The Parapsychological Association, Inc.

50th Annual Convention

Proceedings of Presented Papers

August 2–5, 2007

Holiday Inn Select Halifax Centre

Halifax, Nova Scotia, Canada

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ACKNOWLEDGEMENTS

It is a distinct honor to have been selected Program Chair for the 50th Anniversary of our distinguished association. To commemorate this milestone, this year's program includes a special panel, organized by the president, Rex G. Stanford, that takes stock of how far we have come in meeting our objectives since the founding of the PA in 1957. In addition, there is the usual collection of interesting submissions, including 16 full papers, 9 research briefs, and 2 other panels. Finally, we have an invited address by Erlendur Haraldsson and the banquet address by Daryl Bem. These contributions represent a total of 26 first authors from 10 countries; the international scope of the PA continues to be evident.

I have many people to thank for their contributions to the success of this year's convention. First and foremost, I wish to thank the members of the Program Committee for their labors. Unlike many other scientific societies, the PA requires that submissions to our conventions undergo peer review. This review process not only weeds out submissions that do not meet the PAs standards, but it also helps authors improve the papers that we do accept. This, of course, means that our Program Committee members need to do more work than those who represent societies that lack such a provision.

The Arrangements Committee also deserves recognition for the work they have done in selecting the venue for this year's convention, working out the logistics with the hotel, and assuring that everything ran smoothly once the convention began. Last but not least, I want to thank the Rhine Research Center for providing me the "overhead", without which my job would have been much more difficult.

John Palmer, Ph.D., Program Chair

2007 PA CONVENTION – CONVENTION PROGRAM

Thursday, August 2nd

6:00 – 10:00: Welcoming Activities

6:00 Registration
7:30 Social Reception

Friday, August 3rd

8:30 – 9:15: Introductory Activities

8:30 Registration
9:00 Welcoming remarks: Rex G. Stanford (PA President), John Palmer (Program Chair)

9:15 – 10:40: Panel: Forgotten Pioneers of Parapsychology

Chair: Carlos S. Alvarado

9:15 Introduction – *Carlos S. Alvarado*
9:20 The many faces of a parapsychological pioneer: Max Dessoir (1867-1947) – *Gerd H. Hövelmann*
9:30 Rufus Osgood Mason (1830–1903) and the popularization of psychical research in America – *Carlos S. Alvarado*
9:40 Emil Mattiesen: German composer and 'metapsychologist' – *Eberhard Bauer*
9:50 Christoph Schröder (1871–1952): The hub of a parapsychological network – *Peter Mulacz*
10:00 "Biology without metapsychics, a bird without wings": Orlando Canavesio's contributions to parapsychology – *Alejandro Parra*
10:10 Charles Edward Stuart (1907–1947) and experimental ESP research – *Nancy L. Zingrone*
10:20 Open discussion

10:40 – 11:10: Coffee Break

11:10 – 12:15: Psychological Variables

11:10 Paranormal belief, anxiety, and perceived control over life events – *Chris A. Roe & Claire Bell*
11:35 The neurophenomenology of hypnosis – *Etzel Cardeña, Dietrich Lehmann, Peter Jönsson, Devin Terhune, & Pascal Farber*
12:00 The occurrence, phenomenology, and psychological correlates of out-of-body and near-death experiences – *David J. Wilde & Craig D. Murray*

12:15 – 1:45: Lunch

1:45 – 2:50: Psychology of Mediumship

1:45 Differences between Spiritist mediumship and dissociative identity disorder based on a structured interview – *Alexander Moreira-Almeida, Francisco Lotufu Neto, & Etzel Cardeña*
2:10 Spirit controls and the brain – *Bryan J. Williams & William G. Roll*
2:35 The psychology and phenomenology of mediumship: An exploratory survey – *Elizabeth C. Roxburgh*

2:50 – 3:20: Coffee Break

3:20 – 4:00: Mediumship in Latin America

3:20 An "insanity factory": Psychiatry vs. Spiritism in Brazil (1900-1950) – *Angélica A. S. Almeida & Alexander Moreira-Almeida*
3:45 Possession trance and suicide in a Colombian tribe – *Sergio Schilling*

4:00 – 5:00: Memorial Panel: Ian Stevenson's Work in Parapsychology

Chair – Carlos S. Alvarado

4:00 Introduction – *Carlos S. Alvarado*
4:05 Ian Stevenson on the importance of spontaneous cases – *Nancy L. Zingrone*
4:15 Ian Stevenson's reincarnation research – *Erlendur Haraldsson*
4:25 Ian Stevenson's contributions to research with spontaneous ESP experiences – *Carlos S. Alvarado*
4:35 Ian Stevenson on mental mediumship – *John Palmer*
4:45 Open Discussion

5:00 – 7:00: Dinner

7:00 – 10:30: Tributes, Presidential Address and Reception

7:00 Appreciations of distinguished PA members, recently deceased
Robert A. McConnell – *Rick E. Berger*
Evan Harris Walker – *Edwin C. May*
Rhea A. White – *Stanley Krippner*
7:15 Presidential Address – *Rex G. Stanford*
8:30 Presidential Reception

Saturday, August 4th

8:30 – 9:00: Registration

9:00 – 10:05: Remote Viewing and Ganzfeld

9:00 Advances in anomalous cognition analysis: A judge-free and accurate confidence-calling technique – *Edwin C. May*
9:25 A remote viewing pilot study using a ganzfeld induction procedure – *Chris A. Roe & Stuart Flint*
9:40 Are artistic populations psi-conducive? Testing the relationship between creativity and psi with an experience-sampling protocol – *Nicola J. Holt*

10:05 – 10:35: Coffee Break

10:35 – 11:35: Invited Address

An attempt to replicate Ian Stevenson's findings about reincarnation cases – *Erlendur Haraldsson*

11:35 – 12:25: Experimental Psi Research

11:35 A peek in the file drawer: Review of 96 undergraduate student projects at the Koestler parapsychology unit – *Caroline Watt*

12:00 "Token object" effect and medical diagnosis: An experimental study – *Alejandro Parra & Juan Carlos Argibay*

12:25 – 1:55: Lunch

1:55 – 3:00: Implicit Psi Effects

1:55 Can sensory cues facilitate real ESP in an RNG guessing task? – *John Palmer*

2:20 Exploratory field RNG study during a group workshop on psychic experiences – *Bryan J. Williams*

2:45 Cognitive disinhibition and psi: Exploring the filter theory of psi-awareness – *Nicola J. Holt, Christine A. Simmonds-Moore, & Stephen L. Moore*

3:00 – 3:30: Coffee Break

3:30 – 5:00: Panel: Three Parapsychological Association Goals: A 50th Anniversary Assessment

Chair – Rex G. Stanford

3:30 Introduction: The character of the assessment **–** *Rex G. Stanford*

3:35 Goal I: Advancement of parapsychology as a science **–** *Eberhard W. Bauer*

3:55 Goal II: Dissemination of the knowledge of parapsychology **–** *Stanley Krippner*

4:15 Goal III: The integration of parapsychology with other branches of science **–** *Edwin C. May*

4:35 Discussant **–** *Jessica M. Utts*

4:50 Open discussion

5:00 – 6:00: Workshop

Web logs and wikis: 21st century tools for public scholarship – *Annalisa M. Ventola & Rick E. Berger*

6:00 – 7:30: Free time

7:30 – 10:30: PA Banquet

9:00 Parapsychological Association Outstanding Career Award

9:10 Banquet Address: Taking psi to the mainstream: Persuading the pope to look through the telescope – *Daryl J. Bem*

Sunday, August 5th

9:00 – 10:20: Macro Physical Effects

9:00 Psychological and neuropsychological aspects of RSPK **–** *William G. Roll*

9:25 Energetic aspects of RSPK **–** *William T. Joines & William G. Roll*

9:50 Poltergeists as external representations of a mental state **–** *Fiona Campbell & Craig D. Murray*

10:05 Evaluating photographic anomalies: Examining the roles of photographic expertise, context, paranormal belief, and tolerance of ambiguity – *Annalisa M. Ventola & Devin B. Terhune*

10:20 – 11:00: Poster Session

Is long distance psychokinesis possible in outer space? **–** *Liudmila B. Boldyreva*

"Seeing and feeling ghosts": Absorption, fantasy proneness, and healthy schizotypy as predictors of crisis apparition experiences **–** *Alejandro Parra*

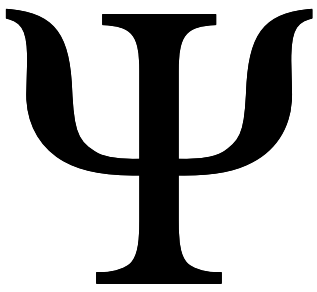
Assessing the role of personality and the provision of feedback in ESP dream research – *Chris A. Roe, Simon J Sherwood, & Louise M. Farrell*

Genetic analysis of psi experiences – *Sergio Schilling & Waldo Mora*

The Albuquerque 300 Experiment: Field RNG analysis of the Albuquerque Tricentennial – *Bryan J. Williams*

11:00 – 12:00 PA Business Meeting (PA members only)

FULL PAPERS



"AN INSANITY FACTORY": PSYCHIATRY VS. SPIRITISM IN BRAZIL (1900-1950)

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ABSTRACT

Allan Kardec, pseudonym for a French intellectual called Hippolyte-Léon Denizard Rivail, intended to perform a scientific investigation on supposed manifestation of spirits in the middle of XIX Century. He considered several possible explanations including what we would currently call fraud, hallucination, unconscious activity, collective unconsciousness, telepathy, and super-psi. While accepting these as possible explanations for many cases, he thought that some mediumistic experiences were best explained by the survival hypothesis. Once convinced of the possibility of communication with deceased people, he aimed to develop a method for obtaining valid knowledge from spirit communications (Kardec, 1986). After comparing and analyzing mediumistic communications obtained through mediums from different countries, Kardec organized the information into a single theory in 1857 (Kardec, 1996). He called the resulting philosophy "Spiritism," defined as "a science which deals with the nature, origin and destiny of Spirits, as well as their relationship with the corporeal world." Kardec regarded Spiritism as a science and philosophy with moral implications (Kardec, 1999).

Spiritism supports an interactionist dualist model of the mind-body relationship as well as the survival of consciousness after death, reincarnation, and an exchange of knowledge between incarnated and disincarnated minds. Spiritism also proposes a model of spiritual etiology for mental disorders, without rejecting their biological, psychological, and social causes. In addition to recommending conventional medical and psychological therapeutics, Spiritism advocates séances for "disobsession," "passes", prayers, and efforts to live according to ethical principles (Moreira- Almeida & Lotufo Neto, 2005).

The history of Spiritism and Psychiatry share several common elements and intersections, but, historians have not adequately explored this subject. In Brazil, particularly, there was an intense, but little studied conflict between psychiatrists and spiritists around "Spiritist Madness" during the first half of 20th Century (Almeida, 2007).

The present study aimed to investigate the construction of the representation of mediumship as madness the "Spiritist Madness" and to understand how spiritist mediumistic experiences came to be classified by psychiatrists as causes and/or manifestation of mental disorders. This study focused on southeast Brazil between 1900 and 1950, the place and the time where this conflict was most severe in that country.

Since the beginning of the Spiritualism and Spiritism, around the middle of XIX Century, mediumistic practices were regarded by physicians as a major cause of insanity in Europe and United States (Brown, 1983; Shortt, 1984; Zingrone, 1994; Malefan, 1999). In 1862, the British Journal of Psychiatry published a paper titled "Spiritualism as a cause of insanity" where the author stated:

> In America, the country which gave birth to this delusion, and where it is in great favor, the number of cases of mental alienation occasioned by it is prodigious. (…) The majority of mediums become haggard, idiots, mad, or stupid; and it is the same with many auditors. (…)
> There can be no doubt that spiritualism should rank among the most fruitful causes of mental alienation" (Burlet, 1862, p.374)

Such viewpoints remained in Europe until the following century. Several case reports, articles, books and theses were written about the noxious action of Spiritism (Malefan, 1999; Shortt, 1984; Zingrone, 1991). Such ideas strongly influenced Brazilian psychiatrists.

The first Brazilian medical publications talking about the "dangers of Spiritism" appeared in the end of 19th Century. Nina Rodrigues (1896/1935) and Franco da Rocha (1896), two leaders of Academic Medicine in Brazil at that time, published works in the same year (1896) stating that Spiritism was an increasing cause of madness:

> As regards neuropaths, with predisposition, together in a poorly lighted room, everybody in silence and an intense emotional state, no wonder the consequences. The emotional state, the collective excitement, and surrounding modifications evoke, especially in women, hysterical outbreaks, and the abnormalities go even further – to complete loss of reason.(…)
> 'This new religion is regretfully imprudent and completely pointless, contributing to nothing else but increasing the number of mad people."(Rocha, 1896, p. 33)

These works were followed by dozens more in the first half of 20th Century. In addition to Rodrigues and Rocha, other eminent physicians were involved in this dispute and they usually endorsed the view of Spiritism as a major danger for mental health. Some of them were: Pacheco e Silva (1950), Xavier de Oliveira (1931), Afrânio Peixoto (1909), Leonídio Ribeiro & Murilo Campos (1931), and Henrique Roxo (1938). Physicians published academic theses, papers, and books about "spiritist madness" and the need to oppose it through governmental control over spiritist groups, forbidding spiritist publications, fighting against the allegedly charlatan practices of mediums, and hospitalizing mediums, who were regarded as insane. Several doctoral theses were produced regarding the dangers of Spiritism, including induction of insanity, suicide, homicide and family disunion (Caldas, 1929; Marques, 1929; Pimentel, 1919).

Following European psychiatrists, Brazilians physicians also stated that Spiritism was causing an epidemic of madness. Several clinical types of Spiritist madness were described: Spiritopathy, Mediumnopathy, and Episodic Spiritist Delusion. This latter label was a new mental disorder proposed by a Brazilian Psychiatrist (Henrique Roxo, 1938) to medical societies in Brazil and France. Mediums were considered mentally unstable people ("neuropaths", "simple-minded", "schizoid", "hysterical", etc.) who developed mental automatism when submitted to strong suggestion during Spiritist *séances.*

In 1927, the Medical Society of Rio de Janeiro promoted a heated debate on the "Spiritism problem" and a committee to study the topic was formed. Eleven renowned physicians were surveyed and answered four questions regarding their opinion about the dangers of Spiritism. The consensus was that Spiritism was harmful to mental health. This was probably the first "expert consensus panel" in Brazilian medicine (Ribeiro & Campos, 1931).

Two books entirely dedicated to explore problems related to spiritist practices were launched in 1931. One of them, "Spiritism and Madness" was published by Xavier de Oliveira, a Professor of Psychiatry at the University of Rio de Janeiro School of Medicine. According to him, Spiritism was the third leading cause if insanity in Brazil, accounting for almost 10% of psychiatric hospitalizations (Oliveira, 1931). Oliveira was one of the most radical opponents of Spiritism among Brazilian physicians, bellow there is an extract from his book:

> The 'Mediums' Book' by Allan Kardec is the cocaine of nervous enfeebled individuals [. . .] and with one aggravation: it is cheaper, reachable and for those reasons results in the hospitalization of a lot more people than 'devil's powder' [. . .] The hygiene and prophylaxis rely exclusively on burning all Spiritist books and shutdown of *candomblés*, high, medium and low, that, for now, infest Rio de Janeiro, Brazil and the entire western part of the world. (Oliveira, 1931, p. 211)

The second book published in 1931 was "The Spiritism in Brazil: contributions to its clinical and medicolegal study" (Ribeiro & Campos, 1931). Its authors were Leonídio Ribeiro (Professor of Legal Medicine at the University of Rio de Janeiro) and Murilo Campos. Ribeiro was also one of the main opponent to Spiritism in the Brazilian medical field. Although He kept this approach until the 1960s (Ribeiro, 1962).

For their part, spiritists also published books, wrote papers in spiritist periodicals, produced a thesis in medicine (but the School of Medicine's board denied approval) and built spiritist psychiatric hospitals.

Spiritists criticized biased data collection and unwarranted inferences made by psychiatrists who were trying to prove that Spiritism was an "insanity factory" (Machado, 1922; Leite, 1931; Lobo, 1939). Allan Kardec wrote several papers dealing with the alleged risks posed by Spiritism to Mental health:

> It goes against the most basic principles of reasoning to take a general conclusion of the matter from a few isolated cases which can be disclosed by other cases. (. . .) You say you have followed six cases. (. . .) But what can it prove? Had you followed two or three times more than that, still nothing could be proven, as long as the total amount of mad people does not reach an average. Let's take an average of 1,000, which is a round number. (...) Had the average grown to 1,200 since the beginning of propagation of Spiritist ideas, for instance, and the difference were precisely the cases of Spiritist madness, that would be another situation. However, as long as one cannot prove that the average of disturbed people has increased due to the influence of Spiritism, the description of a few isolated cases proves nothing besides an intention to disbelieve Spiritist ideas and disturb the general opinion Police. (Kardec, 1863, p. 53)

Besides denying that mediumship was a form of madness, spiritists defended Spiritism and criticized Psychiatry for both its poor clinical effectiveness and for not taking in account possible spiritual causes for madness. The psychiatrist Inácio Ferreira (1945, 1946, 1948) and the journalist Carlos Imbassahy (1949) were two Brazilian spiritist leaders involved more in depth in this debate. Both published books on this subject refuting physicians´ claims about the "Spiritst Madness". This struggle between physicians and spiritists reached the lay media; a large number of articles about this subject were printed in large circulation newspapers (Maia, 1939; Lex, 1941).

Undoubtedly, several factor contributed to this conflict and to labeling spiritist mediumistic experiences as causes and/or manifestation of mental disorders. In Brazil during the first half of 20th Century, both Psychiatry and Spiritism were seeking legitimation, cultural, scientific, and institutional space within Brazilian society. These two social actors were related to urban, intellectualized class, and proposed different views and therapeutic approaches to mind and madness. Both contested the same spaces in the scientific, cultural, social, and institutional fields, attempting to establish their own legitimacy. This conflict was expressed through constant quarrels between psychiatrists and spiritists. Psychiatrists claimed to themselves the authority to pronounce about mind, its disorders and treatments. The authority over these topics was also demanded by spiritists. In addition to dispute their space within Brazilian society, Spiritists and Psychiatrists hold different theories and practices. On one hand, Psychiatrists were progressively taking anti-religious stances and increasing the promotion of materialistic monism as an explanation to mind-brain relationship; Spiritism, on the other hand, attempted to bring back an interactionist dualism and spiritual issues to mental health field (Hess, 1991, 1994; Wadi, 1999-2000; Aubrée & Laplantine, 1999; Aubrée, 2000; Isaia, 2006; Almeida, 2007). Similar analysis were produced in studies about the conflict between spiritualists/spiritists and physicians in Europe and United States (Shortt, 1984; Malefan, 1999; Zingrone, 1994):

> The neurologists and alienists saw themselves as participants in a crucial epistemological debate between those wishing to preserve an essentially religious view of the natural world and those who endorsed an entirely secular perspective (Shortt, 1984, p. 345)

Besides the professional and epistemological factors related above, several other epistemological factors related to positivism are among the sociocultural factors that seem to have influenced the building of the representation of mediumship as a mental disorder, including a cultural insensibility expressed through an ethnocentric approach and blindness to the cultural biases that influence all scientific observation. Psychiatrists often claimed that they were not moved by any prejudice but only by impartial and scientific observations. Inductivism and verificationism are also positivistic approaches that appear to have affected psychiatrists' behavior during this conflict (Herskovits, 1943, 1949; Kuhn, 1970; Popper, 1995).

The resolution of this conflict came about as both groups managed to achieve legitimacy, albeit in different fields. Psychiatry found its niche in medical and academic environments; Spiritism achieved its legitimacy inside the religious field. Nevertheless, both groups have influenced the representation of mental disorders in Brazilian society. A large proportion of Brazilians seek spiritual treatments as a

complement to psychiatric therapies. Psychiatric and spiritist representations of mental disorders are often understood more as complementary than opposite (Almeida, 2007).

This dispute over representations of mind, madness and mediumship played a role in the constitution of Psychiatry and Spiritism as we now understand it in contemporary Brazil. It provided Psychiatry with more social visibility and institutional power to treat mental disorders, while also giving influence to the Brazilian spiritist movement with its emphasis on the religious aspects of charity and spiritual consolation (Almeida, 2007).

REFERENCES

Almeida, A. A. S. (2007). *"Uma Fábrica de Loucos": Psiquiatria X Espiritismo no Brasil (1900-1950).* Campinas. Tese (Doutorado em História) – Unicamp.

Aubrée, M. (2000). Les "Malasies Nerveuses" et leurs therapeutiques populaires au Bresil. Caravelle. *Cahiers du Monde Hispanique et Luso-Bresilien*. 75:49-60.

Aubrée, M. & Laplantine, F. (1990). *La Table, Le Livre et les Espirits*. Éditions Jean-Claude Làttes.

Brown, E. M. (1983). Neurology and Spiritualism in the 1870s. *Bulletin of the History of Medicina*. 57(4) Winter.

Burlet, M.. (1862). Spiritualism as a Cause of Insanity. British Medical Journal 2:374-5, Oct. 3.

Caldas, M. (1929). As causas e a prophylaxia do suicidio – *Archivos Brasileiros de Hygiene Mental*, Ano IL (3): 158-9.

Ferreira, I. (1946). *Têm Razão?* Uberaba, Gráfica Mundo Espírita.

_____. (1993 [1945]).*Novos rumos à medicina*,Vol. I. São Paulo: Edições FEESP.

_____. (1995 [1948]). *Novos rumos à medicina*, Vol. II. São Paulo: Edições FEESP.

Herskovits, M. J. (1943). *Pesquisas Etnológicas na Bahia*. Publicações do Museu da Bahia. N. 3.

_____. (1949). *Man and his Works. The Science of Cultural Anthropology.* New York: Alfred a Knopf.

Hess, D. (1991). *Spiritists and Scientists: Ideology, Spiritsm and Brazilian Culture*. Pennsylvania. The Pennsylvania State University Press.

_____. (1994). *Samba in the Night. Spiritism in Brazil*. New York: Columbia University Press, 1994.

Isaia, A. C. (2006). *Espiritismo, Catolicismo e Saber Médico Psiquiátrico: A Presença de Charcot na Obra do Padre Júlio Maria de Lombaerde.* In: Orixás e Espíritos. O debate interdisciplinar na pesquisa contemporânea. Org: Artur Cesar Isaia. Uberlândia: EDUFU.

Kardec, A. (1863) A loucura espirita. *Revista Espírita – Jornal de Estudos Psicológicos*, 6 (5), 50–7.

Kardec, A. (1986 [1861]). *The mediums' book* (trans. Anna Blackwell). Rio de Janeiro: FEB.

Kardec, A. (1999 [1859]). *What is Spiritism?* Philadelphia. Allan Kardec Educational Society.

Kardec, A. (1996 [1857]). *The spirits' book (*trans. Anna Blackwell). Rio de Janeiro: FEB.

Kuhn, T. S. (1970) *The Structure of Scientific Revolutions*. Chicago: University of Chicago.

Leite, S. F. (1931). O Que Aumenta Entre Nós a Loucura? *O Globo*.

Le Maléfan, P. (1999). *Folie Et Spiritismo. Histoire du discours psychopathologique sur la pratique du spiritisme ses abords et ses avatars (1850-1950)*. Paris: L'Harmattan.

Lex, A. (1941). *O Revelador*. São Paulo, Fev.

Lobo, S. (06/1939). O Espiritismo Atacado por ter Feito 1.372 Loucos em dez annos, responde com a assistencia gratuita de 10.000 enfermos em 24 mezes. *Diário da Noite*, Jun. p.1-2.

Machado, B. M. (1922). *Contribuição ao Estudo da Psychiatria*. Tese de Doutoramento. Faculdade de Medicina do Rio de Janeiro.

Maia, G. T. (1939). Os Médicos Espíritas Vão Mandar Uma Moção ao Ministro da Educação. *Diário da Noite* n.3671, p.1-2, 06/14, edição das 15 horas.

Marques, C. (1929). *Espiritismo e Idéias Delirantes*. Tese (Doutorado em Medicina). Faculdade de Medicina da Universidade do Rio de Janeiro. Rio de Janeiro.

Moreira-Almeida, A.; Lotufo Neto, F. (2005). Spiritist views of mental disorders in Brazil. *Transcultural Psychiatry* 42(4):570-95.

Oliveira, X. (1931). *Espiritismo e Loucura. Contribuição ao estudo do factor religioso em Psychiatria*. Rio de Janeiro: Alba.

Pacheco e Silva, A. C. (1950). O Espiritismo e as Doenças Mentais no Brasil. *Anais Portugueses de Psiquiatria* 2(2):1-6.

Peixoto, A. (1909). Violencia Carnal e Mediunidade. *Archivos Brasileiros de Psychiatria, Neurologia e Medicina Legal* 5(1-2):78-94.

Pimentel, O. S. (1919). *Em Torno do Espiritismo.* Tese (doutoramento). Faculdade de Medicina do Rio de Janeiro - Rio de Janeiro.

Popper, K. R. (1982). *Conjecturas e Refutações*. Brasília: Universidade de Brasília.

Ribeiro, L. (1967). *De Médico a Criminalista.* Rio de Janeiro: Livraria São José.

Ribeiro, L. & Campos, M. (1931). *O Espiritismo no Brasil: contribuição ao seu estudo clínico e medico-legal*. São Paulo: Companhia Editora Nacional, 1931.

Rocha, F. (1896). *Hospício de Alienados de São Paulo*. Estatística. São Paulo: Typographia do Diario Oficial.

Rodrigues, N. (1935) *O Animismo Fetichista dos Negros Bahianos* . Rio de Janeiro: Civilização Brasileira). Originally published 1896.

Roxo, H. (1938). Delirio Espirita Episodico nas Classes Populares do Rio de Janeiro. *Archivos Brasileiros de Medicina* 28(2):59-72.

Shortt, S. E. D. (1984). Physicians and Psychics: The Anglo-American Medical Response to Spiritualism, 1870-1890. *Journal of the History of Medicine.* 39:339-55.

Zingrone, N. L. (1994). Images of Woman as Medium: power, pathology and passivity in the Writings of Frederic Marvin and Cesare Lombroso – In: Coly, L.; White, R. A. (Eds.) - *Women and Parapsychology* - New York. Parapsychology Foundation Inc, p. 90-123.

Wadi, Y. M. (1999-2000). Aos loucos, os médicos: a luta pela medicalização do hospício e construção da psiquiatria no Rio Grande do Sul. *História, Ciências, Saúde - Manguinhos* 6(3): 659-679.

IS LONG-DISTANCE PSYCHOKINESIS POSSIBLE IN OUTER SPACE?

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ABSTRACT

Some features of psychokinetic effects in the experiments on mental influencing physical devices and instruments are discussed. It is shown that the results of different experiments on both short-range and long-range psychokinesis can be explained on the basis of a model of superfluid physical vacuum if one assumes that the psychic's effort is 'transmitted' to the target by means of spin processes in the vacuum. Spin processes can propagate through the superfluid physical vacuum provided the vacuum is in a perturbed state. The excitation of the vacuum is performed by quantum entities such as elementary particles or photons. If the concentration of the quantum entities in the vacuum is insufficient, the psychic's effort will not be transmitted through the vacuum. It is this mechanism which can account for the cessation of psychokinetic effect on a target in a vessel after the air has been evacuated. It follows from the above that psychokinesis may not be feasible in outer space. That is, a psychic on board a spaceship will not be able to influence the devices, instruments or other targets on board a different spaceship or on the earth.

SOME FEATURES OF PSYCHOKINETIC EFFECTS IN THE EXPERIMENTS ON MENTAL INFLUENCING PHYSICAL DEVICES AND INSTRUMENTS

In (Boldyreva & Sotina, 2002, 2003) psychokinesis experiments are described wherein psychics were influencing physical instruments, such as microcalorimeters and noise generators, at a distance of up to several kilometers. The effect of the psychic's influencing is characterized by the following:

1. Screening of the instrument from electromagnetic and other type of radiation did not affect the result produced by the psychic, and in some cases made it even more distinct.

2. The variation of the distance between the psychic and the instrument, in the range of 0.5 m to 2,000 km, did not affect the result, which rules out the thermal or acoustic nature of psychic's influence.

3. The psychics showed an ability to selectively influence the instruments: the reference instruments located in close proximity to the instrument being influenced upon did not respond to the psychic's efforts.

4. The aftereffect took place: after stopping the very first effort of psychic's the signal did not return to the initial level for a long time; the subsequent psychic's efforts resulted in a signal change; however, when the psychic stopped the effort, the signal returned to a level close to that established after the first effort.

The above experiments were carried out on the earth, and it is worth questioning whether long-distance psychokinesis is possible in outer space, with the psychic and the target being in different spaceships or the psychic being on the earth and the target on board a spaceship or vice versa.

Taking into account the independence of the psychic's influence results on the distance, the answer to the question might be positive. However, we should take into account as well the properties of the physical vacuum – the medium through which the influencing is effected. The author of this paper argues that from the latter point of view the answer can be negative. The argument is based on the data obtained in the experiments with the outstanding Russian psychic Mrs. Ninel Kulagina. The psychokinesis experiments with Mrs. Kulagina were conducted at the former Leningrad Institute for Fine Mechanics and Optics by a research team headed by Prof. G. N. Dul'nev in the 1970s and 1980s (Dul'nev, 2004). Mrs. Kulagina was able to distantly move various objects, both metallic and non-metallic, with mass of several grams. Also she had an ability to rotate the compass needle both clockwise and counter-clockwise, to change pH of water, to spoil an X-ray film placed in a light-proof camera, or to make people experience

a sensation of burn in parts of human body. The distance between the psychic's palms and the target was from 10 to 30 cm. The displacement of the targets occurred in a peculiar way. For example, a wineglass moved ajog along the surface of the table away from the psychic's palms shaped as a parabolic antenna, the path length being up to 20 cm. Metallic and plastic cylinders of 1 to 1,5 cm in diameter, 5 to 10 cm long, were moved in a vertical position jerkily, in much the same way as the wineglass. The results did not change when the target had been placed inside the Faraday cage, which ruled out the electromagnetic nature of the Kulagina effect.

In the experiments, a suggestion of whether the nature of the effect was thermal was tested too. For this purpose, Mrs. Kulagina attempted to influence a heat flow meter placed at a distance of 5 to 10 cm from the her palms forming a hemisphere. At the same time the temperature of the psychic's palms was measured by means of special thermocouples. Next to the heat flow meter at a distance of 10 cm from it there was a compass. During the experiment, from 0 to 13 minutes the psychic did not pay any attention to the heat flow meter and her effort was aimed at the compass needle, making it rotate. In the period from 13 to 20 minutes the psychic switched to the heat flow meter only and influenced it successfully (Fig.1). From the 21st minute on she started influencing the compass again. The temperature of the palms was normal and did not change during the entire course of the experiment. This experiment showed, firstly, that Mrs. Kulagina was able to selectively influence the targets: by switching her mental effort from one target to another she was able to influence only the chosen target and there was no effect on the other placed next to the first one. Secondly, the nature of the Kulagina effect was not thermal. The response of the heat flow meter to Mrs. Kulagina's effort might be a result of converting some unidentified type of energy emitted by Mrs. Kulagina into the energy that made the instrument change its readings.

To clarify further the nature of the Kulagina effect a series of experiments was conducted, where the target had been placed inside an evacuated glass vessel. Mrs. Kulagina was able only to mentally move the target while the air pressure in the vessel exceeded ca. 10^{-3} mm Hg, the normal pressure being ca. 10^{3} mm Hg. This fact ruled out the "corpuscular" nature of the Kulagina effect: if assume that the psychokinesis took place owing to Mrs. Kulagina's ability to emit a flow of some particles, the effect of the evacuation of the air out of the vessel would be nil.

However, there was the acoustic hypothesis to be explored. To this end Mrs. Kulagina's influence on sound receiving devices was studied. A Bruel & Kjaer instrumentation tape recorder and microphones were used. The devices were at a distance of 5 to 17 cm from the psychic's palms. The experiments have shown (Fig.2) that the devices responded to Mrs. Kulagina's efforts: acoustic pulses of 10^{-2} to 10^{4} s width and 70 to 90 dB amplitude were recorded (the noise amplitude was within 40 to 60 dB).

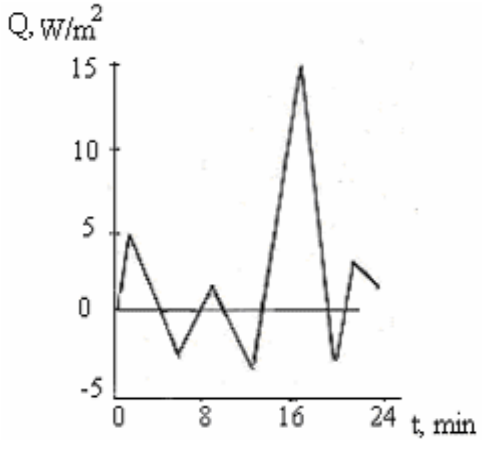

Fig 1. Response of the heat flow meter to Mrs. Kulagina's effort. Q is heat flow density.

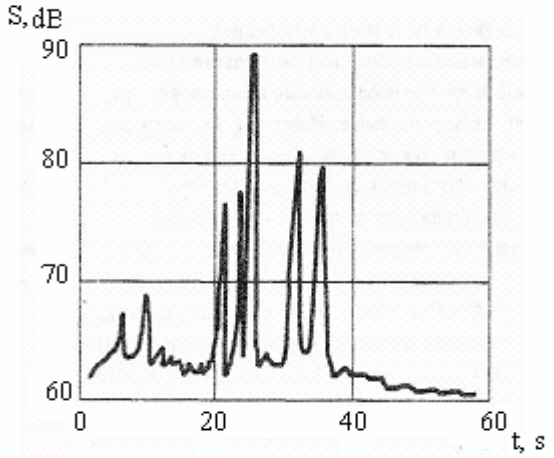

Fig 2. Response of the sound receiving device to Mrs. Kulagina's effort. S is acoustic signal amplitude.

The results of the experiments seemed to support the acoustic hypothesis. The acoustic effects could readily account for the sensation of burn in the parts of people being influenced by Mrs. Kulagina: it was well known that a contact with a 1 MHz ultrasound radiator could cause such a sensation. The motion of targets ajog or in a jerking way could be explained by an ability of Mrs. Kulagina to establish a mental contact with the target and tune to the natural frequency of the latter. At resonance the target would jump slightly forming an air cushion and reducing thus the friction. However, acoustic effects could not account for spoiling the X-ray film placed in a light-proof camera. Besides, it was shown that the results of the experiment did not depend on the presence of various metallic and non-metallic screens between Mrs. Kulagina and the target devices, although the screening should have reduced the acoustic waves. The effect of Mrs. Kulagina's on the sound receiving devices might be linked with a conversion of energy as in the case of the heat flow meter. And, finally, the acoustic hypothesis was incompatible with the above-mentioned experiments on long-distance psychokinesis. Of course, one might suggest that the nature of the psychokinesis effects in the above long-distance experiments was different from that by Mrs. Kulagina. However, it should be taken into account that both types of effects have much in common, e.g. independence of the presence of electromagnetic screens, non-thermal nature, selectivity of influencing.

PSYCHOKINESIS AND THE MODEL OF SUPERFLUID PHYSICAL VACUUM

It is shown further in this paper that both Mrs. Kulagina's effects and the results of the experiments on long-range psychokinesis can be explained from a single viewpoint based on the model of the superfluid physical vacuum (Boldyreva & Sotina, 1992, August 2002, 2003).

According to the model the physical vacuum has the properties of a superfluid and consists of pairs of oppositely charged particles, the fermions. In the unperturbed state the total spin of a pair equals zero. In such a vacuum, quantum objects produce volumes of oriented and precessing spins of the particles that constitute the superfluid physical vacuum: the so-called homogeneously precessing domains (HPD's). The mental action of a physic upon the target can be effected in the vacuum through the interaction of structures created in it by the psychic and the target. From the point of view of the model of superfluid physical vacuum, the interaction of these structures can be effected by means of spin currents. In the Appendix there is a brief description of the experiment with superfluid ^{3}He-*B* where spin processes were observed. The following features of the process are worth mentioning:

1. It runs without 'participation' of photons.
2. Independence of the length of the channel linking the HPD's, that is, of the distance between the interacting structures.
3. Selectivity of the effect: the phase slip takes place only at a specific magnitude of spin current (or phase gradient, which is the same).

Thus we can see that the properties of the long-range psychokinesis, listed in the beginning of this paper, are like those of spin processes in a superfluid.

DISCUSSION

In contrast to ^{3}He-*B* where the total spin of a Cooper pair, i.e. a pair of ^{3}He atoms (which are fermions like electrons), is equal to 1, the total spin of a pair of the particles that constitute the superfluid physical vacuum equals zero in the unperturbed state. Spin currents cannot be induced in the vacuum in this state. The physical vacuum should be perturbed somehow to induce a spin-related physical process. This can be done by means of quantum objects that produce in the vacuum the volumes with oriented and precessing spins of the particles. In energy terms, the perturbation of the physical vacuum means that quanta of energy, $h\nu$, emerge in the vacuum, where ν is determined by the energy of the quantum objects producing the perturbation. That is, one can speak of the emergence of virtual photons in the vacuum.

In the experiments with Mrs. Kulagina, the evacuation of air from the glass vessel resulted in reduction in the amount of quantum objects, i.e. the molecules, in the vessel, and thus gave rise to the transition of the physical vacuum from the perturbed state to the unperturbed one. Thus if we assume that the psychic's effort is transmitted from her or him to the target by means of spin-related processes in the superfluid physical vacuum, we can readily explain why the evacuation of air from the glass vessel leads to disappearance of the effect on the target. Therefore, if the concentration of quantum objects, such as photons or elementary particles, is small in outer space, with the pressure being less than 10^{-3} mm Hg, psychokinesis may not be feasible in outer space. That is, a psychic on board a spaceship will not be able to influence the devices, instruments or other targets on board a different spaceship or on the earth.

It is worth outlining a PK experiment to be conducted on the earth, which might test the above hypothesis. It could be an experiment on *long-distance* mental influencing the readings of electronic devices. A lot of such experiments have been carried out and described (e. g. May & Vilenskaya, 1992, Boldyreva & Sotina et al., 2002). In the suggested experiment, the target device(s) should be placed in an evacuated vessel. Supposedly, there would be no PK effect in high vacuum. However, if an intense light beam is introduced into the vessel, the PK effect is expected to be observed in spite of the high vacuum.

Note. As it was mentioned above, the displacement of the targets under Kulagina's influence occurred in a peculiar jogging way. So it is reasonable to suggest their weights were reduced to nil and a momentary levitation took place. The nature of levitation of is unknown, but this phenomenon is consistent with the properties of the superfluid physical vacuum because, according to the model, it is the medium where creation and annihilation of elementary particles take place and certain processes develop which are connected with creation and annihilation of mass.

REFERENCES

Boldyreva, L. B. & Sotina, N. B. (1992) Superfluid Vacuum with Intrinsic Degrees of Freedom. *Physics Essays, 5*, No. 4 (pp. 510 - 513)

Boldyreva, L. B., Sotina, N. B. et al. (2002) *Physicists in Parapsychology*. Hatrol Publishing House, Moscow

Boldyreva, L. B. & Sotina, N. B. (August 2002) Superfluid Vacuum as a Basis for Explanation of Some Phenomena of Parapsychology. *ISLIS* (*Tokyo, Japan*) *20*, No. 2 (pp. 543 - 548)

Boldyreva, L.B. & Sotina, N.B. (January 2003 – June 2004) Telekinesis at the Quantum Level. *MISAHA Newsletter*, *#40-45* (pp. 24 - 29)

Borovic-Romanov, A.S. et al. (1987) Observation of the Phase Slip at Superfluid Spin Current Flow in ^{3}He-*B*. *Letters to ZhETF*, 45 (98 - 102), Moscow (in Russian)

Dul'nev, G. N. (2004) *In Search for a New World. Psychokinesis, Telepathy, Telekinesis: Facts and Scientific Experiments.* Ves' Publishing House, St-Petersburg (in Russian)

May, E.C. & Vilenskaya, L. (1992) Overview of Current Parapsychology Research in the Former Soviet Union, *Subtle Energies, 3*, No. 3 (pp. 45 - 67)

APPENDIX

One of the remarkable properties of superfluids is the existence of processes leading to the equalization of order parameter. The order parameter gradient can be caused, for example, by a difference in orientation of spins of the fluid particles or a difference in the spin precession phases. As an example, we will describe an experiment carried out at the Institute of Physical Problems in Moscow by a group of researchers headed by Academician A.S. Borovic-Romanov with superfluid ^{3}He-*B* (Borovic-Romanov et al., 1987).

There were two vessels with superfluid ^{3}He-*B* linked by a narrow channel; a homogeneous precession of spins of ^{3}He atoms was generated, that is, two HPD's were created. The difference in the frequencies of precession of atomic spins in the vessels was about 0.1 Hz (~10^{-5} percent of the precession frequency). The difference in the precession frequencies resulted in the creation of a nonzero precession phase gradient, that is, a difference in the order parameter phases and, correspondingly, in the creation of a superfluid spin current. At a certain magnitude of the spin current, a precession phase slip of $2\pi n$ took place along the channel.

THE NEUROPHENOMENOLOGY OF HYPNOSIS

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ABSTRACT

From its inception, "animal magnetism" and hypnosis have been related to reputed psi phenomena. However, only until recently have phenomenological and neurophysiological approaches advanced enough to go beyond the proposal of a putative –and vague- hypnotic state. In this study we are following a neurophenomenological approach by analyzing in parallel experience and brain processes. We selected a group of individuals with high, medium, and low hypnotizability. While their cortical activity was evaluated, their responses to a baseline sitting down with eyes closed and then lifting an arm was compared to the same behaviors after a hypnotic induction (1st session); their spontaneous mentation during baseline and various prompts after an induction and a suggestion to go into their "deepest" state was also measured (2nd session). Results show that a between-subjects factor (level of hypnotizabity) and a within subject factor (baseline vs. other stages of the session) both had significant effects, as did their interaction. While the experience of low hypnotizables was characterized by "normal" mentation, that of "medium" hypnotizables was centered more on vestibular and other bodily sensations, and that of "highs" was characterized by positive affect and "exceptional" mystic-like phenomena. Spectral and source location EEG analyses corroborated various patterns of brain functioning differences across levels of hypnotizability and at different times during the sessions.

INTRODUCTION

Reputed psi phenomena have been observed in mesmerism and hypnosis throughout their history (Ellenberger, 1970). More recently, empirical studies and meta-analyses have strongly associated psi with hypnotic procedures (e.g., Stanford, 1992), although there has been almost no research trying to discern which aspects of the hypnotic procedure, the states produced by that procedure, and/or the trait of hypnotizability are related to psi functioning (Cardeña, 2006). Psi has also been related to specific cortical functioning (e.g., Don, McDonough, & Warren, 1998). Thus a neurophenomenological approach that aims to have a precise mapping of states of consciousness and their associated brain function (Lutz & Thompson, 2003) is called for in parapsychology. The first step, however, is to empirically determine what states of consciousness are being considered (most likely a trait by procedure interaction). In the case of hypnosis there is evidence that there are various discernible states of consciousness, not only one (Cardeña, 2005). How to characterize the brain correlates of such states depends on space and time considerations (e.g., Wackermann, 1999). Hypnotizability (the ability to respond to hypnotic suggestions) is related to anomalous phenomena including mystical, out-of-body, and psi-related experiences, but most of those findings have been correlational in nature (Cardeña, Lynn, & Krippner, 2000). Little research has focused on hypnotic phenomenology, especially among "ultraresponsive" individuals (Weitzenhoffer, 2000, p. 227). One of the problems has been to distinguish between the "artifact" of hypnosis (e.g., induction and suggestions, role playing), and the associated alterations in consciousness (Orne, 1959). A potential solution has been the rarely used approach of "neutral hypnosis" (no explicit suggestions after an induction; Kihlstrom & Edmonston, 1971), similar in spirit to Sheehan & McConkey's attempt to provide few cues on the nature of the hypnotic phenomena investigated (1982, p. 85). Another point to consider is that phenomenal experience is not a static "thing," but a dynamic process that is constantly changing. Using the concept of depth to characterize hypnotic experience is a metaphor that implies significant

differences in experience within the same session. The validity of this characterization is supported by studies showing a positive correlation between reports of greater depth and changes in objective and subjective indices (Kahn, Fromm, Lombard, & Sossi, 1989; Laurence & Nadon, 1986; Tart, 1970b).

With regard to specific studies, Tart (1970a) studied the phenomenology of a hypnotic "virtuoso" who reported that the deepest hypnotic state was characterized by many noticeable alterations in consciousness. With a group of hypnotic virtuosos, Sherman (1971) corroborated Tart's description of deep hypnosis, adding that medium hypnosis involved emotional experiences, simple images, and body sensation, whereas a lighter state was characterized by ideas, worries, and "normal verbal thinking." These results were replicated and extended by Feldman (1976). The findings of these studies have been very consistent, but had various methodological limitations. Cardeña (2005) overcame a number of these methodological limitations in a repeated-measures study with hypnotic virtuosos. In a "neutral hypnosis" context in which participants were only given the suggestion to go as deeply into hypnosis as possible, volunteers reported greater alterations in body image, time sense, perception and meaning, sense of being in an altered state of awareness, affect, attention, and imagery. They also mentioned less self-awareness, rationality, voluntary control and memory. A typical experience consisted of mild alterations in body sensations and image during light to medium hypnosis. In a deep state of hypnosis, participants mentioned unusual experiences such as disembodied consciousness, utter darkness and voidness, brightness, a sense of potentiality, and being in contact with everything. This study also had some limitations. Because only hypnotic virtuosos were studied, the effect demand characteristics was not controlled.

For a long time, it has been almost a truism that hypnosis cannot be considered a different "state of consciousness", because it does not entail specific cortical activity, unlike sleep states. In the last fifteen years or so, this view has been challenged in a number of ways by studies showing significant anatomical and physiological differences between high and low hypnotizable individuals. For instance, high hypnotizability and the related ability to control pain has been associated with a considerably (31.8%) larger rostrum and, presumably, enhanced allocation of attention (Horton, Crawford, Harrington, & Downs, 2004). As compared with low hypnotizables, high hypnotizables manifest greater EEG hemispheric asymmetries and hemispheric specificity for tasks (Crawford et al., 1996), higher EEG global dimensional complexity (Isotani et al., 2001), and different sources for EEG activity (Lehmann et al., 2001). Hypnotic suggestions to reduce the affective or sensory components of pain have been shown to affect different brain areas (Rainville et al., 1999). However, no recent studies have been carried out on the EEG activity associated with specific, spontaneous (i.e., non-suggested) hypnotic experiences. The only relevant reference in the hypnosis literature is by Sherman (1971), but his EEG set-up was primitive and he did not provide specific information on his analyses. The objective of this study was to compare the phenomenology and EEG activity of high, medium, and low hypnotizable individuals under a "neutral," deep hypnotic condition, and in response to hypnotic and non-hypnotic tasks.

METHOD

Design

This project follows a general mixed within/between factor design, with hypnotizability (high, medium, or low) as a between factor, and condition of task (e.g., willed or hypnotically suggested arm levitation) as a within factor.

Participants

Through media and internet announcements, members of Lund University and the surrounding communities were invited to participate. The research had been approved earlier by the Swedish Federal Human Subjects Agency (Etikprövningsnämden). Those participants who completed all phases of the experiment were paid 90 SEK (about 12 Euros).

Procedure

Participants were administered an approved "informed consent form" and then a group hypnotizability screening instrument (Harvard Group Scale of Hypnotic Susceptibility), and the Inventory Scale of Hypnotic Depth (ISHD). From this group, those with high (HGSHS scores from 9-12), medium (5-7), and low (0-3) hypnotizability were contacted, and those interested in continuing to participate were further evaluated with an individual measure, the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C), and the Brief Symptom Inventory (BSI). Those who continued to score as either high, medium, or low hypnotizables, did not manifest obvious pathology, and wanted to continue were further evaluated in two EEG sessions.

In the *first session*, after learning the self-report scale of hypnotic depth, participants: 1) completed the Phenomenology of Consciousness Inventory in reference to their expectancies of deep hypnosis, and 2) had their cortical activity evaluated during an eyes-closed, 3 minute baseline period and a request to voluntarily lift their left arm and hold it there for a minute. Subsequently they were given an arm levitation hypnotic induction and asked to keep their arm up for a minute, after which they heard a 1-10-count to deepen their hypnotic state, were asked to remain in that state for 2 minutes, were asked about their experience for the previous 2 minutes, and were then dehypnotized with a count from 10-0. They were then asked to voluntarily lift their arm again and hold it up for 1 minute.

In the *second session*, as their EEG activity was being measured, participants underwent a two-minute, eye-closed baseline period, were asked to fill out the PCI for their experience for the past two minutes, and were then administered a 1-30 count induction with the only suggestion that they would continue to go into a deeper state of hypnosis throughout the session. Then, every 5 minutes for about 45 minutes, they were asked to provide a depth report ("state"?) and describe their experience ("what were you experiencing?") in the period before the prompts. All reports were digitally recorded and later transcribed. After about 8 prompts (fewer in the case of those who reported discomfort with the EEG electrocap), participants were dehypnotized with a 10-0 count, completed the PCI for their "deepest" state during the session and were asked about their general impression for the session.

Instruments

The Harvard Group Scale of Hypnotic Susceptibility (HGSHS; Shor & Orne, 1962) is widely used as a screening measure of hypnotic ability and has a scoring range of 0-12.

The Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962), has a scoring range of 0 to 12 and is typically considered the "gold standard" of hypnotic susceptibility measurement.

The North Carolina Scale was the self-report scale of hypnotic depth used in this study. It was derived from (Tart, 1970), in which the participant is told that a number that indicates his/her hypnotic depth will appear "automatically" in the mind whenever the experimenter says "state." As compared to the original North Carolina Scale, no phenomena are provided as examples of what might constitute hypnosis (Cardeña, 2005). The scale used was: 0 = wide-awake, 1-10 = feeling slightly different than normal, 11-20 = light hypnosis, 21-30 = medium hypnosis, 31-40 = deep hypnosis, 41-... = very deep hypnosis.

The Inventory Scale of Hypnotic Depth (ISHD; Field, 1965) is a valid instruments that includes 38 items of subjective experiences empirically associated with hypnosis: a) absorption and internal and external unawareness, b) feelings of automaticity and compulsion, and c) discontinuity from normal experience.

The Brief Symptom Inventory (BSI; Derogatis, 1975) is a 53 items abbreviation of the SCL-90 to evaluate general psychiatric symptomatology, with very good validity and reliability.

The Phenomenology of Consciousness Inventory (PCI; Pekala 1991) is a 53-item valid and reliable questionnaires scored on a 0-7 Likert-type scale with various dimensions that evaluate retrospective

account of subjective experience. It has been used for the assessment of many different types of alterations of consciousness (Pekala & Cardeña, 2000).

EEG data were collected using a 64-channel system channels (with linked mastoids as reference) at a rate of 256 Hz and a bandpass filter of .5-100 Hz. Data acquisition and pre-processing analysis was done with a Neuroscan 4.3 system; advanced final analyses (e.g., Low Resolution Electromagnetic Tomography) were done with the programs developed by the KEY Institute.

Analyses

For psychological variables, quantitative and qualitative content analyses were carried out to establish categories of experience. ANOVAs, t-tests, and regression analyses were conducted with interval data; chi squares with categorical data. The significance level for analyses with psychological measures was set at .05, two-tailed. Brown-Forsythe tests were used for heterogeneity of variance; Greenhouse-Geisser corrections for not meeting sphericity.

All EEG data were examined for muscle, movement, sweat, and technical artifacts. Artifact-free data epochs of 2 seconds each were identified and selected for further processing. Four types of power spectra were computed using FFT for each participant and each recording condition:

1) spectrum of original or 'raw' power averaged ('mean') across the spectra of all channels,
2) spectrum of relative* or 'normalized' power, averaged ('mean') across the spectra of all channels,
3) spectrum of original or 'raw' power of the Global Field Power=GFP** curve.
4) spectrum of relative* or 'normalized' Global Field Power=GFP**.

* for the computation of relative or 'normalized' power values, the sum of power in all 86 frequency bins (steps of 0.5 Hz) from 1.5 Hz to 44 Hz was set to 1.

** the single curve of Global Field Power (GFP) for each data epoch was computed for each time point as the standard deviation of the momentary potential values at all electrodes.

Spectral power was integrated across frequency bins into 3 or 8 frequency bands as follows:

Three EEG frequency bands: 1) 'low' (delta & theta, 1.5-8.0 Hz), 2) 'middle' (alpha-1 & alpha-2, 8.5-12.0 Hz), and 3) 'high' (beta-1 & beta-2 & beta-3 & gamma, 13.5-44 Hz). Eight EEG frequency bands: 1) delta (1.5 - 6.0 Hz), 2) theta (6.5-8.0 Hz), 3) alpha1 (8.5-10.0 Hz), 4) alpha2 (10.5 - 12.0 Hz), 5) beta1 (12.5 – 18.0 Hz), 6) beta2 (18.5 – 21.0 Hz), 7) beta3 (21.5 – 30 Hz), and 8) gamma (35 - 44 Hz).

LORETA functional imaging (Pascual-Marqui 2002; Pascual-Marqui et al. 1994) was employed for the intracortical localization of the sources of brain electric activity. The total solution space of the employed sLORETA functional imaging software (downloadable at <http://www.unizh.ch/keyinst/index/download .html>) is 6239 voxels in the cortical areas. LORETA computed current density for each voxel in the solution space. Voxel-wise statistics for the assessment of differences between conditions and participant groups was done using the sLORETA software package. LORETA functional images were computed separately for the same 3 and 8 frequency bands as for the power spectral analyses: The following option was chosen for the computations with sLORETA: 'time frame normalized' = normalized global strength for each frequency band for each participant. This option leads to the detection of 'landscape' differences (detection of differences of the spatial distribution of intracortical brain electric activity) while overall strength of this activity is disregarded. For the assessment of general topographic tendencies in comparisons of the detailed voxel-wise LORETA results between conditions and participant groups, and for ease of visualization of these dominant LORETA results, the intracerebral 3-dimensional localizations of the gravity centers of the voxels' current density values were computed for each frequency band.

RESULTS

Sample

After various group tests, 186 participants completed the HGSHS. Of these participants 62 were male (33.5%) and 123 (66.4) female. Complete data for the variables gender, age and HGSHS was available for 183 participants. The mean age of the participants was 29.16 (range = 18-66, *SD* = 11.00). For participation in EEG sessions 1 and 2, 40 participants completed individual hypnotizability testing and both EEG sessions (28 women, 12 men; 14 highs, 14 lows, 12 mediums). Because not all participants had complete datasets or analyzable EEGs, most psychological analyses were done on 14 lows, 12 mediums and 12 highs. Although noticeably most men were in the low group (n=8), there was no statistical effect for gender ($p > .05$) but there was a significant effect for age ($F(2, 34) = 5.32$, $p \leq .01$). Because highs ($M = 33.46$, $SD = 10.96$) *were* significantly older than mediums ($M = 25.50$, SD = 4.12; $p \leq .01$) and lows ($M = 25.07$, SD = 25.07; $p < .05$), age was entered as a covariate in most analyses. For EEG analyses, appropriate data were available for 33 participants in session 1 and 27 participants in session 2.

Self-reports of Hypnotic Depth

For session one, self-reports of hypnotic depths were procured after a three-minute baseline, after lifting the arm voluntarily, after the hypnotic arm levitation induction, after the deepening instruction, after a two-minutes period of "remaining in a hypnotic state," after a de-hypnosis procedure, and after lifting the arm voluntarily. Although sex and age did not have a significant effect on ratings (all main and interaction effects *ns*), age was used as a covariate in a 3 (levels of hypnotizability) x 7 (conditions) ANCOVA. Main effects were found for condition (i.e., time of rating in session: baseline, report 1, 2, etc.) and hypnotizability (high, medium, or low). For condition: ($F(6, 192) = 4.26$, $p \leq .01$, $\eta^2 = .12$), with a significant cubic trend ($F(1, 32) = 9.75$, $p = .004$, $\eta^2 = .23$). For hypnotizability: ($F(2, 32) = 5.21$, $p \leq .01$, $\eta^2 = .25$); the interaction between condition X hypnotizability was also significant ($F(12, 192) = 5.14$, $p < .001$, interaction = .24), with quadratic ($F(2, 32) = 6.37$, $p = .005$, $\eta^2 = .29$) and cubic ($F(2, 32) = 4.98$, $p = .013$, $\eta^2 = .24$) effects. Bonferroni tests showed that lows differed from highs at $p<.005$. Whereas the first two ratings (before hypnosis) had no impact on participants, hypnosis did have a pronounced effect on highs, a parallel but smaller effect on mediums, and almost no effect on lows (whose average did not raise above "feeling slightly different than normal.")

For session 2, it should be mentioned that there was no depth rating at the end of the session because the de-induction process continued until every person mentioned being around 0-3 in depth. In the depth reports for the second session there is a similar pattern to the first session. Although sex and age did not have a significant effect on ratings (all main and interaction effects *ns*), age was used as a covariate. After the Greenhouse-Geisser correction, there was only a trend for significance for condition ($F(7, 224) = 2.48$, $p = .078$, $\eta^2 = .072$.) There was a main effect for hypnotizability ($F(2, 32) = 8.31$, $p < .001$, $\eta^2 = .34$), and the interaction of condition X hypnotizability was also significant: ($F(14, 224) = 5.34$, $p < .001$, $\eta^2 = .25$), with significant linear ($F(2, 33) = 8.64$, $p < .001$, $\eta^2 = .34$) and quadratic ($F(2, 32) = 4.52$, $p < .05$, $\eta^2 = .22$) effects. Bonferroni showed that low hypnotizables differed from mediums and highs ($p \leq .01$, and $p < .005$). For mediums and especially highs, depth ratings increase for the first three hypnotic reports and then went into a plateau, whereas there was only a minor effect for the lows throughout the session.

Verbal Reports of Hypnotic Phenomenology for Session 2

For the second session, after a baseline period, there was a hypnotic induction (just counting to 30 with a suggestion to go deeper) followed by probes for hypnotic depth and experience at the end of the induction and then every five minutes for about 6 more probes for each participant. There were a total of 355 usable reports. An emergent coding approach was used following a grounded theory approach (e.g., Glaser, 1992). Two raters, one of them masked as to the participants' level of hypnotizability,

independently evaluated the phenomenological reports. After reading the transcriptions, they arrived at a very similar set of categories and after eliminating some for redundancies arrived to the following list: 1) imagery/fantasy/dreaming (imagery), 2) normal attention/cognition (normal cognition), 3) vestibular body alterations/hallucinations (body), 4) environmental perceptual alterations/hallucinations (environmental), 5) enhanced cognition/exceptional-experience/positive affect (positive), 6) negative affect/discomfort (negative), 7) lethargy/relaxation/sleepiness (relaxation), 8) forgetting, and 9) loss of mental control/sudden thought (loss of control). Some of these categories are compounds (e.g., enhanced cognition/exceptional experience/positive affect) because those phenomena tended to be distinguishable conceptually but still cluster together in participants' reports. For these dimensions, the two raters also independently assessed how indicative were the dimensions for each report, where 1 = not at all, 2 = a little, 3 = somewhat, and 4 = strongly so. They also evaluated which was the main dimension for each report. A comparison of their ratings on which dimension was the primary one showed a 75% concordance. Because agreement percentage does not consider chance agreements, Cohen's (1960) κ statistic was computed. The reliability of the ratings was strong ($\kappa = .69$, $p < .001$), where $\kappa > .6$ reflects substantial agreement. Average scores were then computed from the set of report scores from individual sessions per phenomenological dimension. Six of the 9 variables violated the assumption of homogeneity of variance between hypnotizability groups, so group differences for these variables were assessed with non-parametric statistics (Kruskal-Wallis tests for main effects and Mann Whitney tests for contrasts).

The first analyses were on the average ratings for the reports. Main effects of group were found for three of the phenomenological dimensions: imagery, exceptional, and normal; each was found to account for more than 30% of the variance in hypnotizability. Mann-Whitney tests revealed that high hypnotizables experienced more imagery across the different epochs than low but not medium hypnotizables. Low hypnotizables displayed significantly greater normal cognition than medium and high hypnotizables, but the latter two did not differ. Finally, high hypnotizables experienced more positive affect and exceptional experiences than both low and medium hypnotizables, who did not differ from each other. It is worthy mentioning that the groups did not differ in reported relaxation, so the results cannot be explained as a confound of that variable.

Analyses just for the primary dimension were generally consistent with the findings above, In this case, 50% of low hypnotizable reports were primarily composed of normal cognition, and approximately 40% of medium and high hypnotizable epochs were primarily comprised of body and imagery dimensions, respectively. Main effects of group were found for imagery, normal cognition, body, and positive. The reports of high hypnotizables were more often seen as primarily reflecting exceptional experience than those of the other two hypnotizability groups High hypnotizables were more likely to experience imagery as a primary epoch dimension than low hypnotizables, but not medium hypnotizables. The reports of low hypnotizables were more likely than the other two groups to have normal as the primary phenomenological dimension, and there was a very suggestive (p=.06 with a Tukey test, p.05 with a t test) result that the reports of mediums were more often of body alterations than those of highs.

The Phenomenology of Consciousness Inventory for Session 2

A mixed 3 (low, medium, or high hypnotizability) x 2 (baseline vs. deepest hypnotic state) ANCOVA (controlling for age) using the PCI dimensions and sub-dimensions as dependent variables supports and extends the phenomenological analyses. Level of hypnotizability was associated with having an altered experience, alterations in body image, time sense, perception, enhanced meaning, changes in positive affect, joy, love, changes in self-awareness, experiencing an altered state, and changes in memory. The time of testing (baseline versus deepest state) was associated with altered experience, alterations in body image, time sense, perception, enhanced meaning, changes in positive affect, joy, negative affect, anger, fear, imagery in general and amount and vividness of imagery, changes in self-awareness, arousal, rationality, and voluntary control. Given the hypotheses of this study, interaction effects are of particular importance. They were found for having an altered experience, changes in body image and perception, enhanced meaning, changes in love, sadness, and imagery, and experiencing an altered state.

Comparing groups as a function of hypnotizability at baseline show that lows differed from the other two groups only in reporting less memory than highs. Mediums differed from highs at baseline in altered experience, body image, time, perceptual alterations, joy, self-awareness. A different pattern is found for the self-rated deepest hypnotic state. Lows differed from both mediums and highs in altered experience, body image, perception, and being in an altered state. They differed only from highs in time, enhanced meaning, positive affect, love, self-awareness, and voluntary control. Moderates differed only from highs in time alterations, positive affect, and love.

The PCI results show that although there are a few baseline phenomenological differences across levels of hypnotizability, they become more pronounced during hypnosis, thus supporting a state by trait position on hypnosis. Furthermore, in concordance with the phenomenological ratings, a deep hypnotic state is associated with experiencing an altered state and various other alterations of consciousness. It is also worth mentioning that comparisons across levels of hypnotizability in both conditions suggest that the relationship between lows, mediums, and highs is not just linear as the depth reports would suggest.

EEG Frequency Band Spectral Power in High and Low Hypnotizable Volunteers: Session 1

EEG frequency band power computed in four types of analyses across all available recording channels was tested for differences between high and low hypnotizables in the four experimental conditions of baseline, combined arm1+2 (willful arm raising), HypArm (hypnotic arm levitation), and hypnosis proper. No power difference was observed between high and low hypnotizable volunteers during hypnosis, whereas during the other conditions, various indications for differences between the two groups were detected. The results found are quite consistent across the four types of power spectra and three of the experimental conditions, excepting the hypnosis condition. Table 1 concentrates on the differences between high and low hypnotizable volunteers. The data in Table 1 show that larger power in highs than lows occurred consistently in the EEG frequencies above 12.5 Hz in both relative (normalized) power spectra during baseline, willful arm lifting and hypnotic arm elevation (not during hypnosis). Also evident is that 12 of the 13 differences of interest in the delta, theta, alpha-1 and alpha-2 frequency bands showed less power for highs than lows. In particular, less power for highs than lows was seen during baseline in alpha-1 and during HypArm in alpha-2. These differences between groups disappeared in the hypnosis condition. This suggests that hypnosis installs a brain functional state that is no different in highs and lows in terms of EEG frequency band-wise global power spectra.

EEG Frequency Band Power Comparing High Versus Low Hypnotizable Participants During Hypnosis in Session 2

During the hypnosis 1 condition of session 2, there were no differences of power values between the 9 highs and the 11 lows in any of the 8 frequency bands in any of the four types of spectra computations at two tail $p<0.10$. This confirmed the previous reported observation in session 1 that EEG band power differences between highs and lows that had been observed during the conditions of baseline, willful arm lifting and hypnotic arm levitation disappeared in the hypnosis condition.

Correlations Between EEG Frequency Band Power and Subjective Depth of Hypnosis in High and Low Hypnotizable Volunteers: Session 1

The ratings of experienced depth of hypnosis during the 'hypnosis' condition were correlated with power spectral results of the multichannel EEG data that were recorded during this condition. The results showed that for the entire cohort, the experience of deeper hypnosis was associated with decreased power in the delta, theta and alpha-1 frequency range, and with increased power in the beta and gamma frequency ranges. However, there was a tendency to opposite behavior for highs and lows, making the general observation for the entire group somewhat irrelevant.

differences Hi minus Lo									Session 1	N=10,11
HZ band #	1	2	3	4	5	6	7	8		
	mean raw									
base		*-7.73*								
arm12		*-5.28*								
Hypar				*-17*						
hypno										
	mean norm									
base			*-0.09*					0.01		
arm12						0.01	0.02	0.01		
Hypar	0.062			*-0.08*		0.01				
hypno										
	GFP raw									
base	*-1.19*		*-1.3*							
arm12										
Hypar	*-0.93*	*-0.23*		*-0.46*						
hypno										
	GFP norm									
base			*-0.06*		0.02	0.01	0.03	0.01		
arm12					0.02	0.01	0.03			
Hypar				*-0.02*	0.02	0.01	0.03			
hypno										

Table 1. Differences of EEG frequency band spectral power between highs and lows, for the four types of spectra, for the eight frequency bands and for the four recording conditions (baseline, arm1+2, HypArm, and hypnosis), for comparisons where the corresponding t-test yielded $p<0.2$. Underlined and italics are difference values where highs showed less power than lows; regular font are difference values where highs showed more power than lows.

When comparing the results between highs and lows, it is noteworthy that 9 of the 12 correlations in the analysis for three frequency bands, and 22 of the 32 correlations in the eight-band analyses showed correlations of opposite sign for highs and lows. Although this mean tendency appears interesting, only two of these pairs of opposing correlation coefficients differed at $p=0.1$. On the other hand, such opposing signs of the correlations were not observed in the analysis of the data of the hypnosis condition S1 of session 2 where deeper hypnosis was associated with higher power in high frequencies as in session 1, but without differences between highs and lows.

Correlations Between EEG Frequency Band Power and Subjective Depth of Hypnosis in Highs and Lows: Session 2

A correlational analysis showed that deeper subjective depth of hypnosis was associated with increased power in EEG beta-2, beta-3 and gamma frequencies. These obvious tendencies for all 27 participants were quite similar in the sub-groups of high and low hypnotizables, although less significant as to be expected because of the smaller Ns. Further, the closer examination of the coefficients showed that negative correlations occurred for slower EEG frequencies, i.e. for the alpha-1, theta and delta frequencies, but none of these correlations reached the level of $p<0.1$.

These results confirm the observation in the hypnosis condition of session 1 where likewise, deeper hypnosis correlated with higher power in fast frequencies. On the other hand, these session 2 data did not confirm the observation of session 1 where opposing signs of the correlations were seen for highs and lows (although there was limited statistical underpinning for this observation in session 1, the trend seemed obvious).

Correlation of Spectral Power Values with the Contents of the Volunteers' Oral Reports of Their Experiences in Session 2

In session 2, participants reported their experiences with brief oral comments that were other-rated for various characteristics. The EEG power spectral analysis results were correlated with the experience reports on the scales A and B (A= imagery/fantasy/dreaming, B = normal attention/cognition; see table below). Table 2 shows the results for the 27 volunteers. With increasing rating values on scale A, the various analyses indicated increase of relative EEG power in delta (1.5-6 Hz), decrease of relative power in alpha-1 (8.5-10 Hz), and increase of relative power in beta-3 (21-30 Hz) and gamma (35-44 Hz). On the other hand, the rating values on scale B showed very little effect relative to the EEG frequency band power measurements.

Sess2 cond S-1		band1	band2	band3	band4	band5	band6	band7	band8	0			N=27
Linked		**Pearson correlations log power with other rating scale A**											
raw mean	A	.01	-.24	-.31	-.22	-.10	-.23	-.12	.10				
norm mean	A	***.34***	-.13	***-.39***	-.14	.18	-.01	.17	***.31***				
raw GFP	A	-.26	-.31	***-.38***	-.28	-.29	-.25	-.10	.06				
norm GFP	A	.22	-.16	***-.45***	-.13	-.09	.11	***.37***	***.40***				
		Pearson correlations log power with other rating scale B											
raw mean	B	.06	.06	.04	-.15	.02	.07	.12	.02				
norm mean	B	.00	.04	.04	***-.30***	-.03	.06	.09	-.03				
raw GFP	B	.08	.17	.16	.03	.13	.14	.09	-.04				
norm GFP	B	-.10	.27	.22	-.09	.10	.08	-.05	-.15				
								.3233	= r for p=0.1 N=27				
								.3808	= r for p=0.05 N=27				

Table 2. Pearson Correlation r-values between EEG frequency band power (4 types of values) and other-rating scores on scales A (imagery/fantasy/dreaming) and B (normal attention/cognition) during the hypnosis 1 condition of session 2 for 27 volunteers (9 highs, 7 mediums, 11 Lows). Significant differences are underlined.

However, when these correlations were computed separately for high and low hypnotizables, very different results emerged, For scale A, for high hypnotizables, none of the correlations reached $p<0.10$, but 12 of the 32 correlations for low hypnotizables were negative at $p<0.10$ (8 of them at $p<0.05$), indicative that higher rating scores were associated with lower EEG power in the frequency bands between 6.5 and 30 Hz, i.e,. from the theta to the beta-3 band. In one of the 4 power analysis types (normalized relative GFP power), delta band power correlated positively with scale A scores at $p=0.007$. For scale B, only three correlations reached $p<0.1$, all three concerning high hypnotizables who showed decreased beta-3 and gamma band power with higher ratings for normal attention / cognition.

When statistically comparing the obtained correlations of ratings-to-EEG-power between high and low hypnotizables, differences between the two groups were clearly observed. The significance of the differences between corresponding correlation coefficients of the two subject groups was determined, and if $p<0.2$. Patently, the statistics substantiated the description of the obtained correlations in the top four panels. Highs and Lows tended to have different correlations, Highs showing higher coefficients than Lows for faster EEG frequencies in scale A correlations (lower correlation for delta frequencies), and Highs showing lower coefficients than Low's for faster EEG frequencies in scale B correlations. The

difference in correlations when comparing the groups was clear in that of the 21 correlations at p<0.2, 18 were of opposite sign, that is, they were positive in highs, negative correlations in lows, and vice versa.

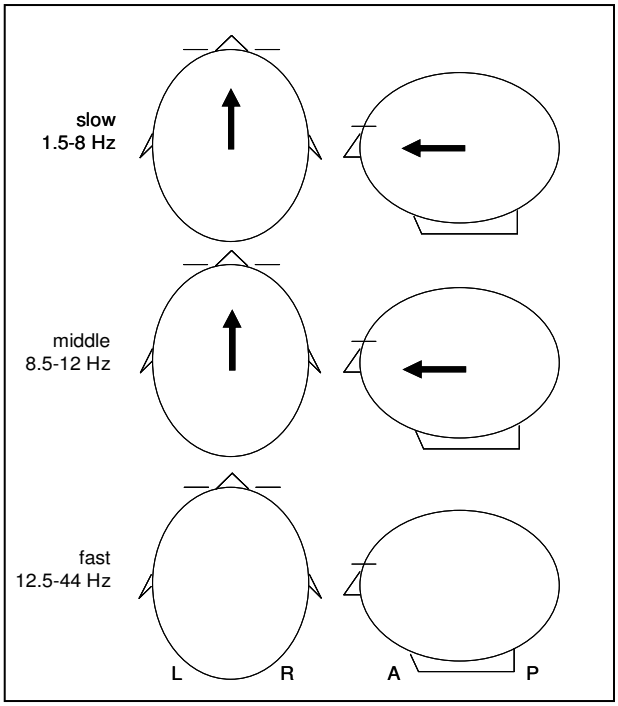

Fig 1. Direction of differences of the locations of sLORETA current density gravity centers between the 11 low hypnotizables (origin) versus the 10 high hypnotizables (arrowhead) for the sources of the three major EEG frequency bands (slow, middle and fast frequencies). Data were recorded during the 'resting' condition of session 1. - Solid arrows = direction of change of the gravity center location at p<0.10.

Intracortical Localization of Brain Electric Activity in High and Low Hypnotizables Using LORETA Functional Tomography

EEG data during the resting condition of Session 1 were compared between highs and lows using frequency-band wise LORETA functional tomography. The overall main tendency of the differences in localizations of EEG frequency band-wise activity between the highs and lows are illustrated in Fig. 1, which shows the results of source gravity center assessment of the LORETA images: Measured in the three major EEG frequency bands, high hypnotizables compared to lows showed a generally more anterior localization of the sources of EEG slow and middle frequency sources at p<0.10.

The assessment in Fig. 1 reflects the general tendency of the LORETA functional images that represent the differences of the detailed, voxel-wise computed cortical current density between the two groups as shown in Fig. 2. In Fig. 2, the anterior brain area predominance of the red-colored voxels that represent larger current density in high hypnotizables (at p<0.05) is obvious in the slow and middle frequency band.

Table 3 shows that the LORETA gravity center of low hypnotizables moved to more *anterior* from rest to hypnosis (p=0.100), but that of high hypnotizables moved slightly to more *posterior* (p=0.18), with the difference of this difference reaching p=0.066. For the middle frequency band, the gravity centers of both groups moved more anterior without a statistical significance between groups. This difference cannot, conclusively elucidate the brain electric differences between waking and hypnosis because the two experimental conditions of resting and hypnosis were successive in session 1 and there was no resting condition following the hypnosis condition so that effects of passing time cannot be checked.

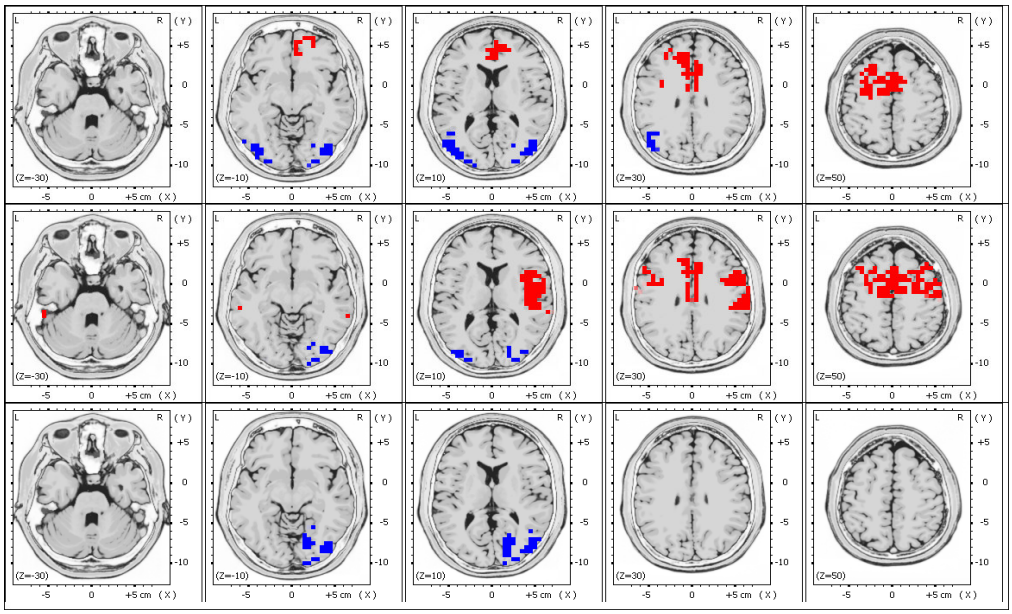

Fig 2. Difference of EEG intracortical current density (sLORETA) between highs and lows during resting. Illustrated are axial slices through sLORETA images (total solution space is 6239 voxels in the cortical areas) at (left to right) z-levels (inferior to superior axis) of -30, -10, +10, +30, +50 mm. Shaded coded are voxels where unpaired t-test p-values (not corrected for multiple testing) reached p<=0.05.

In fact, the differences between normal arm raising and hypnotic arm levitation go in the opposite direction: in the hypnotic arm levitation condition compared to normal arm raising, the results of all 33 volunteers showed a posteriorization of the LORETA gravity center for slow frequencies. For comparison with the results of highs and lows, Table 4 shows the results obtained with all 33 participants; the anteriorization of the LORETA gravity centers during hypnosis yielded p=0.004 for the middle frequency band sources, whereas the anteriorization of the slow frequency band gravity centers was not significant.

Additional analyses showed that slow and fast frequency gravity centers were significantly more to the left in the hypnosis than in the rest condition, reminiscent of the left-shift of the LORETA gravity centers of slow and fast frequencies in the comparison between willful arm raising and hypnotic arm levitation. However, there were anterior-posterior tendencies of location changes opposite to those observed in the non-hypnotic and hypnotic arm conditions. The left-shift in the two hypnotic conditions is intriguing, conceivably indicating a predominance of left-hemispheric processing, of attentional control activity in hypnosis. But, as already noted above, the comparison of the results between rest and hypnosis is limited because there are no rest condition data after hypnosis to check for time effects.

Hz Band:	**Slow**	**Middle**
Low Hypnotizables N=11		
mean in Hypnosis	-20.28	-37.98
mean in Rest	-22.23	-39.31
Difference Hypnosis minus Rest	1.95	1.33
t-test p	**0.100**	**0.085**
Hypnosis was more	anterior	anterior
High Hypnotizables N=10		
mean in Hypnosis	-18.67	-32.61
mean in Rest	-18.21	-33.56
Difference Hypnosis minus Rest	-0.46	0.94
t-test p =	**0.18**	**0.113**
Hypnosis was more	*posterior*	anterior
High versus Low Hypnotizables		
Differences of differences: Highs (Hypnosis minus Rest) minus / versus Lows (Hypnosis minus Rest)		
mean	-2.41	-0.39
t-test p =	**0.066**	**0.73**

Table 3. Mean LORETA gravity center localizations of lows and highs on the posterior-to-anterior brain axis for slow and middle EEG frequency bands, in 'resting' and 'hypnosis' of session 1.

Hz Band:	**Slow**	**Middle**
All volunteers N=33		
mean in Hypnosis	-20.07	-35.36
mean in Rest	-20.70	-36.59
Difference Hypnosis minus Rest	0.64	1.22
t-test p	**0.20**	**0.004**
Hypnosis was more	anterior	anterior

Table 4. Mean LORETA gravity center localizations on the posterior-to-anterior brain axis for slow and middle EEG frequency bands, in 'resting' and 'hypnosis' of session 1.

DISCUSSION

Analyses using both quantitative and qualitative measures, in the context of a minimal suggestion ("neutral" suggestion) design shows conclusively that according to their previously assessed level of hypnotizability, individuals experience hypnosis in very different ways. Especially contrasting the two more extreme groups (highs and lows), it is clear that the former experienced an increasingly deeper level of hypnosis during the session, whereas the latter had almost no change. When looking specifically at what phenomena may explain this self-rating of depth, it seems clear that whereas "lows" mostly continue experiencing "normal" mentation, "highs" have noticeable alterations, especially of experiences of positive affect and exceptional phenomena. The "medium" hypnotizable seemed to mostly experience somatic changes, in concordance with previous work suggestion that a low to medium" hypnotic state" is characterized by body image alterations (Cardeña, 2005). Although the EEG results cannot be easily summarized, they show that brain processes differ across levels of hypnotizability and task In general, power in higher frequencies seem to be positively correlated with hypnotizability, and the hypnotic procedure seems to have opposite effects (e.g., different valence in correlations) for highs than for lows. The results, which suggest concordance of sensitive phenomenological and EEG measures recommend a neurophenomenology of specific consciousness alterations, rather than using imprecise terms such as "hypnotized." At this point, we hypothesize that the greater unitive experience of highs in "deep" hypnosis is more likely to be conducive to psi phenomena, which also support a more interconnected (entangled?) description of reality.

REFERENCES

Cardeña, E. (2005). The phenomenology of deep hypnosis: Quiescent and physically active. *International Journal of Clinical & Experimental Hypnosis, 53,* 37-59.

Cardeña, E. (2006). Anomalous experiences and hypnosis. *Proceedings of the 49th Annual Conventions of the Parapsychological Association,* 32-42.

Cardeña, E., Lynn, S. J., & Krippner, S. (Eds.). (2000). *Varieties of anomalous experience: Examining the scientific evidence.* Washington, DC: American Psychological Association.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 20*, 37 46.

Crawford, H. J., Clarke, S. W., Kitner-Triolo, M. (1996). Self-generated happy and sad emotions in low and highly hypnotizable persons during waking and hypnosis: Laterality and regional EEG activity differences. *International Journal of Psychophysiology, 24,* 239-266.

Derogatis, L. R. (1975). *Brief symptom inventory.* Baltimore: Clinical Psychometric Research.

Don, N. S., McDonough, B. E., & Warren, C. A. (1998). Event-related *brain* potential (ERP) indicators of unconscious psi: A replication using subjects unselected for psi. *Journal of Parapsychology. 62,* 127-145.

Ellenberger, H. F. (1970). *The discovery of the unconscious.* New York: Basic Books.

Feldman, B. E. (1976). A phenomenological and clinical inquiry into deep hypnosis. *Unpublished doctoral dissertation.* University of California, Berkeley.

Field, P. B. (1965). An inventory scale of hypnotic depth. *International Journal of Clinical and Experimental Hypnosis, 13,* 238-249.

Glaser, B. (1992). *Basics of grounded theory analysis.* Mill Valley, CA: Sociology Press.

Horton, J. E., Crawford, H. J., Harrington, G., & Downs, J. H. (2003). Increased anterior corpus callosum size associated positively with hypnotizability and the ability to control pain. *Brain, 127,* 1741-1747.

Isotani, T., Lehmann, D., Pascual-Marqui, R. D., Kochi, K., Wackermann, J., Saito, N., Yagyu, T., Kinoshita, T., & Sasada, K. (2001). EEG source localization and global dimensional complexity in high and low hypnotizable subjects: A pilot study. *Neuropsychology, 44,* 192-198.

Kahn, S., Fromm, E., Lombard, L. &, Sossi, M. (1989). The relation of self-reports of hypnotic depth in self-hypnosis to hypnotizabilty and imagery production**.** *International Journal of Clinical and Experimental Hypnosis, 37,* 290-304.

Kihlstrom, J. F. & Edmonston, W. E., Jr. (1971). Alterations in consciousness in neutral hypnosis: Distortions in semantic space. *American Journal of Clinical Hypnosis, 13,* 243-248.

Laurence, J. R., & Perry. C. (1988). *Hypnosis, will and memory.* New York: Guilford.

Lehmann, D., Faber, P.L., Isotani, T. & Wohlgemuth, P. (2001). Source locations of EEG frequency bands during hypnotic arm levitation: A pilot study. *Contemporary Hypnosis 18,* 120-127 (2001). Erratum in: *Contemporary Hypnosis. 18,* 220.

Lutz, A. & Thompson, E. (2003). Neurophenomenology: Integrating subjective experience and brain dynamics in the neuroscience of consciousness. In A. Jack & A. Roepstorff (Eds.) *Trusting the subject. Vol. 1* (pp. 31-52). Exeter, UK: Imprint Press.

Orne, M. T. (1959). The nature of hypnosis: Artifact and essence. *Journal of Abnormal and Social Psychology, 58,* 277-299.

Pascual-Marqui, R. D. (2002) Standardized low-resolution brain electromagnetic tomography (sLORETA): technical details. *Methods & Findings in Experimental & Clinical Pharmacology, 24, Suppl D*, 5-12.

Pascual-Marqui, R. D., Michel, C. M., & Lehmann, D. (1994) Low resolution electromagnetic tomography: a new method for localizing electrical activity in the brain. *International Journal of Psychophysiology, 18*, 49-65.

Pekala, R. J. (1991). *Quantifying consciousness: An empirical approach.* New York: Plenum.

Pekala, R., & Cardeña, E. (2000). Methodological issues in the study of altered states of consciousness and anomalous experiences. In E. Cardeña, S. J. Lynn., & S. Krippner (Eds.), *The varieties of anomalous experience* (pp. 47-81). Washington, DC: American Psychological Association.

Rainville, P., Carrier, B., Hofbauer, R. K., Bushnell, M. C., & Duncan, G. H. (1999). Dissociation of sensory and affective dimensions of pain using hypnotic modulation. *Pain, Vol. 82,* pp. 159-71.

Sheehan, P. W. & McConkey, K. M. (1982). *Hypnosis and experience; The exploration of phenomena and process.* Hillsdale, NJ: Erlbaum.

Sherman, S. E. (1971). Very deep hypnosis: An experiential and electro- encephalographic investigation. *Unpublished doctoral dissertation.* Stanford University.

Shor, R. E., & Orne, E. C. (1962). *Harvard Group Scale of Hypnotic Susceptibility.* Palo Alto, California: Consulting Psychologists Press.

Stanford, R. G. (1992). Experimental hypnosis-ESP literature: A review from the hypothesis-testing perspective. *Journal of Parapsychology, 56,* 39-56.

Tart, C. T. (1970a). Transpersonal potentialities of deep hypnosis. *Journal of Transpersonal Psychology, 2,* 27-40.

Tart, C. T. (1970b). Self-report scales of hypnotic depth. *International Journal of Clinical & Experimental Hypnosis, 18,* 105-125.

Wackermann, J. (1999). Characterization of states of consciousness based on global descriptors of brain electrical dynamics. *Journal of Parapsychology. 63*, 143-161.

Weitzenhoffer, A. M. (2000). *The practice of hypnotism.* 2nd Ed.. New York: Wiley.

Weitzenhoffer, A. M., & Hilgard, E. R. (1962). *Stanford Hypnotic Susceptibility. Scale. Form C.* Palo Alto, California: Consulting Psychologists Press.

ARE ARTISTIC POPULATIONS 'PSI-CONDUCIVE'?: TESTING THE RELATIONSHIP BETWEEN CREATIVITY AND PSI WITH AN EXPERIENCE-SAMPLING PROTOCOL

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Abstract

Following previous work where affective rather than cognitive dimensions of creativity were significantly correlated with the reporting of subjective paranormal experiences (Holt, Delanoy & Roe, 2004), the present paper tests whether the same holds for psi-performance in a free-response ESP task. Collectively, previous research reveals no clear relationship between creativity and psi, and, at best, suggests that any association arises in interaction with other variables (e.g. as predicted by Palmer's magnitude and direction model, 1997). Despite this, there is one consistent finding, that artistic populations have performed at a higher level than controls in free-response ESP tasks (e.g. Moss, 1969) and, in ganzfeld studies (e.g. Dalton, 1997) at a higher level than that reported in meta-analyses of all ganzfeld samples (Bem, Palmer & Broughton, 2001). The current study sought to investigate this 'artist-psi' effect further, using a broader range of creativity assessments, by controlling for potentially confounding variables that have been associated with both creativity and psi in previous research: extraversion, belief in the paranormal, a proclivity to have unusual experiences and self-confidence (e.g. Morris, Cunningham, McAlpine & Taylor, 1993; Schlitz & Honorton, 1992), and by including both artists and 'non-artists' in order to avoid ceiling effects with some creativity measures. After considering both the potential advantages of the ganzfeld task demands for artists ('performing' by free associating audibly in a novel scenario, or looking inward and observing visual imagery) and the potential efficacy of 'take home' ESP procedures (Delanoy, Watt & Morris, 1993; Ertel, 2004) an alternative ESP protocol was devised. This was based on an amalgam of experience sampling methodology (Connor, 2005) and descriptive experience sampling (Hurlburt & Heavey, 2006) and involved participants recording psi-impressions concerning a target video clip at their own impetus over a 24-hour period. This was enabled by a personal digital assistant, which both recorded audio impressions and written notes and drawings, and presented a questionnaire concerning the state of consciousness in which the impression arose, at the participants' instigation. The overall outcome of the study was perceived to be such that the methodology warrants further research, although a number of pitfalls were identified. Psi-performance was at levels commensurate with the performance of artists in previous free-response ESP research (r = .423, n = 30, with a hit rate of 43%). However, the planned sum-of-ranks analysis did not reach statistical significance (z = 1.03, p = .152, 1-t). Artists did not out-perform carefully matched controls, who differed only on 'artistic creative personality', possibly attributable to the autonomy enabled by the experience sampling protocol. In line with previous research, none of the creativity measures selected significantly predicted psi-outcome, thus the hypothesis that affective dimensions of creativity might be related to psi-performance was rejected. However, in planned exploratory analyses one cognitive-style significantly predicted psi-performance, where the use of ideas that seem to come from 'beyond the self' in the creative process was associated with psi-missing (*rho* = -.429, p =.018, 2-tailed); and cognitive flexibility and originality was significantly associated with magnitude of the psi-effect (*rho* = -.535, p = .004, 2-tailed).

INTRODUCTION

Both Barrett (1911) and Parker (2004) describe a series of ESP trials by two 'aristocratic ladies', Hermione Ramsden and Clarissa Miles, an artist, in 1905. Clarissa would send ESP messages, from London in one study, and whilst touring France in another, to Hermione, in Bedfordshire, UK. Barrett (p. 97-8) describes the procedure:

> Miss Miles, at the time of each experiment, noted in a book kept for the purpose the idea or image that she wished to convey, while Miss Ramsden wrote down each day the impressions that had come into her mind, and sent the record to Miss Miles before knowing what she (Miss M.) had attempted on her side. Miss Miles then pasted the record into her book, opposite her own notes.

Parker describes both ladies as being artistically inclined, Hermione as often experiencing her psi-impressions in hypnopompic and hypnagogic states, and Clarissa as being fantasy-prone, entering absorbed, imagistic states. Such characteristics and states, he suggests, are thought to facilitate success on ESP tasks today (e.g. Braud, 2002; Morris, Summers & Yim, 2003). The study presented in this paper has some parallels with that of Miles and Ramsden. It employs experience sampling methods in a free-response ESP design, where percipients likewise, over a day, record impressions that 'come into their mind' in a naturalistic setting. However, the study experimentally tests whether being 'artistic' impacts upon psi-performance, and whether particular dimensions of conscious experience, creativity and styles of creative-cognition are related to psi-performance. It takes advantage of current technologies that increase the facility of recording data (e.g. of verbal reports and responses to experience-sampling questionnaires) whilst securing against fraud (e.g. storing data as inaccessible 'hidden files'). In addition, it has applied the procedures accrued through years of experimentation in the field, such as the adequate randomisation of target material, judging procedures and probability analyses. As such, the current study may be described as taking the laboratory into the field, enabling spontaneity, where impressions may be recorded as they arise in naturally occurring states of consciousness.

Creativity and Psi

The idea that creativity and psi might be related, sharing common cognitive processes, or by similar personality traits, whereby spontaneous associations enter conscious awareness with increased facility, has commonly been promulgated (e.g. Anderson, 1966; Krippner, 1962-3; Murphy, 1966; Myers, 1903). If creative inspiration and psi impressions share, at least in part, a common cognitive microgenesis, then creative individuals might be expected to perform better on ESP tasks.

In this section the key outcomes from experimental work examining whether creativity variables impact upon psi-performance (27 experimental studies, conducted between 1962 and 2003) will be briefly considered, with an emphasis on overall trends and implications for subsequent research. These studies fall into three thematic sections: forced-choice studies; free-response studies with artistic-populations; and free-response studies with participants not pre-selected according to any criteria related to creativity.

Early research predicted performance on forced-choice ESP tasks according to diverse operational definitions of creativity, including: divergent thinking (cognitive flexibility and originality), creative personality (acquiescence to traits common amongst eminent creators), teachers' ratings of pupils' creativity and professional involvement in the arts (music) (Anderson, 1966; Honorton, 1967; Honorton, Carlson & Tietze, 1968; Jackson, Franzoi & Schmeidler, 1977; Levine & Stowell, 1963; McGuire, Percy & Carpenter, 1973; Pang & Frost, 1969; Schmeidler, 1963, 1964). The combined outcome suggests a small positive relationship between creativity and psi-performance: $r' = .175$, $z = 5.727$, $n = 883$, $p < .0001$. Yet, a straightforward interpretation may be questioned following a deeper analysis of these studies. This reveals that some of the significant positive findings were due to low creativity scores being associated with psi-missing, and high creativity scores with psi-performance at chance levels – where a *lack* of creativity appears to be associated with deviations from chance (Honorton, 1967; Honorton, Carlson & Tietze, 1968). If there is a relationship between creativity and psi, any clear pattern in this cluster of forced-choice studies is either obfuscated by a lack of consistent creativity measurement (as Palmer, 1978, noted) or by complex interactions between creativity and other factors in the experimental setting (psychological e.g. expectation, and situational, e.g. task demands). Schmeidler (1963; 1964) suggested the latter, attempting to make sense of the significant negative correlations between creativity and psi-performance that emerged in her research. She postulated that 'creatives' might be more sensitive to experimenter effects, and as the experimenter in these studies was 'unsympathetic to parapsychology', whether they thus responded in a psi-missing direction. This idea was developed further in Palmer's (1997) magnitude and direction model of psi-functioning, where variables pertaining to creativity

(spontaneity) are hypothesised to affect the magnitude of any psi-effect and 'comfort' variables associated with the situational context, to affect the direction of the psi-effect.

Subsequent free-response ESP studies that have used psychometric measures of creativity have clarified the picture little (Bierman, 1995; Dalton, 1997; Rebman, Radin & Stevens, 1996; Braud & Loewenstern, 1982; Morris, Cunningham, McAlpine & Taylor, 1993; Morris, Dalton, Delanoy & Watt, 1995; Roe, Ali & McKenzie; 2001; Sondow, 1986; Roe, Holt & Simmonds, 2003; Roe, Sherwood & Holt, 2004; Schlitz & Honorton, 1992). Again, a wide variety of creativity measures have been used, again, the outcomes are contradictory, and again, the combined predictive power of creativity is unimpressive (r' = .020, z = 1.532, n = 2619, p = .070). Schlitz and Honorton (1992, p. 94) suggest that any relationship between creativity and psi might be curvilinear, where extreme cognitive flexibility may lead to psi-missing where "any psi signal may be drowned out in a … powerful uprush of creative ideas". Dalton (1997) suggests that different measures of creativity be used in future research, raising the question: if cognitive, attitudinal and trait measures of creativity do not reliably relate to psi-performance, then what aspect of creativity, if any, might? Dalton's reasoning for assuming that creativity is in some way related to psi stems from the results she obtained with artistic populations, to which this review will now proceed.

Moss and Gengerelli (1968) developed a free-response protocol using emotionally charged targets in a 'telepathy design'. Post hoc, they observed that psi-performance was significantly higher when the sender-receiver pairing included at least one artist. Moss (1969) proceeded to compare the performance of a group of professional artists (painters, composers, actors and writers) and non-artists (teachers, secretaries, engineers and housewives) on the same ESP task (with different images). As predicted, the artist group scored significantly higher than the non-artist group, achieving significant psi-hitting (p = .003, n = 30, 1-t). Gelade and Harvie (1975) attempted a further replication of this 'artist-effect', reporting that artist/artist pairings scored higher than artist/non-artist pairings, but did not achieve significant psi-hitting. However, Palmer (1978) conducted a post hoc chi-squared analysis to show that the artist pairs did score significantly better than pairs with one or no artists. The combined outcome of four studies[1] comparing artists and non-artists in free-response ESP designs is r' = .328, z = 4.931, p < .00001. These results suggest that something about being 'an artist' that may be associated with psi-performance in free-response studies. This interpretation is reinforced when considering the six ganzfeld studies that have targeted artistic populations, each obtaining above chance psi-scoring, with hit-rates between 30% and 50% (MCE = 25%), and an overall hit-rate of 40% (r = .344, p = $1x10^{-9}$, n = 336) (Dalton, 1997; McDonough, Don & Warren, 1994; Morris, Cunningham, McAlpine & Taylor, 1993; Morris, Dalton, Delanoy & Watt, 1995; Morris, Summers & Yin, 2003; Schlitz & Honorton, 1992). These artistic populations have scored higher than the general populations in ganzfeld studies, meta-analyses giving hit-rates of 32% in the PRL ganzfelds (Bem & Honorton, 1994) and 30% in ganzfelds post PRL (Bem, Palmer & Broughton, 2001). It has commonly been suggested that the psi success of artistic populations is due to 'creativity', however, as elucidated above, the correlations between 'psi-performance' and psychometric measures of creativity are mixed and contradictory. Mere involvement in the arts is not equivalent to creativity. Thus, as yet, *it is not known why artists have performed well in these studies*. This may, for instance, be due to task demands, experimenter effects, belief in the paranormal, self-confidence, extraversion, the ability to shift easily into or between states of consciousness or to 'creativity'. To elucidate: demand characteristics associated with the ganzfeld might be preferred by artists (e.g. the 'performance' of speaking aloud by actors or the observing of visual imagery by painters); artists might have performed well due to the warm social ambiance provided in particular studies, rather than specific characteristics intrinsic to 'the artist'; belief in the paranormal has been associated both with successful psi-performance and artistic creativity (Lawrence, 1993; Moon, 1975); extraversion has been associated with psi-success in the ganzfeld (Honorton, Ferrari & Bem, 1998) and in at least one of the ganzfeld ESP studies, all artists were described as scoring above the mean on extraversion (Morris, Cunningham, McAlpine & Taylor, 1993); finally, artistic creativity has been associated with a proclivity to shift into altered states (Holt, 2007), which has also been associated with psi-performance (Braud, 2002).

[1] Including a study by Moon (1973) who used an ESP word association task, with art versus humanity students.

The study reported in this paper aimed to directly explore this question of 'what it is about artists that appears to be related to psi-success', focusing on creativity. A consideration of the affective dimensions of creativity has proliferated in the last decade (e.g. Russ, 2001). Holt (2007) found that only one dimension of creativity – emotional creativity – demonstrated a statistically significant relationship with subjective paranormal experiences (SPEs) (r = .30, p = .00001). In addition, reports of the use of certain cognitive-styles in the creative process were significantly correlated with SPEs: 'heightened internal awareness' (r = .43, p = .000001); 'intuition, hunches and inspiration' (r = .42, p = .000001) and 'dreaming, day dreaming and hypnagogia' (r = .41, p = .000001). The tentative conclusion of this study was that it is not cognitive flexibility and originality, creative personality or involvement in particular creative domains that relate to the reporting of SPEs, but an openness to and exploration of 'psychological space', with a focus on affect and imagery. This concurs with the idea that people who have 'internal sensitivity' are more likely to have psi experiences (Honorton, 1972). Hence, the current study tested the hypothesis that a heightened sensitivity to emotions and 'internal awareness', common but not exclusive to artists, explains the propounded link between 'artistic creativity' and psi.

Sampling 'Naturally Occurring' Experience

The current study sought to avoid potential demand characteristics of the ganzfeld which, as noted above, artists might find easier to engage with. A 'take-home' free-response ESP protocol was employed, which may be conceptualised as an amalgam of experience sampling methodology (ESM) (Hektner, Schmidt & Csikszentmihalyi, 2006), descriptive experience sampling (DES) (Hurlburt & Heavey, 2006), and 'take home' ESP tasks (Delanoy, Watt & Morris, 1993; Ertel, 2004) (see also Holt, 2006).

Both DES and ESM have sought to capture 'snapshots of everyday consciousness', to capture regularities in and dynamic fluctuations of the phenomenological content of everyday life. Proponents of each method argue that by sampling experience, that is immediately recounted, accounts will be less tinged by retrospective fallacies and biases, which are argued to be problematical in questionnaires, diary reports and interviews (Bolger, Davis & Rafaeli, 2003). Both approaches propound the value of collecting situated, contextual reports – where experiences are embedded in natural contexts, in interaction with meaningful life events rather than constructed laboratory scenarios or hypothetical questions.

ESM involves participants providing questionnaire-reports about the nature and quality of their experience as they go about their everyday activities. Reporting is either triggered by randomly timed signals over a set epoch (signal-contingent sampling) or by a particular environmental or psychological stimulus (event-contingent sampling). The methodology has three broad characteristics: participants record information in a 'natural setting', in 'real time' (i.e. as close as possible to a signal or event) and do so on repeated trials (Conner, 2005). ESM employs statistical procedures to explore experiential (or temporal) regularities on three levels: 1) fluctuations within a single individual's experience (the 'stimulus' level); 2) average experiences of different groups, e.g. personality types (the 'person-level'); and 3) the interaction between the person and stimulus-level, e.g. how different personality types show different patterns of experiential variability.

In contrast, DES follows the principles of phenomenology and aims to develop a disciplined exploration of 'the structure of nowness' (Hurlburt & Heavey, 2006). Participants are asked to respond at randomly triggered epochs to the question "What are the details of your inner experience *at this very moment*?", where 'inner experience' refers to anything that is going on in awareness. Participants, or co-researchers, wear a beeper in an earpiece and record their 'inner experience' in a notepad or on a separate voice-recorder. At the end of each DES day, participants discuss their experiences in an interview, which examines the 'inner experience' of each beep, seeking elucidation and the honing of observational clarity.

The current study drew upon DES in that: 1) participants were asked to describe 'psi-impressions' qualitatively; and 2) had the opportunity to talk further about their experiences at the end of the 24-hour period. However, it drew upon ESM in that participants were: 1) asked to record this impression at their own impetus (whenever they conceptualised a thought as being potentially psi-relevant); and 2) asked to complete an experience-sampling questionnaire immediately following this. The current study introduced

a quasi-experimental component, as each event related to a specific task – reports were evaluated by independent judges according to their degree of correspondence to an ESP target.

The experience-sampling questionnaire concerning the context of the event was based on an instrument that has been specifically designed to measure fluctuations in naturally occurring states of consciousness – the Phenomenology of Consciousness Inventory (Pekala, 1991). Further items were added from a scale developed by Sargent (1980) to assess reported states of consciousness in a series of ganzfeld ESP studies. Previous studies using post-session questionnaires in the ganzfeld found psi-success to be significantly and positively associated with: time distortion, a loss of body awareness, relaxation, spontaneity of imagery, abundance and clarity of mental imagery and bizarre mental activity (Palmer, Bogart, Jones & Tart, 1977; Palmer, Khamashta, & Israelson, 1979; Sargent, 1980). However, in the current study the analysis of state-experiential variables was exploratory since no previous research has assessed psi-performance in relation to reports of naturally occurring states outside of the laboratory.

Both Delanoy et al. (1993) and Ertel (2004) have suggested that 'take-home' protocols may be psi-conducive. This has been attributed to participants being better able to relax in their chosen environment (Ertel, 2004) and/or to the freedom and choice of when to take part, which may promote feelings of competence and motivation (Delanoy et al., 1993). It was additionally hoped that experience sampling may be particularly pertinent in a study pertaining to creativity, where participants would have time and the freedom to use the methodology in a creative manner, which may also be psi-conducive due to the spontaneity that this might allow (according to Stanford's PMIR model, 1974).

In summary, the advantages of the adapted experience-sampling protocol were perceived to be various. By taking the psi experiment out of the laboratory, it was hoped to minimize task demands associated with previous laboratory free-response ESP designs that might favour artists or people who are able to shift into a relaxed, psi-conducive state on demand. By collecting data over a 24-hour period the methodology enabled impressions to be recorded that arose in naturally occurring states of consciousness (including dreams and variants of the waking state). This would enable impressions to be recorded in or after 'preferred' states (e.g. hypnagogia or meditation), or as they arose spontaneously (e.g. whilst washing up or at work). By giving autonomy to participants and enabling spontaneity and creativity of response it was hoped that the protocol would be psi-conducive (following Delanoy et al, 1993 and Ertel, 2004). Finally, in the longer term, this study was seen to be of value as an initial foray into new territory, testing a methodology that might prove fruitful for the study of anomalous experiences and psi *in vivo*.

Study Hypotheses and Planned Analyses

The following hypotheses were made, for which intended statistical analyses will be discussed subsequently:

1) There will be overall psi-hitting, in that the recorded 'ESP impressions' will enable independent judges to select the target video clip to a degree better than mean chance expectation.
2) Artists will demonstrate greater psi-hitting than 'non-artists'.
3) Emotional creativity scores will correlate significantly with overall psi-hitting.
4) Non-linear creative cognitive styles will correlate significantly with overall psi-hitting.

Planned exploratory analyses were:

1) To examine whether creativity components predict psi-performance, and when partialling out potential confounding variables (belief in the paranormal [BP], extraversion [E], self-confidence [SC], and unusual experiences [UE]).
2) To examine if particular dimensions of consciousness (on the Phenomenology of Consciousness Inventory) are associated with psi-performance at the stimulus level.
3) To examine the magnitude and direction model of creativity (Palmer, 1997; Schmeidler, 1964).

It was planned to use a sum-of-target ranks (SOR) analysis for the overall ratings of each trial as the primary outcome measure, conducted to test hypothesis 1). A SOR analysis was selected due to its sensitivity to directional effects across the target ranks, it being expected that that the potential psi-conducive conditions of the study would lead to a directional outcome towards psi-hitting. Two

independent judges were selected to provide similarity ratings for each clip in order to assess inter-judge reliability. It was proposed to assess the degree of concordance between their ratings and if these were sufficiently similar ($r > .7$) (Rohde, 2003) to combine their ratings. The collective ratings for each clip would be used to rank the target for each trial. Raw ratings would not be used as they are subject to bias due to individual differences in rating style (errors of central tendency or 'generosity' and errors of variability), hence each judges' ratings would first be converted into a standardised score (z-score). The mean of the independent judge's z-scores would then be calculated. This is the accepted method of combining rating scores (e.g. see Roberts et al., 2005).

If parametric test assumptions were met a one-tailed t-test would be used to compare z-scores between artists and controls. This would be repeated, partialling out potentially confounding variables. Z-scores (averaged z-scores of target ratings for each trial overall) would also be used as the psi-index to assess factors that correlate with individual differences in psi-performance, as these are more sensitive than ranks, allowing for greater variance across participants. Correlations would be two-tailed, due to the unpredictable correlations between creativity and psi-performance reported in the previous literature.

The p-values for specific planned analyses (hypotheses 1-4) should be corrected for multiple analyses (where, using the Bonferroni method, the criterion value for significance would be $p = .05/7 = .007$). The planned exploratory analyses are not thus corrected, being suggestive for future research merely.

Thirty trials were planned due to the time intensive nature of the design. Whilst small, this sample size is commensurate with previous studies (e.g. Dalton, 1997, $n = 32$; Schlitz & Honorton, 1992, $n = 20$).

METHOD

Design

The present study intended to explore the utility of using event-contingent experience-sampling methodology within a quasi-experimental ESP protocol, where 'receivers' record impressions about an ESP target at their own impetus. This further includes a 'sender' (the experimenter, NH) watching a randomly selected video-clip, and a judging stage using two blind independent judges, where the target clip and three decoy clips are rated for their similarity to a receiver's mentation. The dependent variable for the evaluation of psi-performance is based on the sum-of-target-ranks awarded; the dependent variable for personality and exploratory analyses is the z-score of target ratings (averaged across judges). Planned analyses will be made at the group level – looking at overall psi-performance and psychometric correlates of this. Exploratory analyses will look at psi-performance and reported states of consciousness at the stimulus level. The presentation orders of experience-sampling questions were randomized to help prevent boredom and stereotyped responses with repeated use.

Participants

A total of 30 participants took part in this study: 15 'artists' (9 females; 6 males; mean age = 37.13; ranging from 25 to 64) and 15 'non-artists' (9 females; 6 males; mean age = 40.20; ranging from 26 to 62). Groups were matched according to age, gender, and degree of familiarity with the experimenter/sender. There was no significant difference between the groups according to age ($t = -.757$, $p = .455$, 2-t) or familiarity ratings ($z = -.897$, $p = .377$, 2-t).

For the purposes of selection, an artist was defined as a person who either professionally or as a full-time degree student was involved in the visual arts (e.g. painting, photography or sculpture), performance arts (e.g. dance, drama, film-making, animation), music (performing or composing) or artistic writing (e.g. poetry, plays, novels or short stories). 'Non-artists' were defined as persons not involved in any artistic pursuit professionally or on a full-time basis.

The 'artist' sample had all received at least one year of professional training in 'the arts' (only one was a student) and consisted of: 1 illustrator; 2 fine artists; 1 photographic artist; 1 graphic designer/fine artist; 1 arts director/fine artist; 1 3D computer graphics/animation artist; 1 costume/jewellery designer; 1 textile designer; 1 ceramics student (year 2); 1 portrait artist; 1 fine artist/musician; 1 musician; 1 musician/arts

teacher; and 1 composer/musician. The 'non-artists' consisted of: 1 barrister's clerk; 1 business consultant; 1 dentist; 1 gardener; 5 psychology research-students/researchers; 1 physicist; 1 youth worker; 1 conservationist; 1 software developer; and 2 administrators.

Participants were selected through opportunity sampling and the snowball technique through: a local group of artists with which the author was acquainted (n = 2); colleagues at the University of Northampton (n = 7); friends involved in the arts (n = 20); and an advert asking artists to take part in an ESP study in the *Paranormal Review* (n = 1). NH had never met 14 of the participants previously, was acquainted with 11 to varying degrees and knew 5 reasonably well.

Two independent judges assessed the participants' data for psi-performance. Both were acquaintances of NH, but did not know each other or of the other's identity. Judge One (J1) was male, aged 36 and a creative writer, selected for his sensitivity to metaphor; Judge Two was male, aged 34 and a parapsychology researcher, selected for his familiarity with the judging procedure.

Materials and Equipment

Experience Sampling Program (ESP), version 4 (Barrett & Feldman-Barrett, 2005). This is free software for Palm PDAs that has been designed specifically for ESM research. It displays questions, records responses (as hidden files) and measures reaction times (to respond to each question). ESP includes two software packages: 'ESP', a palm application that interacts with participants; and 'ESP desktop', a PC application for designing experiments and configuring the ESP settings.

Tungsten T personal Digital Assistant (PDA) by Palm Inc (2002). The dimensions of this are 7.4 x 9.6x 1.3 cm, with a high-resolution colour display screen measuring 5.3 x 5.3 cm. It runs on Palm OS version 5 and has a Texas instruments OMAP1510 processor, with 16 MB of internal memory. The PDA has a microphone and its installed software includes 'Voicememo', which enables up to 55 minutes worth of audio mentation to be recorded (without a memory expansion card). The software also includes 'Notepad', which enables recordings to be made with a stylus (a metal 'pen' which is stored inside the PDA) on the screen, thus capturing words or images. The PDA has rechargeable batteries, which remain charged for up to two days, depending on usage, and a portable charger in which to store it when not being used.

Targe Pool. A revised version of the University of Northampton target pool, consisting of 112 minute-long digital video clips that were drawn from commercial films to reflect a range of emotions and themes (as used previously in ESP research by e.g. Sherwood, Roe, & Holt, 2005; Roe, Sherwood, & Holt, 2004). The pool was revised to delete two violent clips that NH felt uncomfortable with sending. Clips are arranged in 27 sets of 4 so that members of a set were as distinct as possible.

An Automated Remote Viewing Computer System developed by Paul Stevens and written in Microsoft Visual Basic v5 that presented video clips via Media Player v7. Video clips are stored digitally as MPEG files, labelled 1a, 1b, etc. Randomisation was achieved using the Visual Basic pseudo-random algorithm, seeded using the timer at the start of the program. Once the 'Start' button has been pressed, the computer first selects a target set, then selects one of the four clips within that set. This program has been used in several ESP studies to select targets (e.g. Roe, Holt & Simmonds, 2003; Roe, Sherwood & Holt, 2005).

Psychometric Measures

Experience Sampling Questionnaire. The Experience Sampling Program was configured to display and store responses to 31 questions. These were based on: the Phenomenology of Consciousness Inventory, (Pekala, 1991), with 21 items assessing 12 dimensions (positive affect, negative affect, altered experience, imagery, attention, self-awareness, internal dialogue, ASC, rationality, volitional control, memory and arousal); 2 items concerned environmental context (described with free response text) and degree of solitude; 8 items were taken from post-trial ganzfeld questionnaires (Sargent, 1980) and concerned auditory and taste/smell imagery, effortlessness, wakefulness, the source of, familiarity of imagery, preoccupation with current concerns and degree of confidence in ones 'ESP performance'. Most responses involved moving a point on a slider from 0 to 100% to indicate degree of agreement with a statement.

The Emotional Creativity Inventory (ECI), Averill (1999). A 30-item inventory examining three facets of emotional creativity, based on Wallas' (1926) stage model of creativity: preparedness; novelty; authenticity and effectiveness. The ECI taps into paying attention to affect and the ability to form cognitive content about emotional experience (Gohm & Clore, 2000; 2002) and appears to be associated with artistic creativity (Ivcevic, Brackett & Mayer, 2007).

The Amended Creative Activities and Interests Checklist (CAIC, Griffin & McDermott, 1998; Holt, 2007). A 54-item checklist, focusing on the visual arts, performance arts, writing and domestic arts and science, with a dichotomy between an active interest in these activities and recent experience of these activities, based on the Creative Behavior Inventory (Hocevar, 1979).

Gough's Creative Personality Scale, CPS (1979). A 30-item sub-scale of the Adjective Checklist (Gough & Heilbrun, 1983), 12 adjectives being antithetical to and 18 being associated positively with creative personality. Gough and Heilbrun (1983, p. 18) describe: "The high-scorer on the CPS is venturesome, aesthetically reactive, clever, and quick to respond. Intellectual characteristics such as breadth of interests, cognitive ability, and ideational fluency are also apparent."

Self-perceived Creativity and the Importance of Creativity. An author-devised 2-item measure on a 7-point Likert scale, asking: "How creative would you describe yourself to be?", with responses from 'not at all creative' to 'highly creative'; and "Is involvement in a creative practice an importance purpose in your life?", with responses from 'not at all important' to 'highly important'.

Shapes, (Holt, 2007). A divergent figural transformation task based on the divergent-thinking model of creativity (Guildford, 1967). *Shapes* consists of three simple un-named line drawings (a curve, an 'open box' and a 'triangular cross'), each repeated three times on a shaded square background. Participants are asked to: "please see how many objects or pictures you can make from the shapes below, by drawing on them. Try to think of as many things as you can that no one else will think of and give names or titles to the objects that you create". Responses were scored by: *flexibility*, the total number of different ideas produced; and *originality*, the rarity of the transformational object produced.

The Creative Cognition Inventory Revised, CCI-R (Holt, 2007). A 29-item scale, with a five point Likert response scale, developed to assess the import that different modes of cognition play in an individual's creative process, drawing upon a phenomenological study exploring the nature of the creative process (Holt, 2000). The CCI-R has six sub-scales: 'internal awareness'; playful, absorbed cognition; oneiric cognition; 'beyond the self'; inspiration and intuition; and goal-directed linear cognition.

The Australian Sheep-Goat Scale (Thalbourne & Delin, 1993). This scale was developed to assess degree of belief in paranormal phenomena. It consists of 18 items, with a five-point response scale ranging from 'strongly disagree' to 'strongly agree', with 'neutral/unsure' at the midpoint. Eleven items cover experiences of and belief in ESP, five items enquire about experiences of and belief in psychokinesis, and two items about belief in an afterlife and the possibility of contact with spirits.

The 'Self-confidence' Subscale of the Adjective Checklist (Gough & Heilbrun, 1983), consisting of 34 items, 20 of which are positive indicators of self-confidence and 14 of which are antithetical. High scorers are described as "initiators, confident of their ability to achieve goals … assertive, enterprising, and self-confident".

The 'Extraversion' Subscale of the short scale of the Revised Eysenck Personality Questionnaire (EPQ-R, Eysenck, Eysenck & Barrett, 1985): 12-items, with a yes/no response scale, assessing aspects of sociability, activity, liveliness and excitability. The EPQ-R has been described as assessing impulsivity more than other scales, although having in common that extraverts are gregarious and friendly.

The 'Unusual Experiences' Subscale of the Short Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE, Mason, Linney & Claridge, 2005). This is one dimension of the schizotypal personality trait, concerning a proclivity to have unusual cognitive and perceptual experiences and beliefs (hallucinatory experiences, perceptual aberration and magical thinking). It consists of 12 items with a

yes/no response scale and includes: seeing shapes/forms in the dark, ones thoughts being almost audible, thinking that one has special powers, experiences of a sense of presence and rushes of vivid ideation.

Procedure

Potential participants were sent a booklet that described the study aims and procedure, plus the personality questionnaire to look at and complete if they were still interested in participating. An initial meeting was then arranged with a participant, when the practicalities of the study were described to them by NH, who attempted to create a good rapport. Subsequently, the participant was shown how to use the PDA and guided through the protocol with a practice session. They were reminded of their right to withdraw from the experiment at any point and of the booklet which described how to use the PDA, delineated all details of the study, in case they forgot anything, and gave the contact details for NH should they experience any difficulties and need to cancel the trial. The participant and NH arranged a future 24-hour slot, which would constitute the trial day, and a time for a follow-up meeting, when the target clip would be revealed. There was no communication between the participant and NH between these two meetings.

On the ESP-ESM trial day participants carried a PDA with them for 24-hours. When they felt like taking part (i.e. recording a daydream, thought, dream or experience) the participant switched on the PDA and recorded this impression or experience either through Voicememo or Notepad. This meant that they had choices about how to record their impression: either through speaking into the microphone; writing them down; or by drawing pictures. They then initiated the questionnaire on the PDA which recorded their responses to questions about their state of consciousness, time and situation. Each participant was asked to record at least one impression, which they could initiate at any time over the pre-arranged 24-hour trial period. The participant could not subsequently access any of their experience-sampling forms and mentations were automatically time-stamped and saved as hidden files.

On the trial day a target video clip was randomly selected by the remote viewing programme on a laptop computer. NH watched this and attempted to send information about it to the participant at spontaneous times throughout the day, recording times, lengths of sending sessions and details of the information focused upon, to assist/monitor her own sending.

The participants were informed, in the briefing session, of the above, and that they would see the target clip in the debriefing session. They were told that no attempt was being made to distinguish between whether any potential psi was due to telepathy, clairvoyance or precognition, allowing them to frame the task as they preferred.

At the final stage of each trial, the participant typically met with the experimenter for a debriefing session. The participant gave her the PDA and then they discussed the experience of taking part in the study, looked at the impressions they had recorded, and made comparisons with the target clip, which they were then shown. Participants had the opportunity to ask any questions about the research and to receive feedback about the overall outcomes.

The mentations that were generated by each participant were used by two independent judges in order to detect the identity of the target from three decoy clips. Each judge gave a confidence rating (0 to 100%) for each clip, representing certainty that it was the target. This was done both for each separate impression and holistically for all the impressions, considered as a collective, across the 24-hour period (the latter was planned to be the primary measure). It was decided to use independent judges, rather than allow participants to be the judges, in order to avoid possible unconscious cues concerning the identity of the target during the judging stage (as the experimenter is also the sender in this design). The judges were both blind as to the study hypotheses (beyond that the study was interested in the relationship between creativity and ESP and used an ESM design), the identity of the target, the trial date and any information regarding the identity of the participant. They were not involved in the trials in any way other than judging mentations.

Eleven participants were located in the same town as NH, but she did not leave home on these days to avoid any accidental meeting with them. The remaining participants lived at varying distances from Northampton. NH had no contact details for 8 of the participants until after the trial (having been

introduced to them by mutual contacts who arranged the initial meeting), email addresses only for 10 participants and phone numbers/addresses for the remaining participants. There was no way, in the opinion of the author, by which participants could obtain information about the clip through 'normal' means. The 'sending' took part in isolation, files recording details of each trial and NH's laptop required passwords to access, and details of the study were not disclosed to any person. However, this study was designed in an attempt to gain a better understanding of 'creativity, psi and everyday consciousness' and was process rather than proof oriented.

British Psychological Society ethical guidelines were adhered to throughout this study, considering in particular confidentiality, sensitivity to participants' beliefs, careful debriefing and making participants aware of their right to withdraw at any stage of the study.

RESULTS AND DISCUSSION

Group Characteristics: Artists and Controls

The sample as a whole appeared to be 'anomaly prone', both artists and non-artists scored 1-2 SDs higher on 'unusual experiences' than the normative mean scores reported by Mason et al. (2005). Both artists and non-artists were slightly introverted, with mean scores lower than normative mean scores (Eysenck et al., 1985), but within 1 SD. Artists only differed significantly from controls on artistic creative personality (t = 5.103, p < .0001), and the use of playful cognition (t = 3.015, p < .005) and intuition/inspiration in the creative process (z = -2.725 p < .006). That artists compared similarly to the non-artist group on measures such as belief in the paranormal, unusual experiences, further dimensions of creativity and extraversion helps to experimentally isolate the factor of 'artistic involvement'. Both samples scored similarly on 'internal awareness' and emotional creativity, suggesting that, on average, both groups were psychologically minded or had 'internal sensitivity'. The non-artists had higher mean emotional creativity scores in the current study than 'non-artists' in Holt et al. (2004), but within 1 SD.

Inter-rater Reliability of the Independent Judges

The z-scores (for the target clip) of the two independent judges (J1 and J2) correlated with each other at r = .716, hence this was considered to indicate sufficient inter-rater agreement. Further, the rankings of J1 and J2 had a reliability coefficient (Cronbach's alpha) of .835. They awarded the same rank (e.g. 2, 2) on 18 trials, rankings next to each other (e.g. 2, 3) on 8 trials, and rankings two intervals apart (e.g. 2, 4) on 4 trials. Despite these differences, the two judges tended to concur with each other, and it may be argued, based on the shared variance between z-scores, that their decisions were mostly (51.3%) based on objective, rather than subjective (48.7%) data/associations (that is, using reliable information in the mentations rather than using 'hunches', apophenia, noticing different facets of lengthy mentations, or rating 'randomly'). Thus, combining the ratings of J1 and J2 should provide a more reliable measure of psi-performance, converging towards objectivity.

Psi Performance of Artists and 'Non-Artists'

Based on average-standardized ratings (of J1 and J2) for each clip, target rankings are as delineated in Table 1. The hit-rate amongst artists (40%, r = .346) was commensurate with previous free-response ESP research with artistic populations (where, for example, six ganzfeld studies conducted with artists obtained a combined hit-rate of 40%, r = .344). However, the hit-rate was higher than predicted for non-artists (47%, r = .500), perhaps suggesting that the ESM protocol was 'psi-conducive' for this sample, concurring with Delanoy et al. (1993) and Ertel (2004). The overall hit-rate was 43.3% (r = .423)[2]. However, the sum-of-ranks analysis for overall psi did not reach statistical significance (SOR = 68, z = 1.03, p = .152, 1-t). The higher than expected sum of ranks may be accounted for, in part, by a magnitude

[2] Exact binomial: p = .013, 1-t.

effect in the artist sample, with 33.3% rank 4s, which would concur with the magnitude and direction model propounded by Palmer (1997) and Schmeidler (1964), where creative populations might be more sensitive to contextual factors that are hypothesised to affect direction, while tending to respond strongly (with magnitude) in either direction. In any event, hypothesis one, that there would be significantly low SORs, indicating target ranks are organised in a 'psi-hitting' distribution, was rejected.

TABLE 1
TARGET RANK FREQUENCIES FOR ARTISTS, 'NON-ARTISTS' AND BOTH SAMPLES COMBINED

	Target ranks				Mean *z*-score (SD)	SOR	*z*	*p*-value (1-t)	*r*
	1	2	3	4					
Artists	6 (40.0%)	3 (20.0%)	1 (6.67%)	5 (33.3%)	.168 (.895)	35	.680	.248	.176
'Non-artists'	7 (46.7%)	1 (6.67%)	4 (26.7%)	3 (20.0%)	.155 (.912)	33	.961	.168	.248
Total sample	13 (43.3%)	4 (13.3%)	5 (16.7%)	8 (26.7%)	.161 (.888)	68	1.030	.152	.188

As hypothesized, the mean *z*-scores were higher for artists than 'non-artists' (.168 versus .155), but this difference was not statistically significant (t = .037, df = 28, p = .485, 1-tailed); even when controlling for potentially confounding variables (E, UE, PB and SC): $F_{(1,14)}$ = .513, p = .482. Thus, hypothesis two, that artists would demonstrate better psi-performance than 'non-artists' was rejected.

This outcome does not concur with previous free-response work comparing artists with 'non-artists' where artists across four studies had significantly higher psi-indexes than controls (Gelade & Harvey, 1975; Moon 1973; Moss 1969; Moss & Gengerelli 1968). Various reasons could be postulated for this. In Moss's follow-up study, artists who had previously reported a SPE were responsible for the 'psi-hitting'. However, in this study, belief-in-the-paranormal, which includes SPEs, was negatively correlated with psi-performance for both groups. Hence, this explanation does not appear to explain the lack of an 'artist-psi' effect. Alternatively, the control group in this sample might be better matched than in previous studies, only significantly differing from non-artists on 'artistic creative personality' of the creativity/personality/belief scales, and associated cognitive-styles – 'playful, absorbed cognition' and 'intuition/inspiration'. Having inadvertently selected participants in each group with similar levels of emotional creativity and heightened internal awareness might have mitigated against any 'artists' advantage'. This explanation would be consistent with Holt et al. (2004) where artists did not report significantly more SPEs than 'non-artists', but that level of emotional creativity and internal sensitivity, rather than domain involvement, did significantly predict the reporting of SPEs. That emotional creativity, rather than 'being an artist' might predict psi-performance will be considered below.

Finally, it could be that the methodology did not give an advantage to artists, which previous free-response designs may have done, e.g. by being comfortable with 'performing' (most relevant to Schlitz and Honorton's sample from the Julliard school of performing arts), or focusing on and describing visual imagery (in the case of visual artists). In the current study participants could create their own environment in which to respond and could record any type of mentation or experience, in any state of consciousness, as they wished, in privacy, and spontaneously.

Psychometric Measures of Creativity and Psi Performance

Table 2 presents the correlation matrix of creativity components[3] and psi-performance. None of the dimensions of creativity were significantly correlated with overall psi-performance. Partialling out the potentially confounding effects of UE, E, PB and SC did not impact upon these small effect sizes.

[3] These creativity components emerged from a principal components analysis in a previous study (Holt, 2007).

Hypothesis three, that emotional creativity would correlate positively and significantly with overall psi-performance, was rejected. The overall correlation between emotional creativity and psi-performance was non-significant (*rho* = .127, *p* = .505). Thus emotional creativity, while related to the reporting of SPEs (Holt et al., 2004), does not appear to be related to objective psi-performance in this study. The enhanced performance of 'non-artists' (compared to previous research) in this study cannot be explained by emotional creativity and affective awareness.

TABLE 2
CORRELATIONS BETWEEN CREATIVITY DIMENSIONS AND Z-SCORES (SPEARMAN'S RHO, 2-T)

Psi-performance	Emotional creativity	Artistic creative personality	Scientific creative personality	Figural divergent-thinking	Music and performance arts	Domestic crafts	Writing
Total sample	.127 (.404)	-.117 (.538)	.255 (.182)	-.142 (.480)	-.298 (.110)	-.044 (.819)	.133 (.483)

Dimensions of the CCI and Psi Performance

Contrary to expectation negative correlations were formed between non-linear cognition and psi-performance (as observed in Table 3). The only significant correlation (but not when correcting for multiple analyses) was for 'beyond the self' (*rho* = -.429, *p* = .018, 2-tailed) which was negatively associated with psi-performance. The effect remained when partialling out the effects of UE, PB, SC and E (*r* = -.448, *p* = .025, 2-tailed). 'Beyond the self' consisted of: using, in the creative process, ideas that seem to come from some source other than the self; a sense of channelling in the creative process; and a sense of connecting with something 'other'. Might it be that such experiences and mental content adds cognitive noise and might such participants be drawing on aspects of their own vivid imagination, rather than 'psi-information'? Such experiences, e.g. where parts of the creative process seem to be 'dictated' by some other source than the self have been related to intrusions from the right hemisphere (Martindale, 1977-78) and are similar to experiences of a 'sense of presence' or a 'homologue' 'right hemisphere' sense of self (Persinger & Healey, 2002). Perhaps being prone to such experiences is related to difficulties in distinguishing between experiences which are 'self' or 'other' generated, which might make identifying psi information across an unstructured period of time difficult.

TABLE 3
CORRELATIONS BETWEEN CCI DIMENSIONS AND Z-SCORES (2-T)

Psi-performance	Internal awareness	Playful cognition	Intuition	Oneiric cognition	Beyond the self
Total sample	-.311 (.074)	-.230 (.222)	-.006 (.977)	-.142 (.480)	**-.429** (.018)

Note. Correlations in bold are statistically significant, where $p < .05$.

The 'Magnitude and Direction' Model

Palmer's (1997) magnitude and direction model predicts that creativity variables associated with flexibility and spontaneity affect the magnitude of the psi-index. Table 4 displays correlation coefficients (and associated probabilities) for the relationship between absolute *z*-scores (the magnitude of psi-performance, in terms of deviation from zero) and creativity dimensions. Significant effects can be observed with two dimensions of creativity.

Scientific creative personality (scores on Gough's CPS and an interest and involvement in science) was associated with magnitude of scoring in a positive direction (*rho* = .370, *p* = .044, 2-tailed). However, this was brought to non-significance by partialling out the effects of UE, SC, E and PB (*r* = .159, *p* = .640, 2-tailed). The second magnitude effect was for 'figural divergent-thinking' (*rho* = -.535, *p* = .004, 2-tailed).

This effect was not partialled out by UE, SC, E and PB (r = .522, p = .011, 2-tailed). It appears that scoring at a low level on the figural-DT task is associated with either very high or low psi-scores. This is in the opposite direction to that proposed by Palmer (1997), where high flexibility scores might make participants more sensitive to contextual variables (e.g. experimenter effects) that might lead to psi-hitting or missing. The effect may be interpreted in accordance with Schlitz's and Honorton's (1992) suggestion, that less divergent thinking, leading to more 'cognitive quietude' and less deviations from potential psi-impressions, might facilitate psi-performance – however low figural-DT would in this case have to interact with another variable for this to lead either to psi-missing or psi-hitting.

TABLE 4
CORRELATIONS BETWEEN CREATIVITY DIMENSIONS AND ABSOLUTE Z-SCORES (SPEARMAN'S RHO, 2-T)

Psi-performance	Emotional creativity	Artistic creative personality	Scientific creative personality	Figural divergent-thinking	Music and performance arts	Domestic crafts	Writing
Total sample	.035 (.856)	-.117 (.538)	**.370** (.044)	**-.535** (.004)	.208 (.270)	.064 (.738)	.098 (.603)

Note. Correlations in bold are statistically significant, where $p < .05$.

Stimulus- level Analyses

Experience-sampling questionnaire data were only available for 22 participants (11 artists and 11 controls). Only eleven participants completed a questionnaire after every single impression recorded, as described in the procedure and participant instructions. Another 11 participants completed questionnaires to cover clusters of impressions, most commonly reporting that they did not have time to complete the questionnaire at times when they wanted to record something that they thought was relevant very quickly. One participant's responses were excluded because all were at 'mid-point' on the scale, where the response cursor rests naturally, and hence it was assumed that they had not completed the questionnaire properly. A further seven participants forgot to complete the experience-sampling questionnaire at all.

While the ESM allowed participants the freedom to record impressions according to their own proclivities, it also encouraged non-compliance. Presumably the main motivation of the participants was to record their impressions, rather than to complete the, less exciting, questionnaires. However, the study may have seemed complex to some participants, particularly if using a PDA for the first time. The questionnaire had to be initiated by the participant, which may have been easy to forget under such circumstances. In future ESM-psi research it would thus be advisable to write a programme that activates a shorter experience-sampling questionnaire automatically, after an impression has been recorded.

It would be possible to correlate, at the person level, the average scores on 12 dimensions of consciousness (across the 24-hours, for each of the 22 participants) with psi-performance. However, retrospective state summaries may be inaccurate. Thus, a rudimentary within-person analyses was conducted, based on the limited and possibly non-representative 11 'compliant' participants (5 artists and 6 'non-artists'). Scores on the 12 dimensions of consciousness for the 'best' and 'worst' impressions for each participant (those with the highest and lowest z-scores) were compared. The most accurate psi-impressions contained *less* visual imagery (z = -2.19, p = .028, 2-tailed) and *less* positive affect (z = 2.14, p = .032, 2-tailed) compared to the 'worst' psi-impressions across the 24-hours. This may be aligned with psi-conducive models of cognitive and affective quietude (Braud, 2002).

In future studies, with complete data, it is hoped to use hierarchical linear modelling to examine whether particular states are associated with psi-hitting or missing, and whether this differs according to group membership (e.g. artists versus 'non-artists' or introverts versus extraverts). For example, Conner, Barrett, Tugade and Tennen (2007) detail how factor analysis of stimulus level variables can be used to create individual 'signatures' (e.g. a 'psychic signature'), i.e. structural regularities pertaining to an event (e.g. psi-hitting), which can then be compared at the group level, e.g. to see if 'psychic signatures' differ according to personality type, gender or other person level categories.

There were 204 individual mentations, ranging from 2 to 24 recorded impressions for each trial. At a future date it may be possible to analyse the thematic content of these mentations qualitatively. In order to

illustrate the types of impressions that were recorded during the study, those with extreme high and low *z*-scores are detailed below. From this very small selection it can be noted that reports vary along several dimensions, such as 'strangeness' versus mundanity and degree of descriptive detail, and are reported whilst undergoing various activities, including programming, driving and walking.

Impressions with the five most extreme low z-scores (ranging between -1.24 and -1.11) were contributed by 4 participants, the lowest for each participant is presented here:

- *z* = -1.24, *Notepad, 1.08 a.m.: "*A wild beast was coming in my mind while I was programming – strange!" (p#11, control, rank 4 overall);
- *z* = -1.19, *Notepad, 16.46 p.m.: "*Strange feeling in head – like someone staring upwards from the floor at me" (p#8, artist, rank 1 overall);
- *z* = -1.19, *Notepad, 13.49 p.m: "*A man in a long dark coat visits me – he speaks to me, however, I cannot hear him. He is in a dark tunnel quite a distance away, standing facing me" (p#29, artist, rank 4 overall);
- *z* = -1.16, *Notepad, 8.08 a.m.: "*Holidays. Sick and sinks" (p#13, artist, rank 1 overall).

Impressions with the five most extreme high-scores (ranging between 1.60 and 1.50) were contributed by 4 participants, the highest for each participant is presented here:

- *z* = 1.60, *Notepad, 19.13 p.m.: "*Field of swaying golden and amber grain. Seen from a low viewpoint as if amongst stalks" see *Figure 1,* (p#22, artist rank 2 overall);
- *z* = 1.50, *VoiceMemo, 13.36 p.m.*: "It's about half past one, I'm stuck in traffic, I'm driving home. Erm, an image of a ginger tom cat keeps popping into my head" (p#24, artist, rank 1 overall);
- *z* = 1.50, *Notepad, 14.28 p.m.: "*Bookshelf", see *Figure 2*, (p#13, artist, rank 1 overall);
- *z* = 1.50, *VoiceMemo, 10.15 a.m.:* "Morning! While I was walking to work I was daydreaming about astronauts and Tom Hanks in Apollo 13, which is not something I normally think about, so I thought I'd tell you. OK, bye" (p#1, control, rank 1 overall).

Fig 1

Fig 2

CONCLUSIONS

Artists performed at a level commensurate with free-response ganzfeld research with artistic populations with an effect size of $r = .346$. However, they did not outperform 'non-artists' (who obtained an effect size of $r = .500$). Nevertheless, a sum-of-ranks analysis did not find these outcomes to deviate significantly from chance expectation (SOR = 68, $z = 1.03$, $p = .152$, 1-t). However, the main outcome of this study emerges from the observation that 'non-artists' performed at a similar level to artists. That artists only differed from non-artists according to 'artistic-creative personality', other creativity and personality variables being 'controlled for', suggests that artistic involvement *alone* does not explain the 'enhanced psi-effect' found in previous ESP studies that have worked with artistic populations.

If this is the case (which is difficult to extrapolate from one small study), why might this be? Might the task demands of previous tasks, or experimenter effects have been responsible for the previous effects where artists scored higher than controls (e.g. Moss, 1969)? Or, were the comparison groups not adequately representative? Artists usually score higher than non-artists on belief in the paranormal, unusual experiences and emotional creativity, which was not the case in the current study. This would

suggest that a particular profile, which artists might more commonly, but not exclusively possess, is associated with psi-performance. Further, it may be that the procedure of this study facilitated psi-performance amongst 'non artists', by allowing them to take part as they preferred, increasing autonomy, control, and perhaps a sense of relaxation, as argued by Ertel (2004) and Delanoy et al. (1993) of 'take-home' ESP procedures. Finally, it might be that artists are particularly good at selecting the target clip themselves in the judging phase, which they could not do in this study.

None of the seven creativity measures significantly predicted overall psi-performance. The hypothesis that emotional creativity might be the factor that was associated with psi-performance, rather than, and independent of, domain involvement, was rejected. In previous creativity-psi research the combined effect size of all correlations between measures of creativity and psi (across both forced-choice and free-response studies) is very small: $r' = .049$, $n = 3851$, $z = 1.695$, $p = .045$. The current study did not find any simple significant effects that might dispute this weak, almost zero, effect. However, a number of suggestions arose from exploratory analyses, which could be examined in future research. One style of creative-cognition, 'beyond the self', characterised by a sense of receiving information from 'something other', was associated with psi-missing (*rho* = -.429, $p = .018$, 2-tailed). It was questioned whether such participants might have expected any 'psi' information to have felt 'other', rather than being 'mundane' – perhaps these participants had more problems with 'source monitoring', deciding whether a thought was psi-mediated or not. This raises interesting questions about how and why participants selected a thought or experience to record – how were the 'possibly psychic' moments chosen out of the stream of consciousness? While 'beyond the self' predicted the overall direction of psi-performance, figural divergent-thinking predicted the magnitude of psi-performance. This to some extent supports Palmer's (1997) magnitude and direction model. Low figural divergent-thinking was associated with a magnitude effect for both artists and non-artists (*rho* = -.535, $p = .004$, 2-tailed), suggesting that less flexible, creative cognition led to either extreme psi hitting or missing in this study, leading the author to speculate whether low-DT plus the presence of an additional variable leads to psi-success.

It is worth noting that the entire sample scored higher than the norm on 'unusual experiences' and emotional creativity, suggesting that a group with such characteristics might perform well on ESP tasks.

In conclusion, the current study, in the author's opinion, profitably explored the use of a new methodology in ESP research. This specific study has suggested that the few previous findings that artistic involvement alone is psi-conducive be questioned, and rather, that interactions between task demands, domain involvement and person-variables be further explored. Larger ESM studies with multi-level designs might facilitate understanding of such potential interactions. The author intends to improve available software: to facilitate the combined recording of qualitative and quantitative data; to develop software that will enable complete psi tasks to be performed on a PDA (e.g. with a precognition design); and to use mobile technology to communicate between 'sender' and 'receiver', enabling different targets to be 'sent' when the receiver is ready to mentate. The latter designs would increase the statistical power of such psi-ESM research, by enabling within-person multiple trials.

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REFERENCES

Anderson, M. (1966). The use of fantasy in testing for extrasensory perception. *Journal of the American Society of Psychical Research*, **60**, 250-163.

Averill, J. (1999). Individual differences in emotional creativity: Structure and correlates. *Journal of Personality,* **67**, 331-371.

Barrett, W. (1911/1918). *Psychical research.* London: Williams and Norgate.

Barrett, D. & Feldman-Barrett, L. (2005). *ESP, the experience-sampling program.* Obtained from http://www.experience-sampling.org/esp/.

Bem, D., Palmer, J. & Broughton, R. (2001). Updating the ganzfeld database: A victim of its own success? *Journal of Parapsychology*, **65**, 207-18.

Bierman, D. (1995). A free response precognition experiment via the World Wide Web. The Parapsychological Association 38th Annual Convention Proceedings of Presented Papers, 38-42.

Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, **54**, 579-616.

Braud, W. (2002). Psi-favorable conditions. In V. G. Rammohan (Ed.), *New frontiers of human science,* pp. 95-118. Jefferson, NC: McFarland.

Conner, T. (2005). *Experience sampling resource page*. Obtained from http://psychiatry.uchc.edu /people/postdocs/conner/esm.php

Conner, T., Barrett, L., Tugade, M., & Tennen, H. (2007). Idiographic personality: The theory and practice of experience sampling. In R. Robins, R. Frayley, & R. Kreuger (Eds.), *Handbook of Research Methods in Personality Psychology*. New York: Guilford Press.

Dalton, K. (1997). *The relationship between creativity and anomalous cognition in the ganzfeld.* Unpublished doctoral dissertation. University of Edinburgh.

Delanoy, D., Watt, C. & Morris, R. (1993). A new methodology for free-response ESP testing outwith the laboratory. *Proceedings of the 36th Annual Parapsychological Association Convention*, 204-223.

Ertel, S. (2004). Psi test feats achieved alone or at home: do they disappear under lab control? *Proceedings of the 47th Annual Parapsychological Association Convention,* 355-366.

Gelade, G. & Harvie, R. (1975). Confidence ratings in an ESP task using affective stimuli. *Journal for the Society for Psychical Research*, 48, 209-219.

Hektner, J., Scmidt, J., & Csiksentmihalyi, M. (2006). *Experience sampling method: Measuring the quality of everyday life*. London: Sage Publications.

Holt, N. (2006). Developing experience-sampling methodology to explore psi in 'everyday life'. *Proceedings of the Parapsychological Association 49th Annual Convention.*

Holt, N. (2007). *Creativity, altered states of consciousness and anomalous cognition: the role of epistemological flexibility in the creative process*. PhD thesis (submitted), University of Northampton.

Holt, N., Delanoy, D. & Roe, C. (2004). Creativity, subjective paranormal experiences and altered states of consciousness. *Proceedings of the Parapsychological Association 47th Annual Convention*, 433-436.

Honorton, C. (1967). Creativity and precognition scoring level. *The Journal of Parapsychology*, **31,** 29-42.

Honorton, C. (1977). Psi and internal attention states. In B.B. Wolman (Ed.), *Handbook of parapsychology* (pp. 435-472). New York: Van Nostrand Reinhold.

Honorton, C. Carlson, T. & Tietze, T. (1968). Combined methods in subject selection. In J.B. Rhine and R. Brier (Eds.), *Parapsychology today,* pp. 138-145. New York: Citadel Press.

Honorton, C., Ferrari, D., & Bem, D. (1992). Extraversion and ESP performance: A meta-analysis and a new confirmation. *Research in parapsychology 1990* (pp. 35-38). Metuchen, NJ: Scarecrow Press.

Hurlburt, R., & Heavey, C. (2006). *Exploring inner experience: The descriptive experience sampling method*. Advances in consciousness research, Volume 64. Amsterdam & Philadelphia: John Benjamins.

Jackson, M. Franzoi, S. & Schmeidler, G. (1977). Effects of feedback on ESP: A curious partial replication. *Journal of the American Society for Psychical Research*, **71**, 147-155.

Krippner, S. (1962-63). Creativity and psychic phenomena. *The Indian Journal of Parapsychology*, **4**, 1-20.

Lawrence, T. (1993). Gathering in the sheep and goats: A meta-analysis of forced-choice sheep-goat ESAP studies, 1947-1993. *Proceedings of presented papers, The Parapsychological Association 36th Annual Convention,* 75-86.

Levine, F., & Stowell, J. (1963). The relationship between creativity and clairvoyance. Paper presented at the 6th Annual Convention of the Parapsychological Association, New York, abstract in the *Journal of Parapsychology*, 27, p. 272.

Mason, O., Claridge, G., & Jackson, M. (1995). New scales for measurement of schizotypy. *Personality and Individual Differences*, **18**, 7-13.

Moon, M. (1975). Artists contrasted with non-artists concerning belief in ESP: A poll. *Journal of the American Society for Psychical Research*, **69**, 161-166.

Morris, R., Cunningham, S., McAlpine, S. & Taylor, R. (1993). Toward replication and extensions of autoganzfeld results. Proceedings of presented papers, The Parapsychological Association 36th Annual Convention, Toronto, 177-191.

Morris, R., Dalton, K., Delanoy, D. & Watt, C. (1995). Comparison of the sender/ no sender condition in the ganzfeld. Proceedings of presented papers, The Parapsychological Association 38th Annual Convention, Durham, North Carolina, 244-259.

Morris, R., Summers, J. & Yim, S. (2003). Evidence of anomalous information transfer with a creative population. *Proceedings The Parapsychological Association 46th Annual Convention*, 116-131.

Moss, T. (1969). ESP effects in "artists" contrasted with "non-artists". *Journal of Parapsychology*, **33**, 57-69.

Moss, T. & Gengerelli, J. (1968). ESP effects generated by affective states. *Journal of Parapsychology*, **32**, 90-100.

Murphy, G. (1966). Research in creativeness: What can it tell us about extrasensory perception? *Journal of the American Society for Psychical Research***, 60**, 8-22.

Myers, F. (1903/2001). *Human personality and its survival of bodily death*. Charlottesville, VA: Hampton Roads Publishing Co.

Palmer, J. (1997). Correlates of ESP magnitude and direction in the PRL and RRC autoganzfeld dada bases. *The Parapsychological Association 40th Annual Convention Proceedings of Presented Papers,* Brighton, UK, 283-298.

Pang, H. & Frost, L. (1967). Relatedness of Creativity, Values and ESP. *Perceptual and Motor Skills*, 24, 650.

Parker, A. (2004). Psi and altered states of consciousness. In M. Thalbourne & L. Storm (Eds.), *Parapsychology in the twenty-first century*. Jefferson, NC: McFarland & Co

Pekala, R. (1991). *Quantifying consciousness: An empirical approach*. New York: Plenum Press.

Rebman, J., Radin, D., & Stevens, P. (1996). A precognition experiment on the World Wide Web. *Proceedings of The Parapsychological Association 39th Annual Convention*, 207-218.

Roe, C. Sherwood, S. & Holt, N. (2004). Interpersonal psi: Exploring the role of the sender in ganzfeld GESP tasks. *Journal of Parapsychology*, **68**, 361-380.

Roe, C., Ali, A. & McKenzie, E. (2001). Sender and receiver creativity scores as predictors of performance at a ganzfeld ESP task. *Journal of the Society for Psychical Research*, **65**, 107-121.

Roe, C., Holt, N. & Simmonds, C. (2003). Considering the sender as a PK agent in ganzfeld ESP studies. *Journal of Parapsychology*, **67**, 129-146.

Russ, S. (2001). Primary process thinking and creativity: Affect and cognition. *Creativity Research Journal,* **13**, 27-36.

Sargent, C. (1980). *Exploring psi in the ganzfeld.* New York: Parapsychology Foundation.

Schlitz, M. & Honorton, C. (1992). Ganzfeld psi performance within an artistically gifted population. *Journal of the American Society for Psychical Research*, **86**, 83-98.

Schmeidler, G. (1963). Tests of creative thinking and ESP scores. *Indian Journal of Parapsychological Research***, 4**, 51-57.

Schmeidler, G. (1964). An experiment on precognitive clairvoyance part IV: Precognition scores related to creativity scores. *The Journal of Parapsychology*, **28**, 102-108.

Sondow, N. (1986). Exploring hypnotisability, creativity, and psi: Conscious and unconscious components to psi success in the ganzfeld. In *Research in Parapsychology 1986: Abstracts and papers from the 29th Annual Convention of the Parapsychological Association*. Metuchen, NJ & London: The Scarecrow Press, Inc.

ENERGETIC ASPECTS OF RSPK

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ABSTRACT

A previous paper (Roll, 2007) about RSPK, that is, movement of objects outside the body, indicate that this form of behavior, like bodily behavior, is determined by affect, more particularly by emotional tension between the agent and members the agent's family or group. In the same paper, neuropsychological studies are reported, which suggest that some agents are prone to electrical eruption in the brain that may cause epilepsy and Tourette's syndrome. RSPK is an energetic phenomenon because movement of objects entails expenditure of energy. The six cases with several object movements, showed statistically significant or suggestive declines in the number of incidents with increased distance from the agents, a finding that was consistent with the hypothesis that the events resulted from physical energy because such energy usually decreases with distance from the source. Three cases, where the evidence for RSPK was best, were analyzed in depth and showed that the attenuation could be accounted for by formulae that combine the inverse square with the exponential decay function. Unlike inanimate systems, the source of energy in RSPK is a human body. Emission of photons from the body has been shown by Joines and Roll and by Baumann, Joines, et al. (2005) in two subjects. This and other observations led the authors to a theory for RSPK according to which an object may change its position by an applied electromagnetic field. Since RSPK tends to begin on days of increased geomagnetic perturbation, this could initiate the process. The concept of consciousness waves by Jahn and Dunne (1987) combines the electromagnetic and affective features of RSPK while consciousness charge accounts for occasions when incidents take place in the agent's absence. RSPK is also a function of observation. No incidents were reported when the object was visually observed or filmed, but many took place when the agent was observed. In other respects, RSPK is like familiar behavior. In both, individuals act on objects because of their affective importance, and in both the affective component of objects can be nonlocal.

INTRODUCTION

Another paper (Roll, 2007) about the present cases deals with their psychological and neuropsychological aspects. It seems that the incidents are a response to tension between the agent and other members of his or her social group. The finding that the onset of RSPK tends to be on days of increased geomagnetic perturbation (Roll & Gearhart, 1974; Gearhart & Persinger, 1986) and that some agents are prone to electromagnetic eruptions of brain neurons (Roll, 1977/1986; the Mueller Case and the Resch Case in the present paper) have raised the possibility that electromagnetism is part of the etiology of RSPK. Electromagnetism is one of the four forces in nature, the others being the gravitational force, the strong atomic force and the week atomic force. It is thought that the four forces will eventually be combined to one, which has already happened for the electromagnetic force and the weak atomic force. If electromagnetism can be combined also with the gravitational force and the strong atomic force, and if RSPK is electromagnetic, all forces of nature would be combined in RSPK.

However, the electromagnetism of RSPK would not be the impersonal sort of physical theory. Like electromagnetism within the body, the electromagnetism that may operate in RSPK, that is, outside the body, has an affective component. It is, so to say, electromagnetism with an attitude.

ENERGETIC ASPECTS OF RSPK

When WGR began his exploration of RSPK, he did not consider the possibility that it may involve physical energy. A survey (Roll, 1977/1986) indicated that objects distant from the agent were less likely to move than nearby objects. To see if this would hold up in the cases he explored, beginning with the Lessing case (see below), Roll measured the distance between the agents and the objects whenever this was known or could be inferred. Because RSPK incidents as a rule cannot be predicted, measurements can only be taken after an object has moved. This is best done if the investigator is present at the time, or failing this if other witnesses are present and can inform you. WGR measured to the nearest foot, using a tape measure, and assumed that the energy went in a straight line from agent to object regardless of intervening walls and furniture. For instance, if a figurine in the living room moved while the agent was seated on his chair at the dining room table, WGR would measure the distance between the original position of the figurine and the dining-room chair. The distances were then plotted in groups of five. For instance, all objects in a radius of 1-5 feet from the agent were added together. WGR used this procedure for an easy survey of a distance factor, if there were any.

When WTJ became involved in the research, the possibility arose that physical energy from the agent, particularly electromagnetic energy, may bring on the events. To determine the amount of force expended by the movement of an object, the distance traveled and the weight or mass of the object are usually combined. These factors are not easy to determine in RSPK. In the Lessing case, a large number of occurrences consisted in the unscrewing of bottles, followed by the bottles falling over and spilling their contents, the incidents being accompanied by explosive sounds. There were then three types of motion in each case, unscrewing of the cap, the bottles falling over, and the explosive sounds (sound is due to the movement of air molecules) but we were unable to assign values in terms of distance traveled. In the Resch home, light switches repeatedly moved causing the lights to turn on when the switches were secured by Scotch tape (to prevent tampering), the tape disappearing at the same time. The incidents were clearly physical and must have taken energy, but we had no way of determining how much energy they expended. Even the energy of the more common movement of objects can be difficult to assess. For instance, the force that propels a cup to crash against a wall after moving eight feet would likely be much stronger than for a cup that simply falls to the ground after moving eight feet. Instead of measuring RSPK movement with the yardstick of ordinary movement, we plotted the *number* of occurrences as a function of distance from the agent. This made sense because the energy available for interaction should be directly proportional to the number of occurrences. We were able to fit these data to well-known equations that predict how energy usually decreases with distance from the source (see Analysis of the Decline Effect).

Lessing Case[1]

When the 48 incidents, where Michael's location and the location of the object could be determined, are presented in terms of five-foot increments; this results in six groups representing occurrences at 1-5, 6-10, 11-15, 16-20, 21-25 and 26-30 feet from Michael, the number of events in each grouping being 19, 9, 12, 5, 2 and 1. A linear regression analysis shows the decrease to be statistically significant[2]. For this analysis, our data consisted of all movement of objects, including the bottle incidents. A comparative analysis of the frequency with which different types of objects moved, showed that bottle incidents (18) were the most common. The choice of objects, such as bottles, was probably due to psychological factors and not to their physical composition (Roll, 2007). There were significant tendencies for objects to travel south and east, which again may be due to psychological factors.

[1] The circumstances under which the cases were investigated are discussed in the original articles and outlined in the previous paper (Roll, 2007).

[2] We use the term, "statistically significant" for values equal to or better than one in hundred (p = .01) and up to one in a thousand (p = .001). Results between one in 20 (p = .05) and one in a hundred we refer to as "suggestive." The exact values will be found in the full papers.

Analyses were made of the composition of the objects in the hope that this would explain why they were singled out. Of the 64 objects that had moved, 15 were mostly electric conductors while 49 were mostly dielectrics or probable dielectrics, such as glass or porcelain. The bottles were classed as probable dielectrics although their contents would be conductors. An analysis of the chemical composition of the objects, based on what is commonly known about such items, showed the principal elements to be hydrogen, oxygen, carbon, silicon and sodium, a result of their being mostly glass and clay.

Brooks Case

There were two phases of the Brooks case, a seemingly genuine phase and, several months later, an obviously fraudulent one. A total of 64 object movements belonged to the former group, of which the distance between Arnold and the object was known for 40. When these are reduced to five-foot increments, the figures are 15, 14, 7, 2 and 2. A linear regression analysis shows the decline to be suggestive. More dielectrics than conductors were affected, but this may have been due to the fact that there were more conductors in the home. There was no decline effect in the fraudulent phase because the occurrences all took place next to the boy.

Bloom Case

There were 35 movements of objects when Mrs. Bloom's distance from the objects was known Using the groupings of 1-5 feet, 6-10 feet, etc., the distribution came out as 12, 7, 4, 2, 2, 4 and 4, a suggestive decline according to a linear regression analysis. The objects that moved were usually dielectrics probably because most of the things in the home were dielectric

Gonzales Case

Victor's (Roll, Burdick & Joines, 1973) distance from the objects was known for 36 occurrences. Of these 20 took place when Pratt, Roll, police officers or other investigators had the area under surveillance. When the 20 events are divided into five-foot segments, the values are 6, 7, 3, 3, 0, and 1, a significant decline. There were 16 incidents when visitors were present but the conditions of observation or the qualification of the witnesses was less satisfactory. The distribution of these incidents, 2, 3, 6, 1, 4, 0, is insignificant. When the 36 occurrences are combined, the decrease becomes significant. The distance aspects of this case together with the distance aspects of the Callihan case and the Resch case are discussed in the following section.

Hoping to learn more about the energy, we examined the direction in which objects traveled in relation to Victor's position. Close to Victor, the movements tended to be short, radial, clockwise, outward, clustered behind him and to his right. Far from Victor, object movements were long, tangential, counterclockwise, inward and at his left and front. This pattern could have resulted from two sources of energy from Victor's body that interacted, thereby producing a moving beam that swept back and forth catching objects along the way, in the manner of phased-array radar.

Callihan Case

The 107 events when Roger's location was known (Roll, Burdick & Joines, 1974) showed a significant and extreme clustering close to the boy followed by a sharp decline: 94, 12, and 1. The figures do not include the incidents the family reported when Roger was away. Unlike the previous four cases, articles of furniture often moved.

We divided the occurrences into three groups, 15 movements of small household objects that had been observed by the investigators or others and apparently could not have been due to normal throwing, 16 unwitnessed occurrences, and 13 movements of furniture. The patterns of movements in the first group were similar to those in the Gonzales case. For both cases, the short movements were close to the agent and to his right while the long movements were distant and to his left. The direction of movement was different; in the Callihan case, the long movements tended to be clockwise and the short movements

counterclockwise while the opposite was true for Gonzales, but this is still consistent with the changing beam model. The movements for the unwitnessed occurrences do not fit the model while the movements of furniture can be accounted for, but not as clearly as the witnessed incidents with small objects.

Resch Case

There were 87 incidents when Tina was observed by the investigators or by witnesses other than her or her family. When the occurrences are separated into the usual categories, there is a significant decline with distance: 48, 18, 11, 5, 4, 0, and 1. We had hoped that the moving beam effect would occur in the Resch case, but the direction of movements was entirely random (Roll, Burdick, & Joines, 1999).-

The incidents began during a geomagnetic storm, which is defined as three days of above-average perturbation. We had become interested in the possible relationship between RSPK and geomagnetic disturbances because surveys (Roll and Gearhart, 1974; Gearhart and Persinger, 1986) had shown there to be a tendency for the onset of RSPK to coincide with upswings of geomagnetic disturbances. Geomagnetic perturbations are due mainly to magnetic emissions from the sun that are accompanied by sunspots and interfere with radio transmission and other electromagnetic processes on earth. Such eruptions by themselves cannot bring on RSPK but they may affect the central nervous system, which in turn may trigger RSPK for some individuals. On the other hand, it has been found that ESP may be facilitated by calm geomagnetic conditions (Persinger, 1985, 1987). The apparent difference in this respect between ESP and RSPK seems consistent with observations that ESP may be associated with the parasympathetic branch of the autonomic nervous system while RSPK may be associated with the sympathetic branch (Roll, 2007).

ANALYSIS OF THE DECLINE EFFECT

The distance data for the cases with object movements were analyzed in terms of two familiar energetic processes, the inverse function and the exponential decay function. The first three cases conformed either to the exponential function (Lessing and Brooks) or to the inverse function (Bloom). Because of this ambiguity, the three last cases (Gonzales, Callihan, and Resch) were analyzed by formulae that combine the two functions. The evidence for RSPK in the latter cases was considerably better than in the earlier cases because the investigators had witnessed many of the occurrences themselves and because most of the distance measurements were made immediately after each event.

The formula we used has two sets of terms. The 350/D and 1843/D terms account for the spreading of the field intensity as the wave propagates outward from the source, and the EXP(-D/15) and EXP(-D/3.66) terms accounts for the attenuation caused by the medium, such as air, through which the wave propagates. Electromagnetic and other invisible fields decrease in intensity from their source according to the inverse square function. This decrease is expressed in the 350/D and 1843/D terms. As the fields propagate and radiate outward from their source, they also decrease exponentially because part of the energy is absorbed by the medium through which the energy travels. This decrease is expressed by the EXP(-D/15) and EXP(-D/3.66) terms.

The data-points from the Gonzales and Resch cases fit exactly the same equation with the same constants while the data points from the Callihan casefit the equation with different constants.[3] The three distance curves are shown in Roll and Joines (2001).

It makes sense that RSPK data-points representing forces on objects should fit a field intensity versus a distance curve. Electromagnetic force is directly proportional to electric and magnetic field intensity and, like acoustic waves, is described by the same differential Maxwell equations. However, an acoustic wave cannot propagate through a vacuum but requires a material like water or metal. For either type of wave, the product of frequency (number of wave oscillations per second) multiplied by wavelength (distance between peaks of the wave) equals the velocity of propagation.

[3] Physical constants such as the speed of light result from laboratory measurement and are thought to be changeless over time.

It is known that electromagnetic (EM) waves propagate best through empty space because a material attenuates the wave amplitude and decreases its velocity. As is now known, the vacuum is not empty but is filled by an EM field that fluctuates around zero and is known as zero point energy (ZPE). Because the vacuum has no mass and no net electrical charge, a propagating EM wave relies upon the concept of equal and opposite charges oscillating along with the EM field intensity. The electric field intensity is a vector beginning on a positive charge and ending on a negative charge. The vacuum may contain equal and opposite charges, but they must have either no mass, or the mass of one charge must be the negative of the other. The electric field intensity is polarized in a direction perpendicular to the direction of propagation and the polarization changes sign as the field oscillates through zero to reach a maximum in the opposite direction.

AN EXPLANATORY MODEL FOR RSPK

WGR (Roll, 2003) has suggested that gravity, the force that holds an object in place, may be suspended if the random fluctuation of the ZPE that surrounds the object is made to cohere by the RSPK agent. Gravity is related to inertia, which causes stationary objects to remain at rest and moving objects to remain in motion. The coherence of the local ZPE, we suggest, may result from the strong emotion that seems to surround the agent or from its transient electromagnetic components. This hypothetical process would not cause the object to move but provide a condition where this becomes possible. According to the classical text by Blanchard et al. (1959) about quantum mechanics, four quantum numbers determine the state of an object (p. 188), one of which refers to the spin of fundamental particles. In principle, all four numbers could be changed by the delivery of the proper message from the agent, but altering the spin or rotation of an electron requires a very small amount of signal energy for an interaction to occur. This could make an object that has been stable in one location fly immediately to another location where it is again stable. This hypothetical mechanism has not been empirically demonstrated and may only occur in the charged emotional field of an RSPK agent or a similar individual.

If in fact the RSPK agent transmits signal energy to an object, there has to be a mechanism for doing so. This mechanism may have been discovered in a different setting. In order to determine if an individual may transmit photons that are too weak to see or that occupy the invisible part of the electromagnetic spectrum, the PRF acquired a photomultiplier and installed it in Joines' laboratory. In an unpublished study in the 1970s of the psychic healer, Karen Getsla, we found that she built up electrical charges on her body and emitted photons from her hands when she brought them close to the photomultiplier tube and concentrated on sending healing energy. In terms of the visible spectrum (red, orange, yellow, green, blue, indigo, and violet), where longer wavelengths or lower frequencies are red, and shorter wavelengths or higher frequencies are violet, the photomultiplier showed a peak at a wavelength of 385 nanometers, which dropped off to progressively lower values. Because the visible spectrum consists of wavelengths between 700 and 400 nanometers (red to violet), 385 nanometers would be just beyond visible in the violet to ultra-violet range. This is close to visible and there were in fact occasions when a faint light could be seen to emanate from Getsla's body in the darkened room. Baumann, Joines et al. (2005) resumed the work with 19 experienced psychic healers, of which only a young yoga devotee was able to emit light photons. He first used passive meditation to no effect, but succeeded when he employed an active Buddhist method that is said to awaken the body's kundalini energy. During two sessions, he produced two large spikes on the photomultiplier, the first at 205,535 counts per half-second, the second at 42,411 counts, the baseline being less than 20 counts. The spikes were accompanied by negative voltage surges from an arm electrode. Unfortunately, the effort resulted in an "unbelievable burning inside" and spitting up of blood by the participant, although an infrared camera showed his body temperature at a normal 98 degrees Fahrenheit. The experiment was terminated to protect the participant, but it took him nearly a week to return to normal. The literature (e.g., Chimmoy, 1992) warns not to attempt activating the kundalini except with expert guidance.

Baumann and Joines considered the possibility that the photon phenomenon was due to static electricity. Using control subjects, they tried to produce the same results from static electricity but could not. The light flashes were evidently due to another process.

In the meantime, Green et al. (1991) built a laboratory for measuring bioenergy. Voltage surges from ten experienced meditators were unremarkable but six of 14 practitioners of non-contact healing produced transient surges of 4-221 volts, mostly of negative polarity. No attempts were made to measure photons emitted by the body.

The studies at Duke with the photomultiplier and the research by Green's group led us to a theory for RSPK, according to which the source is electromagnetic waves from dermal nerve cells. Activation of dermal nerve cells causes the electrodermal response, which has been found to register ESP (e.g., Braud, 2003; Radin, 2006). In non-contact healing and RSPK, dermal nerve cells may act as transmitters of energy rather than receivers.

The possibility that an individual may emit light came up in a case of apparent RSPK that consisted entirely of flashes of white light (Roll, 1972/2004, Ch. 6). The flashes occurred in the presence of Frances Howell, a heavyset and taciturn 19-year-old girl, in a house in Clayton, NC, she shared with her mother and older brother. The flashes came at night when the houselights were off and seemed to startle and frighten the girl. Her brother saw the first flash. He told us he was in bed when there was a bright flash that he thought was lightning. When he checked the weather, it was clear and he went back to bed. "Then the light came again; my sister jumped up and hollered. She thought somebody had a light in her room" (op cit. p. 73). Roll was present during several nights and saw the flashes but only from outside the house, so he was unable to determine their origin, but the police had seen flashes near Frances at the same time they observed her. An officer said he saw a flash in the bathroom when Frances was there with a glass of water in one hand and the other on the lavatory spigot. The police made an exhaustive search for electronic equipment but found none. There were also no residues or smells of chemicals that might have produced the lights. The fact that everyone within view saw the lights, suggests that they were electromagnetic. Because the lights were strong enough to be seen from outside the house, it seems highly unlikely that they were due to static electricity in the sense known to physics and engineering. This may be another example of the hypothetical RSPK interaction between electromagnetism and affect. We do not know why Frances might want to reveal herself in this manner. Perhaps she had an unconscious need to do so and this need caused transient increases in the amplitude of her electromagnetic field so it became visible as flashes of light. Alternatively, the process may have been entirely autonomic without involvement of higher brain centers.

If RSPK is due to the transmission of electromagnetic waves to objects, the question arises whether this may have measurable effects. During an RSPK investigation, Joines (1975) tested a spot near where an object had just landed by inserting the antenna of a radio receiver there. He detected a spherical region that emitted radiation at a frequency of 146 MHz, and repeated the operation with a second object. The region was about two feet in diameter, which is consistent with the 146 MHz frequency for a resonant region of this size. Detectable transmission persisted for about one minute in each case. The movement of a charge on the human body might generate electrical signals oscillating at this frequency because the body is comparable in size to an antenna that radiates signals at 146 MHz. However, this would not explain why the radiated energy would be concentrated into a spherical region outside the body.

RSPK is not only about EM waves in the physical sense, but also about EM waves with affective components. This apparent fact is captured by Jahn and Dunne's (1987 pp. 203-287) concept of "waves of consciousness." In their usage, the term consciousness includes all types of human experience, such as perception, cognition, intuition, instinct, and emotion, whether these be regarded as conscious, subconscious, superconscious, or unconscious.

Consciousness waves may result in a "consciousness charge" (op. cit., p. 235). This means that when consciousness waves are directed to an object and the object absorbs the waves, there may be no observable change until a later time when the charge is released as object movement. This may happen whether the agent is present or not. Freud (1965, p. xvi) noted the similarity between electromagnetic and mental charge when he wrote, "a charge of affect or sum of excitation" is present in mental functions and "possesses all the characteristics of a quantity (though we have no means of measuring it), which is

capable of increase, diminution, displacement and discharge, and which is spread over the memory-traces of ideas somewhat as an electric charge is spread over the surface of a body" (quoted by Jahn & Dunne, 1987, p. 237).

The fact that RSPK sometimes occurs several feet from the agents and sometimes even when they are out of the area, may indicate that the agent has caused the build-up of a consciousness charge on the objects that may cause them to move in the absence of the agent. Since there is no difference in charge accumulation between metallic and dielectric objects, this is consistent with the finding from the Lessing and Brooks cases that both types of objects were affected. In the Bloom case, six toilet containers in the bathroom were affected when Bloom was out of the room and five objects apparently moved when Bloom was not home. There were also several reports of object movements when Roger was absent.

A PRINCIPLE OF UNCERTAINTY FOR RSPK

In the familiar world, objects often move from stationary positions when watched or filmed, but there are few if any reports of the same happening to objects affected by RSPK. In a home with RSPK, it seems that a stationary object that is watched or filmed will remain in place, but if you look away or turn off the camera, the object may move. We have suggested that the signal energy for RSPK may be quantum mechanical and would thereby be subject to the Heisenberg principle of uncertainty, but the analogy does not work for RSPK uncertainty. According to the Heisenberg uncertainty principle, you cannot simultaneously observe the location of a subatomic particle, such as an electron, at the same time as you observe the moving wave that produces the particle, you have to do one thing at a time. A stationary large-scale RSPK object in a sense is particle-like and a moving RSPK object in a sense is wave-like. If you fix the location of the object with your eyes or camera, you fix it in place and it cannot move until you look away or turn off the camera. However, RSPK uncertainty is different from quantum uncertainty. In quantum physics, the act of observation causes the ambiguous state of the wave function to collapse to a specific state. In contrast, a stationary object in RSPK, which is thereby in a specific state, is prevented from moving if observed. In quantum physics as well as RSPK, observation affects the system but in different ways. The reason for this difference is unknown but may be related to fact that the objects affected by RSPK are large-scale rather than subatomic.

CONCLUSION

We have presented a model for RSPK that is based in part on quantum mechanics. Quantum mechanics has previously come up in discussions of PK where the effect consists of deviations from chance expectancy, as in tests with random event generators, rather than movement of objects. Evan Harris Walker (1974, 1985) has pointed out that the observer effect in quantum physics is indistinguishable from PK because both depend on human operators and entail action at a distance, and Helmut Schmidt (1993) has provided empirical evidence that the two processes may be the same. If energy, even weak energy, is transmitted from the body, it should be possible to detect. In studies by Joines and Roll and by Baumann, Joines et al. (2005) two subjects evidently transmitted beams of photons. A similar process could underlie RSPK.

Emotion, no less than EM energy, is an ingredient of RSPK, and is accounted for by Jahn and Dunne's (1987) concept of consciousness waves. The idea is consistent with the finding that RSPK tends to be manifested by people who are prone to sudden discharges of brain neurons as in epilepsy and Tourette's syndrome. Like electromagnetic waves, Jahn and Dunne propose that consciousness waves may accumulate in objects as consciousness charges, which is also consistent with findings in RSPK. Electromagnetism has a long history in psi research, as Alvarado (1987, 2001) has pointed out, but in psi we are dealing with electromagnetism that has an affective component.

In some respects, RSPK is like normal behavior. In both, people act on objects because of their affective importance, and in both the affective component of objects can be nonlocal. As the saying goes,

"Distance makes the heart grow fonder," but this does not mean that you can affect him or her at a distance; this presumably requires PK or bio-PK.-

The more we known about the movement of material objects without tangible aid, the more normal it seems, and the more is known about matter, the more paranormal it appears.

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REFERENCES

Alvarado, C. S. (1987). Observations of luminous phenomena around the human body: A review. *Journal of the Society for Psychical Research*, **54**, 38 – 60.

Alvarado, C. S. (2001). Concepts of force in early psychical research. *Proceedings of Presented Papers: The Parapsychological Association 44th Annual Convention,* 9 – 24.

Baumann, S., Joines, W. T., Kim, J., & Zile (2005). Energy emissions from an exceptional subject. *Proceedings of Presented Papers: The Parapsychological Association 48th Annual Convention*, 219 – 223.

Blanchard, C. H., Burnett, C. R., Stoner, R., & Weber, R. L. (1959). *Introduction to Modern Physics.* New York: Prentice-Hall.

Braud, W. (2003). *Distant Mental Influence: Its Contribution to Science, Healing and Human Interactions.* Charlottesville, VA: Hampton Roads.

Chimmoy, S. (1992). *Kundalin: The Mother Power.* New York: Aum Publications.

Freud, S. (1964). *The Interpretation of Dreams.* New York: Avon.

Gearhart, L., & Persinger, M. A. (1986). Geophysical variables and behavior: XXXIII. Onsets of historical and contemporary poltergeist episodes occurred with sudden increases in geomagnetic activity. *Perceptual and Motor Skills*, **62**, 463 – 466.

Green, E. E., Parks, P. A. Guyer, P. M., Fahrion, S. L, & Lolafaye, C. (1991). Anomalous electrostatic phenomena in exceptional subjects. *Subtle Energies*, **2**, 69 – 94.

Jahn, R. G. & Dunne, B. J. (1987). *Margins of Reality.* New York: Harcourt Brace.

Joines, W. T. (1975). A wave theory of psi energy. In J. D. Morris, W. G. Roll & R. L. Morris (Eds.), *Research in Parapsychology 1974* (pp. 147 – 149). Metuchen, NJ: Scarecrow.

Persinger, M. A. (1985b). Geophysical variables and behavior: XXX. Intense paranormal experiences occur during days of quiet, global, geomagnetic activity. *Perceptual and Motor Skills*, 61, 320 – 322.

Persinger, M. A. (1987). Spontaneous telepathic experiences from *Phantasms of the Living* and low global geomagnetic activity. *Journal of the American Society for Psychical Research*, 83, 23 – 36.

Radin, D. (2006). *Entangled Minds*. New York: Pocket Paraview.

Roll, W. G. (1977/1986). Poltergeists. In B. B. Wolman (Ed.) *Handbook of Parapsychology* (pp. 382 – 413). New York: Van Nostrand Reinhold.

Roll, W. G. (2007). The psychological and neuropsychological aspects of RSPK. *Proceedings of Presented Papers: Parapsychological Association 50th Annual Convention.*

Roll, W. G. (1972/2004). *The Poltergeist.* New York: Paraview. (Reprint of Nelson Doubleday edition).

Roll, W. G., Burdick, D., & Joines, W. T. (1973). Radial and tangential forces in the Miami poltergeist. *Journal of the American Society for Psychical Research*, **67**, 267 – 281.

Roll, W. G., Burdick, D., & Joines, W. T. (1974). The rotating beam theory and the Olive Hill poltergeist. In W. G. Roll, R. L. Morris & J. D. Morris (Eds.) *Research in Parapsychology 1973* (pp. 64 – 67). Metuchen, N.J.: Scarecrow.

Roll, W. G., Burdick, D., & Joines, W. T. (1999). The rotating beam theory and the Columbus poltergeist. Unpublished study.

Roll, W. G. & Joines, W. T. (2001). RSPK and consciousness. *Proceedings of Presented Papers the Parapsychological Association 44th Annual Convention*, 267 – 284.

Roll, W. G., & Gearhart, L. (1974). Geomagnetic perturbations and RSPK. In W. G. Roll, R. L. Morris & J. D. Morris (Eds.) *Research in Parapsychology 1973* (pp. 44 – 46). Metuchen, NJ: Scarecrow.

Roll, W. G. & Storey, V. (2004). *Unleashed of Poltergeists and Murder: The Curious Story of Tina Resch.* New York: Paraview Pocket.

Schmidt, H. (1993). Observation of a psychokinetic effect under highly controlled conditions. *Journal of Parapsychology*, 57, 351 – 372.

Walker, E. H. (1974). Consciousness and quantum theory. In White, R. (Ed.) *Psychic Exploration*. New York: Putnam's Sons.

Walker, E. H. (1985). Qunatum mechanics and parapsyhology. *Journal of Indian Psychology, 4*, 21-26.

ADVANCES IN ANOMALOUS COGNITION ANALYSIS: A JUDGE-FREE AND ACCURATE CONFIDENCE-CALLING TECHNIQUE

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ABSTRACT

We developed an automatic confidence calling method that relies upon having an estimate of a null hypothesis distribution for a blind rating system. We used basic fuzzy set ideas to compute a *Figure of Merit* as the normalized intersection between a fuzzy set representation of the response and of the target in an anomalous cognition (AC) trial. By using data from a previous AC experiment, we estimated the *Figure of Merit* null distribution from cross matches within that dataset. The only input from the experimenter in the study reported here was to encode (in a blind way) each response as a fuzzy set. All further analyses were carried out by a computer code. Three experienced participants contributed a total of 50 trials. The targets in the study were randomly selected from 12 groups of three orthogonal categories each. We observed 32 hits in 50 trials (binomial $p = 2.4 \times 10^{-6}$, $z = 4.57$, ES = 0.647) and of the 11 confidence calls resulting from significant *Figures of Merit*, 10 were correct (Binomial $p = 5.7 \times 10^{-6}$, $z = 4.39$, ES = 1.32).

INTRODUCTION

There are two basic methods of blind analysis of a single anomalous cognition (AC) trial:

1. Rating—a subjective numerical score is used to assess a match between a given response and a candidate target. This may be either completely subjective or based upon some *a priori* rating scale. Ratings have the advantage of not being dependent upon other targets in the pool.
2. Ranks—candidate targets are ordered on the basis of the subjective agreement with the AC response. A rank number is assigned between one and *N* where *N* is the total number of candidate targets. Ranks are strongly dependent upon the orthogonality of the decoy targets, and thus confound correlation investigations.

In both methods, a human blind judge conducts the analysis, and the outcome result for a single AC trial is either the rank number or the rating value for the intended target for that trial. Of course, there are a number of methods to combine the outcomes from each trial to provide an assessment for the series.

May et al. (May, Utts, Humphrey, Luke, & Frivold, 1990) introduced a new rating method of analysis for anomalous cognition trials using some of the basic ideas from fuzzy set theory. The fuzzy set method was later refined (May et al., 1999) by reducing the original 131 items to 24 as the Universal Set of Elements that would be used to encode all the images in the target pool and each response in a given AC experiment. A rating, which is called *Figure of Merit*, was computed as the normalized intersection between the response and target fuzzy sets.

While the fuzzy set approach appeared to be an improvement over the crisp set, descriptor list methods,[1] it suffered from a lack of a successful confidence call (i.e., a correct *a priori* assessment) for a given trial. The techniques and confirmation experiment described below remedies that shortcoming.

[1] As yet unpublished results of the US Government-sponsored research at SRI International.

METHOD

We extended the fuzzy set approach by developing a statistical meaning for each *Figure of Merit* and used the resulting z-score as a confidence call.

Target Pool

The target pool used in this study was the current result of nearly 40-people-years worth of effort (May et al., 1999). This pool was based exclusively upon the Corel Stock Photo Library of Professional Photographs. This library of copyright-free images was in digital form and was comprised of 100 images on each of 200 CD-ROM's. The details of how this photographic library of 20,000 images was culled to produce the current pool of 300 outdoor images that were arranged in 12 groups of five orthogonal categories can be found in the above reference.[2]

Six individuals independently encoded each of the 300 photographs against the *Universal Set of Elements* shown in Table 1, and a consensus was formed to create a fuzzy set representation of each image with regard to how each element in Table 1 was *visually impacting* in the image.

TABLE 1
UNIVERSAL SET OF ELEMENTS

Buildings	Coliseums	Glaciers/Ice/Snow
Villages/Towns/Cities	Hills/Cliffs/Valleys	Vegetation
Ruins	Mountains	Deserts
Roads	Land/Water Interface	Natural
Pyramids	Lakes/Ponds	Manmade
Windmills	Rivers/Streams	Prominent/Central
Lighthouses	Coastlines	Textured
Bridges	Waterfalls	Repeat Motif

Based upon the consensus coding of the six contributors, we computed the normalized distance between all possible pairs of target images within each group. We then used cluster analysis to determine whether targets were closer together within a category than to other targets within the group. The distance between targets *j* and *k* is given by:

$$d_{j,k} = 1 - \frac{\sum_{i=1}^{N} \min(\mu_{i,j}\mu_{i,k})}{\sqrt{\sum_{i=1}^{N} \mu_{i,j} \times \sum_{i=1}^{N} \mu_{i,k}}},$$

where *N* is the number of elements in the USE (i.e., 24 in this case), and the μ's are the fuzzy set membership values for the respective targets *j* and *k*.[3] This metric can then be used to produce a hierarchical cluster diagram that gives a visual display of the orthogonality of the categories within each group. Figure 1 shows the cluster analysis for group 1, and there are similar diagrams for each of the remaining 11 groups.

[2] This paper may be found in pdf format at www.lfr.org/LFR/csl/library/TargetPool.pdf .
[3] Membership values, which represent the degree to which the given element is visually impacting in the image, are in the range of [0,1] and constrained to steps of 0.1.

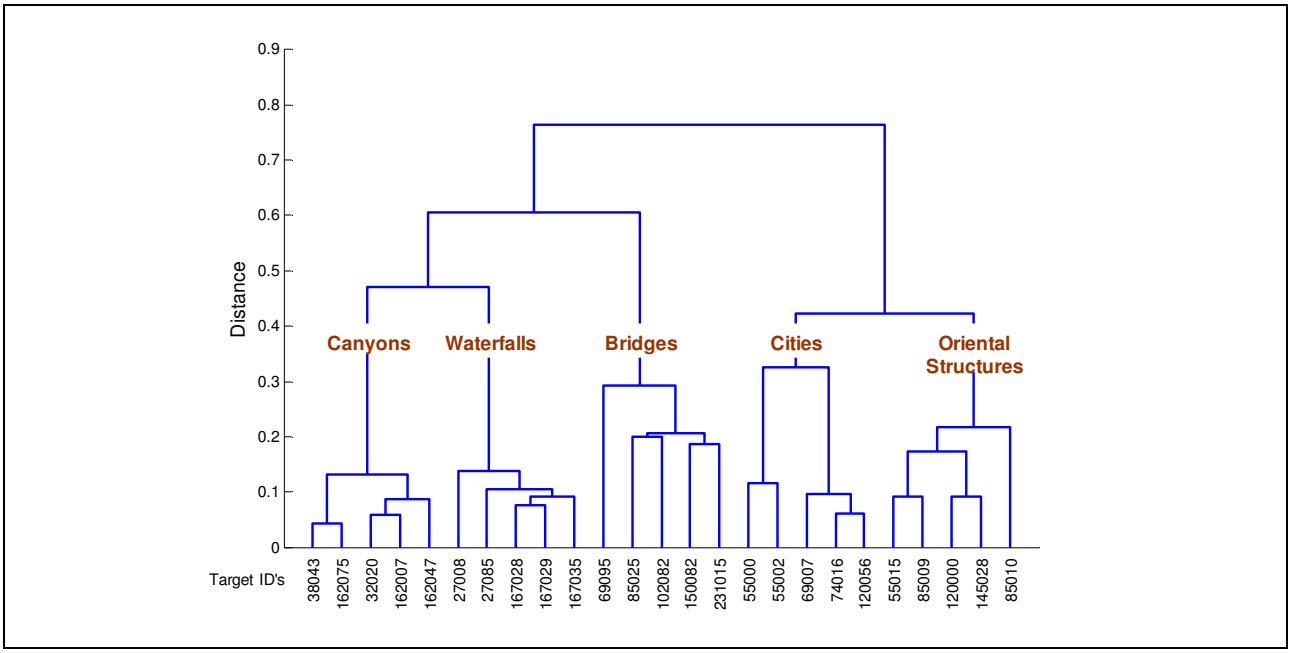

Fig 1. Cluster diagram for the 25 targets contained in Group 1.

When the distances shown in Figure 1 are small then the images are very similar, and conversely, when they are large, the images are dissimilar. For example the five waterfall photographs are all similar, yet they are different collectively from the five similar canyons. Additionally, by inspection, the waterfalls/canyons categories are substantially different from the cities/oriental structures categories.

The target pool for the current study was a 180-image subset of the original 300. We reduced the set from five categories per group down to three in order to increase the within-group category orthogonality, and thus, perhaps make the machine judging easier. We selected the three categories in each group in the following way. The three most different categories from each of the 12 groups were selected by visual inspection. For example, for group one (Figure 1 above) the categories of waterfalls, bridges, and oriental structures comprise the categories in the new group 1, which was used in the study reported here. Since there are always five similar images in each category, we ended up with 180 target images.

Participants

Three of our long-standing, experienced participants agreed to take part in the study. One was local to the California laboratory while the remaining participants were from the East coast of the US.

Number of Trials

A total of 50 trials were distributed among the three participants. The total number of trials was set before the study; however, the number per participant was not and was set by their availability.

Hypotheses for the Study

There are two primary hypotheses for this study:

1. We will observe significant evidence for anomalous cognition.
2. Figures of Merit above the significance threshold will serve as a successful confidence call for the trial.

Precognition Trial Protocol

Each trial was conducted with a single participant who was tasked by the following phrase: "In about an hour, you will see a photograph on the computer. Please access and describe it now." The local participant was monitored while the other two were not. For the monitored session, we used a "stimulus/response" technique where the stimulus was the word "target" and the response was a brief sketch or a few written words. The other participants used their own free-form methodology.

At the end of the session,[4] the response was encoded into a fuzzy set using the *Universal Set of Elements* shown in Table 1. The analyst scored each element with regard to the degree to which he/she felt that element was represented in the response. Since the analyst was blind to any targets whatsoever, care was exercised to avoid trying to "guess" whether that element was in the target. Much of the encoding process was objective. For example, if the response contained the words, "buildings," then the *buildings* element must be and was scored as one—complete certainty that buildings were in the response. As response elements became less specific, the analyst exercised more subjectivity. Thus, if the response contained drawings of vertical rectangular shapes that contained smaller rectangles within them, then the analyst might give 0.6 for the *buildings* element; that is, the analyst was only 60% convinced that the participant meant buildings. In this study, response elements that did not have a corresponding item in the *Universal Set of Elements* were ignored.

Once the response was encoded and automatically entered into a database, the computer used a pseudo-random number generator to:

1. Randomly select a group, which contained three orthogonal categories, on the integer interval [1,12].
2. Randomly select one image from the five within each of three categories within the selected group.
3. Randomly order the three selected images and arbitrarily label them "High," "Low," and "Between," respectively.[5]

Since each of these targets possessed an *a priori* fuzzy set representation, we computed a *Figure of Merit* for each of the three images as follows:

- An alpha cut of 0.2 was applied to the target. That is, if the value for any element was equal to or greater than 0.2, it was set to one; otherwise it was set to zero. We did this because at the current level of anomalous cognition, participants appear not to be able to both identify an element in the target and assess its visual relevance.
- The *Accuracy* (i.e., the fraction of the target that was correct in the response) was computed as:

$$accuracy = \frac{\sum_{j=1}^{24} \min(\mu_{T,j}, \mu_{R,j})}{\sum_{j=1}^{24} \mu_{T,j}}, \qquad (0 \le accuracy \le 1)$$

where $\mu_{T,j}$ is the value of the j^{th} element in the target fuzzy set (post alpha cut) and $\mu_{R,j}$ is the j^{th} element of the response fuzzy set.

- Similarly, the *Reliability* (i.e., the fraction of the response that was correct) was computed as:

$$reliability = \frac{\sum_{j=1}^{24} \min(\mu_{T,j}, \mu_{R,j})}{\sum_{j=1}^{24} \mu_{R,j}}, \qquad (0 \le reliability \le 1).$$

[4] Distant participants faxed their response to the laboratory.

[5] It is important to emphasize that the group, category, and images were all selected randomly *after* the response had been entered into the computer.

- The *Figure of Merit* was computed as *accuracy* × *reliability.*

Thus, three *Figures of Merit* were computed for each trial with no human intervention beyond the blind encoding of the response. At the time of this computation, the intended target had not been chosen, and the analyst did not see any images whatsoever.

A session target ranking was computed automatically according to the values of the *Figure of Merit*.

Finally, the intended target (i.e., High, Low, or Between) was chosen by a pseudo random number generator.

Statistical Meaning of a Figure of Merit (i.e., Null Hypothesis Distribution)

The *Figure of Merit* is an absolute number that does not depend upon any other target images in the pool. So given a *Figure of Merit,* what is the probability of obtaining that *Figure of Merit* or larger, under the null hypothesis of no anomalous cognition? We need to know this statistical likelihood of a given *Figure of Merit* if we intend to use it in any predictive way (i.e., confidence call).

To determine this, we examined another anomalous cognition study from several years ago (May, Spottiswoode, & Faith, 2000) that used the same target pool and the same participants that contributed as those in the current study. To obtain an estimate of the null *Figure of Merit* distribution, we computed *Figures of Merit* for each response against targets drawn from orthogonal categories other than the intended one. In that earlier study, the three participants contributed 15 trials each and since there are five images in each category, a total of 2,680 *Figures of Merit* were computed from those categories that were orthogonal from the current trial category.[6] Figure 2 shows the resulting null hypothesis distribution.

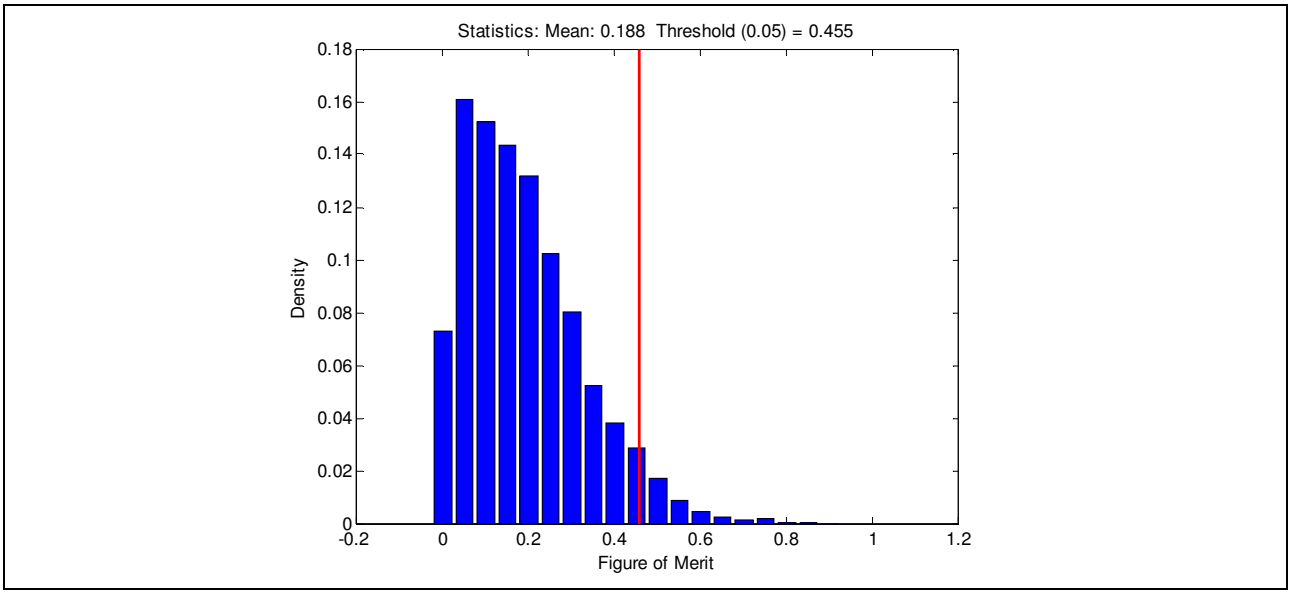

Fig 2. Null hypothesis figure of merit distribution.

The vertical line shown in Figure 2 designates a significant *Figure of Merit* (i.e., values equal to or larger will be observed under the null hypothesis of no AC five percent of the time). That value is 0.455. Cleary the distribution of *Figures of Merit* are dependent upon the given target pool and upon the particular participants. This distribution was then used to compute p-values for the *Figures of Merit* for each trial, and these p-values we used to compute associated z-scores and effect sizes in the usual way.

[6] We used only groups that contained the intended target category and used the other categories in those groups for the cross match calculation. The 2,680 null-hypothesis *Figures of Merit* arose from the 45 trials in the previous study such that the given target category in each trail was one present in the current study and that its orthogonal categories in the previous study were ones also present in the current study. Aside from this restriction, the target images in the study reported here were the same ones used in the previous one.

There were a number of inherent assumptions in this approach. A substantial number of years had elapsed between the two studies; the number of trials per participant was different both within and across the two studies; we assumed that the anomalous cognition ability of the participants remained constant over the years; and, that these differences would not matter—a truly empirical question. Given the results quoted below, it appears these issues did not matter.

The software used in this study was developed in 1997 and is now being used by a number of research laboratories around the world. It has been exhaustively checked by hand by a number of independent laboratories.

RESULTS

The primary measure (*a priori)* for evidence of anomalous cognition was the number of direct hits. We observed 32 hits out of 50 trials (binomial $p = 2.4 \times 10^{-6}$, $z = 4.57$, ES = 0.647). That is, the largest *Figure of Merit* of the three computed for each trial was correct 32 times out of 50. Thus, the primary hypothesis of evidence for anomalous cognition was confirmed.

Post Hoc we computed a number of other measures. The mean rank was 1.56 where 2.0 is expected ($p = 0.005$, $z = 2.58$, ES = 0.366). We used the null *Figure of Merit* distribution shown in Figure 2 to compute a z-score for each trial, and thus we computed a Stouffer's Z for the study of 4.24 (ES = 0.600 $p = 1.1 \times 10^{-5}$). We found that 11 of the largest (of three) *Figures of Merit* for each of the 50 trials was equal to or larger than the significant threshold of 0.455 shown in Figure 2 (11 hits in 50 trials with event probability of 0.05 leads to a binomial $p = 4.97 \times 10^{-6}$, $z = 4.42$, ES = 0.625).

However the *a priori* test of the second formal hypothesis of a statistically meaningful confidence call was addressed by asking how many of these 11 significant *Figures of Merit* lead to a hit. We observed 10 hits in 11 trials with event probability of 1/3 (Binomial $p = 5.7 \times 10^{-6}$, $z = 4.39$, ES = 1.32). So in 10 of 11 trials an *a priori* significant *Figure of Merit* eventually led to the correct answer, and thus the significant *Figures of Merit* constituted an accurate confidence indicator.

DISCUSSION

We used a previous study to estimate the null *Figure of Merit* distribution so that we could obtain a confidence call in real time even for the first trial in the current study. This would not be possible if we had waited until the study was complete to provide the with-study cross match *Figure of Merit* distribution. It seemed to us that a retrospective confidence call is less useful than one obtained in real time.

Table 2 shows a summary of the results.

TABLE 2
SUMMARY OF RESULTS FOR A THREE-STATE ANOMALOUS COGNITION EXPERIMENT OF 50 TRIALS

Measure	Value	Z-Score	P-Value	Effect Size	*A Priori*
Hits	32	4.57	2.4×10^{-6}	0.647	yes
Mean Rank	1.56	2.58	0.005	0.366	no
Stouffer's Z	4.24	4.24	1.1×10^{-5}	0.600	no
Significant FOM's	11	4.42	5.0×10^{-6}	0.625	no
Correct Sig. FOM's	10	4.39	5.7×10^{-6}	1.324	yes

The two statistics labeled yes for *a priori* are the ones that confirm the two hypotheses stated above. The most important of these is a human judge-free analysis system that produces a highly effective confidence call. That is, in this experiment, 10 of 11 confidence calls were correct.

Table 3 shows a *post hoc* break out of some of the statistics for each of the three experienced participants.

TABLE 3
SUMMERY OF STATISTICS ACCROSS PARTICIPANTS

Participant	No. Trials	Hits	Z-Score	P-Value	ES	No. Sig	Fract Sig.
1	12	10	3.91	4.7×10^{-5}	1.127	2	0.167
2	11	8	3.00	0.0014	0.903	3	0.273
3	27	14	2.19	0.0140	0.421	5	0.185

The first thing to notice is that all three participants produced individually significant results, which consistent with their long and successful experience with the former US Government project.[7] Participant 1's hit rate was significantly larger than Participant 3's ($t(37) = 2.035$, $p = 0.025$), but there was no significant difference between Participants 1 and 2 ($t(21) = 0.537$, $p = 0.299$) and between Participants 2 and 3 ($t(36) = 1.346$, $p = 0.093$). It is interesting to note, however, that Participant 2 is probably the most experienced in applying anomalous cognition in the real-world under stress and 27.3% of that Participant's sessions produced individually significant *Figures of Merit*, whereby chance we would expect only 5%.

We must caveat this *Figure of Merit* approach to confidence calling. The technique in one sense is quite general. That is, a Universal Set of Elements can be tailored to meet any target pool and any set of participants. However, the approach does not generalize across participants. The null hypothesis *Figure of Merit* distribution shown in Figure 1 only holds for investigations which use the three participants and target pool used in this study. The *Figure of Merit* contains two subcomponents as described above —*Accuracy* and *Reliability.* While we could generate null hypothesis distributions for each of these, neither is a good measure of anomalous cognition by itself. For example, it is easy to obtain a high *accuracy* by providing a verbose response that mentions anything possible in a target pool. Similarly, by just giving a one-word response such as "natural" (e.g., one of the elements in the USE) will guarantee a high *reliability* even under the null hypothesis. To obtain a high *Figure of Merit*, however, a reasonable fraction of the intended target must be described in a parsimonious way; that is, not much incorrect material in the response and most of that response must match the elements in the target image.

Finally, given the strength of results quoted here, we must examine other possible explanations. Short of experimenter fraud, which can only be guarded against by independent replication, it is difficult to imagine non-psi alternative hypotheses for the result. Precognition protocols such as the one used here are particularly "clean." In addition, a rank-ordering, even once based upon a rating system, is completely insensitive to target pool, participant, and judging biases.

REFERENCES

May, E. C., Faith, L. V., Blackman, M., Bourgeois, B., Kerr, N., & Woods, L. (1999, August 4-8, 1999). *A Target Pool and Database for Anomalous Cognition Experiments.* Paper presented at the Parapsychological Association, Stanford, California.

May, E. C., Spottiswoode, S. J. P., & Faith, L. V. (2000). Correlation of the gradient of Shannon entropy and anomalous cognition: Toward an AC sensory system. *Journal of Scientific Exploration, 14*(1), 53-72.

May, E. C., Utts, J. M., Humphrey, B. S., Luke, W. L. W., & Frivold, T. J. (1990). Advances in remote-viewing analysis. *Journal of Parapsychology, 54*, 193-228.

[7] We have long held the position that using selected participants in experiments is more efficient in exhibiting anomalous cognition and will lead to better and, perhaps, faster understanding of the mechanisms involved.

DIFFERENCES BETWEEN SPIRITIST MEDIUMSHIP AND DISSOCIATIVE IDENTITY DISORDER ON THE BASIS OF A STRUCTURED INTERVIEW

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ABSTRACT

Objectives: To study the similarities and differences between Spiritistic mediums and Dissociative Identity Disorder (DID) patients based on a structured psychiatric interview. Methods: Twenty four mediums selected among different Spiritist organizations in Sao Paulo, Brazil, were interviewed using the Dissociative Disorder Interview Schedule (Ross, Heber, & Norton, 1989), and their responses were compared with those of DID described in the literature. Results: The Spiritist mediums were similar to published data on DID patients only with respect to female prevalence, high frequency of Schneiderian First-Rank Symptoms, and reports of anomalous experiences. However, as compared with individuals with DID, the mediums differed in having better social adjustment, low prevalence of mental disorders, lower use of mental health services, no use of antipsychotics, and lower prevalence of histories of physical or sexual childhood abuse, sleepwalking, imaginary childhood playmates, secondary features of DID, and symptoms of borderline personality. Conclusion: Mediumship in this sample differed from DID in having better mental health and social adjustment, and a different clinical profile.

INTRODUCTION

The common theme shared by the dissociative disorders is a partial or complete loss of the normal integration between memories, awareness of identity, sensations, and control of bodily movements resulting in suffering and/or dysfunction (APA, 1994; WHO, 1992). The interest in and concern with dissociative phenomena was remarkable between the end of the 19th and early 20th centuries but diminished drastically until some years ago (Alvarado, 2002; Almeida & Lotufo Neto, 2004; Cardeña et al., 1994; Martínez-Taboas, 2001; Spiegel & Cardeña, 2001). Dissociative Identity Disorder (DID) is considered the most severe and polysymptomatic of the dissociative disorders. However, dissociative phenomena are not necessarily pathological and their manifestation varies across cultures (Cardeña, 1994; Lewis-Fernandez, 1998). Ross and co-workers (1990a) found a high prevalence of dissociative symptoms in 1055 people sampled from Winnipeg, Canada. Almost 13% of the responders scored above 20 points in the Dissociative Experiences Scale (DES), where 30 or more is considered a cut-off for a probably dissociative disorder; this score suggests a considerable number of dissociative experiences in a non-clinical sample. The scores did not differ between genders and were not influenced by income or education.

Besides epidemiological studies with non-clinical samples, ecstatic religions are also relevant to the study of dissociation. Such religions frequently foster dissociative phenomena, for instance trance and possession states that are often called mediumistic by their practitioners. Cardeña (1992) defined "trance" as a temporary alteration of consciousness, identity, and/or behavior characterized by:

(a) Marked alteration of consciousness or loss of the usual sense of identity without replacement by an alternate identity.

(b) Narrowing of awareness of immediate surroundings, or unusually narrow and selective focusing on environmental stimuli.

(c) Stereotyped behaviors or movements experienced as being beyond one's control.

He described "possession trance" as a temporary alteration of consciousness, identity and/or behavior, attributed to possession by a spiritual force or another person, and characterized by at least two of the following:

(a) Single or episodic replacement of the usual sense of identity by that attributed to the possessing force.

(b) Stereotyped and culturally-determined behaviors or movements attributed to the possessing identity.

(c) Full or partial amnesia for the event.

A mediumistic experience is defined when an individual (called the medium) is believed to be in communication with or controlled by the personality of a deceased person or a non-material being (Klimo, 1998; Webster's, 1996).

Although the research and medical communities in Brazil, Europe, and the United States usually classified trance and possession states as pathological throughout the 19th and 20th centuries (Moreira-Almeida et al., 2005), there is empirical evidence that non-pathological dissociative and mediumistic states have occurred throughout history in many if not most societies, being more prominent than pathological ones (Bourguignon, 1968, Cardeña, 1994; Cardeña, Van Duijl, Weiner, & Terhune, in press; Lewis-Fernández, 1998). For instance, anthropologist Erika Bourguignon (1976), in a transcultural study of 488 societies worldwide, identified institutionalized forms of possession and trance states in 251 (52%) of them. Nowadays, these experiences are widespread in Brazil through Spiritism and African-Brazilian religions, and have increased in the USA under the name of channeling (Brown 1997; Hughes, 1991; Klimo, 1998).

In addition to their historical and sociological importance, mediumistic experiences are relevant to both medicine and psychology. Many early luminaries including William James (1909), Pierre Janet (1889), Frederic Myers (1903), Cesare Lombroso (1983), Carl Jung (1994), Karl Jaspers (1985), and Charles Richet (1975) among others, pointed out the usefulness of studying dissociative phenomena, including mediumistic phenomena, to better understand mental and behavioral processes (Almeida & Lotufo Neto, 2004; O'Keefe & Wiseman, 2005). Dissociative processes are also germane to the field of parapsychology (e.g., Braude, 1995). It is also important to distinguish non-pathological religious manifestations and anomalous experiences from psychopathological conditions (Cardeña, Lynn, & Krippner, 2000). Since both, mediums and DID patients, share the experience of different personality manifestation, it is surprising that there are so few actual empirical studies evaluating this issue with validated clinical questionnaires (for a review see Cardeña et al., in press).

In Brazil, Spiritism is the fourth religious community (IBGE, 2000) with its practices centered on mediumistic activities. Spiritism is a French branch of the spiritualist movement that developed in Western countries in the 19th century (Braude, 1989; Doyle, 1926/1975). It adopts a dualistic concept of the human being and postulates that we are essentially immortal spirits that temporarily inhabit physical bodies for several necessary incarnations to attain moral and intellectual improvement. It also believes in communication, through mediums, between incarnate (living) people and discarnate spirits (dead people). In Spiritism, mediumship is a nonprofitable activity, having been recognized as a volunteer based charitable activity (Moreira-Almeida and Lotufo Neto, 2005). At the end of the 19th century, Spiritism was introduced in Brazil and became prominent. Today, although the Brazilian population is mostly Catholic, Spiritism has had more influence in it than in any other country in the world (Aubrée & Laplantine, 1990; Damazio, 1994; Machado, 1993; Santos, 1997).

The clinical and sociodemographic features of spiritist mediums enrolled in Brazilian spiritist centers were investigated in this study and compared with the scientific literature on DID patients. Despite the paucity of data regarding this issue, we hypothesized that mediums and DID patients, although sharing some dissociative experiences, would differ in that only the latter group would exhibit dysfunctionality and other indexes of psychopathology.

METHOD

Participants and Procedure

We carried out an investigation with 115 mediums randomly selected from Spiritistic centers in São Paulo, Brazil. Of the existing 88 centers in the Greater São Paulo area affiliated to a Spiritist federation, 10 groups were chosen using a random number table. Of these, one did not collaborate so our sample was composed of 9 Spiritist centers. The senior author (AMA) visited the centers at times when mediumistic meetings were being held and requested the attending mediums to participate in the study. The enrollment rate was above 90%, achieving a sample of 115 mediums. All mediums completed a sociodemographic questionnaire, the Self-Report Psychiatric Screening Questionnaire (SRQ) and the Social Adjustment Scale (SAS; Moreira-Almeida et al., 2007). Based on their scores on the screening scale for mental disorders (SRQ), we selected 24 mediums for an interview based on the DDIS (Dissociative Disorders Interview Schedule). We intended to interview all mediums with scores suggestive of a mental disorder and a subset of mediums with scores indicative of no mental disorder. Thus, during this study's second stage, we interviewed two groups: the SRQ+ group formed by all mediums above the cutoff for probable mental disorder (n = 12) and the SQR- formed by a random selection of 12 mediums from those 103 mediums below the SRQ cutoff for mental disorders. All mediumistic behaviors were categorized according to the Spiritistic "emic" (i.e., from the perspective of the culture being studied) classification: embodiment (a full trance, the medium asserts that the body is controlled by the spirit), psychophony (the experience that the speech comes from an external source, interpreted as a discarnate spirit), hearing (listens to spirit voices), seeing (sees the spirits) and automatic writing (the spirit uses the medium hands to write) (Kardec, 1993). This study received IRB approval at CAPPesq-HCFMUSP (Comissão de Ética para Análise de Projetos de Pesquisa do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo) and all participants gave informed consent and were interviewed by one of the authors (AMA).

Instruments

Self-Report Psychiatric Screening Questionnaire (SRQ). The SRQ is a self-completion tool developed by the World Health Organization to screen psychiatric morbidity in primary care in developing countries. An abridged version with 20 items that excludes psychotic disorders was validated in Brazil, with a sensitivity of 83% and specificity of 80% using a cut-off score of greater than five for men and greater than seven for women. It is considered an appropriate tool to be used in two-stage screening surveys when it is necessary to screen respondents with psychiatric disturbance for further in-depth evaluations (Mari & Williams, 1986). Initially, for the second stage, only those individuals with SRQ scores above the cut-off point for probable psychopathology (5 for men and 7 for women) were to have been included in the "SRQ positive" (SRQ+) group. A control group with the same number of individuals with scores below the cut-off point was to have comprised the "SRQ negative" (SRQ-) group. However, the number of individuals with probable psychopathology was below the expected (n=9). Thus the selection limit for the second stage of the project was lowered and those individuals with SRQ scores at the cut-off point were also included in the SRQ+group (n=12).

Social Adjustment Scale – Self Report (SAS – SR). The SAS-SR is a 54-item scale used to measure social adjustment and shows high rates of reliability and validity (Weissman, 2000). The Portuguese translation of the SAS-SR used here showed validity and good reliability Cronbach's $\alpha = 0.85$; Gorenstein et al., 2002). The concurrent validity was established by comparing psychiatric with non-psychiatric samples. The SAS evaluates social adjustment in seven areas: work outside the house; household work; school; social life and leisure; relationships with one's family, partner, and children; home life; and financial situation. The overall score is obtained by summing up the scores of all the items and dividing the sum by the total number of items. Each item is scored on a five-point scale, from which the means are obtained, with higher scores being indicative of greater impairment (1= normal, 5= severe maladjustment).

The scale has proved to have sufficient sensitivity to differentiate healthy individuals from those with mental disorders such as depression and schizophrenia (Gorenstein et al., 2002).

Dissociative Disorders Interview Schedule (DDIS). The DDIS is a structured interview with 131- items that evaluates dissociative disorder and related diagnoses and phenomena (Ross, Heber, & Norton, 1989b). It uses the DSM-IV diagnostic criteria for the following disorders: dissociative, somatization, major depression, and borderline personality disorder, and has questions about childhood physical and sexual abuse, Schneiderian first-rank symptoms (considered to be suggestive of schizophrenia, these symptoms include delusional experiences of passivity and specific types of auditory hallucinations: voices arguing about oneself, commenting on one's actions, and hearing one´s thoughts spoken out loud), paranormal/extra-sensorial experiences, sleepwalking, having imaginary playmates, and sixteen secondary features of DID (Ross et al., 1989b). The DDIS is a widely used interview for studying dissociation in clinical and non-clinical groups (Cardeña, in press). Although the DDIS has not yet been validated on the Portuguese language population, its creator authorized the translation for this study. The first author translated the DDIS into Portuguese, and the second author, who has lived some years in the USA, reviewed it. Any disagreement in translation was discussed until a consensual translation was reached.

Analyses

The data were inputted and analyzed with SPSS (Statistical Package for the Social Sciences) 10.0 for Windows. Independent sample *t*-tests were used to compare means of Schneiderian first-rank symptoms, frequency of mediumistic activity, SRQ and SAS-SR scores between mediums bellow and above the cutoff for mental disorders. Spearman´s rho (r_s) was used to test the correlations between Schneiderian first-rank symptoms and markers of mental disorders such as SRQ, SAS-SR scores, and childhood abuse. The outliers were identified using Tukey's diagram or Box-Plot. We chose a two-tailed $p < 0.05$ as a significance value.

RESULTS

Participants

The initial sample of 115 mediums was comprised of 76.5% women, mean age for the sample was 48.1 ± 10.7 years; 2.7% of the volunteers were currently unemployed; 52.2% were married; and 46% had a college degree. Participants indicated being Spiritist for an average of 16.2 ±12.7 years, having a mean of 3.5 different types of mediumistic abilities (receiving/ embodiment of an spiritual entity 72%; "seeing" 63%; "hearing" 32%; and automatic writing 23%). Each mediumistic modality was carried out an average of 7 to 14 times a week (Moreira-Almeida et al., 2007). The 24 selected mediums had an average age of 48.5 ± 11.7 years (range 27-72), 79.2% were female and 45.9% had a college degree. They reported being Spiritist for an average of 18.8 ± 15.7 years (5-72).

Psychological Health

The sample of 115 mediums exhibited a low prevalence of common mental disorders (7.8%) according to the Self-Report Psychiatric Screening Questionnaire (SRQ), and a sound level of social adjustment (1.85 ± 0.33) according to the Social Adjustment Scale (SAS-SR) (Moreira-Almeida et al., 2007). Henceforth, results presented refer to the study's second stage, when 24 mediums were interviewed based on the DDIS. Twelve out of 22 mediums (54.5%) confirmed receiving treatment for some mental or emotional problem. Out of those, 13 (59.1%) had taken psychiatric drugs: antidepressant, anti-anxiety, or sleeping medication, and 8 out of 21 (38.1%) had undergone psychotherapy lasting over 5 sessions.

The mediums showed an average of 4 ± 2.35 Schneiderian First-Rank Symptoms (FRS), and we found no statistical correlation between FRS number and the social adjustment score (SAS-SR) ($r_s = -0.12$, $p = 0.96$) or other psychiatric symptoms (SRQ) ($r_s = 0.19$, $p = 0.38$). Two out of 24 mediums reported physical (8.3%) and 5 out of 23 sexual abuse (21.7%); there were no significant correlations between FRS and

physical ($r_s = 0.06$, $p = 0.78$) or sexual ($r_s = 0.09$, $p = 0.7$) abuses. The borderline symptoms average was 1.2 ± 2.

Five (20.8%) out of 24 mediums reported sleep-walking, and 6 (25%) confirmed having imaginary playmates as children. The mediums showed an average of 2.2 ± 1.8 features associated with DID, (see Table 1). None out of the 24 queried mediums fulfilled the diagnostic criteria for DID or dissociative fugue; two fulfilled criteria for dissociative amnesia and one for depersonalization disorder. Table 2 shows the prevalence of reported anomalous phenomena.

TABLE 1
DISTRIBUTION OF DDIS FEATURES ASSOCIATED WITH DID (N=24)

Features Associated with DID	Never	Occasionally	Fairly Often	Frequently	Unsure
Have you ever noticed that your handwriting changes drastically or that there are things around in handwriting you don't recognize?	16*	1	4	3	0
Do you ever have long periods when you feel unreal, as if in a dream, or as if you're not really there, not counting when you are using drugs or alcohol?	15	4	2	3	0
Do you ever have memories come back to you all of a sudden, in a flood or like flashbacks?	18	4	1	1	0
Do people ever tell you about things you've done or said, that you can't remember, not counting times you have been using drugs or alcohol?	16	5	2	0	1
Do people ever come up and talk to you as if they know you but you don't know them, or only know them faintly?	10	14	0	0	0
Have you ever noticed that things are missing from your personal possessions or where you live?	18	6	0	0	0
Do you ever have blank spells or periods of missing time that you can't remember, not counting times you have been using drugs or alcohol?	19	3	0	0	2
Do you ever find yourself coming to in an unfamiliar place, wide awake, not sure how you got there, and not sure what has been happening for the past while, not counting times when you have been using drugs or alcohol?	22	1	0	0	1
Have you ever noticed that there are things present where you live, and you don't know where they came from or how they got there? e.g. clothes jewelry, books, furniture.	18	6	0	0	0
	Yes		**No**		**Unsure**
Do you hear voices talking to you sometimes or talking inside your head?	13		11		0
If you hear voices, do they seem to come from inside you?	6		6		1
Are there large parts of your childhood after age 5 which you can't remember?	7		16		1
Do you ever speak about yourself as "we" or "us"?	5		17		1
Do you ever feel that there is another person or persons inside you?	4		19		1
Is there another person or person inside you that has a name?	0		4		0
If there is another person inside you, does he or she ever come out and take control of your body?	1		3		0

* These figures indicate the number of mediums who endorsed each item.

TABLE 2
PREVALENCE OF DDIS EXTRASENSORY/PARANORMAL EXPERIENCES (N=23)

Extrasensory/Paranormal Experience	Prevalence (%)
Déjà vu	18 (78,2)
Have you ever felt you know something about past lives or incarnations of yours?	15 (65,2)
Seeing the future in dreams	15 (65,2)
Mental telepathy	13 (56,5)
Seeing the future while awake	11 (45,8)
Have you ever had any contact with poltergeists	4 (17,4)
Moving objects with your mind	1 (4,2)

Table 3 presents the results of independent samples t tests comparing mediums above and bellow the cutoff for a probable mental disorder. This comparison's main purpose was to determine if these two groups differed regarding mediumistic activity. As expected, these groups differed in SRQ and SAS-SR scores, however they did not differ in variables related to mediumistic activity, or even in the number of FRS or secondary features associated to DID.

TABLE 3
COMPARISON BETWEEN MEDIUMS BELLOW AND ABOVE THE CUTOFF FOR MENTAL DISORDERS (N=24)

	SRQ + Mean ± SD (n)	**SRQ –** Mean ± SD (n)	***p***
SRQ score	8.6 ± 2 (12)	3.2 ± 2 (12)	< 0.001
SAS-SR score	2.1 ± 0.3 (12)	1.8 ± (10)	0.008
Years practicing spiritism	16.4 ± 9.2 (12)	13.3 ± 8.1 (10)	0.41
Frequency of embodiment	5 ± 4.4 (8)	6.8 ± 5.1 (6)	0.55
Frequency of seeing	6 ± 6.3 (8)	6.2 ± 6.8 (6)	0.96
Frequency of hearing	8 ± 5.9 (4)	20 ± 10 (3)	0.10
First Rank Symptoms (FRS)	4.2 ± 2.1 (12)	3.8 ±2.7 (11)	0.73
Features Associated with DID	2.2 ± 1.5 (12)	1.7 ± 1.7 (11)	0.51

Comparison with the DID Data

We found through the SRQ a low prevalence of anxiety and depressive disorders among the 115 mediums sampled (Moreira-Almeida et al., 2007), in contrast with a very high frequency among DID patients (Putnam et al., 1986). The mean of borderline personality symptoms was 1.2 per medium, while in 166 DID patients borderline symptoms were on average 5.1 (Ross et al., 1992).

Dissociative disorders are associated with impaired functioning (Johnson, Cohen, Kasen, & Brook, 2006). Contrary to findings with respect to dissociative disorders and in comparison to Brazilian population findings (IBGE, 2000), the mediums manifested a good social adjustment as measured through high educational level (46% college graduates among mediums vs. 10% among the Brazilian population at large), low unemployment rate (2.7% vs. 10%), and were predominantly married and had good SAS-SR scores. A common feature of DID and mediums was the predominance of women.

When considering the DDIS results from the 24 mediums, it is important to point out that the selected sampling for the second investigation stage is not representative of mediums at large, since half of them were chosen because they had the most psychiatric symptoms; thus our comparison is a very conservative estimate of psychopathology within the mediumship population. Even so, this medium sample differs, in most features, from individuals with DID, except for the high prevalence of reports of paranormal experiences and of FRS (4), which, on the other hand are consistent with the mediumistic experience (e.g., audible voices and experiences of passivity), and were still less frequent than among DID patients (6) (Ross et al., 1990b, 1992; Yargiç et al., 1998). Furthermore, the lack of a relationship between the number

of FRS and the scores in the SAS and SRQ denote, in our sample, the absence of relationship between the FRS and others psychopathological markers.

We found abuse rates (8.3% for physical and 21.7% for sexual) with the 24 selected mediums comparable with those found on the general population from several countries (5% to 40%) (Finkelhor, 1994; Springer et al., 2003). In a Brazilian sample of participants of a prominent Spiritist center, with a majority of mediums, about 90% of the subjects reported no history of childhood abuse (Negro Jr. et al., 2002). Childhood physical and sexual abuses have been strongly associated with the dissociative disorders, (Cardeña & Gleaves, 2007; Loewenstein, 1991; Martínez-Taboas, 2001) and to psychotic symptoms (Janssen et al., 2004). Many studies have found reports of childhood abuse to range between 60% to more than 90% among DID patients (Modestin et al., 1996; Putnam et al., 1996; Ross et al., 1990b; Ross & Joshi, 1992; Schultz et al., 1989). In a community sample of 502 individuals (Ross & Joshi, 1992a), the FRS were strongly correlated with physical and sexual abuse, in contrast to the present study which did not support such correlation.

Compared to DID patients, the mediums displayed a lower use of mental health services. From the 24 mediums, 13 (59.1%) reported life-time use of some psychiatric medication; none of it antipsychotic. In a DID sample, 94% took some medication, with 55.9% being antipsychotic (Ross et al., 1990b). Eight out of 21 (38.1%) participants in our sample had been in psychotherapy lasting over five sessions, which is much less than the 94% found with a DID sample (Ross et al., 1990b). Reports of sleepwalking occurred in 5 out of 24 mediums (20.8%), considerably less than in a DID sample (56%; Ross et al., 1990b); Six out of 24 mediums (25%) reported having had childhood imaginary companions, compared with 48% among DID patients (Ross et al., 1990b).

With respect to secondary features, a DID sample had 10.2 (Ross et al., 1922), compared with 2.17 in our sample. Among the DID secondary symptoms, only 3 occurred in more than 25% of the sample: lack of memory from significant childhood periods, handwriting changes, and hearing voices. It is important to point out that the last two features compose what the spiritists regard as types of mediumship.

DISCUSSION

The female predominance among the selected mediums may be caused by a major dissociative tendency in women (cf. Cardeña, Dennis, Winkel, & Skitka, 2005), by their inclination to be more religious, especially in ecstatic religions like Spiritism (Koenig et al., 2001; Levin & Chatters, 1998; Miller & Stark, 2002), or by the therapeutic effect that a possession/mediumistic practice may have on women (Boddy, 1988; Bourguignon, 1968). Since the 19th century when Spiritism and Modern Spiritualism arose, mediums have been predominantly female (Braude, 1989; Doyle, 1995; Zingrone, 1994), consistent with our findings. However, a population study in Canada (Ross et al., 1990a) found no differences on the dissociation scores between men and women, raising the question of possible cultural differences.

According to the DSM-IV criteria (APA, 1994), the DID diagnosis demands the presence of two or more distinct identities or personality states. From these identities, at least two recurrently take control of the patient's behavior. It also requires the inability to recall important personal information, too extensive to be explained by ordinary forgetfulness. Only one medium out of the 24 reported the feeling of having more than one personality outside of a ritual context, but this other personality did not control, reiteratively, the medium's behavior, in comparison with DID criteria. It should be mentioned, though, that mediums perceive the personality that possesses them as an external part of the psyche. North American "channels|" may refer instead to a "higher self" as a source of manifestations (Barret, 1996; Klimo, 1998). Only two individuals in our sample claimed the presence of current, lacunar amnesia.

This study has some important limitations. First, the comparisons with the literature on DID refer to data obtained from a different culture (North American countries). Nonetheless, it seems unlikely that the difference in such variables as functionality between the mediums and the DID patients could be explained completely or even mostly by cultural differences, and the sample studied also compared favorably with Brazilian data. A more important limitation is that, as with most studies in this area, the

data rely on self-report. Future studies would do well to obtain additional sources of information, such as actual medical records, evaluations by relatives and friends, and such. Finally, the reliability and validity of the DDIS translation should be determined.

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When considering the DDIS results from the 24 mediums, it is important to point out that the selected sampling for the second investigation stage is not representative of mediums at large, since half of them were chosen because they had the most psychiatric symptoms; thus our comparison is a very conservative estimate of psychopathology within the mediumship population. Even so, this medium sample differs, in most features, from individuals with DID, except for the high prevalence of reports of paranormal experiences and of FRS (4), which, on the other hand are consistent with the mediumistic experience (e.g., audible voices and experiences of passivity), and were still less frequent than among DID patients (6) (Ross et al., 1990b, 1992; Yargiç et al., 1998). Furthermore, the lack of a relationship between the number of FRS and the scores in the SAS and SRQ denote, in our sample, the absence of relationship between the FRS and others psychopathological markers.

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REFERENCES

Almeida, A. M.,& Lotufo Neto, F. (2004). A Mediunidade vista por alguns pioneiros da área da saúde mental (Mediumship as seen by some pioneers in the area of mental health). *Revista de Psiquiatria Clínica 31*, 132-141.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* - 4th ed. Washington DC. American Psychiatric Press.

Alvarado, C. S. (2002). Dissociation in Britain during the late nineteenth century: The Society for Psychical Research, 1882-1900. *Journal of Trauma and Dissociation 3,* 9-33.

Aubrée, M. & Laplantine, F. (1990). *La table, le livre et les esprits* (The table, the book, and the spirits). Paris: Éditions Jean-Claude Làttes.

Barret, K. W. (1996). *A phenomenological study of channeling: The experience of transmitting information from a source perceived as paranormal*. Unpublished doctoral dissertation. Palo Alto, CA: Institute of Transpersonal Psychology.

Boddy, J. (1988). Spirits and selves in Northern Sudan: The cultural therapeutics of possession and trance. *Medical Anthropology*, *15,* 4-27.

Bourguignon, E. (1973). A framework for the comparative study of altered states of consciousness. In E. Bourguignon –(Ed.), *Religion, altered states of consciousness, and social change* (pp. 3-38). Columbus, OH. Ohio State University Press.

Bourguignon, E. (1976). *Possession.* Illinois: Waveland Press.

Bourguignon, E. – World distribution and patterns of possession states. In R. Prince–(Ed.), *Trance and possession states* (pp. 3-34). Columbus, OH: R M Bucke Memorial Society.

Braude, A (1989). *Radical spirits*. Boston: Beacon Press.

Braude, S. E. (1995). *First person plural: Multiple personality and the philosophy of mind.* Lanham, MD: Rowan & Littlefield.

Brown, M. F. (1997). *The channeling zone: American spirituality in an anxious age*. Cambridge: Harvard University Press.

Cardeña, E. (1992). Trance and possession as dissociative disorders. *Transcultural Psychiatric Research Review, 29,* 287–300.

Cardeña, E. (in press). Dissociative disorders measures. In A. J. Rush, M. B. First, & D. Becker (Eds.), *Handbook of psychiatric measures. 2nd ed.* Washington, D. C.: American Psychiatric Press.

Cardeña, E., Dennis, J. M., Winkel, M., & Skitka, L. (2005). A snapshot of terror: Acute posttraumatic reactions to the September 11 attack. *Journal of Trauma and Dissociation, 6,* 69-84.

Cardeña, E., & Gleaves, D. (2007) Dissociative disorders. In M. Hersen, S. M. Turner, & D. Beidel (Eds.), *Adult psychopathology & diagnosis.* Fifth edition (pp. 473-503). New York: Wiley.

Cardeña, E., Lewis-Fernández, R., Beahr, D., Pakianathan, I., & Spiegel, D. (1996). Dissociative disorders. In T. A. Widiger, A. J. Frances, H. J. Pincus, R. Ross, M. B. First, & W. W. Davis (Eds.) *Sourcebook for the DSM-IV. Vol. II* (pp. 973-1005). Washington, D.C.: American Psychiatric Press.

Cardeña, E., van Duijl, M., Weiner, L. & Terhune, D. (in press). Possession/trance phenomena. In P. F. Dell & J. A. O'Neil (Eds.), *Dissociation and the dissociative disorders: DSM-V and beyond.* New York: Routledge.

Castillo, R. J.. (1994). Spirit possession in South Asia: Dissociation or hysteria? Part 2: Case histories. *Culture, Medicine and Psychiatry 18,*141-162.

Damazio, S. F. (1994). *Da elite ao povo: Advento e expansão do espiritismo no Rio de Janeiro* (From the elite to the people. Beginning and expansion of Spiritism in Rio de Janeiro). Rio de Janeiro. Bertrand Brasil.

Doyle, A. C. (1995). *História do espiritismo* (History of Spiritism). São Paulo. Editora Pensamento.

Finkelhor, D. (1994). The international epidemiology of child sexual abuse. *Child Abuse & Neglect, 1*, 409-417.

Gingrich, H. J. (2005). Trauma and dissociation in the Philippines. *Journal of Trauma Practice, 3-4,* 245-269.

González, C. A., Lewis-Fernandez, R., Griffith, E. E. H., Littlewood, R., & Castillo, R. J. (1994). Impact of culture on dissociation: Enhancing the cultural suitability of DSM-IV – In T. A. Widiger, A. J. Frances, H. J. Pincus, R. Ross, M. B. First, & W. W. Davis (Eds.). American Psychiatric Association - *DSM-IV Sourcebook. Vol. III* (pp.943-949). Washington DC: American Psychiatric Press.

Gorenstein, C., Moreno, R.A., Bernik, M., Carvalho, S. C., Nicastri, S., Cordas, T., Camargo, A. P. P., Artes, R., & Andrade, L. (2002). Validation of the Portuguese version of the Social Adjustment Scale on Brazilian samples. *Journal of Affective Disorders 69*, 167-175.

Greyson, B. (2000) Dissociation in people who have near-death experiences: Out of their bodies or out of their minds? *Lancet, 355*, 460-463.

Hughes, D. J. (1991). Blending with an other: An analysis of trance channeling in the United States. *Ethos 19*, 161-184.

IBGE (2000). *Censo demográfico 2000* (Demographic census 2000). Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística. Available at: http://www.sidra.ibge.gov.br/

Jackson, M.; Fulford, K. W. M. (1997) Spiritual experience and psychopathology. *Philosophy, Psychiatry & Psychology, 4*, 41-65.

James. W. (1960). The final impressions of a psychical researcher. In: G. Murphy, & R. O. Ballou (Eds.), *William James on Psychical Research* (pp.309-325). New York: Viking Press. [Originally published 1909]

Janet, P. (1889). *L'automatisme psychologique: Essai de psychologie expérimentale sur les forme inférieures de l'activité humaine* (The psychological automatism: An essay on the experimental psychology of the inferior forms of human activity). Paris: Félix Alcan.

Janssen, I., Krabbendam, L., Bak, M., Hanssen, M., Vollebergh, W., Graaf, R., & Os, J. (2004). Childhood abuse as a risk factor for psychotic experiences. *Acta Psychiatrica Scandinavica 109*, 38-45.

Jaspers, K. (1985). *Psicopatologia general* (General psychopathology). São Paulo: Atheneu. [Originally published 1959]

Johnson, J. G., Cohen, P., Kasen, S., & Brook, J. S. (2006). Dissociative disorders among adults in the community, impaired functioning, and axis I and II comorbidity. *Journal of Psychiatric Research, 40*,131-140.

Jung, C. G. (1994). Sobre a psicologia e patologia dos fenômenos chamados ocultos (On the psychology and pathology of the so-called occult phenomena). In C. G. Jung, *Estudos Psiquiátrico*s (pp.15-96). Petrópolis: Vozes. [Originally published 1902]

Kardec, A. (1993) *O livro dos médims* (The mediums' book). Rio de Janeiro: FEB. (Originally published 1861)

Klimo, J. (1998). *Channeling: Investigations on receiving information from paranormal sources.* Berkeley: North Atlantic Books.

Koenig, H. G., McCullough, M. E., & Larson, D. B. (2001). *Handbook of religion and health.* New York: Oxford University Press.

Levin, J. S., & Chatters, L. M. (1998). Religion, health, and psychological well-being in older adults. *Journal of Aging and Health 10*, 504-531.

Lewis-Fernández, R (1998). A cultural critique of the DSM-IV Dissociative Disorders section. *Transcultural Psychiatry 35,* 387-400.

Loewenstein, R. J. (1991). Multiple personality disorder: Preface. *Psychiatric Clinics of North America 14*, 11-12.

Lombroso, C. (1983). *Hipnotismo e mediunidade* (Hypnotism and mediumship). Rio de Janeiro: FEB. [Originally published 1909]

Lukoff, D., Lu, F., & Tuner, R. (1992). Toward a more culturally sensitive DSM-IV: Psychoreligious and psychospiritual problems. *Journal of Nervous and Mental Disorders 180*, 673-682.

Machado, U. (1993). *Os intelectuais e o Espiritismo. De Castro Alves a Machado de Assis* (The intellectuals and Spiritsm. From Casto Alves to Machado de Assis). Rio de Janeiro: Antares.

Mari, J. J., & Williams, P. (1986). A validity study of a psychiatric screening questionnaire (SRQ-20) in primary care in the city of São Paulo. *British Journal of Psychiatry 118*, 23-26.

Martínez-Taboas, A. (2001). Dissociative experiences and disorders: A review. *International Journal of Parapsychology 12*, 131-162.

Miller, A. S. & Stark, R. (2002). Gender and religiousness: Can socialization explanations be saved? *American Journal of Sociology 107*, 1399-1423.

Modestin, J., Ebner, G., Junghan, M., & Erni, T. (1996). Dissociative experiences and dissociative disorders in acute psychiatric inpatients. *Comprehensive Psychiatry 37,* 335-361.

Moreira-Almeida, A., Almeida, A. A. S., & Lotufo Neto, F. (2005a). History of spiritist madness in Brazil. *History of Psychiatry 16*, 5-25.

Moreira-Almeida, A., Almeida, A. A. S., & Lotufo Neto, F. (2005b). Spiritist views of mental disorders in Brazil. *Transcultural Psychiatry 42*, 570-595.

Moreira-Almeida A, Lotufo Neto F, Greyson B. (2007). Dissociative and psychotic experiences in Brazilian spiritist mediums. *Psychotherapy and Psychosomatics 76*, 57-58.

Myers, F. W. H. (2001). *Human personality and its survival of bodily death.* Charlottesville: Hampton Roads. [Originally published 1903]

Negro Jr, P. J., Palladino-Negro, P., & Louzá, M. R. (2002). Do religious mediumship dissociative experiences conform to the sociocognitive theory of dissociation? *Journal of Trauma & Dissociation 3*, 51-73.

Newport, F., & Strausberg, M. (2001). *Americans' belief in psychic and paranormal phenomena is up over last decade.* The Gallup Organization. June 8. (Available at http://www.galluppoll.com/content/?ci=4483&pg=1)

O'Keeffe, C.;, & Wiseman, R. (2005). Testing alleged mediumship: Methods and results. *British Journal of Psychology 96,* 165-179.

Putnam, F. W., Guroff, J. J., Silberman, E. K., Barban, L., & Post, R. M. (1986). The clinical phenomenology of multiple personality disorder: Review of 100 recent case. *Journal of Clinical Psychiatry 47*, 285-293.

Putnam, F. W., Carlson, E. B., Ross, C. A., Anderson, G., Clark, P., Torem, M., Bowman, E. S., Coons, P., Chu, J. A., Dill, D. L., Loewenstein, R. J., & Braun, B. G. (1996). Patterns of dissociation in clinical and nonclinical samples. *Journal of Nervous and Mental Disease 184*, 673-679.

Richeport, M. M. (1992). The interface between multiple personality, spirit mediumship and hypnosis. *American Journal of Clinical Hypnosis 34*, 168-177.

Richet, C. (1975). *Thirty years of psychical research.* New York: Arno Press. [Originally published 1923]

Ross, C. A.; Joshi, S. (1992). Paranormal experiences in the general population. *Journal of Nervous and Mental Disease 180*, 357-361.

Ross, C. A., & Joshi, S. (1992a). Schneiderian symptoms and childhood trauma in the general population. *Comprehensive Psychiatry 33*, 269-273.

Ross, C. A., Heber, S., Norton, R., & Anderson, G. (1989a). Differences between multiple personality disorder and other diagnostic groups on structured interview . *Journal of Nervous and Mental Disease 177*, 487-491.

Ross, C. A., Heber, S., Norton, G. R., Anderson, D., Anderson, G., & Barchet, P. (1989b). The Dissociative Disorders Interview Schedule: A structured Interview. *Dissociation 2*, 169-89.

Ross, C. A., Joshi, S., & Currie, R. (1990a). Dissociative experiences in the general Population. *American Journal of Psychiatry 147*, 1547-1552.

Ross, C. A., Miller, S D., Reagor, P., Bjornson, L., Fraser, G A., & Anderson, G. (1990b). Structured interview data of multiple personality disorder from four centers. *American Journal of Psychiatry 147*, 596-601.

Ross, C. A., Geri, A., Fraser, G. A., & Bjornson, L. (1992). Differentiating multiple personality disorder and dissociative disorder not otherwise specified. *Dissociation 5,* 87-90.

Santos, J. L. (1997). *Espiritismo. Uma religião brasileira* (Spiritism. A Brazilian religion). São Paulo: Moderna.

Schultz, R., Braun, B. G., & Kluft, R. P. (1989). Multiple personality disorder: Phenomenology of selected variables in comparison to major depression. *Dissociation 2,* 45-51.

Springer, K. W., Sheridan, J., Kuo, D., & Carnes, M. (2003). The long-term health outcomes of childhood abuse. *Journal of General Internal Medicine 18*, 864-870.

Varma, V. K., Bouri, M., & Wig, N. N. (1981). Multiple personality in India: Comparison with hysterical possession state. *American Journal of Psychotherapy 35*, 113-120.

Webster's comprehensive dictionary of the English language. (1996). Naples: Trident Press International.

Weissman, M. M. (2000). Social Adjustment Scale (SAS). In: A. John Rush Jr., H. A. Pincus, M. B. First, D. Blacker, J. Endicott, S. J. Keith, K. A. Phillips, N. D. Ryan, G. R. Smith Jr., M.T. Tsuang, T. A. Widiger, D. A. Zarin. (Eds.), American Psychiatric Association. *Handbook of Psychiatric Measures* [CD-ROM]. Washington: American Psychiatric Association.

World Health Organisation (1992) *ICD-10: International Statistics Classification of Diseases and Related Health Problems* (10th Rev). Geneva: World Health Organization.

Yargiç, L. I., Sar, V., Tutkun, H., & Alyanak, B. (1998). Comparison of dissociative identity disorder with other diagnostic groups using a structured interview in Turkey. *Comprehensive Psychiatry 39,* 345-351.

Zingrone, N. L. (1994). Images of woman as medium: Power, pathology and passivity in the writings of Frederic Marvin and Cesare Lombroso. In L. Coly, L. & R. A. White, R. A. (Eds.), *Women and parapsychology* (pp. 90-123). New York: Parapsychology Foundation.

CAN SENSORY CUES FACILITATE REAL ESP IN AN RNG GUESSING TASK?

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ABSTRACT

In an experiment primarily intended to study unconscious learning of the contingency in a biased sequence of targets, 20 believers in psi and 20 skeptics each completed 3 runs in a computer guessing task in which they had to identify in which of 4 directions an arrow would point that they would see immediately after each response. In the 1st run (100 trials) all targets were random. In the other 2 runs (200 scored trials each and labeled B1 and B2) a clockwise (CW) or counterclockwise (CCW) bias was introduced, such that (for a CW bias) the target on trial t+1 was displaced 90º CW from the target on trial t in 40% of the trials, and 90º CCW in only 10% of the trials. In each biased run, 50 true (random) target contingencies were inserted at 50 random locations within the run, with the other 150 (fixed) target contingencies then inserted in random order to fill the other locations. Hits on the real-time targets were significantly above chance on the random trials in the 1st biased run (B1) and suggestively higher than the slightly positive ESP score in the random run. The ESP score in B2 declined to chance. Hits on the fixed trials were highly significant, a trend which began early in B1, before participants could be expected to learn the bias. In most cases skeptics scored higher than believers, but the difference was only significant in the fixed trials of B1. An unintentional bias in some of the real-time targets in the biased runs was shown not to influence the results. The overall results supported the hypothesis that embedding true ESP targets among targets containing sensory cues can facilitate scoring on the true ESP targets, although why this is so has yet to be determined.

INTRODUCTION

I think it is fair to say that most skeptics and believers in the paranormal would agree that psychics can obtain accurate information when sensory cues are present and that such acquisition is better when sensory cues are present than when they are absent. However, this conclusion is difficult to document incisively, because experiments in which sensory cues are known to be present are usually not published.

The only experiments I know of that are directly relevant to the above issue were two ESP tests that I conducted with an anonymous psychic. In the first experiment, the psychic gave face-to-face readings to groups of four students (Palmer, 1996). This procedure was introduced to allow the kinds of sensory cues that magicians use for cold readings (e.g., clothing, mannerisms, reactions to previous statements) to be available to the psychic. The students later highlighted statements in the transcripts of all four readings in their group. An instructional set manipulation designed to push the students toward or away from marking statements in the control readings failed to have any effect, thus providing some evidence that the markings were not influenced by rater bias. The four marked transcripts were then given to two blind judges who rated each for accuracy, and the score was the rating of the intended reading minus the average rating of the three controls.

In the second experiment, the same psychic gave blind readings to individual volunteers while holding a concealed photograph of the target person (Palmer, 1997c). No other information about the target persons was give to the psychic. The volunteers later highlighted statements in each of four transcripts, without being informed which one was intended for them. These marked transcripts were then given to the same blind judges used in the earlier experiment, who scored them the same way as before.

Blind-ratings of the session transcripts revealed highly significant success in sessions with sensory cues and chance results in sessions without sensory cues. Although the transcripts from the first experiment (Palmer, 1996) were not analyzed for specific statements that follow logically from available sensory cues, it seems reasonable to suppose that some of the success in this experiment was caused by

deductions from such cues. In any event, the combined results of the two experiments support the hypothesis that sensory cues directly or indirectly facilitate information acquisition in tests or demonstrations of ESP.

In the absence of additional information, the most plausible interpretation of the possible facilitating effect of sensory cues is simply that percipients make logical deductions from the sensory information, and these deductions allow them to make accurate statements about the target person. However, it is also possible that some of the statements reflect genuine ESP, especially if they are specific and do not follow logically from the sensory cues known to be available (for example, proper names.).

If the presence of sensory cues does in fact facilitate genuine ESP, the question remains of the mechanism behind such facilitation. The most plausible explanation to me is that the availability of sensory cues makes the psychic more comfortable and confident, and this state of mind is the more direct cause of the facilitation.

A more incisive way to test the sensory cue facilitation hypothesis is to embed cue-free targets in a sequence of targets that contains sensory cues. In a forced choice ESP test, this objective could be achieved by embedding random targets in an otherwise nonrandom target sequence. I was able to introduce such a manipulation in an experiment I conducted while I was at the University of Zürich. The experiment was intended primarily to test implicit sequence learning (ISL) by presenting participants (Ps) with an RNG guessing task incorporating biased target sequences. The ISL hypothesis was that Ps' responses during the course of the testing would increasingly reflect the target bias, but when asked to overtly describe the target bias the Ps would be unable to do so. Testing the sensory cue facilitation hypothesis was accomplished by introducing random targets into the target sequence at randomly defined points. These *random* targets would not reflect the bias characteristic of the other trials in the sequence, which were labeled as *fixed* targets.

The following hypotheses were introduced:

1) Ps would score significantly above chance on random targets intermingled with fixed targets.
2) Ps would score significantly higher on random targets intermingled with fixed targets than on random targets presented in isolation.
3) Ps would score significantly higher on the fixed targets than on the random targets in runs containing both.
4) For each of the above hypotheses, believers in psi would score higher than skeptics.

METHOD

Participants

Physically and mentally healthy females were recruited by flyers posted at bookstores or similar public places near the University of Zürich. Believers were also recruited from a local psychical research society. Females were selected because males had been used exclusively for a previous ISL experiment, and we wanted to restore the gender balance of persons available for future experiments. The flyers introduced the study as an "experiment in the neuropsychology of guessing behavior and extrasensory perception (ESP)". They requested that the volunteers either "consider extrasensory perception not only possible, but believe they can apply their own parapsychological abilities in everyday situations (believers) or "skeptical and do not believe in parapsychological phenomena or extrasensory perception, i.e., precognition, telepathy, or clairvoyance" (skeptics). A standardized telephone interview excluded those persons with a personal or first-degree family history of neurological and psychiatric disease, including serious learning disabilities and drug abuse. The solicitations yielded a final sample of 20 believers and 20 skeptics.

Questionnaires

Ps completed four standardized questionnaires during the experiment. Handedness was assessed by a brief inventory developed by Chapman and Chapman (1987). (This questionnaire was included because of its relevance to testing the ISL hypotheses and was not expected to bear any relationship to the ESP

results.) Two questionnaires were used to verify Ps' experiences of and attitude toward paranormal phenomena. The *Australian Sheep-Goat Scale* (ASGS) is an 18-item paranormal belief scale presented in a visual analog format (Thalbourne & Delin, 1993). This instrument (revised form; German translation) was considered especially relevant for this experiment since it assesses not only Ps' belief in psi (specifically telepathy, clairvoyance, precognition and psychokinesis), but also their relevant experiences. The *Magical Ideation Scale* (MIS) is conceptualized as an indicator of schizotypy (Eckblad & Chapman, 1983) and asks Ps to indicate their belief in a range of paranormal phenomena, including telepathy and precognition but also spanning the topics of extraterrestrial life and contacts with the deceased. The fourth questionnaire was the Myers-Briggs Type Indicator (MBTI; Myers & McCaulley, 1985), a personality test based on four Jungian typologies: Introversion-Extraversion (IE), Sensing-Intuition (SN), Thinking-Feeling (TF), and Judging-Perceiving (JP). Previous research has shown that more extraverted and spontaneous participants score higher or more extremely on ganzfeld ESP tasks (e.g., Honorton, 1997; Palmer, 1997b), and we wanted to see if such effects would also manifest in the current context.

In addition, Ps completed two rating scales. A rating scale devised by Peter Brugger assessed Ps' evaluation of their performance during the test. For each of the three runs, they were asked to indicate (a) how many guesses they thought they made (key taps) and how many of these were correct, (b) whether they thought there was a regular pattern to the target sequence, and if so, whether they could identify that pattern, (c) whether they responded intuitively, strategically, or both, and (d) whether they thought their scores improved from the first to second half of the run. The other rating scale included various questions about demographics and P's life-style, as well as questions about drug use and physical or mental diseases or disabilities.

Prediction Task

The four target alternatives were presented to Ps as arrows on a computer screen pointing either up, left, down or right. Ps were required to predict the direction of the next arrow in the target sequence by pressing with the right hand one of four response keys on the computer screen. After P's prediction, an arrow appeared on the screen in one of the four directions, independently of the prediction. Whenever P's prediction matched the computer's choice (a "hit"), the feedback arrow appeared in bright green and the computer gave a tantara sound. For "misses", the feedback arrow appeared in black and there was no sound. No information about trial number or the number of trails in the run was ever displayed. Ps had as long as they wished to make their guesses. The experiment was controlled by "Superlab Pro 2.01" software.

Each P guessed three target sequences in succession. The first consisted of 100 random targets derived from a computer algorithm developed by Marsaglia and Zaman (1987), which they had thoroughly tested for nonrandomness. The following two runs, each consisting of 201 trials, had systematically biased target sequences. For half the Ps in each belief category, in 40% of the trials the target for trial t+1 was displaced 90° clockwise (CW) from that of trial t. For example, if the target for trial t was ↑ (up), the target for trial t+1 would be → (right). In 10% of the trials, a corresponding counterclockwise (CCW) bias was designated. Thus, overall there was a clear bias favoring a CW contingency. The other options, 0% (repeat) and 180° (opposite) each occurred approximately 25% of the time. For the other half of the Ps, the percentages for the CW and CCW targets were reversed, creating a CCW bias. Each biased run was preceded by a single, unscored trial. This trial was needed because two trials are necessary to define a contingency.

For each biased run, 50 random target contingencies were generated and placed at random locations within the run[1]. The 50 trials corresponding to the second member of the pair of targets defined by the contingency were designated as the random trials in the run. A sequence containing the number of

[1] There are four possible target contingencies, defined as the relationship between the targets in trials t and t+1. They can labeled as 0, +1, -1, and 2. For example, an up (↑) in trial t followed by a right (→) in trial t+1 would be labeled as a +1 contingency, an up (↑) followed by a left (←) would be -1, an up (↑) followed by a down (↓) would be 2, and an up (↑) followed by an up (↑) would be 0. These four alternatives were selected randomly to create the random target contingencies.

replications of each target contingency needed to cause the total number of each alternative to meet the bias requirements for the total run was created and then randomly permutated. These remaining 150 targets (the fixed targets) were then inserted in order into the remaining trial slots. Randomization for the procedures described in this paragraph again made use of the Marsaglia and Zaman algorithm.

All Ps received their own individual target sequences.

Experimental Design

The experiment incorporated a 2 x 2 x 2 mixed ANOVA design for the biased runs, with direction of target bias (CW vs. CCW) and belief in the paranormal (believer vs. skeptic) as between-P factors and run as the within-P factor.

Procedure

Ps were tested individually at the Neurology Clinic of the University Hospital Zürich. They were seated in front of the flat-screen computer monitor, which was placed on its backside so they could make their responses effortlessly by touching the screen at an appropriate location. After offering Ps a drink of fruit juice or water, the experimenter (E) had them sign the consent form and proceeded to review with them the detailed instructions. Ps were encouraged to respond spontaneously and were not informed about the length of the sequences.

Ps completed 10 "practice trials" (discarded from analysis) before the three test runs. E was not present in the room during the test runs. Ps signaled E after they completed each run, at which time E returned to introduce the succeeding run or the next phase of the experiment.

Ps completed the MBTI after the random run. Following the last run, they completed, in order, the rating scale of the session, the handedness questionnaire, the personal data rating scale, the ASGS, and the MIS.

RESULTS

One P (a skeptic receiving the CCW target bias) had to be replaced because her pro-bias responding was so extreme that she obviously had consciously detected the target bias during the biased runs. Because of a programming error, another P (a believer receiving the CW target bias) received the same target order for the 2nd biased run as for the 1st biased run. The data from the 2nd run of this P were excluded from the analyses.

Believers scored significantly higher than skeptics on the ASGS, M = 232.45 vs. 82.61, $t(26.32)$ = 10.43, $p << .001$[2]. The variance of the scores was significantly lower for believers than for skeptics, SD = 26.21 vs. 58.55, F = 8.83, p = .005, by Levene's test. Believers also scored significantly higher than skeptics on the MIS, M = 17.55 (SD = 4.89) vs. M = 5.25 (SD = 4.00), $t(38)$ = 8.71, $p << .001$. The ASGS and the MIS correlated so highly with each other, $r(38)$ = .794, that they can be considered psychometrically equivalent.

Random Run

The mean number of hits in the 100-trial random run was 25.53 (SD = 4.80). Although above the MCE of 25, this result is nonsignificant, $t(39)$ = 0.69. As illustrated in Table 1, the believers scored slightly and nonsignificantly higher than the skeptics. Thus, our data did not produce a confirmation of the traditional sheep-goat effect, but because the difference was in the predicted direction, it does count on the positive side of the ledger for any cumulative analysis of SGE results based on a directional comparison.

[2] All p values reported in this paper are two-tailed.

Biased Runs – Random Trials

The random trials were intended to provide a valid measure of ESP. Across both biased runs, the mean of the 100 random trials was significantly above chance (M = 26.18, SD = 3.56), $t(38) = 2.07$, $p = .045$, confirming Hypothesis 1. The mean for the random trials in the first biased run (B1) was also significant (M =13.80, SD = 2.85), $t(38) = 2.89$, p =.006, but the mean for the random trials in the second biased run (B2) was slightly below the MCE of 12.5 (M = 12.44, SD = 2.77), $t(38) = 0.13$. The decline was suggestively significant, $t(38) = 1.87$, $p = .069$. The mean of the random trials in B1 was suggestively higher than the mean of the random run, $t(39) = 1.79$, $p = .082$, providing marginal support for Hypothesis 2.

As illustrated in Table 1, there were no significant differences between believers and skeptics on the random trials of the biased runs, with skeptics scoring slightly higher in B1 and believers in B2. The mean for skeptics in B1 was significantly above chance.

TABLE 1
MEANS AND STANDARD DEVIATIONS OF ESP HITS FOR THE RANDOM RUN, AND FOR THE RANDOM AND FIXED TRIALS OF EACH BIASED RUN AND THE COMBINED BIASED RUNS, AS A FUNCTION OF BELIEF

			Believers				Skeptics				
Condition	Run	MCE	*N*	*M*	*SD*	*t*	*N*	*M*	*SD*	*t*	t_{diff}
Random	1	25.0	20	25.55	4.44	0.55	20	25.50	5.26	0.43	0.32
Biased (Ran)	B1	12.5	19	13.25	3.04	1.10	20	14.35	2.60	3.18+	0.66
	B2	12.5	19	12.68	2.29	0.34	20	12.20	3.21	0.42	0.54
	BT	12.5	19	12.90	1.88	0.92	20	13.28	1.72	2.02*	1.23
Biased (Fix)	B1	37.5	19	40.60	7.65	1.81*	20	45.45	6.11	5.82++	2.22**
	B2	37.5	19	43.68	7.33	3.68+	20	43.35	6.58	3.98++	0.15
	BT	37.5	19	42.13	5.30	3.80+	20	44.40	4.92	6.28++	1.38

*$p < .10$; **$p < .05$; +$p < .01$; ++$p < .001$

The 2 x 2 x 2 ANOVA applied to the random trails of the biased runs revealed no significant main effects or interactions, although there was a suggestive decline in the run scores from the 1st to the 2nd run, $F(1,35) = 3.24$, $p = .080$.

Biased Runs – Fixed Trials

Because the target order for the fixed trials incorporated the shift bias, I expected the mean number of hits on these trials to exceed MCE. This success is attributable to Ps learning the reinforcement contingency. The mean for these trials, summed over the two biased runs (MCE = 37.5 per run), conformed to this expectation to a very high degree (M = 43.40, SD = 5.17), $t(38) = 6.98$, $p = 3 \times 10^{-7}$. Although this p-value looks spectacular, it corresponds to a hit rate of only 28.9% compared to the MCE of 25%, but it is still higher than the hit rate of 26.2% for the random trials, $t(38) = 3.24$, $p = .002$. Thus, Hypothesis 3 was confirmed.

More surprising is the finding that this hit rate was evident in the first 50 trials of B1, before one would expect the manipulated target contingency to be recognized (M = 11.10, SD = 2.75). Compared to the MCE of 9.38, this outcome corresponds to a hit rate of 29.6%.

As illustrated in Table 1, the skeptics scored significantly higher than the believers in B1, although the believers scored very slightly and nonsignificantly higher than the skeptics in B2.

Unintended Target Bias

Because of an oversight in the preparation of the target generation software – the first (unscored) target in each biased run was always the same – there was an unequal distribution of real-time targets in the biased runs. Over the two runs combined there was a significant excess of targets *left* and *right* compared to *up* and *down*. Although the bias was small in magnitude compared to the manipulated transitional bias (3% vs 15%), it was nonetheless statistically significant, χ^2 (3, N = 3950) = 14.54, p = .002. However, the bias was attributable primarily to B2, χ^2 (3, N = 1950) = 12.09, p = .007. For B1, the run in which significant hitting was demonstrated for the random trials, the bias was not significant, χ^2 (3, N = 2000) = 3.79, p = .285.

A further analysis of the bias revealed that it was limited to even-numbered trials. For B1, the mean number of hits on the truly random, odd-numbered trials was 6.88 (SD = 2.03), t(39) = 1.97, p = .056. This mean is almost identical to the mean of 6.93 (SD = 2.17) for the biased, even-numbered trials, t(39) = 1.99, p = .054. The results for B2 were comparable: odd (M = 6.13, SD = 1.98); even (M = 6.31, SD = 1.78).

These results demonstrate that the target bias did not affect the hit scores and the previously stated conclusions stand.

As expected, the frequencies of the various target contingencies (transitional bias) were approximately equal in the random trials. Across both runs, χ^2 (3, N = 7950) = 0.52, p = .914

Predictor Correlates

Continuous scores on each of the four MBTI subscales and the rating scales were correlated with scores on the random run, as well as with scores on the random trials of B1 and of the biased runs combined. None of these correlations was significant, although there was a suggestive negative relationship between hits in the random run and scores on the Sensing-Intuition subscale of the MBTI, r(38) = -.272, p = .089. High scores in the random run were also suggestively associated with low motivation for the computer game as reported on the session rating scale, r(38) = -.283, p = .076.

DISCUSSION

In general, the results of the experiment supported the hypotheses. Ps scored significantly above chance on the random as well as the fixed trials in the biased runs. Scores on the fixed trials were significantly higher than scores on the random trials, and the latter were suggestively more significant than the chance scores in the random run. Thus, in conformance with the results of the previous experiments on psychic readings (Palmer 1996, 1997c), the presence of sensory cues, available to Ps though the trial-by-trial feedback of targets, indeed produced highly significant scoring on the trials to which they applied, but a lower level of significant scoring still was found in trials to which the sensory cues did not apply.

Due to experimenter error there was a real-time frequency bias in half of the "random" trials, but there is compelling evidence that these cues did not influence the scoring on these trials. First, the target bias was not significant in the run (B1) which accounted for the significant scoring on the random trials. Second, the scoring in this run was virtually identical for the biased random trials and the truly random trials, and the scoring on the latter subset of trials was very close to significant (p = .056).

The comparison between the random trials of the biased run and the random run was less than ideal because these runs were not counterbalanced, that is, the random run always came first. This procedure was required to properly test the ISL hypothesis, which was the primary objective of the experiment. Moreover, the fact that scoring was higher in B1 than in the random run is opposite the expectation based on a decline effect.

The fact that scoring on the fixed trials was significant even before one could reasonably expect the feedback of targets to have an effect suggests that genuine psi might have occurred in these trials as well.

This suggestion is reinforced by the fact that there was no evidence of ISL in the biased runs overall.[3] However, it is still conceivable that ISL could have occurred within this span of 50 trials, although there is no positive evidence of this. In fact, the high scoring was evident from the very beginning of the run. As Ps were randomly assigned to the CW and CCW conditions and the high scoring was prevalent in both of these conditions, conformance of the targets to Ps' response biases is not a plausible conventional interpretation of this scoring.

An inference one can reasonably draw from these findings is that designs in which random ESP targets can be embedded in tasks that contain sensory cues might increase the yield of ESP in our experiments, and such designs should be explored further. On the other hand, the present results do not shed light on how the surrounding sensory cues facilitated ESP. In the Introduction I suggested that the most plausible interpretation of this facilitation is that the sensory cues made Ps more comfortable and confident. This suggestion was grounded in an earlier literature review, where I concluded that such factors seem to facilitate positive scoring in a variety of ESP tasks (Palmer, 1997d). However, in this experiment Ps were not consciously aware of the target biases, and thus one would have to assume that they were somehow perceived unconsciously. However, if this were the case one would predict evidence of ISL, which was not found. Moreover, the increase in the percentage of hits was actually quite small and too small to be consciously recognized as success. Alternatively, it could be that the very presence of sensory cues in the form of feedback made Ps more comfortable with the task and this comfort translated into significant scoring in B1.

Finally, there is always the possibility of the result being due to experimenter psi, a concept I have broadened to include any member of the research team who was psychologically involved in the outcome of the experiment (Palmer, 1997a). The failure to find any significant correlations with the individual difference measures, including several trends in the direction opposite those predicted by theory and past research (negative directional trends between ESP and belief in psi, MBTI Intuition and motivation in the random run), lends a modicum of indirect support to an experimenter psi interpretation.

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REFERENCES

Chapman, L. J., & Chapman, J. P. (1987). The measurement of handedness. *Brain and Cognition, 6,* 175-183.

Eckblad, M., & Chapman, L. J. (1983). Magical ideation as an indicator of schizotypy. *Journal of Consulting and Clinical Psychology, 51,* 215-225.

Honorton, C. (1997). The ganzfeld novice: Four predictors of initial ESP success. *Journal of Parapsychology*, *61*, 143-158.

Marsaglia, G., & Zaman, A. (1987). Toward a universal random number generator (FSU-SCRI-87-50). Gainesville, FL: Florida State University.

Myers, I. B., & McCaulley, M. H. (1985). *Manual: A guide to the development and use of the Myers-Briggs Type Indicator*. Palo Alto, CA: Consulting Psychologists Press.

Palmer, J. (1996). Individual differences in face-to-face psychic readings. *Proceedings of Presented Papers: The Parapsychological Association 39th Annual Convention,* 115-130.

Palmer, J. (1997a). The challenge of experimenter psi. *European Journal of Psychology, 13,* 110-125.

[3] The ISL results from this experiment will be presented in a separate report not yet published.

Palmer, J. (1997b). Correlates of ESP magnitude and direction in the PRL and RRC autoganzfeld data bases. *Proceedings of the Parapsychological Association 40th Annual Convention,* 283-298.

Palmer, J. (1997c). Individual differences in blind psychic readings. *Proceedings of Presented Papers: The Parapsychological Association 40th Annual Convention,* 299-316.

Palmer, J. (1997d, November). The psychology of ESP: Magnitude vs. direction. Paper presented at the First International Brazilian Congress of Parapsychology, Recife, Brazil.

Thalbourne, M. A., & Delin, P. S. (1993). A new instrument for measuring the sheep-goat variable: Its psychometric properties and factor structure. *Journal of the Society for Psychical Research, 59,* 172-186.

"SEEING AND FEELING GHOSTS": ABSORPTION, FANTASY PRONENESS, AND HEALTHY SCHIZOTYPY AS PREDICTORS OF CRISIS APPARITION EXPERIENCES

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ABSTRACT

An apparition is a visual experience in which there appears to be a person or animal present, often in connection with an agent who is dying or undergoing some other crisis. This study treats the apparitional experience (AE) and the sense of presence (SP) as phenomena worthy of study in their own right. Six hypotheses were tested: people who see or feel apparitions have a higher capacity for absorption, fantasy and cognitive-perceptual schizotypy than non-experients. Six hundred and fifty-six undergraduate students, 76% females and 24% males (age range 17-57), completed four scales: the *Paranormal Experiences Questionnaire*, *Creative Experiences Questionnaire*, *Tellegen Absorption Scale*, *and Schizotypical Personality Questionnaire*. Experients scored higher on absorption (AE: z = 6.06 and SP: z = 5.19), fantasy proneness (AE: z = 4.76) and cognitive perceptual schizotypy (AE: z = 7.01 and SP: z = 8.21) than non-experients. Our results suggest that, apart from the dominant schizotypy proneness, a second dimension (absorption) may underlie the differentiation of the two groups of participants. Gender differences were overall non-significant. Apparitional and other apparition-like experiences are related to higher levels of reports of absorption and imaginative-fantasy experiences. Visions of ghosts may be related to cognitive processes involving fantasy and cognitive perceptual schizotypy proneness, which are correlated with each other. Many therapists still regard clients who report apparitions as mentally ill; however, they often do not tell anyone about their experiences. This study demonstrated the viability of adopting a psychological approach to better understand the crisis apparition experience.

INTRODUCTION

Most of the apparitional research on the survival hypothesis has involved determining whether apparitions are subjective (purely created within the mind) or objectively real (existing independently of the mind of the witness). A review of over 100 papers on hallucinations in the professional psychological literature reveals only two (Smythies, 1956; Sarbin & Juhasz, 1967) that display any familiarity with the parapsychological literature on hallucinations. Several researchers (Bennett, 1987; Davidson & Russell, 1981; Emmons, 1982; Finucane, 1984) have pointed to ostensible variations in the experience across historical periods and across societies in accordance with the social functions served by a belief in apparitions. It remains uncertain, however, if these variations exist in the apparitional experience itself or merely in the experient's cognitive reconstruction and narrative description of the experience.

Apparitions and hallucinations (both external projections) differ from imagery (perceived internally). Unlike hallucinations, apparitions are said to never indicate psychopathology, and they convey veridical data that could only be obtained from an external source. In practice, the distinction between an apparition, hallucination and imagery is blurred. L.E. Rhine believed there is a continuum between an apparition (seen within sensory range) and an ESP vision (seen outside sensory range) (Rhine, 1981). Evans (1984) places the apparition in the broader context of the "entity experience". Apparitions of the dead (ghosts) are usually associated with a particular building (haunting). Apparitions of the living or dying are of two types. A crisis apparition is where the witness supposedly sees a figure of another person (often a relative or friend) at another locality. An experimental apparition is deliberately produced; for example, a psychic goes "out-of-body" to another location to contact a target and then sees an apparition.

Evans (1984) distinguishes between stereotyped entities (such as the Virgin Mary) and generalised entities (such as UFO visitors). In one survey (Rees, 1971), 47% of 293 elderly people (mean age 75) reported hallucinations of their deceased spouse; 14% included visual sightings; the other 33% involved feelings, and hearing, touching, and speaking to the spouse. Professional status, a happy marriage, and the first 10 years after widowhood were the best predictors of apparitions. In another survey (Berrios & Brook, 1984).), 29% of 150 persons (mean age 77) reported visual hallucinations. Few elderly people tell others about their apparitions through fear of ridicule; this is a health concern.

A satisfactory theory of apparitions should specify whether the phenomena are objective or hallucinatory, and should propose one or more plausible mechanisms by which the manifestations occur. An initial distinction can be made between (a) theories that attempt to account for the phenomena in purely normal terms, and (b) theories that require a paranormal element (e.g., telepathy or the laying down of some sort of "psychic trace" in the haunted place). McCue (2002) had labelled theories of the first type 'naturalistic' and theories of the second type as 'psi-based'. Psi-based theories can be divided into two sub-categories: those positing discarnate agency and those that do not require the notion of post-mortem survival as it is generally understood.

The founders of the (London) Society for Psychical Research published their first case collection (Gurney, Myers, and Podmore, 1886), which was followed by the "Census of Hallucinations" (Sidgwick, Johnson, Myers, Podmore, and Sidgwick, 1894), where data were gathered from 17,000 people, of whom about 10% reported some sort of hallucinatory experience. Some reports were of animals, and only 20% of the 830 realistic apparitions were recognizable as dead people (ghosts). This focus on "benign hallucinations" (from sane people) is important because such hallucinations differ from those associated with mental illness and drug states (Anderson & Anderson, 1982; Asaad & Shapiro, 1986).

Some studies (Mavromatis, 1987; Sherwood, 1999) have demonstrated that apparitions often occur in states of consciousness in which mental images are experienced as particularly lifelike and "real" -- for example, the hypnagogic state (falling asleep) and hypnopompic state (waking up). In fact, a surprising number of normal individuals, when questioned, report a history of hallucinatory experiences (39% = Posey & Losch, 1983; 30% = Barrett & Etheridge, 1992; 12% = Sidgwick, Johnson, Myers, Podmore, & Sidgwick, 1894; 14% = West, 1948; 25% = McKellar, 1968). Moreover, there is evidence of quite substantial cultural variations in the disposition to have hallucinatory experiences (Al-Issa, 1977, 1995). Psychotic patients with a history of auditory hallucinations differ from non-hallucinating patients and normal persons in having poorer "reality testing" (Slade, 1976). Reality testing refers to the ability to distinguish a present perception (reality) from a present act of imagination (hallucination or apparition). Reality testing is probably important also for normal people who report visual hallucinations or apparitions, although participants are recalling a memory of an apparition seen in the past. A better term here is "reality monitoring" (Johnson & Raye, 1981), which refers to the distinction between a past perception and a past act of imagination. In conclusion, more than just skill at visual imagery (vividness) is involved. One aspect of reality monitoring is the ability to focus attention (absorption). Another aspect is the ability to create stories out of one's visual imagery (fantasy proneness).

Data on the cognitive style of apparitional experients are scarce (McCreery and Green, 1986). Some studies indicate that mental imagery skills make a substantial contribution to the apparitional experience (Irwin, 1989) and that experients and non-experients do not differ in their capacity for psychological absorption (Hough, 1991; Irwin, 1985). Fantasy proneness is also emerging as a strong discriminator: as a group, experients seem to be highly inclined to fantasize (Cameron & Roll, 1983; Myers *et al.*, 1983; Osis, 1986; Wilson & Barber, 1983).

Wilson and Barber (1983) coined the term "fantasy prone personality" to refer to a small group of persons (about 4% of the population) who fantasize most of the time. They fully see, hear and touch what they fantasize. Its basic feature is a deep involvement in fantasy, that is, a habitual capacity to suspend reality monitoring, unlike the momentary capacity indicated by absorption. The people studied by Wilson and Barber reported a high incidence of a wide variety of psychic experiences, including apparitions. A problem is that some participants had visual fantasies only with their eyes closed; thus, they could not see apparitions, which by definition require that one's eyes be open. In two studies (Council & Huff, 1990;

Myers & Austrin, 1985), a strong correlation was found between fantasy proneness and absorption, and both correlated significantly with a measure of psychic experiences that included seeing apparitions.

Absorption is the capacity to focus attention exclusively on some object (including, mental imagery) to the exclusion of distracting events. The object seems to have a heightened sense of reality, as do apparitions. A capacity for absorption, by itself, may not be sufficient; perhaps people must also have a motivation or need for the experience of absorption, as well as a situation suitable for inducing it (Irwin, 1985). High absorption indicates the ability to momentarily inhibit reality monitoring. The *Tellegen Absorption Scale* (Tellegen & Atkinson, 1974) has been used by many researchers. Although the limited number of studies suggest no difference in capacity for absorption, there is some suggestion that experients and non-experients may differ in their *need* for absorption (Irwin, 1985, 1989).

The concept of schizotypy is derived inductively from the traits and symptoms found in schizophrenia, and schizotypal and borderline personality disorders. Three latent factors –cognitive-perceptual deficits, interpersonal deficits, and disorganization– appear to underlie schizotypal personality in the normal population. Factor analysis of these traits reliably produces four factors, one of which (unusual experiences) contains items consonant with the positive symptoms of psychotic illness (i.e., hallucinations, delusions and thought disorder), together with cognitive disorganisation, introvertive anhedonia, and impulsive nonconformity. *Healthy schizotypy* is described as: "the uncoupling of the concept of schizotypy from the concept of disease" (Claridge, 1997). Healthy schizotypy represents a departure from the quasi-dimensional, pathological model for schizotypy and suggests an extension into a fully dimensional model (McCreery & Claridge, 2002) with health as a starting point (Claridge, 1997; Claridge & Beech, 1995).

Thus, despite the evident overlap between paranormal beliefs-experiences and schizotypy, it does not necessarily follow that paranormal beliefs and experiences are associated with psychological ill-health. McCreery and Claridge (1995, 1996, 2002) found that out-of-the-body experients showed signs of schizotypy but otherwise appeared to be healthy. The out-of-the-body experients had higher scores than non-experients on positive symptoms of schizotypy but not on negative symptoms. Moreover, some of the experients seemed to be healthy not only despite their out-of-the-body experiences but also because of them. These individuals were called "happy schizotypes" (McCreery & Claridge, 1995).

Therefore, the apparitional experience (which refers to experiencing or clearly seeing a figure of human form, someone who was not physically present at that moment [Thalbourne, 1982]) and the sense of presence (which refers to an increased, vivid sensations of some presence, as if someone or something touched or pressed on all or some part of the body [Cheyne, Newby-Clark, & Rueffer, 1999]) are phenomena worthy of study in their own right, like other aspects of human experience. Thus the focus is on the experience or phenomenon, whatever the interpretation. Apparitions, like everything else in the mental life of the healthy individual, do not occur in a vacuum but are closely interwoven with many other psychological and parapsychological processes.

For these reasons, I argue that apparition reports are part of human experience and as such deserve and require study in and of themselves, with and without efforts to relate apparitions to possible paranormal components. My perspective is consistent with Palmer's (1979) discussion of the importance of distinguishing conventional models of explanation from paranormal ones in parapsychology. It is also consistent with recent pleas to consider the experiential aspects of psi claims as part of parapsychological research, without necessarily focusing on paranormal explanatory models (e.g., Alvarado, 1997; Schouten, 1986; White, 1990). To quote Irwin (2004, p. 10), "human experience includes a wide range of different dimensions and there are many more aspects of psi experiences to be studied other than ostensible paranormality." Little is known about the psychological factors and processes that underlie the apparitional experience, but there are indications in the psychological, parapsychological and psychiatric literature that particular cognitive (mental) variables are important. Three of these cognitive variables are absorption, and fantasy proneness, and proneness to cognitive-perceptual schizotypy.

Hypotheses

The present study is exploratory. Six specific hypotheses are tested: Students who have apparitional experiences (AE experients) have a higher capacity for (1) absorption, (2) fantasy proneness, and (3) cognitive-perceptual schizotypy-proneness than non-experients, and students who feel a sense of presence (SP experients) have a higher capacity for (4) absorption, (5) fantasy proneness, and (6) cognitive perceptual schizotypy proneness score higher than non-experients.

METHOD

From a total of 678 undergraduate students recruited from the psychology department I received 650 usable questionnaires (95.8%). Participation was voluntary and the students received no pay. The students who returned the questionnaires included 494 (76%) females and 156 (24%) males, ranging in age from 17 to 57 (Mean = 25.57; SD = 7.23). Students who answered "yes" (one time, sometimes, or frequently) were grouped as "experients" and students who answered "no" were grouped as "non-experients" (see Table 1).

TABLE 1
GENDER AND MEAN AGE OF EXPERIENTS AND NON-EXPERIENTS FOR APPARITIONAL EXPERIENCES AND SENSE OF PRESENCE

		Apparitional Experience (N= 67)	**Sense of Presence** (N= 295)
	Gender	M= 13 (19.4%)	M= 66 (22.4%)
		F= 54 (80.6%)	F= 229 (77.6%)
Experients	Range age	18–57 yr.	17–57 yr.
	Mean – SD age	24.72 – 7.21	25.35 – 7.36
		(N= 583)	(N= 355)
	Gender	M= 143 (24.6%)	M= 90 (25.1%)
		F= 440 (75.4%)	F= 265 (74.9%)
Non-experients	Range age	17–54 yr.	17–54 yr.
	Mean – SD age	25.42 – 7.11	25.79 – 7.09

Design and Materials

Students completed three scales: the *Creative Experiences Questionnaire* (25 true/false items; Merckelbach, Horselenberg and Muris, 2001), which measures fantasy proneness; the *Tellegen Absorption Scale* (34 true/false items; Tellegen and Atkinson, 1974), which measures how frequently people engaged in absorptive activities; and the *Schizotypical Personality Questionnaire*, or SPQ (74 yes/no items; Raine, 1991; Raine, 1992, Raine & Baker, 1992; Raine & Benishay, 1995), which measures three factors of schizotypy: Cognitive-Perceptual (e.g., "Have you ever seen things invisible to other people?" or "Are your thoughts sometimes so strong that you can almost hear them?"), Interpersonal, and Disorganized. The SPQ was given the pseudo-title *Questionnaire of Psychological Experiences, Forms A, B,* and *C*, in a counterbalanced order to encourage unbiased responding. The set of scales was given in a single envelope to each student during a class. Each student received vague information about the aims of the study and was invited to complete the scales voluntarily and anonymously in a single session, selected from days and times previously agreed upon with the teachers.

I developed an 18-item self-report inventory to collect information on spontaneous paranormal experiences, inspired by the English version of the *Anomalous/Paranormal Experiences Inventory* (Gallagher, Kumar, and Pekala, 1994), and Palmer's (1979) survey of students in Charlottesville, VA. The two questions on apparitions were: "Being awake, I have had the experience of hearing voices or seeing

appearances invisible to others, which forewarned me about an impending danger that occurred shortly thereafter" (Spanish version: *Estando despierto, he tenido la experiencia de oir voces o ver presencias invisibles para otros que me indicaban acerca de un peligro inminente que luego ocurrió*) (item 15). The question refers to "crisis apparitions", that is, visions seen or voices heard at the moment of an individual's death or during a time of great stress such as illness, serious injury, or a life-threatening situation. For sense of presence: "Being alone, I have had the vivid impression of a sensation of presence, but nothing was visible where I was" (Spanish version: *Estando solo, he tenido la vívida impresión de una sensación de presencia, pero invisible donde me encontraba*) (item 8). Both questions tapped three dimensions of experience: frequency (never, once, sometimes, frequently), subjective explanation (i.e., rational, unknown, paranormal), and positive or negative (emotional) impact ("none" and a 1 – 7 scale for some impact, 7 being the highest).

RESULTS

Data were compared on apparitional experience (AE) for experients, (N= 67) vs. non-experients (N= 583), and on sense of presence (SP) for experients (N= 295) vs. non-experients (N= 355; see Table 2).

TABLE 2
APPARITIONAL EXPERIENCE AND SENSE OF PRESENCE:
FREQUENCY, EMOTIONAL IMPACT AND EXPLANATION

		Apparitional experience			**Sense of presence**		
		Males (N= 13)	Females (N= 54)	Total (N= 67)	Males (N= 66)	Females (N= 229)	Total (N= 295)
Frequency	One time	10 (71.4%)	27 (49.1%)	37	20 (33.9%)	55 (24.6%)	75
	Sometimes	4 (28.6%)	22 (45.5%)	26	39 (60%)	152 (68.2%)	191
	Frequently	--	4 (5.4%)	4	13 (6.1%)	16 (7.2%)	29
Emotional Impact	Mean (1–7)[(1)]	4.01	4.13	4.15	3.50	3.54	3.97
Explanation	Rational/Explicable	4 (28.6%)	9 (16.4%)	13	18 (27.7%)	50 (22.4%)	68
	I do not know	5 (35.7%)	23 (41.8%)	28	39 (60.0%)	115 (51.6%)	154
	Paranormal/ Unexplained	5 (35.7%)	23 (41.8%)	28	12 (12.3%)	58 (26.0%)	70

[(1)] 1 negative to 7 positive emotional impact.

Tests of Hypotheses

First, two-sample KS tests was used for comparing experients and non-experients (*TAS* $p < .001$; *CP-SPQ* $p = .08$; *CEQ* $p = .004$), as it is sensitive to differences in both location and shape of the empirical cumulative distribution functions of the two samples. Since the data were not normally distributed, the Mann-Whitney *U* test was used to test the hypotheses (see Table 3).

Hypothesis 1 was that AE experients would score higher on absorption than non-experients on the *TAS*. This hypothesis was supported: the mean for experients was significantly higher than for non-experients ($z = 6.06$, $p < .001$, one-tailed).

Hypothesis 2 was that AE experients would score higher on fantasy proneness than non-experients on the *CEQ*. This hypothesis was supported: the score for experients was significantly higher than for non-experients ($z = 4.34$, $p = .0001$, one-tailed).

Hypothesis 3 was that AE experients would score higher on cognitive-perceptual schizotypy proneness than non-experients on the *CP-SPQ*. This hypothesis was supported: the score for experients was significantly higher than for non-experients ($z = 7.01$, $p < .001$, one-tailed).

Hypothesis 4 was that SP experients would score higher on absorption than non-experients on the *TAS*. This hypothesis was supported: the score for experients was significantly higher than for non-experients ($z = 5.19$, $p < .001$, one-tailed).

Hypothesis 5 was that SP experients would score higher on fantasy proneness than non-experients on the *CEQ*. This hypothesis was supported: the score for experients was significantly higher than for non-experients ($z = 5.17$, $p < .001$, one-tailed).

Hypothesis 6 was that experients would score higher on cognitive-perceptual schizotypy proneness than non-experients on the *CP-SPQ*. This hypothesis was supported: the score for experients was significantly higher than for non-experients ($z = 8.21$, $p < .001$, one-tailed).

TABLE 3
COMPARISON OF TAS, CP-SPQ AND CEQ SCORES SCORES OF STUDENTS WHO REPORT APPARITIONAL EXPERIENCES AND SENSE OF PRESENCE WITH THOSE WHO DO NOT REPORT THEM

		Apparitional Experience					**Sense of Presence**				
Variables[(a)]		N	*Mean*	*SD*	*Mann-Whitney U*	*z*	N	*Mean*	*SD*	*Mann-Whitney U*	*z*
TAS	Non-experients	509	23.43	12.69	8530.0	6.06***	241	21.08	12.85	15469.0	5.19***
	Experients	63	72.18	35.59			182	27.81	13.49		
CP-SPQ	Non-experients	509	7.30	4.64	6805.0	7.01***	241	5.71	4.34	10910.5	8.21***
	Experients	63	12.44	4.97			182	9.56	4.60		
CEQ	Non-experients	509	32.11	15.30	10653.0	4.34***	241	28.08	14.69	15490.0	5.17***
	Experients	63	41.74	16.09			182	36.19	15.50		

*** *p < .001, one-tailed*

[(a)] *TAS*= Absorption (Mean= 24.41; SD= 13.48; Median = 21.87; df: 572); *CP-SPQ*= Cognitive Perceptual (Mean = 7.87; SD = 4.93; Median = 7.00); *CEQ*= Fantasy proneness (Mean = 32.86; SD = 15.79; Median = 31.60).

As a way of exploring gender differences, I split the data into males/females and experients/non-experients, and examined the number of participants who obtained scores at or above the mean with those who obtained scores below the mean, using the Fisher exact probability test. Analyses of the *TAS, DES* and *CEQ* and *PEQ* and *HES* frequencies for males versus females were overall non-significant, which was also the case when experients and non-experients were examined separately. In other words, I did not find evidence for gender differences in my set of data.

DISCUSSION

The characteristics of the apparitions (seeing or feeling presences) reported in this sample are similar to those reported in previous studies, and they are consistent with the core characteristics described by Osis (1986). The concept of reality monitoring may prove crucial to the more complete understanding of the apparitional experience, as this concept does not require that the apparitional experient be particularly skilled in consciously producing vivid visual images. The experience is a function of cognitive style rather than skill.

An individual who grows to adulthood in a society that recognizes the existence of ghosts or that values spiritual experiences is more likely to attribute reality to the image of a deceased relative than a person who reaches maturity in a materialistic, scientifically oriented society. The impact of external stimulation on hallucinations also can be understood in terms of the source-monitoring hypothesis. In conditions in which external stimulation is degraded (either by sensory restriction or by white noise), individuals are likely to adopt more liberal criteria for assuming that perceived events are real and are therefore more likely to misattribute internally generated thoughts to an external source (Bentall, 2000). The impact of stress and emotional arousal on hallucinations can be understood if it is assumed that the cognitive operations involved in source monitoring, like in other cognitive operations, are disrupted by emotional arousal.

The state of absorption could be associated with a low level of reality monitoring. While in this state, the focal object of attention, even if imaginary, becomes totally real to the experient (Tellegen & Atkinson, 1974). In this study, however, perhaps capacity for absorption is only one of a constellation of related factors, and style may be more important than capacity or skill. Or maybe we should distinguish between two types of reality monitoring: momentary attention and a more enduring propensity to suspend reality monitoring. The *TAS* measures only capacity for absorption, the extent to which a person can be so engrossed in a mental experience at a given moment that reality monitoring is temporarily inhibited. A scale that measures need for absorption, a motivational variable (Irwin, 1985), may indicate a more habitual use or recurrent desire to engage in absorbed mental activity, such that habitually poor reality monitoring becomes an enduring aspect of cognitive style.

I have used fantasy proneness because apparitional experients are clearly more fantasy prone than their non-experient counterparts. This need not mean that all apparitions are pure fantasies, since some could still be potentially veridical. It is possible that the absorbed fantasy state is a psi-conducive state. In other words, extrasensory information is incorporated into the ongoing fantasy, and, because of low reality monitoring, witnessed as an hallucinatory image. Hence, in the context of this study, the distinction between purely subjective experiences and those considered paranormal (veridical) is irrelevant. Even veridical experiences may depend on the same psychological predispositional factors as do non-veridical experiences (see Irwin, 1994, for a phenomenological approach).

The main analyses confirmed the two clusters of hypotheses: that apparitional experiences are related to higher levels of absorption and imaginative-fantasy experiences. This is also in conceptual agreement with studies which have found that measures of fantasy proneness seem to be successful predictors of psychic phenomena other than apparitional experiences (Myers, Austrin, Grisso & Nickeson, 1983; Wilson & Barber, 1983). Such findings suggest that visions of ghosts may be related to cognitive processes involving fantasy proneness and cognitive perceptual schizotypy proneness, and that these factors are correlated. Raine observed that one of the factors, the cognitive-perceptual schizotypal factor (made up of unusual perceptual experiences, magical thinking, paranoid ideation, and ideas of reference) may be analogous to the positive symptoms factor (delusions and hallucinations) found by Arndt, Alliger, & Andreasen (1991) in schizophrenia. However, this may not be the whole picture. The low number of apparitional cases prevents us from exploring the influence of factors other than those measured by the *CP-SPQ, TAS* and *CEQ,* such as the context in which the apparitional and apparitional-like experience occurred (e.g., emotional circumstances related to death).

The apparitions question used in this experiment refers specifically to "crisis apparitions", that is, visions seen or voices heard at the moment of an individual's death or during a time of great stress, such as illness, serious injury, or a life-threatening situation. Although I restricted my sample to crisis apparitions,

I see no reason to think that the correlations I found with the predictors apply only to crisis apparitions. Two hallucination questionnaires (the *Launay-Slade Hallucination Scale, LSHS-R*; see Aleman, Nieuwenstein, Bocker, De Haan, 2001; Waters, Badcock, Mayberry, 2003; and *Barrett's Hallucinations Questionnaire –Form C*, see Barret, 1993; Barrett and Etheridge, 1992, 1994) contain items which refer to apparitional experiences such as hearing one's own name when nobody is present, hearing one's own thoughts aloud, hearing voices coming from a place where there is nobody present, or hearing voices belonging to dead friends or relatives. None of these items mention "at the moment of an individual's death". Maybe this qualification defines the "cut off-point" between veridical and non-veridical apparitional experience. This question needs further investigation.

Apparitional experiences also have implications for the philosophy of perception. The occurrence of hallucinations, that is, perceptual experiences without justifying sensory stimuli, has long been one of the standard objections to the philosophical theory of direct realism (Goldstein, 1996; Matlin and Foley, 1997). According to this theory, we are in some sense in direct contact with the external world while we seem to be perceiving it, and not merely in direct contact with some mediating representation in our mind, such as a sense-datum or an image, which may or may not correspond to external reality.

This study demonstrates the viability of adopting a psychological approach in order to better understand the veridical apparitional experience. It is tentatively concluded that the constellation of interrelated factors that make up the construct of the "fantasy-prone personality" (Wilson & Barber, 1983) provide a psychological predisposition for the apparitional experience. It also supports the view that apparitional experiences of the type described here may have important clinical applications. Many therapists still regard a client who reports apparitions (or other possibly parapsychological experiences) as mentally ill or deluded. For this reason, fantasy-prone persons, fearing ridicule, often do not tell anyone about their experiences (Tart, 1983a, 1983b, 1984, Gómez Montanelli and Parra, 2003).

Apparition experients report a significantly higher frequency of ESP in dreams, mystical experiences, apparitions, and out-of-body experiences (Gómez Montanelli & Parra, 2005), and they also score higher on dissociation and hypnotic susceptibility (Pekala, Kumar, & Marcano, 1995; Parra & Argibay, 2006). These findings correspond to those reported by Kohr (1980) and by Palmer (1979) that relate apparitions to other experiences. That is, it is rare to find a person who reports apparitional experiences but makes no other claims of psychic experiences. However, it must be stressed that we are dealing here with claims that depend solely on questionnaire responses. The meaning of these claims is unclear if we are not sure that the participants' answers are actually related to what we were asking – an assurance we cannot expect to find without the benefit of follow-up interviews or, at the very least, a written description of the experiences.

REFERENCES

Al-Issa, I. (1977). Social and cultural aspects of hallucinations. *Psychological Bulletin, 84,* 570-587.

Al-Issa, I. (1995). The illusion of reality or the reality of an illusion: Hallucinations and culture. *British Journal of Psychiatry, 166,* 368-373.

Aleman A, Nieuwenstein MR, Boecker KBE, de Haan EHF (2001) Multidimensionality of hallucinatory predisoposition: Factor structure of a modified version of the Launay-Slade Hallucinations Scale in a normal sample. *Pers Indiv Diff.* 30:287–292.

Alvarado, C.S. (1997). Nota sobre la psicología de percibir apariciones. *Revista Mexicana de Psicología Paranormal, 4,* 244-250.

Anderson, R. & Anderson, W. (1982). Veridical and psychopathic hallucinations: A comparison of types. *Parapsychology Review, 13*(3), 17-23.

Arndt, S; Alliger, R.J; y Andreasen, N.C. (1991). The distinction of positive and negative symptoms: The failure of a two dimensional model. *British Journal of Psychiatry, 158*, 317 322.

Asaad, G. & Shapiro, B. (1986). Hallucinations: Theoretical and clinical overview. *American Journal of Psychiatry, 143,* 1088-1097.

Barrett, T. R_ & Etheridge, J. B. (1992). Verbal hallucinations in normals, 1: People who, hear "voices". *Applied Cognitive Psychology, 6,* 379-387.

Barrett, T. R. (1993). Verbal hallucinations in normals. Part 2: Self reported imagery vividness *Personality and lndividual Differences, 15*, 61-67.

Barrett. T. R.. y Etheridge. J. B. (1994). Verbal hallucinations in normals. Part 3: Dysfunctional personality correlates. *Personality and Individual Diffences, 16*, 57-62.

Bennett, G. (1987). *Traditions of belief: Women and the supernatural*. London: Penguin Books.

Bentall, R. P., & Slade, P. D. (1985). Reality testing and auditory hallucinations: A signal detection analysis. *British Journal of Clinical Psychology, 24,* 159-169.

Bentall, R. P. (2000). Hallucinatory experiences. In E. Cardeña, S.J. Lynn, and S. Krippner (Eds.), *Varieties of Anomalous Experience: Examining the scientific experience* (pp. 85-121). Washington, DC: American Psychological Association.

Berrios, G & Brook, P. (1984). Visual hallucinations and sensory delusions in the elderly. *British Journal of Psychiatry, 144,* 662-664.

Cameron, T. & Roll, W.G. (1983). An investigation of apparitional experiences. *Theta, 11*, 74-78.

Claridge, G. (1997). *Schizotypy: Implications for Illness and Health*. Oxford: Oxford University Press.

Claridge, G., & Beech, T. (1995). Fully and quasi-dimensional constructions of schizotypy. In A. Raine, T. Lencz, and S.A. Mednick (Eds.), *Schizotypal Personality* (pp. 192-216). Cambridge: Cambridge University Press.

Cheyne, J.A., Newby-Clark, I.R. & Rueffer, S.D. (1999). Sleep paralysis and associated hypnagogic and hypnopompic experiences'. *Journal of Sleep Research, 8*, 313–17.

Council, J.R. & Huff, K. (1990). Hypnosis, fantasy activity, and reports of paranormal experiences in high, medium and low fantasizers. *British Journal of Experimental and Clinical Hypnosis, 7*, 9-13.

Davidson, H.R.E. & Russell, W.M.S. (Eds.) (1981). *The folklore of ghosts*. Cambridge, England: Brewer.

Eisenbud, J. (1977). Paranormal photography. In B. B. Wolman (Ed.), *Handbook of Parapsychology* (pp. 414-434). New York: Van Nostrand,.

Emmons, C.F. (1982). *Chinese ghosts and ESP. A Study of paranormal beliefs and experiences*. Metuchen, NJ: Scarecrow Press.

Evans, H. (1984). *Visions, apparitions, alien visitors.* Wellingborough: Aquarian.

Finucane, R.C. (1984). *Appearances of the dead: A cultural history of ghosts*. Buffalo, NY: Prometheus Books.

Gallagher, C., Kumar, V. K., & Pekala, R. J. (1994). The Anomalous Experiences Inventory: Reliability and validity. *Journal of Parapsychology, 58*, 402-428.

Goldstein, E.B. (1996). *Sensation and Perception*. Pacific Grove: Brooks/Cole.

Gómez Montanelli, D. & Parra, A. (2003). Un abordaje modelo para el procesamiento de las reacciones emocionales ante experiencias paranormales. *Revista Argentina de Psicología Paranormal, 14*, 9-27.

Gómez Montanelli, D. & Parra, A. (2005). ¿Las Experiencias Paranormales son psicológicamente perturbadoras? Una encuesta comparando estudiantes universitarios y aficionados a temas paranormales. *Revista Interamericana de Psicología, 39*(2), 285-294.

Gurney, E., Myers, F.W.H. & Podmore, F. (1886). *Phantasms of the living, 2 vols*. London: Trubner.

Matlin, M.W. & Foley, H.J. (1997). *Sensation and Perception*. Boston: Allyn and Bacon.

Hough, M. (1991). Cognition and the apparitional experience. *Australian Parapsychological Review*, 17, 8-16.

Irwin, H.J. (1985). Parapsychological phenomena and the absorption domain. *Journal of the American Society of Psychical Research, 79*, 1-11.

Irwin, H.J. (1989). Extrasensory experiences and the need for absorption. *Parapsychology Review, 20*(6), 9-10.

Irwin, H.J. (1994). The phenomenology of parapsychological experiences. In S. Krippner (Ed.), *Advances in parapsychological research 7* (pp. 10-76). Jefferson, NC: McFarland.

Irwin, H.J. (2004). *An introduction to Parapsychology, Fourth Edition*. Jefferson, NC: McFarland.

Johnson, M. & Raye, C. (1981). Reality monitoring. *Psychological Review, 88*, 67-85.

Khor, R.L. (1980). A survey of psi experiences among members of a special population. *Journal of the American Society for Psychical Research, 74,* 395-411.

MacKenzie, A. (1982). *Hauntings and apparitions*. London: Paladin.

Mavromatis, A. (1987). *Hypnagogia: The unique state of consciousness between wakefulness and sleep*. London: Routledge and Kegan Paul.

McCreery, C. & Green, C. (1986). *A follow-up study of people reporting apparitional experiences*. Paper presented at the Tenth International Conference, Society for Psychical Research, Cambridge.

McCreery, C., & Claridge, G. (1995). Out-of-the-body experiences and personality. *Journal of the Society for Psychical Research, 60*, 129-148.

McCreery, C., & Claridge, G. (1996). A study of hallucination in normal subjects-I. Self-Report data. *Personality and Individual Differences, 21*, 739-747.

McCreery, C., & Claridge, G. (2002). Healthy schizotypy: The case of out-of-the-body experiences. *Personality and Individual Differences, 32,* 141-154.

McKellar, P. (1968). *Experience and behavior.* Harmondsworth: Penguin Press.

McCue, P. E. (2002). Theories of haunting: A critical overview. *Journal of the Society for Psychical Research, 66,* 1-21.

Merckelbach, H.; Horselenberg, R. & Muris, P. (2001). The Creative Experiences Questionnaire (CEQ): A brief self-report measure of fantasy proneness. *Personality and Individual Differences, 31*, 987-995.

Myers, S. & Austrin, H. (1985). Distal eidetic technology. *Journal of Mental Imagery, 9*, 57-66.

Myers, S.A.; Austrin, H.R.; Grisso, J.T. & Nickelson, R.C. (1983). Personality characteristics as related to the out-of-body experience. *Journal of Parapsychology, 47,* 131-144.

Osis, K. (1986). Apparitions old and new. In K.R. Rao (Ed.), *Case studies in parapsychology* (pp. 74-86). Jefferson, NC: McFarland.

Parra, A. & Argibay, J.C. (2006). Interacción entre susceptibilidad hipnótica y experiencias disociativas en una población que reporta experiencias anómalo/paranormales. *Revista Interamericana de Psicología, 40*, 233-240.

Palmer, J. (1979). A community mail survey of psychic experiences. *Journal of the American Society for Psychical Research, 81*, 111-123.

Pekala, R.J., Kumar, V.K., & Marcano, G. (1995). Anomalous/paranormal experiences, hypnotic susceptibility, and dissociation. *Journal of the American Society for Psychical Research, 89*, 313-332.

Posey, T. B., & Losch, M. E. (1983). Auditory hallucinations of hearing voices in 375 normal subjects. *Imagination, Cognition and Personality, 2*, 99-113.

Raine, A. (1991). The SPQ: A scale for the assessment of schizotypal personality based on DSM-III-R criteria. *Schizophrenia Bulletin, 17*, 556-564.

Raine, A. (1992). Sex differences in schizotypal personality in a non-clinical population. *Journal of Abnormal Psychology, 101*, 361-364.

Raine, A. & Baker, L. (1992) *The Schizotypal Personality Questionnaire: Genetics, Psychophysiology. Neuropsychology and Gender Differences*. Western Psychological Association, Portland, Oregon, April 30-May 3.

Raine, A. & Benishay, D. (1995). The SPQ-B: A brief screening instrument for schizotypal personality disorder. *Journal of Personality Disorders, 9,* 346-355.

Rees, W.D. (1971). The hallucinations of widowhood. *British Medical Journal, 2, 37-41.*

Rhine, L. (1981). *The invisible picture.* Jefferson, NC: McFarland.
Sarbin, T., & Juhasz, J. (1967). The historical background of the concept of hallucination. Journal *of the History of the Behavioral Sciences, 3*, 339-358.

Schouten, S.A. (1986). A different approach for studying psi. In B.Shapin and L. Coly (Ed.), *Current trends in Psi Research* (pp. 27-39). New York, NY: Parapsychology Foundation.

Sherwood, S. J. (1999). Relationship between childhood hypnagogic/hypnopompic and sleep experiences, childhood fantasy proneness, and anomalous experiences and beliefs: An exploratory WWW survey. *Journal of the American Society for Psychical Research, 93*, 167-197.

Sidgwick, H., Johnson, A., Myers, F.W.H., Podmore, F. & Sidgwick, E. (1894). Report on the Census of Hallucinations. *Proceedings of the Society for Psychical Research, 10*, 25-422.

Slade, P. (1976). An investigation of psychological factors involved in the predisposition to auditory hallucinations. *Psychological Medicine, 6,* 123-132.

Smythies, J. (1956). A logical and cultural analysis of hallucinatory sense-experience. *Journal of Mental Science, 102*, 336-342.

Tart, C. T. (1983a). The controversy about psi: Two psychological theories. *Journal of Parapsychology, 46,* 313-320.

Tart, C. T. (1983b). Who's afraid of psychic powers? Me? *The Open Mind, 1*(3), 1-5.

Tart, C. T. (1984). Acknowledging and dealing with the fear of psi. *Journal of the American Society for Psychical Research, 78*, 133-143.

Tellegen, A. & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ('absorption'), a trait related to hypnotic, susceptibility. *Journal of Abnormal Psychology, 83*, 268-277.

Thalbourne, M. (1982). *A Glossary of Parapsychogy*. London: Heinemann.

Tien, A. Y. (1991). Distribution of hallucinations in the population. *Social Psychiatry and Psychiatric Epidemiology, 26*, 287-292.

Waters, F., Badcock, J.C., Maybery, M. (2003) Revision of the factor structure of the Launay-Slade Hallucination Scale (LSHS-R). *Personality and Individual Differences, 35,* 1351-1357.

West, D. J. (1948). A mass observation questionnaire on hallucinations. *Journal of the Society for Psychical Research, 34,* 187-196.

White, R.A. (1990). An experience-centered approach to parapsychology. *Exceptional Human Experience: Studies of the Psychic/Spontaneous/Intangible, 8*, 7-36.

Wilson, S.C. & Barber, T.X. (1983). The fantasy-prone personality: Implications for understanding imagery, hypnosis, and parapsychological phenomena. In A.A. Sheik (Ed.), *Imagery: Current theory, research, and applications* (pp. 340-387). New York, NY: Wiley.

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"TOKEN-OBJECT" EFFECT AND MEDICAL DIAGNOSIS: AN EXPERIMENTAL STUDY

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ABSTRACT

Some psychics and healers claim to obtain impressions of body sensations, visual images of organ dysfunctions, or an "inner knowing". However, there are few reports of quantitatively evaluated studies with psychics. They sometimes perform "psychometry", which is defined as an anomalous cognition system, specifically the ability to get "impressions" from objects. Usually it is described as a type of knowledge which allows a psychic or sensitive to receive impressions using a physical object as an inductor or instrument. A series of psychometry-based experimental sessions was designed. The aim was to explore if there is a significant difference between psychics and nonpsychics. One hundred fifty participants (M age = 45.85; SD= 12.29) who reported personal experiences of psi were split into two groups, persons claiming ESP experiences but no abilities, or "nonpsychics" (N= 88) and persons claiming ESP skills as well as experiences, or "psychics" (N= 62). Four adult volunteers who suffered from medically diagnosed diseases (i.e. diabetes mellitus, hernia hiatal, osteoarthritis, and varicose veins) acted as target persons (TPs). They delivered personal objects (a comb, handkerchief, hair brooch, or billfold), which were coded and recoded blind by both experimenters. Instructions asked participants to describe the symptoms in non-technical language. Each participant received four pairs of objects (target and control) to be "touched". They performed four trials of psychic diagnosis of the TPs, who remained unidentified. Although both groups combined scored significantly above chance (p = .01), there was only slight support for the claim that the "psychics"(p = .03) scored higher than the nonpsychics (p = .08) Although neither group obtained highly significant results, high variability was found; it was in a positive direction for the psychics and the negative direction for the nonpsychics (p < .05). It appears that psychic diagnosis relates to perceptions of "information" in and around TPs, and that these may be difficult to translate into physical diagnoses. The psychics and healers were also not trained in medical terminology, anatomy or physiology, and therefore may have had difficulties providing impressions specific to anatomical structures and quantifiable in conventional terminology.

INTRODUCTION

Anomalous detection, or psychic diagnosis, is reported frequently by healers and psychics. Similar intuitions have also been mentioned by people in others walks of life. They may include several components, such as unusual awakenings, understandings based upon sensory observations and data analysis which are suddenly perceived in a novel relationship and order, or data based upon information from anomalous cognitive processes –such as telepathy or clairvoyance– which appear to transcend ordinary reasoning (Benor, 1992). Despite the fact that psychics have been the focus of interest from the beginning of psychical research, frequently people want to know whether they should or should not consult such persons, and if they do, what they might expect and how they might evaluate the statements made to them by the psychic (Schouten, 1993).

Psychics claim that such impressions may sometimes be obtained through scanning the "energy body", which surrounds and interpenetrates the physical body. For instance, healers report intuitive awareness and understanding of healees' physical, emotional, mental, and spirituals problems (Benor, 2002). These may come to them as sensations in their hands during laying-on of hands treatments (Krieger, 1979), as words appearing in their mind, including technical diagnoses which they themselves do not comprehend but which doctors later confirm to be accurate (Stearn, 1967), as body sensations –especially pains– which reflect those of patients, as smells, as visual images of organ dysfunctions, or simply as an "inner knowing" (Brennan, 1987; Freed, 1992; Schwartz, 1967). In anecdotal reports, diagnoses seem to be

provided by the colors of an energy field, or "aura vision", perceived by healers visually around the body (Karagulla & van Gelder Kunz, 1989). People report various observations and distinctions in the energy field. Nash (1987) observed a relationship between cervical cancer and the use of hope and hopelessness words. He suggested that some of the patients extrasensorially perceived the presence of their cancer and that this caused them to use hope words less and hopelessness words more, but the absence of a correlation between physical changes and the use of such words does detracts from this explanation. It is also possible that the cancers were extrasensorially perceived by the physicians rather than by the patients.

However, there are few reports on quantitatively evaluated studies with psychics. Edgar Cayce is probably the best known American psychic diagnostician (Stearn, 1967). Under hypnosis he was able to provide accurate diagnoses given only the name and address of subjects who could be many miles away. Systematic assessment of his diagnostic accuracy was only made posthumously, with 43% of a randomly selected 150 cases demonstrating documented confirmation of an accurate diagnosis and/or treatment recommendations (Cayce & Cayce, 1971). Numerous testimonials from patients and doctors are preserved in the files of the Association for Research and Enlightenment in Virginia Beach. They and others are continuing to research the unusual but successful remedies which Cayce recommended intuitively for various types of problems (McGarey, 1983). Czech physician Karel Mison (1968) reported 2005 paranormal diagnoses. In each case, a physician and a "biodiagnostician" examined the same patient. Congruence of diagnoses where healers directly examined patients ranged from 45–85%. Overall congruence for diagnoses from a distance was 29%. No statistical analyses were reported and raw data were not presented. A study carried out by Brier, Savits and Schmeidler (1974) divided graduates of the Silva Mind Control Program (SMCP), who claim to be able to make diagnoses from a distance, into five groups with minimal symptom overlap. The researchers had a surgeon select 25 cases, identifying each by first name, an initial of the last name, age, and sex. Five graduates of the SMCP made intuitive diagnoses. No significant results were produced in the first study. A second study, performed on the day after graduation, again showed non-significant overall results. Two subjects were children and gave minimal information not useful for diagnosis. One subject`s results were significant (p <.05), and if the scores of the three older subjects had been examined separately, they would have been significant. A separate evaluation of another Silva graduate also produced significant results (p <.05).

Alan Vaughan (1974) studied another 21 graduates of the SMCP. He sent them the following data on five patients whose diagnoses were known to the referring physician (but not to Vaughan): first name, last initial, sex, age, and the city of residence. Vaughan paired the 21 readings of two patients matched for age and sex and sent the 42 randomized readings to the physician. The physician judging matched only 16 correctly; twenty-one matches would be expected by chance. He then reviewed the entire series, finding only one correct diagnostic impression. Norman Shealy (1975) reported that he selected an unspecified number of patients whose illnesses appeared to be physical (i.e. excluding patients with presumed psychosomatic problems). Several unconventional diagnosticians participated: a palmist, a graphologist, and three psychics (clairvoyants). A psychologist making no claim to psychic abilities also participated. The psychics gave the most accurate diagnoses; the graphologist and psychologist least. Shealy (1988) also discovered Caroline Myss, a psychic diagnostician who appears incredibly accurate. She was able to achieve 93% accuracy when given only the patient´s name and birth date. Shealy also found that a consensus diagnosis by several psychics was more accurate than one alone. In a semi-formal pilot study of seventeen or so patients, whenever there was a consensus of opinion among the psychics they were 98% accurate on personality disorders. Recently, Young and Aung (1997) reported results which indicated some correspondences between psychic diagnoses and medical records of the patients, but the correspondences were not sufficiently impressive to warrant considering psychic diagnosis as a useful alternate method for diagnosing disease.

We use the term "psychics" in this paper to refer to their activity, which is to provide information not normally known at the time by paranormal means. They are defined as persons who believe themselves able to obtain paranormal impressions at will. Usually they perform "psychometry", which is defined as an anomalous cognition system for psi-detection (Buchanam, 1885; Richet, 1922). Some psychics claim the ability to get "impressions" from objects, these impressions constituting information about the owners and past histories of the objects other than what could be inferred from their known physical properties. It

usually describes a type of knowledge (or extrasensory perception, ESP) which allows a psychic or sensitive to receive impressions using a physical object as an inductor or instrument to express the information perceived (Bentley, 1961; Rogo, 1974).

Two major studies of psychometry came out in the early 1920s: Pagenstecher's (1922) and Prince's (1921) research with de Zierold (see also Roll, 1978), and that of the French physician and later director of the Institut Metapsychique International, Eugene Osty (1923). The main reason why Pagenstecher and Osty explored psychometry was to throw light on the nature of psychic awareness; for example, an unfavorable relationship between psychic and target may cause the psychic's ability to remain unexpressed. If one or two more tests with the same person-target pair are also barren, it is best to try another method. A reading may also be complete fantasy: The unconscious of the psychic, receiving no stimulus from the target, constructs a story of its own. In addition, it was easier to control for sensory cues when objects other than those of the owners were used in an experiment.

Normally in studies with psychics, the aim is to demonstrate that they are able to provide better information on target persons than can be expected by chance. However, in most studies the experience of psychics in dealing with persons not known to them cannot be ruled out as a contributing factor when positive results are obtained. Therefore, the proper question, and the only one of practical use, is not whether psychics are able to do better than chance, but whether psychics are able to do better than nonpsychics of comparable experience in dealing with target persons. Boerenkamp (1985) compared impressions of 10 nonpsychics and 25 psychics about six target persons. Three series of sessions under conditions that were as similar as possible to the conditions of their normal daily practice were involved. It was found that the number of statements depends on the amount of feedback given by the sitter. Moreover, only about 12% of the statements were considered to be based on paranormal impressions. Boerenkamp concluded that research with psychics is no more promising than any other avenue of parapsychological research.

A series of psychometry-based experimental sessions was designed. We explored some strategies for using and appraising "token-object" effect in groups in the context of a program on psi development, based on Tart´s learning theory of ESP (1977) using correct and incorrect feedback. Following on two previous experiments (Parra and Argibay, 2007a, 2007b), ordinary people (nonpsychics) and self-claimed psychics were compared, using objects as targets .

METHOD

Participants

The sample consisted of 150 participants (77.3% females and 22.7% males) who were all well-educated and believed in psi. The ages ranged between 18 and 76 (M= 45.85; SD= 12.29). Personal experiences suggestive of psi were reported by the majority of the participants, such as ESP "feelings" around sick people (56%), around past place events (50.8%), around "token" objects (34.7%), around unknown people (69.4%), and around "token" photos (38.3%). Seventy-eight percent of the participants have had some training in meditation or other techniques involving internal focus of attention. Participants were recruited by media announcements and a mailing list. An announcement was also placed on the internet (*www.alipsi.com.ar*). The announcement provided a brief explanation of the ESP test procedure and encouraged people to have an interview with us in order to gain more information.

Classification Procedure

Inspired by other paranormal experience questionnaires (*Psychic Experiences Scale*; Richards, 1990 and *Anomalous Experiences Inventory*; Gallagher, Kumar, and Pekala, 1994), we designed a 17-item self-report questionnaire to split the sample into two groups, psychics (with ESP ability) and nonpsychics (with just experiences). Items included three factors (a) belief in psi, (b) extrasensory experiences (telepathy, ESP dreams, anomalous cognition events, clairvoyance, paranormal/anomalous feelings or impressions, being at unknown places or touching things, and aura vision), (c) extrasensory abilities (e.g.,

"Could you or can you control your mind to pick up psychically the thoughts or feelings of another person at a distance?" or "Could you or can you control your mind to pick up psychically physical sensations or to diagnose diseases at a distance employing only an object from a person unknown to you?"). Belief in psi (items 1.1 to 1.6 marked as Yes/No*)* was very high (98.4% answered all items about ESP belief positively).; questions 2.1 to 3.5, which concerned frequency of each experience, were marked as never, once, sometimes, and almost always. Participants who indicated "never" to all the items of the questionnaire were excluded from the sample (i.e., people who believe in ESP but have had no ESP experiences). Extrasensory experiences were defined as extrasensory perception, mind-to-mind communication, any form of precognition, or paranormal knowledge of the future or past. Participants (N= 88, 58.7%) who indicated "sometimes" on at least one of the five items on ESP ability, or indicated "once" on at least three ESP ability items were classified as "psychics". Participants (N= 62; 41.3%) who indicated "sometimes" on at least one ESP experience item, or indicated "once" on at least three of these items, or indicated "once" on one or two ESP ability items were classified as "nonpsychics".

Participant Orientation

Fourteen separate groups were tested by AP and JCA at the IPP headquarters in two-hour sessions over a period of two years. There were between 5 and 10 participants in each group. AP and JCA created a friendly and informal social atmosphere, engaging in conversation with the participants before the test. The psi task was to choose which of two objects was owned by someone who was ill (the TP).

Target Persons (TPs) and Objects

Explanations of the experiment were given to the targets persons (four adult volunteers, two males and two females, who led ordinary lives). None of them had extraordinary events (that we know about) during the course of the experimental series. JCA asked them for a handkerchief, comb, hair brooch, or billfold for fifteen days (an object of either current or previous use). Each TP gave only one object. All were "sick" with a medically diagnosed disease. Their objects were matched with a control group of objects from a healthy person (JCA) with no medically diagnosed sickness at the time of the experimental session. These objects were unknown to AP. People were selected as TPs because they suffered highly symptomatic, noncontagious diseases. We decided in advance to consult two doctors about what diseases to select. They recommended diabetes mellitus (type 2) (the comb), hernia hiatal (the handkerchief), osteoarthritis (the hair brooch), and varicose veins (the billfold).

Target Security

Eight objects were used in this experiment. Four were "token" objects that TPs had owned for at least two years, and four of them (the "controls") were owned by JCA. Before each session, TPs delivered the objects in a box to JCA, who then added the four "control" objects to the box and coded both groups of objects. AP did not know how JCA had coded the "token"and "control" objects. JCA also did not enter the test room during the test; he was in a nonadjacent, sound attenuated room. (The presence of JCA in the same room as the participants and the decoding of the objects would have allowed for sensory cues from JCA to the participants.) Then, JCA used a random procedure (a list of numbers) to determine the order in which the pairs of objects would be rated by each participant. JCA also alternated in which side of a small box each member of the pair was placed. These procedures were unknown to AP. Once the test period for the group was over, AP delivered the objects to JCA, who recoded them as they were originally and returned them to the appropriate TPs. JCA and AP kept independent paper-and-pencil records during all randomization procedures and handling of the token and control objects. The above procedure was repeated with each group.

Test Procedure

Two rooms were necessary for the test procedure; one for AP and the participants, and the other for JCA. The participants were tested in groups and were seated in chairs. Participants were all present

together when handing the objects. AP delivered the pairs of objects to the participants in the small boxes, and they handled them in order. For each pair of objects (TP and "control") there was a form with printed test instructions (although instructions were also given verbally). Before the completion of the ESP test, all participants underwent a 9–minute relaxation exercise, which included progressive autogenic phrases using the voice of one of us (AP). We told participants that we were doing an ESP test using objects, which it is said can stimulate psychic diagnosis abilities in people. Short descriptions of the symptoms were printed in non-technical language and randomized on each form:

1. *Diabetes mellitus*: Type 1 diabetes often involves frequent urination and increased thirst, and a consequent increase in fluid intake. There may also be weight loss (despite normal or increased eating), increased appetite, and irreducible fatigue. Thirst develops because of osmotic effects —sufficiently high glucose in the blood is excreted by the kidneys, but this requires water to carry it and thus causes increased loss of fluid, which must be replaced. Another common symptom is altered vision. Especially-dangerous symptoms include the smell of acetone on the patient's breath (a rapid, deep breathing), and any altered state of consciousness or arousal.

2. *Hiatal hernia*: This may cause heartburn, belching or chest pain when stomach acid backs up into the esophagus. It tends to become worse when one leans forward, strains, lifts heavy objects, or lies down. In some cases, the part of the stomach that protrudes into the chest cavity may become twisted (strangulated) or have its blood supply cut off, leading to severe chest pain, difficulty in swallowing, and obstruction of the esophagus.

3. *Knee arthritis*: This is usually a slowly progressive degenerative disease in which the joint cartilage gradually wears away. It most often affects middle-aged and older people. Pain associated with arthritis develops gradually. The joint may become stiff and swollen, making it difficult to bend or straighten the knee. Pain and swelling are worse in the morning or after a period of inactivity. Pain may also increase after activities such as walking, stair climbing, or kneeling. The pain may often cause a feeling of weakness in the knee, resulting in a "locking" or "buckling."

4. *Varicose veins*: The word "varicose" refers to a vein that is unnaturally and permanently distended. Vein walls or vein valves near the skin can become damaged from natural stretching or weakening because of the pressure of the blood flowing through the veins. Varicose veins often appear through the skin on a person's legs as blue, bulging, and twisted. They can cause pain in the legs, a feeling of fullness and heaviness, mild swelling of the ankles, brown.discoloration, and skin ulcers near the ankle.

The test instructions for each participant during the test were simple: AP asked he/she to "remain with eyes closed, quiet, waiting for mentations about the object for a few minutes." AP remained silent in the room to observe the testing period, which usually lasted 60 minutes. Each participant received four pairs of objects (TP and control) to be "touched". Afterwards, the participant marked on a form which object they thought belonged to an ill person, by writing the code printed on the object. (They did not give impressions about the illness; they just marked for "target" or "control"). Four trials were performed by each participant on a single visit. Once participants completed the four forms (corresponding to each pair of objects), they passed the objects on to AP, who gave the boxes and the forms back to JCA for recoding. After placing the forms from the participant in an envelope, JCA passed the objects for the next participant to AP. This procedure was repeated for each participant. Participants were not given trial-by-trial target feedback of the TP scores during the test period. Total scores were provided only at the end of the workshop and TPs remained unidentified. The randomness source was an electronic random number generator (RNG).

Consent Form

Participants signed an appropriate consent form, using language they could reasonably understand. The form specified that the person (1) had the capacity to consent, (2) had been informed of all significant information concerning the procedure, (3) had freely and without undue influence expressed consent, and

that (4) consent had been appropriately documented (Beahrs & Gutheil, 2001). Membership in the groups was voluntary, and material discussed in the group was confidential.

RESULTS

The experiment studied two groups ("psychics" and "nonpsychics") using a psychometry procedure with "token" objects in a forced-choice ESP test. The number of hits on the four trials were summed for each participant, creating a 0-4 scale with MCE = 2. The two groups combined scored significantly above chance: $t(149) = 2.32$; $p = .01$, one tailed.

TABLE 1
ESP RESULTS: PSYCHICS VS. NONPSYCHICS

	Mean	*t*	df	p (one tailed)
Psychics(N=88)	2.18	1.86	87	.03
Nonpsychics (N=62)	2.13	1.38	61	.08

As shown in Table 1, the prediction was correct in terms of the difference between both groups, that is, psychics scored higher than nonpsychics, but it did not reach significance, t(146)= .376; p = .35, one tailed. As we expected, we obtained a significant score for "psychics" and a nonsignificant score for "nonpsychics".

Because of an experiment by Novillo Pauli (1975, pp. 283-288), an analysis was performed to assess if the groups differed in terms of the variance of their ESP scores. A significant difference was obtained: $F(87/61) = 1.57$; $p < .05$. The "psychics" had greater variability than the "nonpsychics".

Another analysis was carried out to determine if there were differences between the four diseases (diabetes mellitus, hernia hiatal, osteoarthritis, and varicose veins). The results did not show any significant differences ($X^2 = .77$).

DISCUSSION

It can be concluded that those participants who claimed to have ESP skills ("psychics") tended to score higher in a forced-choice ESP test with "token objects" than those who claim only ESP experiences, with no ESP skills ("nonpsychics"). A datum of interest is, however, the difference in variability between the two groups. Participants who claimed psi ability had greater variability in their psi hits. This result could be due to the fact that some of the participants in this group had difficulty in correctly interpreting the "psi signal", so that in an experimental setting where they were asked to attempt to detect information via ESP, they could not "decode it" adequately. Those who decoded the psi signal adequately gave the correct response, while those who could not decode adequately responded systematically in the opposite direction, obtaining psi-missing. This would partly explain the variability in the psychics group compared with the nonpsychics group, in which there were more participants who obtained scores above chance.

Traditionally, most research on people who claim to be psychics has yielded nonsignificant results. Even with a star subject such as G. Croiset, most experiments failed, and the successful ones rarely exceeded the .01 significance level. In comparison with laboratory research with mainly unselected subjects, for instance the Ganzfeld studies, studies with psychic claimants clearly are not more successful. Although, in principle, anyone may call him- or herself a psychic, with few exceptions the survey is based on work with well-known psychics.

This result is clearly at variance with the popular image of the abilities of psychics. If that image is not based on demonstrable ESP ability, as the data suggest, then the question remains as to why so many people are impressed by what psychics do. This image is mainly based on a few spectacular cases, often rather selectively and incompletely reported by the media. The popular image of the psychic, at least in

Argentina, is often based on a few highly publicized cases concerning a small number of "stars", together with the endless and often distorted repetition of these few cases on popular TV programs. This image is probably reinforced by what people experience when consulting a psychic.

It appears that many psychic diagnostic impressions relate to perceptions of apparent energies in and around target persons, which may be difficult to translate into physical diagnoses. A physician familiar with energy medicine would possibly assign energy dysfunctions to relevant organs, making intuitive diagnoses more useful. A doctor who is unfamiliar with energy medicine is likely to find psychic impressions too vague to be useful. Psychics and healers are not trained in medical terminology, anatomy, or physiology, and therefore they may have difficulties providing impressions specific to anatomical structures and quantifiable in conventional terminology.

Different psychics use different methods to facilitate mental images; some do so in a hypnotic state while others divert their attention to the target while remaining awake. The perception of targets also differs among psychics. For the most part, they are specialists, some perceiving bodily changes, others emotional or intellectual states, and still others social events. For example, E. Osty found his psychics adept at untangling the mental problems of the target persons. His psychics were also good at describing bodily problems, but they lacked the medical vocabulary to make specific diagnoses. Osty suggested that the best procedure would be for a physician to work in tandem with a psychic. The doctor would provide an initial diagnosis and the patient would see the psychic for further diagnosis and prognosis.

Roll (2004) attributes psychometry to a memory-like process in which psychics recall events in the history of objects other than his/her own brain. The stimuli to which the psychic responds are not the familiar physical properties of the object, as in sense perception, but memory-like elements associated with the object. In this respect, Pagenstecher (1922) found that objects that had not been exposed to traumatic events elicited images of the manufacture of the objects, that is, of primary events. In ordinary memory, recent or primary events tend to be recalled more often than others.

The process may be easier to understand if the definition of "person" is extended to include objects in the environment. There would then be two types of memory, recall of events in the life of the psychic and recall of events in the lives of persons with whom the psychic is connected. A material object can be a bridge, not only because it is visible and tangible but also because it extends into the past and thereby forms a link to people in whose life it has figured. Once this bridge has been established, the psychic may follow the activities of a person as well as others whose lives intersect with that person.

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REFERENCES

Beahrs, J.O. and Gutheil, T.G. (2001). Informed consent for psychotherapy. *American Journal of Psychiatry, 158*, 4-10.

Benor, D. J. (1992). Lessons from spiritual healing research and practice. *Subtle Energies, 3*, 77-92.

Benor, D.J. (2002). Intuition: Discussion of pattern recognition and psi awareness. *International Journal of Healing and Caring, 2*, 134-156.

Bentley, W.P. (1961). Research in "psychometry" in the US and England. *International Journal of Parapsychology, 3,* 75-103.

Boerenkamp, H. G. (1985). A study of paranormal impressions of psychics: I. Experimental design. *European Journal of Parapsychology, 5*, 327-348.

Brennan, B. (1957). *Hands of light*. New York, NY: Bantam.

Brier, B.B.; Savits, T.; and Schmeidler, G. (1974), Experimental tests of Silva Mind control graduates. In W.G. Roll, R.L. Morris, and J.D. Morris (Eds.), *Research in Parapsychology 1973* (pp. 13-15). Metuchen, NJ: Scarecrow Press.

Buchanan, J.R. (1885). *Manual of psychometry: The dawn of a new civilization, second edition*. Boston: Press of the Roxbury Advocate.

Cayce, E. and Cayce, H.L. (1971). *The outer limits of Edgar Cayce's power*. New York, NY: Harper and Row.

Freed, G. (1992). Miscellaneous sharings. *The Doctor-Healer Network Newsletter, 1*, p. 11.

Karagulla, S. & van Gelder Kunz, D. (1989). *The Chakras and the human energy fields.* Wheaton, IL: Theosophical.

Krieger, D. (1979). *The therapeutic touch: How to use your hands to help or heal*. Englewood Cliffs, NJ: Prentice-Hall.

McGarey, W.A. (1983). *The Edgar Cayce remedies.* New York, NY: Bantam.

Mison, K. (1968). Statistical processing of diagnostics done by subjects and by physician. *Proceedings of the 6th International Conference on Psychotronics Research*, pp. 137-138.

Nash, C.B. (1987). The possible detection of cervical cancer by ESP. *Journal of the Society for Psychical Research, 54*, 143-144.

Novillo Paulí, E. (1975). *Los fenómenos parapsicológicos: Psi en Laboratorio.* Buenos Aires: Kapeluz.

Osty, E. (1923). *Supernormal faculties in man*. London: Methuen.

Pagenstecher, G. (1922). Past events seership: A study in psychometry. *Proceedings of the American Society for Psychical Research, 16*, 1-136.

Parra, A. & Argibay, J C. (2007a). Comparing psychics and non-psychics through a "token-object" forced choise ESP test. *Journal of the Society for Psychical Research, 71*, 80-90.

Parra, A. & Argibay, J C. (2007b). Comparing a free-response psychometry test with a free-response visual imagery test for a non-psychic sample. *Journal of the Society for Psychical Research, 71*, 91-99.

Prince, W. F. (1921). Psychometric experiments with Senora Maria Reyes de Z. *Proceedings of the American Society for Psychical Research, 15,* 189-314.

Richet, C. R. (1922). *Traité de metapsychique*. Paris: Alcan.

Rogo, D.S. (1974). Psychometry: Getting psychic impressions from objects. *Psychic, 5*(4), 19-22.

Roll, W. G. (1978). Hypnosis and object association. In M. Ebon (Ed.), *The Signet Handbook of Parapsychology.* New York, NY: New American Library.

Roll, W. G. (2004). Early studies in psychometry. *Journal of Scientific Exploration, 18*, 711-720.

Schouten, S.A. (1993). Applied parapsychology: Studies of psychics and healers. *Journal of Scientific Exploration, 7*, 375-402.

Schwarz, B.E. (1967). Possible telesomatic reactions. *Journal of the Medical Society of New Jersey, 64,* 600-605.

Shealy, C.N. (1975). The role of psychics in medical diagnosis. In R.J. Carlson (Ed.), *Frontiers of Science and Medicine* (pp. 129-l37) New York, NY: Contemporary.

Shealy, C.N. (1988). Clairvoyant diagnosis. In T.M. Srinivasan (Ed.), *Energy medicine around the world* (pp. 291-301). Phoenix, AZ: Gabriel Press.

Stearn, T. (1967). *Edgar Cayce*. New York, NY: Bantam Books.

Tart, C.T. (1977). Toward conscious control of psi through immediate feedback training: Some considerations of internal processes. *Journal of the American Society for Psychical Research, 71*, 375-408.

Vaughan, A. (1974). Experimental tests of Silva Mind Control graduates [Summary]. In W. G. Roll, R. L. Morris, & J. D. Morris (Eds.), *Research in Parapsychology 1973* (pp.13-15). Metuchen, NJ: Scarecrow.

Young, D.E. & Aung, S.K.H. (1997). An experimental test of psychic diagnosis of disease. *Journal of Alternative and complementary medicine, 3*, 39-53.

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PARANORMAL BELIEF, ANXIETY AND PERCEIVED CONTROL OVER LIFE EVENTS

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ABSTRACT

The psychodynamic functions hypothesis has been proposed as a means to explain the high levels of paranormal belief among the population. According to this view, the world appears to some to be unpredictable, uncontrollable and inherently meaningless, which gives rise to anxiety. Paranormal beliefs may develop to allay this anxiety by offering the promise of order and personal power. Although there is some evidence to support the putative association between the three variables of perceived helplessness, anxiety and paranormal belief, these have not previously been considered together in the same population. Sixty-five participants completed a battery of measures including the State-Trait Anxiety Index (Spielberger, 1983), the Paranormal Belief Scale (Tobacyk, 1988) as well as newly constructed Estimated Likelihood of Stressful Events and Perceived Control over Stressful Events scales. No relationship was found between perceived control over future life events and paranormal belief, but measures of state and trait anxiety correlated significantly with both perceived control and paranormal belief. Results of a path analysis suggested a model that was broadly in agreement with the psychodynamic functions hypothesis in describing a mediating role for anxiety.

INTRODUCTION

The term paranormal has been used to describe phenomena or occurrences that are physically impossible or beyond human capabilities and scientific explanation (Thalbourne, 1982). Although mainstream scientists remain highly skeptical of claims for paranormal phenomena (e.g., Humphrey, 1995; Sagan, 1996), levels of belief among the general population are typically high (e.g., Gallup & Newport, 1991). One explanation that has been put forward to explain this discrepancy is that paranormal beliefs are primarily need serving (e.g., Krippner & Winkler, 1997, Schumaker, 1990). According to this view — termed the psychodynamic functions hypothesis by Irwin (1999) — life is seen by some as chaotic and unpredictable, and this provokes anxiety. Paranormal beliefs arise as an attempt to allay this anxiety by giving the semblance of order or meaning and offering the illusion of control over potential (particularly negative) future events (Irwin, 1993, 1999, 2003; Vyse, 1997).

In support of the psychodynamic functions hypothesis, McGarry and Newberry (1981) found that students who endorsed paranormal beliefs tended to perceive the world as more unpredictable, difficult or problem-laden and unjust. They speculated that the development of occult interests may be related to the promise within such belief systems of mysterious 'magical' powers to overcome or reduce one's problems. In this vein, Keinan (1994) reported that residents living in areas under threat of military action during the Gulf War scored higher on measures of magical thinking than those in areas not under threat. Several researchers have manipulated the uncertainty inherent in a task set for participants and have found that paranormal beliefs and superstitious behaviours are greater where the task is uncontrollable or the outcome uncertain (Matute, 1994, 1995; Padgett & Jorgenson, 1982). Dudley (1999) found that levels of superstitious belief, as measured by the Paranormal Belief Scale (PBS: Tobacyk, 1988), increased following work on an unsolvable puzzle, but decreased after a solvable puzzle, and paranormal believers have been found to be more likely to create an illusion of control when accounting for their performance at a chance-based task (Blackmore & Troscianko, 1985).

Away from the artificiality of laboratory manipulations, there has been a relatively consistent tendency for high scores on belief in the paranormal to be associated with the external pole on measures of locus of control (e.g., Allen & Lester, 1994; Dag, 1999; Groth-Marnat & Pegden, 1998; Irwin, 1986; but see also Haraldsson, 1981; Irwin, 2000), which could be taken as a measure of perceived lack of personal efficacy. It should be noted, however, that McGarry and Newberry (1981) found that the effect was reversed for those participants who reported an active involvement with the paranormal (though this included merely reading relevant books). This might be interpreted as an indicator of the effectiveness of such involvement in overcoming perceived helplessness. However, the items that make up Rotter's (1966) locus of control scale are still some way removed from the sense of lack of control over prospective *personal* events, particularly misfortunes, that paranormal beliefs were originally hypothesised to arise in response to. More direct measures are needed before support for the model can be claimed, and this provided the principal aim for the present study.

The psychodynamic functions hypothesis proposes that the association between the perception of future events as uncontrollable and the development of paranormal beliefs is mediated by anxiety. Indeed, there is some support for the notion that an illusion of control or order in an uncertain situation can alleviate anxiety. For example, Sanderson, Rapee and Barlow (1989) found that participants who were given the false impression that they had control over an aversive stimulus were less likely than controls to experience panic attack symptoms. Taylor and Brown (1988) provide a review of literature suggesting that such illusions may be beneficial in terms of mental health and well being. There is also some evidence of a link between anxiety and levels of paranormal belief. Blum and Blum (1974) claimed that superstitious beliefs may reduce anxiety for the individual. Singer and Benassi (1981) also reported that the harbouring of occult and superstitious beliefs might alleviate anxiety. Although Schumaker (1987) claimed that participants who scored higher on measures of belief in the paranormal reported less psychopathology and psychological distress than lower scorers, Irwin (1991) has argued that the relationship has been misinterpreted and actually reflects *more* psychological distress among paranormal believers. A number of other studies have reported a positive relationship between anxiety and paranormal beliefs (Okebukola, 1986; Wagner & Ratzeburg, 1987; Wolfradt, 1997), although the effect sizes are relatively modest (e.g., for Wolfradt, 1997, all correlations are 0.3 or lower) and have not always been detected (e.g., Tobacyk, 1982).

We have seen, then, that there is encouraging evidence for each of the bivariate relationships outlined in the psychodynamic functions hypothesis. To date, however, the relationship between all three variables has not been considered in the same population. It was planned in this study to conduct a path analysis to see if some of the putative relationships are actually mediated by other variables as hypothesised. We also planned to replace more general measures of locus of control with a new measure of respondents' perceived likelihood of and control over potentially stressful future events, concentrating on occurrences that were more likely to have a significant impact upon them personally should they occur. We predicted that respondents who reported less perceived control over future events would present as more anxious. We also predicted that those who were more anxious would tend to be more believing in paranormal phenomena. Finally we expected as a consequence of the above relationships to find that respondents who reported less perceived control over future events would tend to be more believing in paranormal phenomena. More speculatively, it was predicted that respondents who reported less perceived control over future events would expect negative events to be more likely to occur and positive events to be less likely.

METHOD

Participants

Sixty-five undergraduates at University College Northampton volunteered to participate. The sample consisted of 11 males and 54 females, ranging in age from 18 to 46 years (*Mdn* = 20, *M* = 21.8).

Materials

The survey inventory consisted of five questionnaires. The first asked for basic demographic information, such as age, sex and ethnicity. The second questionnaire included the state and trait versions of the State-Trait Anxiety Inventory for adults (Spielberger, 1983). This is a well validated and widely used measure (cf. Kline, 2000). Both scales consist of 20 items, each rated on a four-point frequency scale. The third questionnaire was the Estimated Likelihood of Stressful Events Scale (ELSE); a measure of the participant's estimated likelihood that stressful events may occur during their life. This was developed especially for this study by taking sixteen stressful events listed in the Student Life Events Questionnaire (Bushnell & Mullin, 1987, itself derived from Holmes & Rahe's [1967] Social Readjustment Rating Scale) and adding a further sixteen items to give a total scale of 32 items. The events selected and generated for inclusion reflected stressful events that perhaps could not be foreseen in the respondent's future and would significantly affect them if they were to occur. Events were chosen that were regarded as not wholly in the control of the respondent, for example "Marital separation or separation from a live in partner" and "Developing a cancer." To control for response set, eight of the added items reflected positive events, for example "Finding true love" and "Gaining a major work promotion," to give a total of 9 positive items and 23 negative items. Positive items were scored separately. Participants gave their estimate of likelihood using a 7-point logarithmic scale ranging from 1/1 (indicating that the event was highly likely) to 1/1 million (indicating that the event was highly unlikely). A copy of the ELSE is included as an appendix. The fourth questionnaire was the Perceived Control over Stressful Events Scale (PCSE); a measure of the amount of control participants believed they had over the occurrence of stressful future events. This was developed especially for this study by taking the items of the ELSE scale and providing participants with a 7-point Likert response scale, ranging from 1 (indicating no control over the likelihood of the event occurring) to 7 (indicating total control over the likelihood of the event occurring). Separate scores are generated for positive and negative items. The fifth questionnaire consisted of Tobacyk's (1988) Paranormal Belief Scale (PBS). This is a 26-item scale that is concerned with a wide variety of paranormal beliefs, including traditional religious beliefs, psi, witchcraft, superstition, spiritualism, extraordinary life forms and precognition. Responses were made on a 5-point scale from strongly agree to strongly disagree, with higher scores indicating greater agreement.

Procedure

Participants were approached towards the end of a class. CB introduced herself and the details of the study. Those willing to participate were given a copy of the questionnaire inventory, which included a cover sheet explaining the participants' right to withdraw, the right to omit details, and the right to confidentiality. They were told only to take part if they wished to once they had read the details of the study. The survey took approximately twenty minutes to complete. Participants either completed the inventory during the break between classes or took them home and returned them to CB at a later date.

RESULTS AND DISCUSSION

Summary statistics for the measures used in this study are given in Table 1. It can be seen that scores on all measures are reasonably normally distributed, although ratings of likelihood of both negative and positive events exhibit a small negative skew. At 72.3 the mean paranormal belief for this sample is somewhat less believing than previous samples from the University of Northampton (e.g., Roe & Morgan, 2002, M = 82.7) and elsewhere (e.g., Wolfradt, 1997, M = 76.1). Mean state and trait anxiety scores are very similar to the norms for college students (Spielberger, 1983). Mean estimates of perceived likelihood of future events occurring are somewhat above (less likely than) the theoretical midpoints for both positive and negative events (i.e. the scores that would be achieved if a respondent selected the unsure or ambivalent response for each item, which gives totals of 36 and 92 respectively). For perceived control over future events, the mean score is slightly higher (relatively within one's control) for positive events

but slightly lower (relatively outside one's control) for negative events (theoretical means again 36 and 92 respectively).

TABLE 1
MEAN SCORES AND STANDARD DEVIATIONS OF PARANORMAL BELIEF, CONTROL OF LIFE EVENTS, LIKELIHOOD OF LIFE EVENTS AND TRAIT ANXIETY

Measure	***M***	***SD***	***Median***	***Range***	***Kurtosis***	***Skew***
Paranormal belief	72.3	14.7	72	35-106	.152	-.219
State anxiety	36.5	8.3	36	20-60	.038	.458
Trait anxiety	41.8	9.3	40	23-72	.677	.771
Perceived likelihood of negative future events	99.3	16.9	101	47-127	.330	-.683
Perceived control over negative future events	73.8	17.7	74	36-120	.030	.021
Perceived likelihood of positive future events	46.2	7.5	47	22-57	.860	-.955
Perceived control over positive future events	47.1	6.3	48	33-62	-.477	.054

Zero order correlations for all the study measures are given in Table 2, and show that the predicted correlations were found between paranormal belief and state and trait anxiety, indicating that those presenting as more anxious also reported greater belief in paranormal phenomena. This is consistent with most previous studies (Okebukola, 1986; Wagner & Ratzeburg, 1987; Wofradt, 1997). In turn, state anxiety scores correlate positively with scores on perceived likelihood that negative events will happen, but negatively with scores on perceived likelihood that positive events will happen. For both types of event high scorers on state anxiety tend to regard their incidence as relatively uncontrollable. A similar pattern is evident for trait anxiety, although the correlation with perceived control of negative events is smaller and non-significant. These data confirm Sanderson et al's (1989) finding that the increased perception of control over a stressful potential event is associated with reduced anxiety, and is in keeping with Taylor and Brown's (1988) suggestion that illusion of control has a beneficial effect upon mental health.

However, there is little evidence of a direct link between paranormal belief and perceived control over negative future events and only a weak and non-significant negative correlation with control over positive future events. This contrasts with the findings of previous research that has utilised measures of locus of control (e.g., Allen & Lester, 1994; Dag, 1999; Groth-Marnat & Pegden, 1998; Irwin, 1986), but is consistent with Irwin (2000). One point of difference between this and previous studies is the use of a more personally relevant measure of control, which may suggest that paranormal belief is associated with an external locus in a more abstract sense but not when considering events that make a strong and personal impact.

Interestingly, for perceived likelihood of positive future events, there is no correlation with paranormal belief. There is a modest positive correlation between paranormal belief and perceived likelihood of negative future events, suggesting that believers may expect more negative events to occur in their lives

than do disbelievers, but this trend is non-significant. This would be in keeping with a characterisation of the paranormal believer as concerned that the future is to be feared. However, such a view stands in contrast to Irwin's (2003) more recent finding that paranormal believers hold assumptive world views that emphasise the benevolence and meaningfulness of the world and the worthiness of the self.

TABLE 2
PEARSON CORRELATIONS BETWEEN MEASURES WITH 2-TAILED PROBABILITIES

	State anxiety	Trait anxiety	likelihood of negative events	control over negative events	likelihood of positive events	control over positive events
Tobacyk belief score	.272*	.326**	.232	-.010	.024	-.194
State anxiety		.631**	.289*	-.255*	-.262*	-.446**
Trait anxiety			.388**	-.200	-.258*	-.520**
Perceived likelihood of negative future events				-.247*	.104	-.403**
Perceived control over negative future events					-.102	.256*
Perceived likelihood of positive future events						.251*

The correlation between the perceived controllability and likelihood of negative events is significant and in the predicted direction, with those perceiving greater control expecting fewer events to befall them. A similar effect, but in the opposite direction can be seen for the relationship between the controllability and likelihood of positive events. These results suggest that respondents may tend either to see the future optimistically (i.e. 'bad things are not likely to happen to me and if they do I have control over them') or pessimistically (i.e. 'bad things are likely to happen to me and I have no control over them'). However, we should note that the effect sizes are still only small to medium (Cohen, 1988) and in both cases account for just over 6% of the variance. Clearly the likelihood of negative events occurring is not regarded as just a matter of personal control.

Taken together these findings suggest that there is no direct relationship between perceived likelihood and controllability of future events and paranormal belief, but the reasonably strong correlations they share with anxiety suggest that there could be a mediated effect. To explore the suggestion that any effect of perceived likelihood and uncontrollability of stressful events upon paranormal belief might be mediated by anxiety, a path analysis was conducted. The path analysis results were obtained through successive stepwise multiple regression analyses with paranormal belief as the initial criterion and each predictor from previous analyses serving as the criterion for the next stage of regressions with the remaining variables. The path coefficients represent standardised partial regression coefficients (β weights). Non-significant relationships with paranormal belief are given as dashed lines for information. It is evident

from Figure 1 that any effect of perceived likelihood or uncontrollability of stressful future events (whether positive or negative) is mediated through increases in anxiety. The only variable that was retained in stage 1 of the regression was state anxiety, with higher levels of anxiety being associated with greater levels of belief. Trait anxiety was predicted by state anxiety[1], but also by perceived control over positive future events, with less perceived control being associated with greater anxiety. State anxiety was predicted by perceived likelihood of negative and positive future events, being greater where positive events were perceived as more likely and negative events less likely. Perceived controllability of positive events was also predicted by perceived likelihood of both negative and positive future events, but the patterns were reversed. The remaining variable not included in the solution, perceived control of negative future events, loaded on estimated likelihood of negative future events but not on estimated likelihood of positive future events.

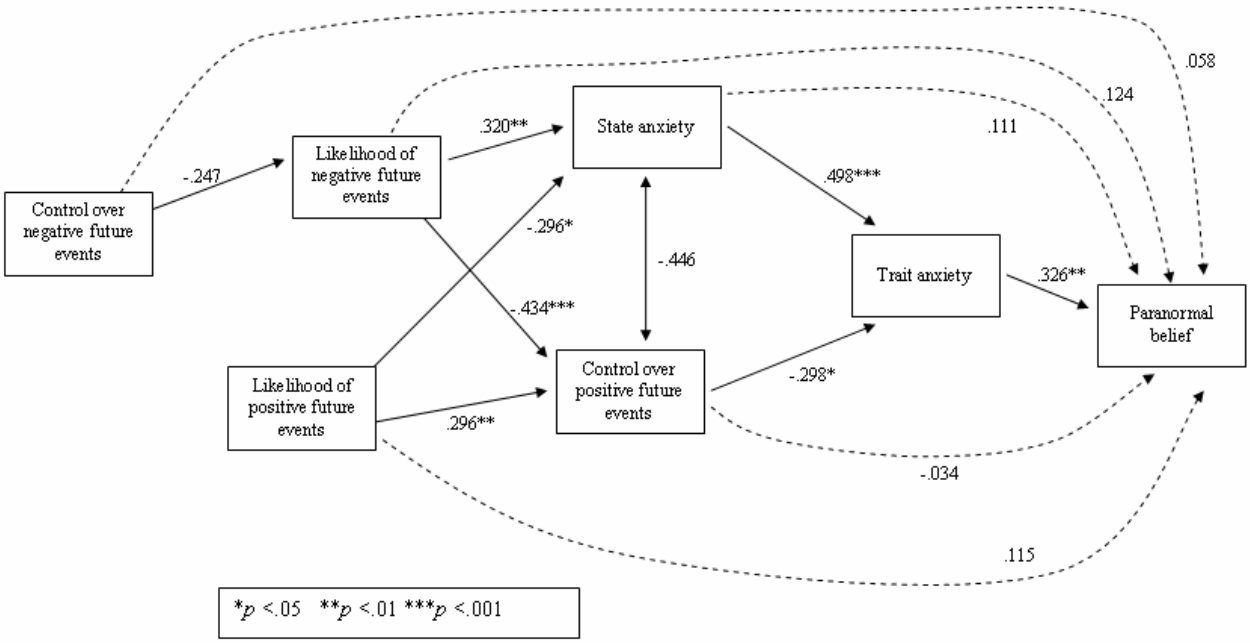

Fig 1. Path diagram illustrating the interrelationships between paranormal belief, state and trait anxiety and perceived likelihood and controllability of stressful future events.

CONCLUSIONS

The first point to make is that, of course, we cannot necessarily infer cause and effect from results derived from correlational analyses; we cannot determine here whether paranormal belief causes high trait anxiety or high trait anxiety causes paranormal belief, for example. However, we can comment that on the basis of the findings reported here we cannot refute the suggestion that paranormal beliefs may develop in some people as a response to anxiety that is evoked by the perception that the world is chaotic and unpredictable, and that "bad things sometimes happen to good people" (Irwin, 2003, p. 19).

Ironically the model is only testable if we presume that the evolution of paranormal beliefs is an ineffective response to the sense of anxiety evoked by encountering a fundamentally meaningless world, since otherwise we would not witness the association with anxiety that was found. The results reported here suggest that paranormal beliefs are not beneficial in terms of creating a system or cognitive bias that

[1] It is a convention with multiple linear regression and path analyses to refer to 'predictor' and 'criterion' variables that are hypothesised to be associated. It should be borne in mind that the ability to predict scores on one variable based on scores on another still does not imply a cause-effect relationship."

may filter reality so as to reduce psychological harm, *contra* Schumaker (1990) and Vyse (1997). Irwin (2000) offers a possible reason for this when he states that although a sense of control over threatening events was enhanced by paranormal beliefs, this seemed to be context specific and could not generalise to all situations. It remains to be seen as to what situations or events may benefit from paranormal beliefs.

We should also be wary of over-interpreting the data given that the sample size was relatively small for the analysis conducted — Dancey & Reidy (1999) suggest a minimum of 15 participants per variable, suggesting a minimum sample size of 90, though Howell (1992) gives minima based on the number of predictors plus 40 and plus 50, both of which this study would satisfy. Nevertheless, one or two of the reported effect sizes (particularly the correlation between estimated likelihood of negative future events and paranormal belief) if replicated in a study of greater power would have been significant. Rather than collect more data we plan to replicate this study with a larger sample using a design that addresses some weaknesses in the present study. The newly-coined ELSE and PCSE scales still cover only a limited range of events and there is a concern that these may not be particularly representative of the worries that people have about their future. It would be interesting to solicit the views of prospective participants as to what they look forward to and what they fear in their life ahead. Similarly, the Paranormal Belief Scale (Tobacyk, 1988) includes questions that seem highly irrelevant to the issue of personal control over one's circumstances (e.g., 'the abominable snowman of Tibet exists'). A more personalised measure of paranormal belief and experience would be preferable.

Two final considerations were suggested to us by referees of this paper, and we are grateful for an opportunity to reflect on them here. Firstly, this study — in keeping with other research reviewed here — treats paranormal belief as if it were a monolithic construct, which it clearly is not (cf. Hartman, 1999; Lawrence, Roe, & Williams, 1997, 1998; Tobacyk & Thomas, 1998). Given the study power issues already referred to here, we feel it would be inappropriate to break down the data set into subscales. However, future work should consider whether the relationships identified here hold up for the different domains of paranormal belief, particularly where they distinguish between belief in parapsychological phenomena and superstitious beliefs more generally (see, for example, Roe & Morgan, 2002, which considers the relationship between narcissistic personality traits and scores on both the PBS and Thalbourne's sheep-goat scale).

Secondly, we should bear in mind that a number of new measures were generated for this study so that we could gauge participants' perceptions of the likelihood of occurrence, and their control over, future positive and negative personal events, and their robustness has not yet been demonstrated. However, it was not the intention here to conduct a psychometric assessment of these measures, and indeed the study design is ill-suited to providing estimates of reliability and validity for them — for example, in not including a retest opportunity with the same sample. We can note that internal reliability is satisfactory for three of the four measures and is very close to satisfactory for the fourth, assuming a threshold Cronbach's alpha of 0.7 (after Kline, 2000): for likelihood of positive events $\alpha = .77$, for likelihood of negative events $\alpha = .89$, for control over positive events $\alpha = .69$, and for control over negative events $\alpha = .88$. Observed correlations with anxiety measures that accord with prediction might be interpreted as a form of convergent validity, although the effect sizes, while significant, are rather small for such purposes. A more thorough psychometric evaluation of these measures would be beneficial.

REFERENCES

Allen, J., & Lester, D. (1994). Belief in paranormal phenomena and an external locus of control. *Perceptual and Motor Skills, 79*, 226.

Blackmore, S., & Troscianko, T. (1985). Belief in the paranormal: Probability judgements, illusory control, and the 'chance baseline shift'. *British Journal of Psychology, 76*, 459-468.

Blum, S. H., & Blum, L. H (1974). Dos and don'ts: an informal study of some prevailing superstitions. *Psychological Reports, 35*, 567-571.

Bushnell, I. W. R., & Mullin, J. T. (1987). *Experimental psychology: A computerized laboratory course*. London: Lawrence Erlbaum Associates.

Cohen, J. (1988). *Statistical power analyses for the behavioral sciences* (2nd ed). Hillsdale, NJ: Lawrence Erlbaum Associates.

Dag, I. (1999). The relationships among paranormal beliefs, locus of control and psychopathology in a Turkish college sample. *Personality and Individual Differences, 26*, 723-737.

Dancey, C. P., & Reidy, J. (1999). *Statistics without maths for psychology*. Harlow, UK: Prentice Hall.

Dudley, R. T. (1999). The effect of superstitious belief on performance following an unsolvable problem. *Personality and Individual Differences, 26*, 1057-1064.

Gallup, G., & Newport, F. (1991). Belief in paranormal phenomena among adult Americans. *Skeptical Inquirer, 15*, 137-146.

Groth-Marnat, G., & Pegden, J. (1998). Personality correlates of paranormal belief: Locus of control and sensation seeking. Social *Behaviour and Personality, 26*, 291-296.

Haraldsson, E. (1981). Some determinants of belief in psychical phenomena. *Journal of the American Society for Psychical Research, 75*, 297-309.

Hartman, S.E. (1999). Another view of the paranormal belief scale. *Journal of Parapsychology*, **63**, 131-141.

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11*, 213-218.

Howell, D. C. (1992). *Statistical methods for psychology* (3rd ed). Belmont, CA: Duxbury Press.

Humphrey, N. (1995). *Soul searching: Human nature and supernatural belief*. London: Chato & Windus.

Irwin, H. J. (1986). The relationship between locus of control and belief in the paranormal. *Parapsychological Journal of South Africa, 7*, 1-23.

Irwin, H. J. (1990). Fantasy proneness and paranormal beliefs. *Psychological Reports, 66*, 655-659.

Irwin, H. J. (1991). A study of paranormal belief, psychological adjustment, and fantasy proneness. *Journal of the American Society for Psychical Research, 85*, 317-331.

Irwin, H. J. (1992). Origins and functions of paranormal belief: The role of childhood trauma and interpersonal control. *Journal of the American Society for Psychical Research, 86*, 199-208.

Irwin, H. J. (1993). Belief in the paranormal: A review of the empirical literature. *Journal of the American Society for Psychical Research, 87*, 1-39.

Irwin, H. J. (1999). *An introduction to parapsychology* (3rd ed.). Jefferson, NC: McFarland & Co.

Irwin, H. J. (2000). Belief in the paranormal and a sense of control over life. *European Journal of Parapsychology, 15*, 68-78.

Irwin, H. J. (2002). Proneness to self-deception and the two-factor model of paranormal belief. *Journal of the Society for Psychical Research, 66*, 80-87.

Irwin, H. J. (2003). Paranormal beliefs and the maintenance of assumptive world views. *Journal of the Society for Psychical Research, 67*, 18-25.

Keinan, G. (1994). Effects of stress and tolerance of ambiguity on magical thinking. *Journal of Personality and Social Psychology, 67*, 48-55.

Kline, P. (2000). *The handbook of psychological testing (2nd ed)*. London: Routledge.

Krippner, S., & Winkler, M. (1997). The 'need to believe.' In G. Stein (Ed.), *The encyclopedia of the paranormal*. pp. 441-453. Amherst, NY: Prometheus Books.

Lawrence, T. R., Roe, C. A., & Williams, C. (1998). On obliquity and the PBS: Thoughts on Tobacyk and Thomas (1997). *Journal of Parapsychology*, **62**, 147-151.

Lawrence, T. R., Roe, C. A., & Williams, C. (1997). Assessing the Factor Structure of the Australian Sheep-Goat Scale: Big orthogonal seven or oblique five? *Journal of Parapsychology*, **61**, 13-31.

Matute, H. (1994). Learned helplessness and superstitious behaviour as opposite effects of uncontrollable reinforcement in humans. *Learning and Motivation, 25*, 216-232.

Matute, H. (1995). Human reactions to uncontrollable outcomes: Further evidence for superstitions rather than helplessness. *Quarterly Journal of Experimental Psychology, 48*, 142-157.

McGarry, J. J., & Newberry, B. H. (1981). Beliefs in paranormal phenomena and locus of control: A field study. *Journal of Personality and Social Psychology, 41*, 725-736.

Okebukola, P. A. (1986). Relationships between anxiety, belief system and creativity. *Journal of Social Psychology, 126*, 815-816.

Padgett, V. R., & Jorgenson, D. O. (1982). Superstition and economic threat: Germany 1918-1940. *Personality and Social Psychology Bulletin, 8*, 736-741.

Roe, C. A., & Morgan, C. L. (2002). Narcissism and belief in the paranormal. *Psychological Reports, 90*, 405-411.

Rotter, J. (1966). Generalized expectancies for internal versus external locus of control of reinforcement. *Psychological Monographs, 80* (1, Whole No. 609).

Sagan, C. (1996). *The demon-haunted world: Science as a candle in the dark*. London: Headline.

Sanderson, W. C., Rapee, R. M., & Barlow, D. H. (1989) The influence of an illusion of control on panic attacks induced via inhalation of 5.5% carbon dioxide-enriched air. *Archives of General Psychiatry, 46*, 157-162

Schumaker, J. F. (1987). Mental health, belief deficit compensation, and paranormal belief. *Journal of Psychology, 121*, 451-457.

Schumaker, J. F. (1990). *Wings of illusion: The origin, nature and future of paranormal belief*. Buffalo, NY: Prometheus Books.

Singer, B., & Benassi, V. A. (1981). Occult beliefs. *American Scientist, 69*, 49-55.

Spielberger, C. D. (1983). *State-trait anxiety inventory for adults: Form Y*. Redwood City, CA: Mind Garden, Inc.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well being: A social psychological perspective on mental health. *Psychological Bulletin, 103*, 193-210.

Thalbourne, M. A. (1982). *A glossary of terms used in parapsychology*. London: William Heinemann Ltd.

Tobacyk, J. J. (1982). Paranormal belief and trait anxiety. *Psychological Reports, 51*, 861-862.

Tobacyk, J. J. (1988). *A revised paranormal belief scale*. Unpublished manuscript. Louisiana Tech University, Ruston, LA.

Tobacyk, J. J., & Thomas, A. (1998). How the Big Orthogonal Seven is really the Oblique Seven. *Journal of Parapsychology*, **61**, 337-342.

Vyse, S. A. (1997). *Believing in magic: The psychology of suggestion*. Oxford: University of Oxford Press.

Wagner, M. W., & Ratzeburg, F. H. (1987). Hypnotic suggestibility and paranormal belief. *Psychological Reports, 60*, 1069-1070.

Wolfradt, U. (1997). Dissociative experiences, trait anxiety and paranormal beliefs. *Personality and Individual Differences, 23*, 15-19.

APPENDIX

Estimated Likelihood of Stressful Events Scale

The following list contains descriptions of events that may occur during one's lifetime. Please read each life event and then circle on the scale to the right your estimate of how likely it is that the event will happen to you in the future. (e.g. circling '1/10' would indicate that you feel there's a one in ten chance of that event occurring to you during your life. Responding '1/1' indicates a 50-50 likelihood, suggesting that the event is very likely to happen to you, whereas '1/1,000,000' indicates a one in a million chance and so is only remotely likely). There are no right or wrong answers, just respond with your first impression.

1. Marital separation or separation from a live-in partner	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
2. Serving a jail sentence of any length	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
3. Winning the lottery	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
4. Suffering a major personal injury or illness (requiring hospitalisation)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
5. Suffering a heart attack	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
6. Being involved in a car crash where the car is written off	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
7. Gaining a major work promotion	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
8. Developing appendicitis	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
9. Being sacked from a permanent job	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
10. Encountering sexual difficulties	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
11. A major change in financial position for the worse	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
12. Getting married	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
13. Developing a stomach ulcer	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
14. The death of a close friend	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
15. Having a family	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
16. Being physically attacked and robbed	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
17. Having the mortgage company foreclose (requiring repayment of the loan)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
18. Trouble with in-laws or parents	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000

19. Deterioration of local neighbourhood (e.g. increased crime rates)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
20. Developing clinically diagnosed depression	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
21. Owning your own home	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
22. Dealing with an unwanted pregnancy	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
23. A holiday of a lifetime	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
24. Developing a cancer	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
25. An outstanding personal achievement	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
26. A house burglary	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
27. Developing schizophrenia	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
28. Miscarriage either personally or a partner	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
29. Encountering disability (e.g. Hearing/sight loss, paralysis)	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
30. Finding true love	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
31. Developing a hernia	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000
32. Major change in financial position for the better	1/1	1/10	1/100	1/1,000	1/10,000	1/100,000	1/1,000,000

PSYCHOLOGICAL AND NEUROPSYCHOLOGICAL ASPECTS OF RSPK

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ABSTRACT

The author outlines the evidence of RSPK in seven cases he has investigated, and examines their psychological, neuropsychological, and other aspects. The assumption underlying his work is that RSPK may be a form of behavior, which occurs outside the body, i.e., nonlocal behavior. Psychological studies of RSPK subjects suggest that this type of behavior may be a response to perceived hostility or indifference by caregivers, usually parents or grandparents. Neuropsychological studies of two subjects with active RSPK showed that their brains were prone to seizure activity (epilepsy and Tourette); a previously active RSPR subject produced a brief period of EEG spikes; the EEG of a third active subject was normal, but stress from three recent childhood diseases may have precipitated the nonlocal behavior. The three remaining subjects were not examined for neuropsychological or physiological factors. Because psychosocial stress may lead to RSPK, the author expected the subjects to show signs of sympathetic arousal of the autonomic nervous system at the time of the incidents, but observation indicated they were often calm. von Lucadou's theory for the elusiveness of RSPK is examined, and there is a discussion of Martinez-Taboas and Alvarado's objections to the psychological and neuropsychological studies. The energetic aspect of RSPK is discussed elsewhere (Joines & Roll, 2007).

INTRODUCTION

In 1957 I joined the Parapsychology Laboratory of Duke University at the invitation of Dr. J. B. Rhine, with the understanding that I would continue the ESP experiments I had begun at Oxford (Roll, 1975). 1957 was an important year not only for me personally but for parapsychology as a whole because it was the year Rhine founded the Parapsychological Association.

While at Oxford, I had heard about movement of objects without tangible aid, then known as poltergeist, but had no interest in the alleged phenomenon at all. If an Oxford college had been the scene of a poltergeist outbreak, I doubt I would have bothered to stop by. As far as I was concerned, Rhine had shown the way to an understanding of psi, and this went through the door of the laboratory. But my work at Duke was not going anywhere. To my surprise, Rhine suggested that I join Dr. J. G. Pratt, the assistant director of the lab, on a poltergeist investigation. Rhine had launched me on a journey I would not otherwise have taken. The investigation with Pratt (Pratt & Roll, 1958) suggested that the incidents were connected to the 12-year-old son in the family because he was at their center, so we dubbed them RSPK for recurrent spontaneous psychokinesis and referred to the boy as the RSPK agent. This assumes that RSPK is a form of behavior that is motivated like other forms of behavior and that a psychological study of the agent might reveal the motivation. The present paper is about all cases with movement of objects outside the body that we have explored. The cases have already been discussed in papers and books. However, a reexamination has revealed new features that may aid the understanding of RSPK. The names of the cases in chronological order are, Lessing, Brooks, Bloom, Gonzales, Callihan, Mueller and Resch. Outlines of the evidence follows.

Lessing Case[1]

The occurrences were associated with Michael, 12, and took place in the house he occupied with his parents and sister in a north-eastern state (Pratt & Roll, 1958). (1) A visiting relative said she was in the living room looking at Michael when she saw a female figurine on an end table by the couch "wiggle" and then fly off. It landed on the rug with a crashing sound but unbroken. Michael was seated at the middle of the couch with his arms folded. (2) A police officer said he was in the living room with all members of the family, when a medicine bottle fell over in the empty bathroom; (3) Pratt and I were upstairs with the family when we heard an explosive sound from the empty basement and found that a laundry bottle had lost its screw cap, fallen over, and spilled its contents.

Brooks Case

Movement of objects (Roll, 1969) revolved around Arnold Brooks when he was living with his grandmother, Mrs. Parks, in her apartment at a housing project in an eastern city. His father had been extremely abusive and frequently beat his son and wife. Two years before the RSPK incidents one of the fights had culminated in the mother shooting and killing her husband. It was because she was in prison that Arnold was taken in by his grandmother.

The case had two phases, an apparently genuine phase that was investigated by Dr. Charles Wrege, Rutgers University, and a fraudulent phase several months later that he and I investigated together.

First Phase: (1) Wrege was holding Arnold with his right arm when a large crockery lamp 15 feet away crashed to the floor. No one else was in the apartment. (2) When Arnold was holding a dustpan with two hands, and Wrege was sweeping lamp pieces into the pan, a glass ashtray from a table fell to the floor in Mrs. Park's room. Arnold's uncle, who had arrived in the meantime and was picking up lamp pieces, said that the ashtray had grazed his chin. (3) When the three were about to leave and the uncle was at the point of turning off the lights, Arnold already being on the landing outside the apartment, the uncle cried out and Wrege saw a saltcellar smash against the wall, the uncle saying it had first hit his head. Immediately afterwards, (4) when the uncle was again at the point of turning off the lights, Wrege now being close to the front door, a heavy ceramic ashtray from a bookcase near the door fell to the floor between the uncle and Wrege. Arnold was still outside.

Second Phase: Several months later I was in the area on other business and used the occasion to visit Mrs. Parks. By then Arnold had moved to the uncle's home, and there had been no occurrences in the apartment nor at the uncle's To determine if the RSPK had stopped for good or would resume once Arnold returned, I suggested that he come back. The disturbances resumed and I made a four-day investigation, Wrege being present for part of this. Because all incidents occurred when the object was within easy reach of the boy, and when he was unobserved, we thought they were fraudulent. It seemed that Arnold did not want to remain with his grandmother and had learnt that moving objects would do the trick.

Bloom Case

The occurrences (Roll, 1970) took place in a home in a Midwestern city occupied by Mrs. Bloom, 32, the apparent RSPK agent, her mother, Mrs. Gerb, 61, and her daughter, Louisa, 13. The three bedrooms, the kitchen-dining room, and the bathroom were on the second floor; the living room, which was rarely used, was on the first floor. Mrs. Bloom had owned the house for four years, her mother living there for the last three. Dr. David Blumenthal, a clinical psychologist with whom I had previously collaborated, assisted in the investigation.

(1) I was in the kitchen when I heard a noise and found a long-handled bath brush on the stairs. When the sound came, I was looking at Bloom who was in the hallway walking towards me. Gerb and Louisa

[1] Except for three cases, names have been altered because of the psychological and neuropsychological information they contain. Two of the three cases with real names, the Callihan and Mueller cases, contain no such information while the Resch case does. However, the agent, Tina Resch, wants the information to be known and vetted the book about her prior to its publication (Roll & Storey, 2004).

were in their rooms, both doorways in view from my position. (2) I was in Gerb's room when a small glass vase from the kitchen landed on the rug by my feet with an explosive sound but unbroken. When I looked up, I saw Bloom seated by the kitchen table where the vase had been. She might have thrown it, since she was unobserved, but this could not explain the sound, which was loud and sharp. One night when Blumenthal was present, knocks came from Gerb's room. (3) With the possibility in mind that she was knocking on the wall underneath the bed covers, Blumenthal took her hands in his, when there was another series of knocks. I was in the kitchen with Bloom, and Louisa was in Bloom's bed, the door open and the lights on. (4) Gerb wanted to get something to eat, and. I went with her to the kitchen and back to her room. As she was lying down, and I was with her, there was a series of knocks. Blumenthal was with Bloom in Louisa's room, and Louisa seemed to be asleep in Bloom's room. This shared a wall with Gerb's room, but Louisa's bed was on the opposite side of the room so she could not have made the knocks on this wall.

Gonzales Case

The occurrences took place in a warehouse for tourist items in a southern state (Roll & Pratt, 1971) in proximity to Victor Gonzales, a 19-year-old shipping clerk. Pratt and I set out pieces of merchandise, of the sort that had moved, in the active areas. We requested Victor, the other employees, and the owner to stay away from the areas. (1) At one point, I watched Victor place a toy alligator on a shelf when a target highball glass four feet behind him crashed to the floor. Both hands were occupied; in the right he held the alligator, in the left his clipboard. Two other workers were present but more than 15 feet from the glass. The incident had an additional aspect that seemed impossible to explain on the fraud hypothesis. We had placed some notebooks in front of the glass and other merchandise along the sides. These items were undisturbed so the glass must have risen at least two inches before falling to the floor. (2) A box of ten beer mugs we had placed as a target on the shipping desk crashed to the floor when I was looking at Victor, who was walking towards me and away from the desk. The only other employee in the room was behind me. While Victor (Roll, 1972/2004, pp. 180 – 181) was at the Institute for Parapsychology in Durham, NC, (3) he was standing in a doorway with a coffee cup in his right hand, when there was a crash and a decorative bottle from a hallway table about 16 feet away was found in pieces on the floor. When this happened, two members of the staff, Charles Honorton and John Stump, were standing just inside the doorway and saw Victor's right arm and shoulder, his left arm being out of view. It did not seem possible that he had earlier looped a string around the bottle and then pulled it from the doorway with his left hand because I had been with him at all times.

Callihan Case

John and Ora Callihan (Roll & Stump, 1969; Roll, 1972/2004, Ch. 11) occupied a four-room house in Olive Hill, KY, a small town in the mountains of Kentucky with their grown daughter. Roger, their 12-year-old grandson, often stayed with them to help with chores. (1) John Stump, from the Psychical Research Foundation (PRF),[2] saw two bottles and a jar with canned berries on the kitchen counter simultaneously move about two feet and fall into the sink, at the same time as Roger and his grandparents were standing quietly by the counter. (2) John was seated in the living room with the family and visitors when the grandfather entered and looked for somewhere to sit. John pointed to an empty chair when this turned upside down. Roger was sitting three feet away also in view and with no visible contact with the chair. (3) John was standing in the living room looking at Roger, who was sitting in front of the TV, when there was a loud crack. Roger jumped away and John saw a cloth doily and a large plastic bowl fall to the floor behind the TV while the plastic flowers that had been in the bowl remained. Then he saw the flowers slowly move off the TV, also landing behind. Here he found the three objects as they had been before, the flowers in the bowl and the bowl on the doily. (4) At the same time these items moved behind the TV, a

[2] The PRF was founded at the Duke Parapsychology Laboratory in 1961 with funds provided by Mr. Charles E. Ozanne in order to conduct research relating to the question of survival after death. Pratt was appointed president of the PRF, Prof. H. H. Price, my supervisor at Oxford, was appointed vice-president, and I became project director.

clock that had also been on the set moved forward, landing on the floor in front of John and about four feet from the TV. Two Chinese plaster of Paris figurines on top of the TV remained in place. (5) I was trailing Roger as he walked to the kitchen. He turned around when he reached the sink and faced me. At that moment, the kitchen table, which was on his right, jumped into the air, rotated about 45 degrees and fell down on the backs of the kitchen chairs that stood around it, its four legs off the ground. (6) I watched Roger stand with his back to the coffee table when this flipped upside down. John and I estimated it weighed at least 60 pounds. (7) When I was standing in the doorway between the children's bedroom and the living room, a bottle with rose gel from the dresser took off and went about four feet into the room. I was facing the dresser and saw the bottle in the air. When it flew, Roger was in the living room to my right, walking away, and in my peripheral vision. His sister, Beverly, was standing behind me on my left; there was no one else in the room.

Mueller Case

The Mueller family, Kalamazoo, MI, was startled one night by loud pounding as if someone was hitting their frame house with a rubber mallet (Solfvin & Roll, 1976). The pounding continued for several weeks and then escalated to "explosions." (1) The pounding seemed to be connected with their son, Peter, 21, and he was suspected of a hoax, but the sounds continued when he was watched by the police. Jerry Solfvin and I heard the pounding though not when we had everyone in view. There were no movements of objects in our presence; however, (2) visiting relatives reported that they saw Mrs. Mueller stand at a window looking out when a pillow from an unoccupied couch at the other end of the room hit her in the back.

Resch Case

In March, 1984 (Roll & Storey, 2004) Kelly Powers, a clinical psychologist, and I went to the home in Columbus, Ohio, of Joan and John Resch, their grown son, Craig, four young foster children, and their adopted daughter, Tina, 14. (1) While in Tina's room, I heard a sound of something falling behind my back and found my teacup on the floor. I had placed the cup on Tina's bedside table moments before; it had moved about 12 feet. When this happened, I was looking at the girl who was on the other side of the bed, cleaning up water she had spilled. (2) My tape-recorder and then (3) a pair of pliers I had just placed on a dresser moved several feet, Tina having touched neither. (4) When Tina was in Steve Baumann's lab in Chapel Hill, NC, facing him and Jeannie Stewart they heard a loud noise from the hallway behind the girl. A 12-inch socket wrench from a table with target objects had hit the open door to a room, several feet behind Tina, and landed inside. An indentation showed the point of impact. It had traveled 18 feet, passing the two experimenters and Tina without notice, and moving another four feet after hitting the door. Dr. Joines saw the incident from a room adjacent to the hallway, the upper part of which was glass. Hearing voices down the hallway, he looked up and saw something fly by; it was the socket wrench. (5) I was seated at the table with targets when a small plastic level disappeared without notice. It evidently moved down the central hallway, making two turns and traveling about 38 feet to the room where Tina and Stewart were standing. Stewart heard a sound behind them and found the level on the floor. When this happened Tina had both hands in her purse searching for her plane ticket. (6) I was sitting at the table, watching Tina seat herself by the window, when a battery from the table hit the window above her head. Stewart sat opposite Tina and also had her in view. A minute later, (7) when we were in the same positions, an L bracket from the table hit the window. (8) Tina went to the door and was standing quietly with her back to the room when Stewart and I heard a sound and found a drill-bit from the table on the floor about ten feet away. When this happened, I was watching Tina and saw her hands resting on either side of the doorframe. There were 21 movements of objects, of which eight were targets, when Tina was observed.

PSYCHOLOGICAL ASPECTS

Lessing Case

Dr. Irving Paul (Roll, 1968) gave Michael an intelligence test, the Rorschach, and the TAT. Paul was aware of the occurrences, but made "every conscious effort" to keep the tests uncontaminated by this knowledge. Michael's verbal I.Q. was high (127) and his performance I.Q. normal (109). The projective tests showed Michael to be knowledgeable in biology, with a special interest in the way animals stalk and consume their prey. The tests revealed four themes, passive needs, hostility to father figures, impersonal violence, and isolation of affect, that is, Michael saw emotion in the pictures but not in himself. Paul thought Michael was searching for an adult identity but that his oral dependency needs had not been met, which resulted in passive needs. Dr. Gertrude Schmeidler, who examined the Rorschach, thought the boy felt protected and cared for but also oppressed. The Rorschach cards evoked images of hurt and violence, such as "badly mauled and dying squid" and "fighting wolves." Michael also saw rockets cut through the clouds, a shell that blasted a hole in a wall with the flaming remains of an atomic warhead, and bombers over a volcano. Seven of his 30 Rorschach responses showed violence and destruction, an unusually large proportion according to Schmeidler. Some of the images may have reflected the object movements. A bottle of ink discharged its cap with an explosive sound and flew some nine feet, spilling ink along the way; three bottles broke against the floor, and others discharged their caps with explosive sounds, fell over, and spilled. Several bottles used by his mother for laundry and cleaning were disturbed and may have reflected the frustrated dependency needs of her son.

One of Michael's TAT stories was about a boy who is "living with a guardian whom he hates;" in another a father accuses his son of being "a liar or a cheater;" the son fights the father and is killed. Michael could tolerate such images because he did not recognize the feelings in himself. Russell Targ (private communication, 2005) said he visited the Lessing home and also spoke to the police. He found that Mr. Lessing, an ex-Marine, ran his family "like a boot-camp." He told Targ that if he found that his son was faking the occurrences, he would "break his back."

I often heard Michael hum, "I have the whole world in my hand" to the tune of the hymn, "He Has the Whole World in His Hand." It is suggestive that a metal globe of the world moved four times. Paul said that the projective tests showed the boy to have "an almost magical faith in omnipotence and omniscience." Other incidents and the places they occurred may have reflected the boy's feelings about his parents. A female figurine in the sitting room moved four times, breaking during its last flight. Its male companion broke on its second flight, both breakages occurring when Michael was out of the room. The sitting room was out of bounds for the children except when there were visitors. There was no evidence that anything happened in the yard outside the house. The events seemed to be confined to objects that were meaningful to Michael, and they were within the home.

Brooks Case

After Wrege and I had completed the study of the apparently fraudulent phase of the occurrences and had left the apartment, the TV set, washing machine, kitchen cupboard, and refrigerator fell over. The latter belonged to the housing project and the disturbances became an issue for the county authorities. It was decided that Arnold could not remain, so he was placed in a group home. Although the occurrences in this phase seemed to be due to simple throwing or pushing, they indicated that the emotional tension, which may have fueled the incidents, spurious as well as genuine, was still present. With encouragement of the Board of Child Welfare and Arnold's family, I brought him and Mrs. Parks to Duke University the following December. This made it possible to test her as well. Dr. John Altrocchi did the psychological evaluations and Dr. Ben Feather the psychiatric interviews. This was the first time since September that Arnold was together with Mrs. Parks, and again there were incidents. We suspected they were caused normally by the boy but could not be sure. We therefore brought them to a room with a one-way mirror that faced another room where Dr. Pratt stationed himself. When Mrs. Parks stepped out of the room, leaving Arnold alone, Pratt saw him pick up two measuring tapes from a table, hide them under his shirt

and then toss them after her. When questioned about the incidents afterwards, Arnold denied any knowledge of how the tapes had moved.

The throwing incidents provided an important element for a polygraph (lie detection) test we had planned regarding the May events. Since there now was an incident that we knew was fraudulent, Arnold's reaction to questions about the tapes could be compared to his reaction to questions about events that seemed genuine. The most convincing of these, a lamp that fell to the floor 15 feet from Arnold when Wrege had his arm around him, was chosen for the test. It was expected that Arnold would show no reaction when denying this was a trick, but that the polygraph would indicate deception when he said the same about the tapes. This expectation was not fulfilled. The test supported Arnold's claim of innocence regarding the lamp but showed no sign of deception when he denied knowing about the tapes. This did not come as a complete surprise. Prior to the polygraph exam Feather had conducted a hypnosis interview where the boy showed no awareness of the tape incidents. Feather concluded that Arnold had thrown them in a dissociated state. Since the polygraph can only reveal acts of which the person is aware, Feather predicted that the test would fail.

The boy's apparent repression of the tape incidents may be related to the way he had learnt to deal with anger. Altrocchi said, "It became clear that at an early age, no matter how furious he was, he felt completely helpless and unable to express or act upon the anger" (p. 161). The father was extremely abusive and frequently beat his son and wife. Two years before, one of the fights culminated in the mother shooting and killing the man. It was because she was in prison that Arnold went to the home of his grandmother.

During Feather's interviews, the most striking feature was the degree to which Arnold used denial and repression as defense. There was evidence of intense anger towards Mrs. Parks combined with complete inability to verbalize this. Dr. Irving Paul had given the boy the Wechsler Intelligence test for children, and the Rorschach and TAT. His verbal IQ was an average 99 but his performance IQ was only 80. I asked Dr. Gertrude Schmeidler to interpret the projective tests. Comparing them to Michael's she found much less evidence of aggression in Arnold's, "Childhood naughtiness which he conceals, maybe–but deep inner hostility, no" (p. 173). She said she would not have expected RSPK from these records.

The psychiatric interviews with Mrs. Parks revealed strong dependency needs which were countered by Arnold's inability at emotional engagement. She distanced the boy further by criticism and control of his activities. Combining this with the high degree of anger apparently underlying the boy's quiet exterior, it was not difficult to suppose that explosive forces may have built up when the two were together. In an interview with Feather, Arnold did not speak of returning to the apartment. He said he would like to go back to his grandmother and if only objects would stop flying he would be able to do so. Instead Arnold returned to the group home. The Board of Child Welfare reported that he seemed happy there.

It should be pointed out that during the seemingly genuine phase the neighbors of Mrs. Parks reported no unusual occurrences in their apartments although they were knew what was happening in hers. As with the movements that surrounded Michael Lessing, they were restricted to objects that were meaningful to the boy, and they were in the home.

Bloom Case

Dr. David Blumenthal, a local psychologist, gave the three occupants the MMPI, the Rorschach and the TAT. The tests showed that Bloom regarded her mother as possessive and controlling and that she directed considerable hostility towards her, but that her feelings were muted by fear of antagonizing the woman. According to Althrocchi's interpretation of the MMPI, Gerb showed depression but much more striking was the extreme degree to which she presented herself as a highly virtuous person who never had an angry thought and never did anything wrong. Altrocchi noted that it can be difficult to live with such a person.

Bloom's feelings about her mother seemed to be expressed particularly clearly by two incidents with gramophone records (the old vinyl type). The first record to break belonged to Gerb and was entitled, "Mit Mir zu Hause" (At Home with Me, Gerb was German). It came from a rack of 35 albums, of which only

four belonged to Gerb. The same message may have been expressed when an album titled "Meine Mamma," flew out of Bloom's room.

A curious feature of the case consisted of clusters of small puncture wounds, called "bites" by Bloom and Gerb. Except for the first wounds, which Bloom said appeared near her own right wrist, her mother was the victim. She would suddenly scream out and I would find one to eight marks within an area of two and a half inches on her legs, arms, throat and right breast. Gerb said she thought a spider or other animal bit her, but made no effort to search for it or asked others to do so. When she had been wounded on her breast, I saw her press a cross against the breast, which suggested a different theory. In any case, the small wounds did not seem like bites, but were more like needle marks. Whatever the explanation, the sudden woundings startled her and were evidently painful.

It may be relevant that Bloom sometimes had to give her mother insulin injections against diabetes, and that the punctures resembled the marks of a hypodermic needle. Gerb's illness was a strain on her daughter's energy and finances, which may have contributed to her hostility and taken the form of needle-like wounds. Knocking sounds then commenced, replacing the punctures. The beats, which sounded deliberate, came in sequences of two, three or more as had the punctures, and they frequently originated close to Gerb, frightening and upsetting her.

The psychological tests did not reveal pathology in either Bloom or her mother. Like Michael and Arnold, the problem seemed to be incompatibility between people in the same household. The relationship within the family was pathological, not the individuals. Gerb returned to Germany because of the events, thereby making things easier for her daughter.

Schmeidler analyzed the projective tests, but, unlike Blumenthal, found little evidence of hostility. The tests showed that Bloom was unhappy and that she did not act on her desires, but not the vitality Schmeidler expected from an RSPK agent. I asked Althrocchi, who had analyzed the MMPI responses of the three women but did not know who was the agent, to make a conjecture. He chose Louisa because of signs of rebelliousness in her record. The MMPI succeeded no better as an indicator of RSPK than the projective tests.

Bloom's RSPK was social in another respect. During 38 events when her activities were known, for 19 or 20 she was with me, for six with her mother, for five with Louisa, and for four to six with others. She was by herself for only one occurrence. It seemed surprising at the time that Bloom was so often with a researcher when things happened, but three later cases showed the same tendency.

Gonzales Case

Psychological tests of Victor at Duke included the TAT and Rorschach, which Schmeidler analyzed. She found feelings of unworthiness and guilt at not living up to family expectations. Several of the TAT stories showed grown children respond to parental control by apparent submission but indirect aggression. The younger person, unable to achieve independence, feels guilty and angry. In work situations there is doubt in a successful outcome, accompanied by resentment at having to work. The outcome, she suggested, would be "dissociated (poltergeist) aggression against the boss's possessions accompanied by outward compliance with the work demands" (Roll, 1972/2004, p. 171). Altrocchi found evidence in the MMPI of "anger, rebellion, a feeling of not being part of the social environment, a feeling that he doesn't get what is coming to him and lack of strongly pleasant experiences in life" (p. 170). Victor's IQ was close to normal.

There was an interesting change during Pratt and my investigation. We had hoped to witness the occurrences, and after a few days, things began happening in our presence, often when we were looking at Victor. The incidents may have been his way to respond to our attention. The breakages would probably have continued whether we were there or not, but they would obviously not have involved the objects we set out. The meaning of the events had changed and thereby the course they took.

Callihan Case

We had hoped to bring Roger to Duke for psychological tests, but Mrs. Callihan would hear none of it. She thought the turmoil was due to a demon that John and I had brought from her parents-in-law home to

hers because there had been no moving objects there until we came. She asked us to leave, perhaps hoping that the demon would follow, but the occurrences continued. She then had members of her church, Jehovah's Witnesses, perform an exorcism. When this also did not work, the family fled to stay with relatives, losing their tormenter along the way.

There are two clues to psychological factors that may be associated with the phenomena. The first clue comes from the circumstances of Roger's life. When he was not in school, he seemed mostly to stay with his grandparents to help with chores. We thought that the boy might be upset by his confinement and by the tasks he had to perform. He did not have a room of his own but had to share their room and possibly their bed, either of which may have been led to problems for a 12-year-old boy. The incidents may have been escape motivated.

The second clue is the apparent effect John and I had on the occurrences. When John arrived at the home of the grandparents (I came later), there was an increase in the number of object movements, several taking place when John was looking at Roger. The day I came, his parents brought us to their home, when movements began there as well, sometimes when I was looking at Roger. While the initial occurrences at his grandparent's may have reflected a need to escape an intolerable situation, I thought that the movements John and I observed may have been a response to our attention.

Mueller Case

No psychological assessments were made of Peter (Solfvin & Roll, 1976). Peter had grand mal epilepsy, which was brought on by a back injury. I speculated that the pounding was attention motivated.

Resch Case

Tina's adoptive parents were highly abusive (Roll & Storey, 2004, Ch. 20), her mother was emotionally abusive, and her father was physically abusive. The movement of heavy pieces of furniture when no one was present in the room was extremely upsetting to them, and the movement of smaller objects often resulted in their destruction. The parents could not blame and punish Tina for the incidents because she was never in tangible contact with the objects. Tina, on her part, evidently wanted to leave the home, in other words, the occurrences may have been escape motivated. She was actually able to leave because I invited her to North Carolina on the strength of the incidents I had witnessed.

When Tina came to North Carolina, Dr. Jim Carpenter (1993) gave her the Rorschach and TAT. He was aware of Tina's RSPK and had himself witnessed movement of objects in his office but he knew nothing else about her. He said that the TAT showed good mental ability but emotional immaturity. Parents were seen as disappointed and critical, and her inability to gain their approval made her escape into fantasy. She was ashamed and critical of herself and expressed this as anger. She was jealous of the foster children and perceived her mother as unavailable because of them. Father figures and males in general "are angry and vicious, betray women sexually, and try to hurt them...In fact, the male figures that occur throughout the testing arouse a level of fear blurring into panic and disorganized thinking." Tina's feelings are understandable; her father was physically abusive, and an older brother (also adopted) had molested her since she was 12. The Rorschach showed a rich fantasy life and confusion about boundaries between self and others and between self and surroundings. She had a high energy level, was excitable, and used denial and action to cope with conflict. There were motives for faking poltergeist activity as a way to create stirs of activity where conflict could be avoided and she could be the center of attention. However, she did not appear to be planful enough to perform complex chicanery. "RSPK, where things behave in chaotic, stressful and dangerous way, may reflect deeper themes of neglect, danger, and insecurity." Tina had strong unfulfilled dependency needs, often mentioning food in ways that suggested insecurity about receiving physical and emotional nurturing. Carpenter thought her unmet cravings made her at risk for making bad choices in her relationships and to develop eating disorder. Sadly enough, both predictions were fulfilled (Roll & Storey, 2004, Ch. 20).

In addition to Carpenter's office, Tina's nonlocal behavior was observed by Dr. Becca Zinn, another psychotherapist, in her office, home, and car, by me at my home where she was staying, and more

importantly at the laboratory of Dr. Steve Baumann. She turned 15 on her last day in North Carolina after which the object movements ceased.

Tina spent the next year in misery at her home. She ran away, was caught, and just before turning 16, slit her wrists. She spent two months at a psychiatric hospital ward for teenagers, after which she returned home. Her parents then sold the house and decided to place Tina in a foster home. There were no openings, and they were going to send her to a juvenile detention center, but before this could happen she ran away and married. She was 16.

CONSCIOUSNESS AND CONTROL

Bloom Case

After there had been several knocking incidents in the Bloom's home when Dr. Blumenthal and I were present, he did a hypnosis session with her during which he asked if there would be more occurrences that night when there was another series of knocks as if in reply.

Gonzales Case

After an argument between Victor and another employee in the warehouse, an ashtray fell to the floor and broke. I asked Victor how he felt, "I feel happy; that thing (the breakage) makes me feel happy; I don't know why" (Roll, 1972/2004, p. 169). When asked the same question after there had been a period of inactivity, Victor said, "Now I am nervous because nothing happens." After a series of incidents, he looked unusually cheerful and I asked how he felt. "I feel good. I really miss the ghost–I mean not the ghost, but I miss it when something does not happen" (p. 168). It appeared that he saw a connection between his emotional state and the incidents. One of the occurrences may even suggest he induced it. He knew that he would get the attention of Pratt and me if our targets moved. When he placed the toy alligator on a shelf, he said, "I make magic." At that moment the highball glass that Pratt and I had placed on another shelf moved over the obstacles in front and fell to the floor.

Callihan Case

During a discussion with Roger's mother, she told me that she was convinced her home had become infested by a demon, but Roger injected, "It's not a demon" (p. 153). After he and Beverly had been sent to their room for the night and Beverly was asleep, Roger said he saw a brush on the dresser move a few inches. This seemed to be a sign for him because he woke her up saying something was going to fall, when a glass bowl from the dresser hit the floor with a bang but unbroken. John and I heard the sound from the kitchen. About 10:30 PM, Roger told us, "Something will happen at one o'clock tonight" (p. 154), but it was only 11:40 when five objects crashed to the floor from the same dresser. Then another object moved and, at midnight, a metal closet in the bathroom fell over when he was there. At this point, the parents forgot the demon theory and told him to "stop it." Beverly then said she saw a glass jar slide a few inches on the coffee table in the living room, Roger remarking, "The table will flip over." This remark and the fact that everything had happened right next to the boy made me suspicious and I decided to keep better watch. It was then that the kitchen table next to the boy flew up as I was watching him. Five minutes later when he was standing in front of me with his back to the coffee table, this turned upside down. There is little doubt that Roger knew about some of the events before they occurred.

Resch Case

Immediately prior to some of the events, Tina said that her stomach or neck hurt, which was a sign that something was about to happen. She also seemed to have a degree of control over the events. Before she came to stay at my home, I was worried that our pieces of porcelain would crash to the floor and asked her to please leave them alone if she could. The only items that moved in the house were candles and small

items of metal and wood. Before I brought her to Baumann's lab, with its delicate instruments, I asked her to not interfere with them. Again the incidents were restricted to unbreakable objects.

ELUSIVENESS OF RSPK AND A REEXAMINATION OF MOTIVATION

During the first days of the Gonzales case, the owner of the warehouse called the police hoping that they would uncover a perpetrator. They focused their attention on the shelves from which merchandise would often fall but the movements stopped when they watched the objects. They also stopped when TV reporters trained their cameras on the objects (Roll & Pratt, 1971; Roll, 1972/2004, pp. 126 – 128). When Pratt or I looked at objects of the types that tended to move, such as beer mugs, they never moved, but a direct gaze on Victor seemed to facilitate movement of nearby objects. In the two Callihan homes, John or I often saw the movement of an object a moment after its movement commenced but this may have been because we were watching Roger, and the object was next to him (Roll, 1972/2004, Ch. 11). In the Resch home, the lights repeatedly came on in the presence of electrician Claggett, and the Scotch tape, with which he had covered the levers to prevent tampering, disappeared, both events occurring when Tina was next to him and in no position to interfere with the switches. In the hope of actually observing this pair of events, he said he spent 15 minutes watching a switch but it never moved and the Scotch tape stayed in place (Roll & Storey, 2004, p. 50).

There is a relevant sequence of events involving the flight of a telephone handset (Roll & Storey, 2004, Ch. 7). Press photographer Shannon said that when he was sitting opposite Tina, he repeatedly saw the handset fly past her and thought this could be his chance to catch an object in the air. However, when he brought the camera to his eye and trained it on the phone, the flights of the handset stopped, but when he took the camera down, the handset took off. Shannon decided that the force was "tricky" (p. 79) and that he had to be tricky as well. He brought the camera to his eye, held it there for five minutes, and then brought it down with his finger still on the trigger. He then turned his head away, keeping the phone in peripheral view. Within seconds he saw a blur and pressed the trigger. The photo showed the handset in midair. Since Shannon was looking away, he was not a good witness, but Harden, the reporter who had brought Shannon, said he was looking at Tina when he saw the phone fly past without her having touched it. Lee Arnold, Tina's caseworker, then came and was about to sit down when the phone took off, landing nearby. Arnold said, "Tina was facing me and I saw her hands" (caption to photo between p. 150 and p. 151). In other words, she was looking at Tina, not at the handset when it flew. TV newsmen then spent about eight hours trying to repeat Shannon's feat, but nothing happened except that Tina pushed a lamp to the floor (see Resch Case in Neuropsychological Aspects). Breakfast and lunch, however, had been hyperactive according to family and friends (op. cit., Ch. 14).

I had brought my camcorder hoping to film moving objects in Tina's room. Nothing happened when the camera was on, but there was a rash of movements when I turned it off. It seemed that filming tied up Tina's RSPK and that it was unleashed with renewed vigor when the camera was turned off. On the other hand, the crashing sound of things hitting the floor was recorded on my audio recorder as were explosive sounds unrelated to the movements. Batcheldor (1966), who elicited movement of objects, often recorded the sound of things hitting the floor, but video recording put a stop to the occurrences (von Lucadou & Zahradnik, 2003).

To explain the elusiveness of RSPK, Dr. Walter von Lucadou (von Lucadou & Zahradnik, 2003) makes a distinction between two aspects of RSPK, a spontaneous and unpredictable aspect (you never know exactly when RSPK will happen) and an evidentiary aspect (due to witnesses)[3]. According to von Lucadou, RSPK is determined by two goals, an internal goal of the agent to affect the social surroundings by novel and eye-catching events and an external goal of investigators to verify what is happening by imposing conditions that will verify the events. The internal goal leads to a combination of novelty and confirmation while the external goal reduces the autonomy and reliability of the system. Only autonomous agents can produce novelty, a necessary ingredient for a phenomenon to be considered anomalous. To

[3] von Lucadou's theory is a guide for the Parapsychological Counseling Office in Freiburg, Germany, which helps people deal with RSPK and other anomalous occurrences.

preserve the autonomy of the system, however, everything should not be predetermined because a predetermined system loses its autonomy and thereby the necessary element of surprise. von Lucadou believes that the stronger the external pressure, sometimes "enhanced by parapsychologists who rush to the scene," the less likely are phenomena to occur. This is not supported by our cases. We often observed Victor, Roger, and Tina during the events. In fact our observing and interacting with the subjects seemed to precipitate movements, but when we watched or filmed an object, it never moved. von Lucadou says, "There are indeed events but always at a location where one does not expect them to happen, otherwise there would be no novelty" (p. 104). This is also not true for our cases. The phenomena often involved the same object, type of object, or area. In Tina's case especially the telephone handset; the type of object, such as the highball glasses and beer mugs that crashed to the floor when we watched Victor; and areas where occurrences were concentrated. In fact it was this feature that enabled us to make a quasi-experimental study in the warehouse. But it is true that it is not possible to predict when something will happen, and the events often involve objects and areas that had not previously been involved. von Lucadou makes the important observation that "It is necessary to adapt the objective conditions of observation to the phenomena, in such a way that it enables the observer to gather the optimum...information that the system is able to deliver. Without this adaptation, one throws away information. If no phenomenon occurs when a complete video recording is made, one apparently threw away too much information about the phenomena: it does not occur any longer" (von Lucadou & Zahradnik, 2003, p. 108 – 109).

As a result of the exchange with von Lucadou, I realized that RSPK may not only serve to free the agent from an intolerable social relationship by destructive behavior, but that RSPK may also be a method to obtain attention without destruction. This seemed to be the message of the Gonzales, Callihan and Resch cases, where there seemed to be clear tendencies for object movement when the agents were being observed.

PASSIVE AND ACTIVE AGENTS

During parapsychological counseling at the IGPP von Lucadou has noticed two types of RSPK agents, one of which he calls passive, the other active. The passive agent often "suffers from depressions and is not able to control anything in his or her life and also not in his or her environment." In contrast, the active agent gives the impression "of boiling pot which is ready to explode, and the phenomena are just the sign of an explosion" (p. 110). Of our cases, Michael, Victor, and Tina appeared to be active according to the psychological tests and to my observation of their behavior. In contrast, the psychological tests of Arnold and Mrs. Bloom indicated they were passive. Roger did not take psychological tests but he was a vivacious boy and probably belonged in the active group. Peter seemed taciturn and passive.

NEUROPSYCHOLOGICAL ASPECTS

Because RSPK is largely unconscious, it may involve the autonomic nervous system. The ANS has two branches, the sympathetic branch, which dominates at times of activity and arousal, and the parasympathetic branch, which is associated with rest and digestion. I expected to find signs of sympathetic arousal at the time of the incidents.

Lessing Case

For the 29 events when Michael's activity was known, during 14 he was in bed either preparing to go to sleep or in the early stage of sleep, during eight he was eating and for seven he was in the bathroom (Roll, 1968). The boy seemed calm when many of the incidents took place. This seems to suggest that the parasympathetic system was associated with Michael's RSPK or alternatively that the process was initiated when he was aroused and only manifested at a later point in time when he was relaxed.

Brooks Case

One night during Wrege's investigation (Roll, 1972/2004, Ch. 4) drunks banged on the front door, demanding to see "the boy with the flying objects" (p. 45) and then tossed a stone through a window. Wrege went to the phone to call the police, taking him along. As he was about to pick up the handset, he saw a water glass fall to the floor. He said that Arnold was extremely upset, which would mean sympathetic arousal. He put his right arm around the boy to comfort him, holding the phone with his left hand, when a large table lamp crashed to the floor 15 feet away. This upset the boy more and he asked Wrege to call his uncle to take him out of the apartment.

During other incidents Arnold seemed calm, as when he held a dustpan for Wrege, so he could clean up the lamp fragments, and when an ashtray moved from the side table where the lamp had been to Mrs. Park's room, and also when he went to the kitchen to empty the dustpan and a peppershaker struck his uncle. The two last incidents in the apartment occurred when Arnold was standing quietly outside waiting to leave with his uncle and Wrege. A neighbor told me that when she was outside the apartment with Arnold, who was waiting to be let in, the TV set inside toppled over. Judging by appearances the boy was calm during several of the events.

An EEG examination (Roll, 1972/2004, pp. 175 – 176) at Duke by Dr. Walter Obrist was normal except for a burst of 14 per second positive spikes during a short period when Arnold was drowsy. If this had been more pronounced, it would have indicated complex partial seizure. CPS is common in adolescents who have behavior problems and episodes of dissociation. It is unknown whether the CPS signs would have been more evident four months earlier when Arnold's RSPK was active.

There was an extreme difference in the level of performance between Arnold's ostensible RSPK and the later phase, when he used trickery. While his tricks were in line with his low performance IQ and were conspicuously simple, his apparent RSPK behavior seemed skillful and, moreover, was performed alongside his normal activities. The difference between his RSPK and normal behaviors may be explained if they rely on separate brain structures. There are indications that nonlocal behavior and perception (ESP) may be functions of the right brain hemisphere (summarized in Roll et al., 2007) while the body's sensory-motor system would be is a function of the left hemisphere. Speculating further along this line, it may be suggested that the change from normal behavior to RSPK may be occasioned either by extreme need or by atrophy in left hemispheric structures that is compensated by structures in the right hemisphere. If this is accepted as a working hypothesis, Arnold would belong to the latter group while Michael Lessing would belong to the former group. We know that Arnold's father beat his son. It is not difficult to imagine that one or more of beatings received by an immature brain could result in long-term damage.

Bloom Case

Mrs. Bloom's activity was known for 38 incidents. During four she was lying down, during 25 seated, during five standing, during three talking, and during one walking. We do not know what was going through her mind at these times, but the 29 incidents when she was lying down or seated may suggest dominance by the parasympathetic system. Like Michael and Arnold, Bloom seemed calm when many of the incidents took place. Bloom had an outlet for her emotions. She said that when she was faced with problems, she would get stomach cramps and throw up. During an interview with Blumenthal, Bloom had to go to the bathroom and vomit when she spoke about life with her mother. The vomiting episodes subsided during the RSPK period. There were only two days when she complained of vomiting and both were largely free of object movements. There may have been an inverse relation between nonlocal behavior and the somatic trouble.

Gonzales Case

Like Michael, Arnold, Mrs. Bloom, and Roger, Victor seemed calm during many of the incidents. His EEG was examined by Dr. Obrist at Duke (Roll, 1972/2004, pp. 176 – 177) but unlike Arnold, whose RSPK was long past when the EEG was recorded, there was an occurrences during Victor's visit to Durham (pp. 180 – 181) but his EEG was entirely normal. In the search for other clues to Victor's RSPK,

he was seen by Dr. Harry McPherson at the Duke Division of Endocrinology. Victor had a slight case of acne and a sore throat but was otherwise healthy. It turned out, however, that he had suffered from three childhood diseases, chickenpox, measles, and mumps during a three-month period and that the termination of the period coincided with the onset of RSPK. Dr. Pamela Heath (email, 1/5/06) has raised the possibility that Victor may have been vulnerable to the three types of virus because of stress. Heath, a physician and PK researcher (Heath, 2003), notes that the three diseases can be serious for adults, for instance, mumps can cause sterility in men. Aside from stress having made Victor more prone to getting ill, the illnesses themselves would be stressors. Heath says that she has often found that a disease is psychologically meaningful. It is as if "the unconscious mind is trying to make a statement about how that person feels about things...with chickenpox, the virus is literally 'getting on your nerves'"; with mumps, the virus is in the glands, including the testicles, suggesting a puberty/sexual issue; with measles, the virus is getting "under your skin" and the face is covered by the red spots of "angry acne," again an issue of puberty and changing hormones. From the perspective of struggling emotionally to grow up, having sexual issues, and things getting on his nerves, Heath suggests, "the RSPK was a more adaptive choice for dealing with his issues than continuing to have health problems."

Callihan Case

Nothing is known about Roger's physiology except that at 12 years he was at the age of puberty and that he was awake when the incidents took place. At the time of the object movements that were observed by John and myself, he seemed calm.

Mueller Case

Peter had grand mal epilepsy, which was brought on by a back injury. After his first attack, in March 1974, he received medication and there had been no further seizures when the pounding began the following July. Peter had another attack in late August after which the pounding stopped for a week. The sounds then resumed until October 10 when Peter went into continuous seizure and was hospitalized. There were no phenomena for the 13 days he was in the hospital except for one night of pounding at the home. They resumed after his return and after the seizures had been suppressed by medication, perhaps suggesting an inverse relationship between the medical symptoms and object movement. It seemed that energy was available either for seizure or object movement but not for both.

Resch Case

Before my arrival at the Resch home, I asked Mrs. Resch to have Tina undergo neurological testing to determine if there were signs of seizure activity (Roll & Storey, 2004, Ch. 12). Dr. Michael Persinger (Persinger & Roll, 1993) examined the three neurological exams and concluded that she suffered from a mild case of Tourette's syndrome. This is due to transient discharges of brain neurons that cause ticks and other involuntary behavior such as hyperactivity, attention deficit, extreme anxiety, swearing and temper tantrums, as well as problems with crafts and drawings, all of which Tina exhibited. Tourette tics, like Tina's apparent RSPK, frequently disappear when the person is asleep, and like Tina many Tourette adolescents do not attend school because of problems with peers and teachers.

Montagno and I (Montagno & Roll, 1983) had predicted that in RSPK an obstacle in the brainstem may cause nerve impulses to be diverted to the environment. To test this hypothesis, Baumann (Baumann, 1995; Roll & Storey, 2004, Ch. 19) did an evoked potential test of Tina's brainstem. This showed an anomaly in the pons area of the brainstem. The pons is connected with the adjacent cerebellum to control body movement.

Tina tended to have stomachaches when things moved. The gastrointestinal tract is served by afferent and efferent fibers from the vagus nerve. It is tempting to speculate that for Tina discharges by efferent neurons from the vagus overshot their target in the body and impacted objects in the environment instead. This could happen because the vagus originates near the pons and may thereby have been affected by the same anomaly.

A major problem of Tina was a compulsive need to complain to her mother, insistently and loudly, about the way she was treated; even the knowledge that a beating by her father would result did not faze her. It seems relevant that the vagus has fibers to the larynx, and thereby controls the tongue and vocal cords, in other words verbal communication.

Baumann also detected abnormally fast transmissions of electrical signals from the pons (Baumann & Roll, 1988; Roll & Storey, 2004, Ch. 19). He thought that these may have amplified Tina's capacity to focus on emotionally significant objects because there is evidence that the pons is involved in focused arousal where attention is temporarily locked onto specific aspects of the environment.

In October, 1984, when I was to bring Tina to Spring Creek Institute for PK tests with Baumann, there had been no occurrences for six months. In the meantime, Jeannie Stewart, a psychotherapist had joined us (Stewart, et al., 1986; Roll & Storey, 2004, Ch. 17). Stewart regarded the RSPK as a form of behavior that might be brought back by reviving the bodily sensations, which had accompanied the incidents, that is, the headaches and stomachaches. She used a hypnotic procedure thereby also ameliorating the painful aspect of the sensations. The procedure was followed by a resumption of moving objects, first at my home and then at Baumann's laboratory.

There was a conspicuous difference between Tina's normal behavior and her RSPK. Tina was usually poorly coordinated. Mrs. Resch told me that when she took classes in crafts at school, her work was so poor that the teacher held it up to show the other children how not to do things. At home her clumsiness resulted in accidents, some of which required hospital visits. During the period of the RSPK, when a large number of TV reporters came to the home in the hope of filming flying objects but nothing happened, the girl decided to fake an incident. She sat down on the couch in the living room next to an end table with a lamp on her right. To prepare for the trick, she used her right arm to measure the distance to the lampshade and then pushed out, but her hand missed the shade. She tried again with better success. Her performance was shown on the evening news and solved the Resch mystery for most viewers.

While Tina's normal behavior showed lack of coordination, her RSPK was exact and to the point. Like Arnold Brooks, she may have had a deficiency in the left rain hemisphere that was compensated by the right hemisphere.

INTENTIONALITY, PK, AND THE BRAIN

Myers (1903, Vol. II, p. 522) suggested that volition not only affects the body but also the environment by telekinesis. Eccles (1953, 1977) and Popper and Eccles (1977) have proposed that voluntary behavior is due to PK acting on brain neurons. The neurons that could be involved may have been identified. Using functional magnetic resonance imaging (fMRI), Lau et al. (2004) detected activation of the pre-supplementary motor area during intentional behavior. The area is connected to the prefrontal cortex, which may serve planning. Nachev et al. (2005) found fMRI activation of the caudal pre-supplementary motor area to be involved in volition, and Winterer et al. (2002) found that fMRI activation of the anterior cingulate cortex is engaged in intentional behavior. The cingulate gyrus, which is just above the corpus callosum, is part of the limbic system and has projections to the motor cortex. In addition to initiating behavior, Devinsky et al. (1995) found the anterior cingulate cortex to be implicated in emotion, response to pain, autonomic control, and learning.

DISCUSSION

I have outlined the evidential, psychological, neuropsychological and other aspects of the seven cases of RSPK we investigated. There was evidence of RSPK in all cases, and in those of Victor, Roger, and Tina the evidence was overwhelming as far as we were concerned. Movement of objects were seen from beginning to end when we watched Roger; our target objects moved when Victor was away from the area, often when we watched him; and target objects moved when Tina was away from the table and being watched.

The RSPK resulted in the disruption of the lives of people and damaged their property, in other words, it seemed to express anger. But this was not always evident from the psychological tests. Schmeidler

found the Rorschach and TAT responses of Arnold and Mrs. Bloom to be conspicuously bland. On the other hand, Paul and Carpenter saw anger in the responses, respectively, of Michael and Tina. The same was true for Victor, according to Schmeidler. Altrocchi thought that his MMPI indicated anger.

Martinez-Taboas and Alvarado (1981) and Martinez-Taboas (1984) question the anger/aggression interpretation of RSPK because it is largely based on the Rorschach and TAT, which are of dubious validity. They have also been critical of the fact that the psychologists knew they were testing RSPK agents, which may have biased their interpretation in favor of the anger theory. We asked assistance from psychologists, not to test any theory, but to see if the tests would throw light on the psychological factors we assumed must underlie the incidents. In hindsight blind assessment would have been preferable but at the time the studies took place we were more focused on understanding the phenomena. The projective tests, the MMPI and the other psychological and psychiatric studies have been important to us because they have indicated how specific emotions may lead to specific incidents. The tests have not shown, nor could they be expected to show, how family friction or other aspects within the environment may spark movement of objects or explosive sounds. The tests have also not enabled us to distinguish people with nonlocal behavior from others. The work leads to the expectation that subjects with this type of behavior will show signs of stress but it does not tell us why this should lead to object movement for only a few and not in the many other conflict-ridden homes and businesses. I had hoped that neuropsychological studies of the subjects would fill in the picture. In a (Roll, 1977/1986) survey of 92 agents, 22 had either been diagnosed with epilepsy (four agents) or showed symptoms of complex partial seizure (CPS). Of the seven agents in the present study, the EEG of Arnold produced a burst of positive spikes that would have suggested CPS if more persistent. Peter obviously had epilepsy. Tina seemed to suffer from Tourette's syndrome, which also is due to involuntary discharges of brain neurons. But again, numerous individuals have symptoms of epilepsy or Tourette's while only a few also exhibit nonlocal behavior. Martinez-Taboas (1984) has objected to the theory that RSPK is related to electric eruptions of brain neurons of the type that can cause CPS and epilepsy because, he says, the theory is unfalsifiable. If the source of seizure is deep within the brain, it may eschew detection except by implanted electrodes. When this is not possible, as it rarely is, you have to rely on overt symptoms, such as muscle contractions and episodes of losing consciousness, which are characteristic of CPS (Roberts et al., 1992).[4]

It is notable that the RSPK was destructive only when the subjects were in the company of individuals who seemed to arouse their anger by abuse, confinement, demands, and other aversive activities. But when the social environment became supportive, the nonlocal behavior occurred without destruction of property. If this observation is verified by future cases, we will not only have learnt something important about RSPK, but also that this type of behavior may be explored without damage to research equipment.

From a psychoanalytic perspective, the destructive incidents could be considered symptoms of "parapsychopathology," as suggested by Rhine (in Roll, 1972/2004, p. xiii). But when attended by investigators who treat the subject with kindness and respect, the occurrences may serve as a positive mechanism for the subject to obtain attention and for the researcher to learn more about nonlocal behavior.

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[4] EEG recording can be done during RSPK, and was attempted by Pratt and Palmer (1976) in a study of a boy and girl who were the center of apparent RSPK. A small unit for transmitting EEG was attached to the agents allowing free movement. The unit transmitted to a nearby FM receiver and tape recorder and had been built by Dr. Fritz Klein, Duke Department of Anesthesiology. Unfortunately, there was no RSPK when the agents carried the unit.

REFERENCES

Batcheldor, K. J. (1966). Report on a case of table levitation and associated phenomena. *Journal of the Society for Psychical Research*, **43**, 339 – 356.

Baumann, S. B. (1995). An overview with examples including a case study of an RSPK subject. *Proceedings of Presented Papers: The Parapsychological Association 38th Annual Convention*, 11 – 19.

Baumann, S. B., & Roll, W. G. (1988). Upper brainstem anomalies in an RSPK subject. Unpublished manuscript.

Braud, W. (2003). *Distant Mental Influence: Its Contributions to Science, Healing and Human Interactions*. Charlottesville, VA: Hampton Roads.

Carpenter, J. (1993). Projective testing on Tina Resch, October, 1984. *Proceedings of Presented Papers: The Parapsychological Association 36th Annual Convention*, 492 – 499.

Devinsky, O., Morrell, M. J., & Vogt, B. A. (1995). Contributions of anterior cingulate cortex to behaviour. *Brain*, **118**, 279 – 306.

Eccles, J. (1953). *The Neurophysiological Basis of the Mind*. Oxford: Clarendon Press.

Eccles, J. (1977). The human person in its two-way relationship to the brain. In J. D. Morris, W. G. Roll, & R. L. Morris (Eds.) *Research in Parapsychology 1976* (pp. 251 – 262). Metuchen, NJ: Scarecrow.

Heath, P. R. (2003). *The PK Zone: A Cross-cultural Review of Psychokinesis*. New York: iUinverse.com.

Joines, W. T., & Roll, W. G. (2007). Energetic aspects of RSPK. Unpublished manuscript.

Lau, H. C., Rogers, R. D., Haggard, P., & Passingham, R. E. (2004). Attention to intention. *Science*, **303**, 1208 – 1210.

Martinez-Taboas, A. (1984). An appraisal of the role of aggression and the central nervous system in RSPK agents. *Journal of the American Society for Psychical Research*, **78**, 55 – 69.

Martinez-Taboas, A., & Alvarado, C. S. (1981). Poltergeist agents: A review of recent research trends and conceptualizations. *European Journal of Parapsychology*, **4**, 99 – 110.

Montagno, E. A., & Roll, W. G. (1983). A neurobiological model for psychokinesis. In W. G. Roll, J. Beloff & R. A. White (Eds.) *Research in Parapsychology 1982* (pp. 272 – 273). Metuchen, NJ: Scarecrow.

Myers, F. W. H. (1903). *Human Personality and its Survival of Bodily Death*. London: Longmans, Green, and Co.

Nachev, P., Rees, G., Parton, A., Kennard, C., & Husain, M. (2005). Volition and conflict in human medial frontal cortex. *Current Biology*, **15**, 122 – 128.

Persinger, M. A. & Roll, W. G. (1993). Potential neurofunctional correlates of the Tina Resch 1984 poltergeist episode. *Proceedings of Presented Papers: The Parapsychological Association 36th Annual Convention*, 483 – 491.

Popper, K. R., & Eccles, J. C. (1977). *The Self and its Brain: An Argument for Interactionism*. Berlin: Springer-Verlag.

Pratt, J. G. & Palmer, J. (1976). An investigation of an unpublicized family poltergeist. In J. D. Morris, W. G. Roll & R. L. Morris (Eds.) *Research in Parapsychology 1975* (pp. 109 – 115). Metuchen, NJ: Scarecrow.

Pratt, J. G., & Roll, W. G. (1958). The Seaford disturbances. *Journal of Parapsychology*, **22**, 79 – 124.

Roberts, R. J., Gorman, L. L., Lee, G. P., Richardson, E. D., Riggle, T. A., & Varney, N. R. (1992). The phenomenology of multiple partial seizure-like symptoms without stereotyped spells: an epilepsy spectrum disorder? *Epilepsy Research*, **13**, 167 – 177.

Roll, W. G. (1968). Some physical and psychological aspects of a series of poltergeist phenomena. *Journal of the American Society for Psychical Research*, **62**, 263 – 308.

Roll, W. G. (1969). The Newark disturbances. *Journal of the American Society for Psychical Research*, **63**, 123 – 174.

Roll, W. G. (1970). Poltergeist phenomena and interpersonal relations. *Journal of the American Society for Psychical Research*, **64**, 66 – 99.

Roll, W. G. (1972/2004). *The Poltergeist*. Garden City, NY: Nelson Doubleday, Inc. (Reprinted by Paraview Special Editions)

Roll, W. G. (1975). *Theory and Experiment in Psychical Research*. New York: Arno Press.

Roll, W. G. (1977/1986). Poltergeists. In B. B. Wolman (Ed.) *Handbook of Parapsychology* (pp. 382 – 413). New York: Van Nostrand Reinhold (Reprinted by Scarecrow Press).

Roll, W. G., & Joines, W. T. (2001). RSPK and consciousness. *Proceedings of Presented Papers: The Parapsychological Association 44th Annual Convention*, 267 – 284.

Roll, W. G., Persinger, M. A., Alexander, C. H., & Williams, B. J. (2007). Psi and the brain. Unpublished manuscript.

Roll, W. G., & Pratt, J. G. (1971). The Miami disturbances. *Journal of the American Society for Psychical Research*, **65**, 409 – 454.

Roll, W. G., & Storey, V. (2004). *Unleashed – Of Poltergeists and Murder: The Curious Story of Tina Resch*. New York: Paraview Pocket Books.

Roll, W. G., & Stump, J. (1969). The Olive Hill poltergeist. *Proceedings of the Parapsychological Association*, **6**, 57 – 58.

Solfvin, G. F., & Roll, W. G. (1976). A case of RSPK with an epileptic agent. *Parapsychology Review*, March-April, 20 – 21.

Stewart, J. L., Roll, W. G., & Baumann, S. (1987). Hypnotic suggestion and RSPK. In D. H. Weiner & R. D. Nelson (Eds.) *Research in Parapsychology 1986* (pp. 30 – 35). Metuchen, NJ: Scarecrow Press.

von Lucadou, W., & Zahradnik, F. (2003). Predictions of the model of pragmatic information about RSPK. *Proceedings of Presented Papers: The Parapsychological Association 47th Annual Convention*, 99 – 112.

Winterer, G., Adams, C. M., Jones, D. W., & Knutson, B. (2002). Volition to action - an event-related fMRI study. *NeuroImage*, **17**, 851 – 858.

A PEEK IN THE FILE-DRAWER: REVIEW OF 96 UNDERGRADUATE STUDENT PROJECTS AT THE KOESTLER PARAPSYCHOLOGY UNIT

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ABSTRACT

To encourage consideration of file-drawer issues in parapsychology and the evidential status of student projects, this paper reviews 96 undergraduate student projects supervised by members of the Koestler Parapsychology Unit at Edinburgh University. Conducted between 1987 and 2007, about 40% of the projects were unrelated either to psi or to paranormal experiences and beliefs, and around 20% were related to paranormal experiences and beliefs but contained no psi task. The paper focuses on the 38 projects (about 40%) that included a psi task. Of these, 27 projects predicted overall significant performance on a psi task, of which 8 (29.6%) found the predicted significant overall positive psi scoring. Failure to find predicted psi performance did not appear to be due to the non-significant studies having lower statistical power (in terms of participant numbers) than the significant studies. Although the projects were very diverse, in an attempt to discern informative trends four small clusters of projects were identified that had used similar psi tasks. Of the four groups of studies, the PK-RNG and EDA presentiment studies tended not to show any consistency of performance on the psi task, and the majority (8/9 studies) obtained non-significant psi results. In contrast, significant results and relatively consistent effect sizes were found in the majority of the ganzfeld studies, specifically those with selected participant populations, such as those who were 'creative', extravert, or who had practised a mental discipline. None of the EDA-staring studies was statistically significant, however all three found effects in the predicted direction and of a reasonable magnitude ($r \approx 0.15$). These results are discussed in terms of what can be learned from these projects, and how future research can be guided by their findings. Appendices give a full list of the psi and psi-related projects.

INTRODUCTION

Particularly in the UK and Europe, academics with research interests in parapsychology are taking up posts within higher education institutions. Naturally these researchers become involved with teaching students and, as a result, many student projects are being conducted under their supervision. This raises the question of the evidential status of such projects – for instance, should they be included in meta-analyses of psi research? Furthermore, as there are far more student projects than there are parapsychologists, does the database of student projects form a significant file-drawer for parapsychology if these projects remain unpublished? This paper aims to encourage consideration of these important issues for modern-day parapsychology by looking in detail at the student projects conducted at the Koestler Parapsychology Unit.

The Koestler Parapsychology Unit (KPU) is a research group situated within the School of Philosophy, Psychology and Language Sciences at the University of Edinburgh, Scotland. The KPU initially grew up around the Koestler Professor of Parapsychology, Robert Morris[2], who held this position from 1985 until his death in 2004. The KPU consists of teaching staff, research staff, and postgraduate students whose area of interest and expertise is parapsychology and the psychology of anomalous experiences and beliefs.

[1] My grateful thanks go to Professor Richard Wiseman for his advice on this paper, and to my referees for their helpful comments.

[2] Prior to Morris's arrival, Dr John Beloff for many years conducted parapsychological research at Edinburgh and supervised both undergraduate and PhD student projects. This paper does not survey the pre-Morris projects.

While Bob Morris was Koestler Professor, KPU researchers included (in alphabetical order) Deborah Delanoy, Peter Lamont, Julie Milton, Fiona Steinkamp, Paul Stevens, and Caroline Watt.

KPU members have always played a role in teaching psychology undergraduate and postgraduate students. The undergraduate psychology course at the University of Edinburgh is four years long. The single most substantial piece of work that undergraduate students produce is their final year project and dissertation. In this, students are able to apply their methodology training to areas of psychology in which they are particularly fascinated, under the supervision of staff with relevant expertise and interests. Students choose their dissertation topic from a selection offered by staff, so staff may suggest projects that might act as 'pilots' for their own research or that, closely supervised, may be publishable. Students are also free to approach staff with their own suggested topic, in which case the staff member may agree to supervise if they feel they have appropriate expertise. So, the degree to which the project topic is driven by staff members' own research agenda varies depending on their flexibility. The project is written up as a dissertation of around 11,000 words that is marked and contributes towards the student's overall degree grade.

The present paper presents a descriptive overview of the final year projects that have been supervised by KPU staff since its inception. These may act as a large number of pilot projects that might help guide future research. As these final year projects are mostly unpublished, they may also place published studies in a wider context with respect to possible file-drawer effects. The KPU-supervised projects consist of two types: those that include a psi task, and those that don't. Based on the assumption that the readers of this paper will be more interested in the psi projects, I will only briefly describe the non-psi projects before going into the psi projects in greater detail.

METHOD

Study Retrieval

Every available 4th year dissertation that had been supervised by KPU members was retrieved from the Koestler Library or directly from KPU members. Students are permitted to work in pairs (and, rarely, in groups of three or four) for data collection, but have to write up their dissertation independently, sometimes resulting in two or more dissertations written on the same group of data. In these cases, the dissertation that was retrieved first was taken to represent the joint project.

TABLE 1
PRINCIPAL CHARACTERISTICS THAT WERE RECORDED FOR EACH PROJECT

Demographic characteristics	**Research area**	**Characteristics of psi studies**	**File-drawer issues**
Project title (as given by the student)	Includes psi task?	Was an overall psi effect predicted?	Published?
Author (more than one name in the case of joint projects)	Subject area (a short descriptor to convey the main research area of the project)	Significant post hoc psi findings?	Presented at PA?
Year		Target type/psi task	
Supervisor(s)			
N participants			
N male			
N female			
Support for pre-planned hypotheses?			

Study Characteristics

Table 1 provides a summary of the principal characteristics of each project. These consist of four main types of information.

The first describes the main 'demographic characteristics' of the dissertation collection. The number of participants gives some indication of the statistical power of each study (which affects the ability of the study to detect a hypothesized genuine experimental effect to a statistically significant degree) and the sex of participants gives an overall picture of the gender balance in these studies. If the pre-planned hypotheses are supported, this indicates the 'success' of the project (in terms of finding support for predicted effects and relationships), though of course a successful study in pedagogical terms could have null findings but be well-designed, conducted, and reported.

The second concerns the research area of the project, including whether or not the study includes a psi measure, and a more detailed breakdown of study topic.

The third provides a fuller picture of the characteristics of the psi studies in particular. One question of interest is whether the psi studies include a prediction of an overall psi effect (i.e. they include a 'proof-oriented' hypothesis). In contrast, overall psi effects in process-oriented studies can be 'washed out' if the experimental design includes conditions predicted not to be psi-conducive. As student projects often contain exploratory analyses, it was also of interest to note the extent to which the projects reported psi findings arising from post hoc analyses.

The fourth column of the table provides an indication of whether the project has reached the public domain, either through journal publication or presentation at a Parapsychological Association conference (where details of method and analyses can then be found in the conference Proceedings). In no cases is the full dissertation published, but a version of the project could be written up for conference presentation or publication. If neither, then the project is essentially in the 'file-drawer'. KPU student projects are also sometimes presented at the conference of the Society for Psychical Research. However this conference only provides abstracts so many methodological and statistical details are unavailable and I would argue that this lack of detail means the projects are essentially 'unpublished'.

RESULTS

Before I describe the results of this survey, some caveats are in order. Firstly, the information provided here is meant to give a *descriptive, not quantitative,* picture of the content of KPU student projects as described by the students themselves in their dissertations. This is not a meta-analysis because there are some inherent limitations to this database. Firstly, the projects are many and varied in their detail, making any attempt to combine studies vulnerable to the 'apples and oranges' problem. Secondly, although the projects were supervised by experienced members of teaching and research staff, normally such supervision would not extend beyond advising the student on study design, helping provide facilities, and advising on analysis and write-up. It would therefore be rare for a supervisor to be present during actual data collection, or to check that the students had correctly followed the planned procedure. Thirdly, time has passed, students and supervisors have departed, and in most cases we no longer have access to the studies' raw data. So we are required to take the study conclusions at face value and to trust that the students have been both truthful and proficient in how they have collected, analysed, and reported the study data. Finally, although the supervisors may have given students feedback on the dissertation contents during the writing process, the finalized dissertations have not been subjected to peer review.

Demographic Characteristics of the Sample

A total of 127 students completed projects supervised by KPU members. Of these, 25 projects were jointly conducted by two or more students, giving 96 projects in all.

Year of project and supervisor. The projects span a 20-year period, from 1987 to 2007. Most were conducted in the 1990s and the vast majority (72/96 = 75%) were solely supervised by Bob Morris (RM), with a further 12 (12.4%) being co-supervised by RM.

Participants. A total of 4,717 individuals participated in these projects. The mean number of participants per project was 49.9[3]. The relatively large standard deviation for participant numbers (34.1) indicates a great deal of variability in project size; indeed the projects ranged in size from 12 to 228 participants (median = 40, mode = 40). This variability often reflected the methodology being used. For instance the largest study was questionnaire-based and used factor analysis therefore large numbers were needed for reliable results. Thirty-five (36.5%) of the projects gave no information about the sex of participants. Of the remainder, there were approximately equal numbers of male (mean = 23.8, SD = 15.8) and female participants (mean = 26.5, SD = 18.8). This suggests that the student experimenters were making some effort to go beyond the usual convenience sample of undergraduate psychology students. Otherwise we would expect to see a predominance of female participants, since females outnumber males by about 3:1 amongst the students' peer-group.

Project 'success'. It turned out to be difficult to ascertain the success of each project in terms of finding support for pre-planned hypotheses, because most projects planned to test several hypotheses and did not clearly indicate a single main hypothesis. It was fairly common, therefore, for students to report mixed findings, with support for some hypotheses but not others. Of course, the more hypotheses that are tested, the greater the likelihood that some of these will achieve statistically significant support by chance alone.

Research Area

Psi or non-psi? The 96 projects were first categorized into two groups: those that included a psi task, and those that did not. Just over one third of the projects (38/96 = 39.6%) included a psi task. Before looking more closely at these, the following section briefly describes the non-psi studies.

The non-psi studies. Fifty-eight projects (60.4%) did not include any psi task. These were further subdivided into topics that had a direct link with parapsychology and the psychology of paranormal experiences and beliefs, and those with no such link. It is perhaps interesting to note that, although this review concerns projects supervised by KPU members, 40 projects (41.7% of the total 96 projects) were not directly related to the paranormal. These projects covered research areas such as sports psychology, volition, and occupational psychology, largely reflecting Bob Morris's interest in performance enhancement. This was an area where Morris considered that parapsychology might have something to contribute to mainstream psychology, and vice versa. Example titles are:

Stress within organisations: An evaluation of a stress management course with the Scottish Police College
An exploratory study into athletes' delay in attending two sports injury clinics
The relationship between volition and self-esteem in alcoholism: A new model of volitional control

There were 18 non-psi projects that *were* related to the paranormal (18.8% of the total 96 projects). These involved study of the psychology of paranormal beliefs and experiences, and factors affecting free-response ESP judging. Appendix 1 gives a full list of the year, titles, authors and supervisors of these projects. Example titles are:

The effect of varying levels of instruction/experience upon the judging of free-response ESP data
Do people's beliefs in ESP affect the way they evaluate evidence confirming or disconfirming their beliefs?
The therapeutic consequences of visiting a medium

[3] This figure excludes one project that did not involve participants, but that consisted of a statistical analysis of over 800 NFL games.

The Psi Studies

This section concerns the 38 projects (39.6% of the total 96) that included a psi task. Appendix 2 gives a full list of the year, titles, authors and supervisors of these projects. Almost three-quarters of these projects included a hypothesis predicting overall significant performance on the psi task (27/38 = 71.1 %). The remaining eleven studies did not predict an overall effect, suggesting that these studies may have used contrasting conditions expected to 'wash out' performance on the psi task when combined, such as psi-believers versus disbelievers (e.g., projects by West and Newell).

Overall predicted outcome. Of the 27 projects predicting overall significant performance on the psi task, 8 (29.6%) found a predicted significant effect. This is considerably greater than the five per cent of studies expected to be significant at the .05 level by chance alone. Although some of these studies do report results that are only marginally significant, others report effects with much smaller p-values that are by definition even less likely to occur by chance alone, such as $p < .000001$ (Langbridge) and $p = .0005$ (Norfolk & Rose). However, most projects did not pre-specify the analysis that would be used to evaluate the hypothesis, and some had more than one psi outcome (e.g., EDA presentiment *and* Blood Pulse Volume (BPV) presentiment in the case of Norfolk and Rose; conscious guessing *and* unconscious (physiological) responses in the case of Sah) and did not pre-specify a single psi outcome measure. These factors are likely to inflate the likelihood of finding significant effects by chance alone.

Statistical power. Student studies tend to have relatively modest resources. This makes it difficult to have large numbers of participants, leading to reduced statistical power. This in turn makes it more difficult to obtain significant results. To estimate whether this might have been a factor for the seventy per cent of projects that predicted but did not obtain overall significant psi task performance, I compared numbers of participants for the studies. The studies that predicted and found overall significant scoring on the psi task had a mean of 34.9 (SD=10.20) participants. Those that predicted and did not find significant scoring on the psi task had 36.8 (SD=11.3) participants on average. This suggests that, compared to the significant studies, the non-significant studies are not being unduly hampered by low statistical power.

Post hoc psi findings. Over half of the psi projects (22/38 = 57.9%) reported significant post hoc findings related to psi task performance. This is perhaps not surprising because student projects often include a number of exploratory analyses, as well as sometimes using novel methods where firm predictions cannot be made. We might expect that the students conducting the 19 studies that predicted but *did not find* overall significant psi task performance would be particularly tempted to data-mine in order to boost their study's findings. Sixty-three per cent of these projects (12/19) reported post hoc psi findings, compared to 50 per cent (4/8) of the studies that had predicted and found significant psi task performance. It appears therefore that there is a slight tendency for students to engage in more data-mining when they did not find a predicted main effect.

Type of psi task. The projects used many and varied psi tasks. ESP/precognition tasks included dowsing for a hidden penny, presentiment of photographs of happy and angry faces, detecting the happy or neutral emotional state of a sender, as well as the better-known ganzfeld free-response method, and forced-choice studies with Zener cards. PK tasks included attempting to exert a psychokinetic influence over the fall of dice, and over RNG-driven computer visual displays including choosing which of four static rectangles will be selected by the computer, controlling a randomly-moving spot's position relative to a circle, and influencing a balloon being driven by a fan onto spikes. DMILS studies included attempts to facilitate attention focusing and performance on a choice reaction time task, and the autonomic detection of remote observation. In addition to the variety of psi tasks, most studies incorporated an investigation of various psychological characteristics, such as personality, creativity, volitional competence, volitional strategy, imagery strategy, belief/disbelief in ESP, meditation, and self-confidence. Given that we are dealing with only 38 psi studies with different combinations of the variables listed above (and more), the studies are not easily compared. Nevertheless there were some small clusters of studies that used fairly similar psi tasks, and these are described in the following sections in an attempt to see whether any informative patterns may emerge. Each table presents the studies in chronological order; further details of date, title and supervisor can be found in Appendix 2.

Free-response Ganzfeld-ESP studies. There are five studies in this group, four of which have been presented at PA conventions (Morris, Cunningham, McAlpine & Taylor, 1993; Symmons & Morris, 1997; Morris, Summers & Yim, 2003). All used an automated ganzfeld procedure in which targets were automatically displayed in a distant room while the participant relaxed and experienced unpatterned sensory stimulation and reported aloud his or her thoughts and impressions. The Symmons study used rhythmic auditory stimulation (drumming at 7 and 2 Hz) rather than white noise. Table 2 gives the principal characteristics of these studies.

TABLE 2
CHARACTERISTICS OF FREE-RESPONSE GANZFELD-ESP STUDIES CONDUCTED AS STUDENT PROJECTS

Author(s)	**Participant type**	**Target type**	**Hits/Trials (MCE=25%)**	**Z (1-t p)***	**Effect size Z/√N**
Cunningham	Creative & extravert undergrad 'sheep'	Dynamic video clips	13/32=40.6%	1.84 p=0.03	.33
McAlpine	Unselected undergrads	Static & dynamic video clips	8/32= 25%	0	0
Symmons	Mostly undergrads selected for prior psi experience & mental discipline	Dynamic video clips	21/51=41.2%	2.51 p=0.006	.35
Colyer	Unselected undergrads	Dynamic digital clips	9/40=22.5%	-0.18	-.03
Summers & Yim	Selected artists & musicians	Dynamic digital clips	15/40=37.5%	1.643 p=0.05	.26

*When a negative value is shown, this indicates the results are in the direction opposite to that predicted; one-tailed p-values are only given when the results are in the predicted direction

We can see from table 2 that three of the five ganzfeld-ESP studies obtained above-chance hit-rates (mean hit-rate 33.4%, mean effect size = 0.18[4]). Though the numbers are small and other co-variates may account for the studies' outcomes, the non-significant studies used unselected student participants, whereas the significant studies used participants selected for 'creativity', extraversion, and prior psi experience or using a mental discipline. Two of the studies had near-zero effects, while three had comparable effect sizes around .30 in magnitude, suggesting some consistency in the findings of these three studies.

RNG-PK studies. There were four studies that reported an overall PK outcome, as shown in table 3. Participants were asked to attempt to influence a visual display (on a computer monitor) that was being driven by a random number generator (RNG). Three of the studies (Dumuhn, Gentles and Grice) used a PK task in which the subject presses the space bar to cause a dot to take a random step either remaining within or leaving a circle, with the dot always beginning in the centre of the circle. Each trial would terminate when the dot left the circle. In half of the trials the participants were instructed to will the dot to stay within the circle (the IN condition) and in the other half they were to will the dot to leave the circle (the OUT condition). The number of steps taken was counted and significant psi scoring was noted if there were more steps for the IN than the OUT condition. Students reported the outcome of these studies by condition or in the case of Lumley-Saville, per trial, rather than per bit. None of these studies obtained results approaching significance and effect sizes were rather diverse suggesting inconsistent findings.

[4] Formulae for effect size conversion can be found in Rosenthal, R. and Rosnow, R.L. (1991). *Essentials of Behavioral Research: Methods and Data Analysis* 2nd ed. New York: McGraw-Hill.

TABLE 3
CHARACTERISTICS OF PK-RNG STUDIES CONDUCTED AS STUDENT PROJECTS THAT REPORTED AN OVERALL PK OUTCOME

Author(s)	Participant type	RNG type	PK outcome	Effect size
Dumughn	Undergraduate female smokers	Algorithm	t(24)=-1.601	-0.31 $r=\sqrt{(t^2/t^2+df)}$
Gentles	Unselected undergrads	Algorithm	t(59)=1.21 p=0.12	0.16 $r=\sqrt{(t^2/t^2+df)}$
Grice	Undergrads selected for sporting experience	Algorithm	t(39)=-0.05	-0.008 $r=\sqrt{(t^2/t^2+df)}$
Lumley-Saville	Undergrads selected for no meditation experience	Unreported	Mean hits = 40.015 (80 trials, MCE=40, Z=.003)	.0003 ($Z/\sqrt{N}$)

Note: when a negative value is shown, this indicates the results are in the direction opposite to that predicted; one-tailed p-values are only given when the results are in the predicted direction

EDA-staring studies. There were three studies in which electrodermal activity (EDA) was monitored while participants were the subject of periods of remote observation (via camera) interspersed with periods of non-observation. As shown in table 4, none of the studies obtained significant results. Effect sizes were of comparable magnitude, though slightly lower when a convenience sample of undergraduate students was used.

TABLE 4
CHARACTERISTICS OF EDA-STARING STUDIES CONDUCTED AS STUDENT PROJECTS

Author(s)	Participant type	Identity of starer	Psi outcome	Effect size $r=\sqrt{(t^2/t^2+df)}$
Howat	General volunteers	Experimenter	t(27)=0.905[5], p=0.38, 2-t	0.17
Lort-Phillips	Involved with 'dance subculture'	Experimenter	t(27)=0.96[6], p=.17, 1-t	0.18
Juniper & Edlmann	Unselected undergraduates	Experimenters	t(65)=0.917[4], p=0.36, 2-t	0.11

EDA-presentiment studies. There were five EDA-presentiment studies, as shown in table 5[7]. In these studies, EDA was measured in the few seconds *prior* to exposure to emotive compared to control stimuli. The earliest of these studies (Norfolk & Rose) found a highly significant effect in the predicted direction; one found a non-significant effect in the predicted direction, and three found non-significant effects in the direction opposite to that predicted (i.e., lower skin conductance prior to exposure to emotive compared to control stimuli). Effect sizes were rather varied, suggesting inconsistent findings. Norfolk & Rose

[5] No directional prediction was made in this study; EDA was more activated during stare than no-stare periods.
[6] As predicted, EDA was calmed during stare compared to no-stare periods.
[7] The study by Norfolk & Rose had two psi outcomes: EDA presentiment, and BPV presentiment. To avoid reporting two psi outcomes for a single study, I report only the EDA results here, because this was the first hypothesised psi outcome.

investigated and discounted the possibility that their results might be inflated by the use of anticipatory strategies by participants.

TABLE 5
CHARACTERISTICS OF EDA-PRESENTIMENT STUDIES CONDUCTED AS STUDENT PROJECTS

Author(s)	Participant type	Stimulus type	Psi outcome	Effect size
Norfolk & Rose	Unselected undergraduates	Extreme (positive & negative) vs calm pictures	Wilcoxon Z=3.28, p=.0005, N=43 participants	
Dimmock & Tawse	Unselected undergraduates	Extreme (positive & negative) vs calm pictures	Wilcoxon Z=-1.6 N=36 participants	-0.24 ($Z/\sqrt{N}$)
Crichton, Lowe, Dowding,Wilson & Wright	Unselected undergraduates	Acoustic startle vs silent control	t(71)=-1.536,	-0.18 $r=\sqrt{(t^2/t^2+df)}$
Costley & Gregory	Unselected undergraduates	Emotionally arousing vs neutral pictures	t(36)=-1.188	-0.04 $r=\sqrt{(t^2/t^2+df)}$
Cochrane & Wilson	Undergrads selected for no meditation experience	Arousing vs neutral sounds	F(1,36)=0.555, p=.461	0.12 $\sqrt{[F(dfbet)/F(dfbet)+dfwithin]}$

Note: when a negative value is shown, this indicates the results are in the direction opposite to that predicted; one-tailed p-values are only given when the results are in the predicted direction

TABLE 6
PROJECTS INCLUDING A PSI TASK THAT HAVE BEEN PRESENTED AT PA CONVENTIONS

Project author(s)	PA convention details	Overall significant psi task performance found?
Cunningham	Morris, Cunningham, McAlpine & Taylor (1993)	Yes
McAlpine	Morris, Cunningham, McAlpine & Taylor (1993)	No
Sah	Delanoy & Sah (1994)	Yes
Symmons	Symmons & Morris (1997)	Yes
Brady	Brady & Morris (1997)	Yes
Summers & Yim	Morris, Summers & Yim (2003)	Yes
Hopkinson & Fraser	Watt, Fraser & Hopkinson (2006)	No

Process-Oriented Studies

As mentioned above, eleven studies did not predict an overall significant psi effect. Most of these were process-oriented studies that either correlated individual difference variables with psi outcome, or that

compared two conditions, one of which was expected to be more psi-conducive than the other. Again, this was a heterogenous group in terms of the research question, however two small clusters of similar studies can be identified. Four looked at sheep-goat effects (one predicting a reversed SGE, replicating Lovitts, 1981), and three found the predicted significant relationship between belief and ESP (West, Newell, and Gentles). Four looked at aspects of volition and psychokinesis task performance, and two found significant relationships (MacLullich and Prince).

File-drawer Issues

Of the 97 projects, only one has led to a journal publication (Watt, Wilson & Watson, 2007). Not surprisingly, none of the non-psi projects that are unrelated to the paranormal has been presented at PA conventions. Furthermore, none of the non-psi projects that *are* related to the paranormal has been presented at PA conventions. Seven psi studies (18.4% of psi studies) have been presented at PA conventions[8,9] (with two being presented in a single paper). These are listed in table 6; full references can be found in the reference list. It appears that there is a tendency to select for PA presentation studies that have found significant results for the psi task, because the proportion of significant studies presented at the PA (5/7 = 71.4%) is considerably larger than the overall proportion of studies that predicted and found significant overall psi effects (8/27 = 29.6%).

DISCUSSION

In this paper I have reviewed 96 undergraduate student projects supervised by members of the Koestler Parapsychology Unit at Edinburgh University and conducted between 1987 and 2007. About 40% of the projects were unrelated either to psi or to paranormal experiences and beliefs. Around 20% were related to paranormal experiences and beliefs but contained no psi task. I focused on the 38 projects (about 40%) that included a psi task. Of these, 27 projects predicted overall significant performance on a psi task, of which 8 (29.6%) found the predicted significant overall positive psi scoring (though some of these projects had more than one psi task and did not specify a single outcome measure). Interestingly, there was little difference between the number of participants (and hence statistical power) for the 'successful' (in terms of finding a predicted overall psi effect) and the 'unsuccessful' studies. This echoes a point that I recall Bob Morris once making, that it does not seem to be the case in parapsychology that significant results are more easily obtained with high-N studies; in other words, the usual assumption that effect sizes are independent of study size may not apply in psi research. However, with only around 35 participants each, the psi studies would conventionally be regarded as low-powered. This is not particularly surprising, given that these were student projects with necessarily limited resources.

Although the projects were very diverse (see Appendix 2), in an attempt to discern informative trends I identified four small clusters of projects that had used similar psi tasks: PK-RNG, EDA presentiment, Ganzfeld ESP, and EDA staring studies. I also calculated effect sizes for each of these studies, because even if the studies are low-powered, effect-sizes can reveal if there is an underlying effect, and how consistent it is. Of the four groups of studies, the PK-RNG and EDA presentiment studies tended not to show any consistency of performance on the psi task, and the majority (8/9 studies) obtained non-significant psi results. Perhaps this is because all the PK-RNG studies analysed their data on a per-condition or per-trial basis, rather than on a per-bit basis. Therefore the power of the student studies, in terms of number of trials, is very low compared to the PK-RNG studies meta-analysed by Bösch, Steinkamp and Boller (2006) that had thousands and sometimes millions of bits, and that found a very

[8] The studies by Cunningham and McAlpine were also reported at the PA by Radin, McAlpine & Cunningham (1993) in the context of geomagnetic effects. The original projects had not planned to investigate geomagnetic effects, so I am taking the Morris et al. (1993) paper as representing these projects.

[9] For the record, I am aware of one student project that falls outside the remit of this paper because it was a third year undergraduate project on staring detection and it was not supervised by KPU staff. It was presented at a PA convention as a research brief (Lee et al., 2005; see reference list for details).

small but significant overall effect size. Of course the alternative possibility is that these studies simply did not support the hypothesis of the existence of psi because, even if psi exists, it is not readily detected using PK-RNG or EDA presentiment methods.

A slight cause for concern arises over the one significant EDA-presentiment study (Norfolk and Rose). The study by Dimmock and Tawse was conducted as a replication of Norfolk and Rose, one year later, and initially found highly significant results (Z=5.57). However on further investigation Dimmock and Tawse found that this was due to a faulty data analysis program, and when the data was manually analysed, chance results were obtained. Based on the contents of the students' dissertations, we can't rule out the possibility that, although Norfolk and Rose explored and ruled out anticipatory strategies as causing their apparently sizeable presentiment effect (Z=3.28, effect size = 0.49), there might have remained a problem with their data analysis program as there is a good chance that the same, or a similar, program was used in both studies. EDA-presentiment is a relatively recent method in parapsychology, so it may be that, as with other young methodologies, it will take some time to identify and remove potential sources of noise and artifact and refine the methodology to become a useful psi task.

More reliable findings came from the ganzfeld and remote staring studies. Significant results and relatively consistent effect sizes were found in the majority of the ganzfeld studies, specifically those with selected participant populations, such as those who were 'creative', extravert, or who had practiced a mental discipline. This trend, though based on only a small sample of studies, is consistent with the high scoring found in previous (Schlitz & Honorton, 1992) and subsequent (Dalton, 1997) ganzfeld studies with creative participants, and with Milton and Wiseman's (1999) meta-analysis that found above-chance scoring for participants who practiced mental disciplines. It seems that if conducting proof-oriented ganzfeld ESP research, the use of selected participants is recommended. Furthermore, a small number of the process-oriented projects found evidence in support of the sheep-goat effect. This reminds us of one of parapsychology's more reliable findings (e.g., Lawrence, 1993) and suggests that if parapsychologists want to maximize the likelihood of obtaining significant psi results then they should also select participants on the basis of their belief in the paranormal.

There were only three EDA-staring studies. None was statistically significant, however two were quite low-powered with only 28 participants each, making statistical significance difficult to achieve. All three found effects in the predicted direction and of a magnitude ($r \approx 0.15$) larger than that found in the Schmidt, Schneider, Utts, and Walach (2004) meta-analysis of 15 remote staring studies (with the latter finding a mean effect size $d = 0.13$, which converts to $r = 0.07$[10]). However, the two data-bases are not independent because Schmidt et al. retrieved unpublished studies, including two of the three studies reported here (Howat, and Juniper and Edlmann). Nevertheless, particularly given that remote staring detection is a commonly-reported real-life psi experience (Sheldrake, 2005) I would echo Schmidt et al.'s recommendation that further high quality research is conducted using this method.

The question arises as to what the status is of this group of mostly-unpublished student projects, with respect to meta-analyses of psi research. Given the limitations that I highlighted at the start of the results section, such as the actual data collection and analysis being largely the responsibility of the students alone, some might feel that these projects' findings are less reliable than studies conducted by more experienced researchers. Meta-analysts' practices differ because there is a trade-off between avoiding file-drawer effects, and including possibly unreliable studies. Schmidt et al. (2004) included some of the unpublished studies reported here, but also coded the studies on a number of different quality indices thus allowing the effects of low quality studies to be quantified. Milton & Wiseman (1999) included the ganzfeld studies by McAlpine and Cunningham, not in their original unpublished form but as they were published in the PA Proceedings. One would expect the reliability of published papers to be higher because they have undergone peer review. I would not recommend using unpublished student projects in a meta-analysis, unless they are accompanied by thorough quality-coding.

Aside from the question of poor quality methodology, some might suspect that students would be motivated to simulate positive results, because these findings are easier to report and are likely to be viewed more favourably by markers. This is an unfalsifiable hypothesis, so it is not very useful. However

[10] Using the formula $r = d/\sqrt{(d^2+4)}$

students using automated data collection would find it relatively difficult to simulate positive results, and the fact that only about 30% of the psi studies predicted and then reported finding overall psi effects suggests that cheating is not widespread amongst our students.

This paper also suggests there is a tendency to select for PA presentation projects that have obtained evidence supporting the psi hypothesis. This is not surprising because positive results are more interesting to present and to hear than null results, just as occurs with journal publications. But it does give an unrepresentative picture of the degree of support these projects have found for the psi hypothesis.

It has been difficult to find overall trends in this review given the miscellaneous nature of the bulk of the psi projects. Such is almost a microcosm of parapsychology as a whole. The great strength of student projects is that they can be very innovative as the students themselves can come up with fresh research ideas. Symmons' ganzfeld project using different drumming frequencies rather than white noise as auditory stimulation is one example of a successful variation upon an established methodology. So we could regard such projects as risk-taking pilot studies that might suggest new lines of research for subsequent systematic investigation, or that explore modifications of well-known methodologies. However, if we want these projects to contribute to the database of formal psi studies, they need to be both closely supervised and systematic, so that they may be published within a wider research context. At the same time this will bring them out of the file-drawer. There is some indication of this in the KPU student projects particularly with the ganzfeld studies with selected participants. We could go further to encourage systematic student research, but that is likely to be at the cost of flexibility, novelty, and allowing the student to follow his or her own initiative. It is perhaps down to the teacher him or herself to make a judgement as to whether pedagogical goals can be satisfied simultaneously with wider research goals and, if not, which should take priority. A similar debate could probably be held about the research of PhD students, where supervisors vary widely in the extent to which they exert tight control over the student's research topic and experimentation. PhD dissertations are another class of student research that may contribute to parapsychology's research database but, if unpublished, also add to its filedrawer. While this paper doesn't come up with definitive answers, I hope it serves a purpose at least in raising some questions and stimulating debate over these issues.

REFERENCES

Bösch, H., Steinkamp, F., & Boller, E. (2006). Examining psychokinesis: The interaction of human intention with random number generators – a meta-analysis. *Psychological Bulletin, 132*, 497-523.

Brady, C., & Morris, R. L. (1997). Attention focusing facilitated through remote mental interaction: A replication and exploration of parameters. *Proceedings of the 40th Annual Convention of the Parapsychological Association* (pp. 73-91). Brighton, UK.

Dalton, K. (1997). Exploring the links: Creativity and psi in the ganzfeld. Proceedings of the 40th Annual Convention of the Parapsychological Association (pp. 119-134). Brighton, UK.

Delanoy, D. L., & Sah, S. (1994). Cognitive and physiological psi responses to remote positive and neutral emotional states. *Proceedings of the 37th Annual Convention of the Parapsychological Association* (pp. 128-138). Amsterdam, The Netherlands.

Lawrence, T. R. (1993). Gathering in the sheep and goats: A meta-analysis of forced-choice sheep-goat ESP studies, 1947-1993. *Proceedings of the 36th Annual Convention of the Parapsychological Association* (pp. 75-86). Torongo, Canada.

Lee, B., Hadjiosif, M., Weidlich, D., Barlow, L., Crichton, C., Moorehead, C., Mackay, A., & Griffith, A. (2005). Personality and perception in staring detection and experience. *Proceedings of the 45th Annual Convention of the Parapsychological* Association (pp. 407-409). Paris, France. (Research Brief)

Lovitts, B. E. (1981). The sheep-goat effect turned upside down. *Journal of Parapsychology, 39*, 289-296.

Milton, J., & Wiseman, R. (1999). Does psi exist? Lack of replication of an anomalous process of information transfer. *Psychological Bulletin, 125*, 387-391.

Morris, R.L., Cunningham, S., McAlpine, S., & Taylor, R. (1993). *Toward replication and extension of autoganzfeld results*. *Proceedings of the 36th Annual Convention of the Parapsychological* Association (pp. 177-191). Toronto, Canada.

Morris, R. L., Summers, J., & Yim, S. (2003). Evidence of anomalous information transfer with a creative population in ganzfeld stimulation. *Proceedings of the 46th Annual Convention of the Parapsychological Association* (pp. 116-131). Vancouver, Canada.

Radin, D. I., McAlpine, S., & Cunningham, S. (1993). Geomagnetism and psi in the ganzfeld. *Proceedings of the 36th Annual Convention of the Parapsychological Association* (pp. 132-142). Toronto, Canada.

Schlitz, M. J., & Honorton, C. (1992). Ganzfeld psi performance within an artistically gifted population. *Journal of the American Society for Psychical Research, 86*, 93-98.

Schmidt, S., Schneider, R., Utts, J., & Walach, H. (2004). Distant intentionality and the feeling of being stared at: Two meta-analyses. *British Journal of Psychology, 95*, 235-247.

Sheldrake, R. (2005). The sense of being stared at. Part 1:Is it real or illusory? *Journal of Consciousness Studies, 6*, 10-31.

Symmons, C., & Morris, R. L. (1997). Drumming at seven Hz and automated ganzfeld performance. *Proceedings of the 40th Annual Convention of the Parapsychological Association* (pp. 441-453). Brighton, UK.

Watt, C., Fraser, C., & Hopkinson, A. (2006). 'Psychic DMILS': Attempted remote facilitation of performance in an ESP game, and an exploration of gender differences. *Proceedings of the 49th Annual Convention of the Parapsychological Association* (pp. 226-236). Stockholm, Sweden.

Watt, C., Wilson, S., & Watson, L. (2007). Cognitive and psychological mediators of anxiety: Evidence from a study of paranormal belief and perceived childhood control. *Personality and Individual Differences, 42*, 335-343.

THE ALBUQUERQUE 300 EXPERIMENT: FIELD RNG ANALYSIS OF THE ALBUQUERQUE TRICENTENNIAL

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ABSTRACT

In an effort to further explore the possible correlation between instances of focused group attention during mass spectator events and the occurrence of structural non-random patterns in the output of random physical systems, data were collected from a truly random number generator (RNG) during the course of several mass public events held as part of the Albuquerque Tricentennial celebration from December 2005 to October 2006. The general prediction was for the RNG data from the events to show a significant non-random deviation, both collectively and individually. RNG data for eleven individual celebration events were collected, and analysis reveals that although the data are in the predicted direction, they are not significantly different from chance overall. Six of the events in the dataset were also noted to have displayed deviations in the direction opposite to prediction. *Post hoc* examination of graphical data representations of the individual events seemed to show suggestive transient, non-random structural patterns within the data for two of the events that may be of incidental note, and the possible relevance of these findings to field RNG experiments on mass public spectator events is discussed.

INTRODUCTION

The year of 2006 marked the 300th anniversary of the founding of the city of Albuquerque, New Mexico, by Spanish settlers returning from exile following the Pueblo Revolt of 1680. As part of the great effort to officially mark the occurrence of this milestone event, the City of Albuquerque had planned a series of mass celebration events for the general public to be held throughout the year. Given the wide degree of media attention and public participation that it was expected to receive, it was predicted early on that the Albuquerque Tricentennial celebration would be the kind of large-scale social event that might be conducive to a hypothesized mind-matter interaction-related "field consciousness" effect on a mass group scale, and a field random number generator (RNG) experiment was subsequently carried out in order to test the prediction.

Several findings reported in the field RNG research literature had led to this prediction. Nelson, Bradish, Dobyns, Dunne, and Jahn (1996) and Radin, Rebman, and Cross (1996) both independently reported results that suggest structural non-random patterns found in RNG data collected during group events may be correlated in some way with the collective social dynamics of the group involved. Subjective observations by the experimenters of the group situations further suggest that these group dynamics may take the form of mass focused attention towards a specific event, a shared emotional response, intellectual group rapport, and/or any other form of social interaction that may lead to a sense of unity or "coherence" among the members of the group. Further exploration by Nelson, Jahn, Dunne, Dobyns, and Bradish (1998) suggested that these "field consciousness" effects do vary across different venues, although those venues that seemed to show consistent results across experiments included relaxed small group meetings, group rituals, and stage performances in music or theater.

The results of various replications by other researchers suggest that field RNG studies of mass group spectator and/or participation events may be worth pursuing. Taking note of peoples' anecdotes of "wishing" for good weather on the days that large Princeton University ceremonial gatherings are held outdoors, Nelson (1997) compared precipitation data from Princeton with that from other surrounding cities and found that there is significantly less rain over time in Princeton on the ceremonial days,

seemingly in accordance with peoples' wishes and perhaps hinting at a possible "group consciousness" effect on the random fluctuations of the natural environment. Nelson and Mayer (1997) found significant deviations from randomness in the field RNG data they collected during a series of popular theatrical performances celebrating the Winter Solstice, suggesting that audience engagement was correlated with the deviation patterns. During the traditional Japanese folk festival *Aomori-Nebuta*, Hirukawa and Ishikawa (2004) collected RNG data during a publicly engaging street parade of *nebuta*, large illuminated figures of characters from Japanese myth. They found a significant non-random trend in data from the parade that was not present in control data they had taken before and after the parade.

In addition, RNG data taken during group meditations and active group workshops on distant healing have also shown notable non-random trends in some studies (Nelson et al., 1996, 1998; Nelson & Radin, 2003; Radin, 1997, Ch. 10; Radin, 2006, Ch. 11; Radin, Rebman, & Cross, 1996; Rowe, 1998). Further analyses of world meditations and active mass public engagements for peace formally examined by the Global Consciousness Project, an international research project with the purpose of detecting this "group consciousness" effect on a global scale during major world events (Nelson, 2001), have also found that the data from these events collectively show a structured deviation from randomness in a global-spanning network of RNG devices that was significantly different from chance (Nelson, 2002; Williams, 2004). Nelson (2006) and Radin (2006, Ch. 11) have also both reported a significant reduction in the variance across the RNGs in this global network that seems to be correlated with the mass public celebration of New Year's Eve over a period of several years (eight in Nelson's case, six in Radin's).

There are also other field RNG studies that are consistent with Nelson et al.'s (1998) exploratory finding that group consciousness effects vary across different venues. Sporting events, which may naturally be expected to show such effects due to their large crowd attendance and frequently strong emotional engagement of spectators, provide one example. Data collected during Princeton University football games by Nelson et al. (1998) had shown little indication of any non-random deviation. Examination of larger football games such as the 1996 NFL Super Bowl by Nelson et al. (1997) and Radin (1997, Ch. 10) revealed modest trends away from randomness in the output of RNGs running during the games, though none were significantly different from chance. However, Bierman (1996) had found a significant deviation in the output of a field RNG running during the 1995 European soccer cup final, and Hagel and Tschapke (2004) reported interesting results from data taken during a winning soccer game held in their local city of Köhn, Germany, which had been followed by a mass public procession through the city streets. In another example, the author had collected RNG data during the 2005 Gathering of Nations Powwow (Williams, 2006). Analysis had revealed a result that was consistent with standard randomness throughout the two days of the powwow.

One thing that may contribute to this variation is the difficulty in defining what constitutes a group dynamic conducive to group consciousness effects, and one possible way to help overcome this is to explore all kinds of events to see which, if any, do show results that may be a focus for replication in the future as a check for possible consistency. The present experiment was also carried out with this aim in mind, providing another reason for the selection of the Albuquerque Tricentennial.

METHOD

Participants

The participants in the study were presumed to be all of those residents and officials of the City of Albuquerque who witnessed and/or participated in the public Tricentennial celebration events.

Apparatus

A truly random number generator (Orion, Inc./ICATT, Amsterdam, the Netherlands, http://www.randomnumbergenerator.nl/) based on electronic noise was connected to the serial port of a Compaq 2.8-GHz PC (Compaq/Hewlett-Packard, Cupertino, CA) located in the author's home in the Northeast Heights region of Albuquerque. The estimated distance from the author's home to the events

ranged from approximately 4.5 to 7 miles (see the following sub-section). The PC utilized the Microsoft Windows-based FRED software package (Institute of Noetic Sciences, Petaluma, CA) to collect individual 200-bit samples per second from the RNG device. One-hour segments (i.e., 3600 samples) of calibration data were collected at various times either prior to or following each event[1], and Table 1 shows the empirical mean and standard deviation for each event calibration segment (see the following sub-section for event descriptions). The data collectively average to an empirical mean of 99.993 and a standard deviation of 7.085, very close to an expected theoretical mean of 100 and a standard deviation of 7.071. Digital displays of the bit samples made possible through the use of FRED software package also seemed to indicate a random distribution, with no signs of a consistently biased pattern of outliers that might suggest a malfunctioning RNG. Calibration tests by the manufacturer prior to shipment had also confirmed standard randomness of the RNG device. This RNG had also been used in a previous field RNG study (Williams, 2006).

TABLE 1
RNG CALIBRATION DATA FOR ABQ 300

Event #	Event	Mean	SD
1	Xmas Lights 2005	99.904	7.085
2	Banquet & Ball	100.061	7.137
3	Balloon & Marathon	99.996	7.044
4	Founders Parade	99.847	7.173
5	April 22 Fiesta	99.986	7.1
6	Faith Festival	99.838	6.989
7	La Entrada	99.958	7.087
8	Old Town Mass	100.033	7.037
9	April 23 Fiesta	99.998	7.062
10	Birthday Wish & Cake	100.31	7.162
11	End Ceremony	99.997	7.054
Total		**99.993**	**7.085**

Predictions & Analysis

A total of 11 celebration events were examined in this experiment. RNG data collection was based on announcements and the schedule of public events posted on the Albuquerque Tricentennial website (http://www.albuquerque300.org) and published in local newspapers over the course of several weeks in April of 2006. A brief summary of each event is as follows, with the approximate distance from the author's home noted in parentheses:

Event 1: Christmas Eve Lighting 2005. One of the first public events to start the Albuquerque Tricentennial was a simultaneous lighting of Christmas display lights planned for December 24, 2005. Residents of Albuquerque were asked to turn on their Christmas lights at 18:00 Mountain Time, allowing a wave of illumination to appear across the city at one time (city-wide; no measureable reference point).

Event 2: Royal Banquet and Ball. A banquet and ball was held at the Albuquerque Convention Center on the night of April 21, 2006. A central media highlight of this event was the presence of the Duke and Duchess of Alburquerque, family descendants of the Spanish duke for whom the city had been named. They had traveled from Spain to be present for the Tricentennial celebration, and were honored guests at the event. Several city officials also attended the banquet and ball (4.75 miles).

Event 3: Balloon Ascension & Marathon. A series of hot-air balloon ascensions were held on the morning of April 22, 2006 at Balloon Fiesta Park and various local parks in Albuquerque. The occurrence

[1] The temporal lag between the event and the collection of calibration data ranged from one hour before (Events 1, 2, & 11), to between one and seven hours after (Events 4, 5, 6, 7, 8, & 10), to nine hours after (Event 3), to one day after (Event 9).

of the balloon ascensions also coincided with the start of the Fiesta de Albuquerque Marathon that ran from Balloon Fiesta Park to Old Town, and participation in the marathon was open to the public (7 miles from reference point at Balloon Fiesta Park).

Event 4: Tricentennial Founders Day Parade. A large parade was held in the streets of Old Town in downtown Albuquerque in the early afternoon of April 22, 2006 (5.5 miles from reference point at Old Town Plaza).

Event 5: Fiesta Events in Tiguex Park – April 22. A series of celebration events, known as the "Tricentennial Fiestas de Albuquerque," was held in Tiguex Park near Old Town throughout the afternoon of April 22, which consisted of a variety of stage entertainment performances by well-known local musicians, an artisan market, kids' activities, and food vending (5.3 miles).

Event 6: Festival of Faith. A ceremony honoring Albuquerque's diverse religions was held at the University of New Mexico Arena ("The Pit") on the morning of April 23, 2006 (4.5 miles).

Event 7: La Entrada Ceremony. *La Entrada* (meaning "The Entry") was a reenactment event designed to retrace the path through New Mexico taken by the Spanish settlers who founded Albuquerque as they returned from exile in 1706. Many family descendants of the settlers participated in the event, and a majority of the participants donned 18th century costumes and/or acted out the lifestyle of the period. The *La Entrada* ceremony, held on April 23, consisted of a parade through the streets of Old Town by the reenactors as they simulated the arrival of the settlers in Albuquerque (5.5 miles from reference point at Old Town Plaza).

Event 8: Mass in Old Town Plaza. Following the *La Entrada* ceremony, a Catholic Mass for the public was held in the Old Town Plaza by Archbishop Michael Sheehan and other clergy members of the Archdiocese of Santa Fe (5.5 miles).

Event 9: Fiesta Events in Tiguex Park – April 23. A second series of the "Tricentennial Fiestas de Albuquerque" was held in Tiguex Park in the afternoon and early evening of April 23. The events were either the same as, or similar to, those of Event 5 (5.3 miles).

Event 10: Wishing Candle Ceremony & Birthday Cake. The second series of the "Fiestas de Albuquerque" closed with the lighting of a giant 300th birthday candle for Albuquerque. Residents were asked to write down their birthday wishes for the city's future and place them in the body of the candlestick, where they would be burned along with the candle. Pieces of Tricentennial birthday cake were handed out to the public afterwards (5.3 miles).

Event 11: Tricentennial End Ceremony & Sandia Crest Lights. The final public Tricentennial celebration event was held on the evening of October 6, 2006, at Balloon Fiesta Park. The ceremony included hot-air balloons and live stage entertainment, and was concluded at 20:50 Mountain Time with the commemorative lighting of a two-mile long row of 200 LED lights placed along the length of the crest of the Sandia Mountains overlooking Albuquerque (see McKay, 2006, for additional details on this event) (7 miles).

The RNG test period for each event was defined as the respective length of duration for each event, based on their pre-published schedule times (see the second column in Table 2). Additional information on the approximate duration and end times of events was kindly provided to the author by Sherry Robinson, the Tricentennial editor, to help ensure that timing was as accurate as possible.[2] In a few cases, however, it was not possible to determine exactly how long a given event had lasted (e.g., Event 1). In such cases, periods were arbitrarily defined to include a short time before the event and a longer period after in order to allow for the possibility of delayed and/or residual effects on the RNG data.

Sampling of the RNG began between 30 minutes to one hour before the start of a given event, and ran up to 15 minutes beyond the defined test period to ensure complete data collection. To help reduce any possible observer effects by the experimenter, the FRED program sequence on the PC was activated,

[2] In an e-mail communication from 5/19/2006, Tricentennial editor Robinson informed the author that there had been differences in timing between the published event schedule and the actual occurrence of certain events: Event 2 lasted only until 20:30 rather than the published midnight, Event 3 began at 06:30 rather than the published 07:00, Event 7 began at 12:00 rather than the published 13:00 due to an early arrival of the reenactors, and it lasted two hours rather than the published one hour. The author adjusted the test periods accordingly to reflect these times (Table 2) and ensure that the proper RNG test data were extracted.

checked once a few minutes later to ensure that data were being collected properly, and then the PC's monitor was turned off and the PC was left to run on its own until the end of the collection period while the author attended to other various tasks.[3] In cases of prolonged data collection (more than 4 hours), brief pauses of about 30 seconds in length were intermittently taken at about four-hour intervals to save the data being stored in the PC's memory to the hard drive in order to help prevent data loss should an unforeseen power failure occur. One such failure did occur during the experiment: a power cut-off to the PC due to uncorrected system power settings that caused it to abruptly shut down on the afternoon of April 23 had led to the loss of a little over two hours and 15 minutes of RNG data stored in the memory covering the period from 15:45 – 18:04; otherwise, all test data are reported here.

For practical reasons,[4] the author did not attend any of the events and this was the reason why the data were collected in the author's home rather than on site at the events. From the outset of the study, distance was not considered a serious factor on the assumption that the findings by Dunne and Jahn (1992), which suggest that mind-matter interaction effects are independent of distance, are valid. However, brief moments of live media coverage of some of the events (Events 5, 9, 10, & 11) were shown on television throughout the day via local news station broadcasts, and the author had monitored these broadcasts to get a basic idea of the psychological atmosphere of the crowd in attendance at these events. When these broadcasts were not shown, the author attended to other tasks and did not direct any attention to the RNG running in a separate room other than at times in which the RNG data were saved to disk.

The general prediction was for the RNG data to show a significant non-random deviation, both individually in the case of each event and collectively across all events. The prediction was tested through analysis of the RNG data using the following conventional statistics procedure (see Nelson, 2001, for more extensive details): The raw sample data are first converted to normalized *z*-scores following the equation $z = (x - 100)/\sqrt{50}$, where x is the individual RNG sample for a given second, 100 is the theoretical mean for a binomial distribution, and 50 is the trial sum variance. These *z*-scores are then squared to create a mean deviation value with 1 degree of freedom (*df*) that is Chi-square distributed. Since Chi-square values are additive, a cumulative summation of all of the is taken across time (with *df* = number of values summed) to represent the overall measure of mean deviation, and an associated probability value is obtained. Graphical representations of the data over time can then be generated from this cumulative summation (Aron & Aron, 1997; Nelson, 2001; Snedecor & Cochran, 1980).[5] An associated *z*-score was also calculated based on the obtained Chi-square and *df* values (Guilford & Fruchter, 1973, p. 517). This same data analysis procedure has been used in a number of previous field RNG studies (e.g., Bierman, 1996; Hirukawa & Ishikawa, 2004; Nelson, 2001, 2002; Nelson et al., 1996, 1998; Nelson & Mayer, 1997; Nelson & Radin, 2003; Rowe, 1998; Williams, 2004, 2006).

RESULTS

General Prediction

Table 2 shows the individual and combined results for the 11 Tricentennial celebration events. The results indicate that although the combined data are in the predicted direction, they are not significantly different from chance overall. Thus, the prediction of a significant non-random deviation in the collective data across events was not confirmed.

[3] The majority of these tasks including things such as household chores, reading, writing, having a meal, and watching television. Although these tasks directed the author's attention away from the RNG, it should not be assumed that they were sufficiently distracting to exclude the possibility of an experimenter effect. In other words, unconscious effects on the author's part are still possible.

[4] These reasons included: a lack of reliable transportation to each of the events, the likely inability to quickly locate an RNG monitoring spot at each event site that would be both unobtrusive and able to supply a continuous power source to run the computer and attached RNG for prolonged periods, and security concerns in large crowd events.

[5] In graphical representations, the single degree of freedom that is generated from each resulting Chi-square value is subtracted from each value, thus reintroducing the sign that was lost when the *z*-score was squared. Thus, the resulting cumulative summation is actually Chi-square minus 1, rather than the raw Chi-square value.

TABLE 2
ALBUQUERQUE TRICENTENNIAL RNG DATA RESULTS

Tricentennial Event	Date	Test Period	Chi-square	DF	p-value	assoc. z
Xmas Eve Simultaneous City Lighting	12/24/2005	17:55 - 18:30	2121.64	2100	0.365	0.341
Royal Banquet & Ball	4/21/2006	18:30 - 22:30	14589.27	14400	0.132	1.114
Balloon Ascension & Marathon	4/22/2006	06:30 - 10:00	10630	10800	0.88	-1.157
Founders Day Parade	4/22/2006	11:00 - 14:30	5559.38	5400	0.063	1.52
Fiesta Events in Tiguex Park - April 22	4/22/2006	10:00 - 17:00	25327.9	25122	0.179	0.918
Festival of Faith	4/23/2006	10:00 - 11:30	5393.46	5400	0.522	-0.058
La Entrada Ceremony	4/23/2006	12:00 - 14:00	7162.58	7200	0.62	-0.308
Mass in Old Town Plaza	4/23/2006	14:00 - 15:00	3555.28	3600	0.698	-0.522
Fiesta Events in Tiguex Park - April 23	4/23/2006	10:00 - 15:45	20501.06	20552	0.598	-0.248
Wishing Candle & Birthday Cake	4/23/2006	18:17 - 19:00	2621.64	2550	0.157	1.00
End Ceremony/Sandia Peak Lights	10/6/2006	18:00 - 22:00	14333.36	14400	0.65	-0.39
Total			**111795.57**	**111524**	**0.282**	**0.575**

Note: Test period times listed are in Mountain Time.

The results in Table 2 also indicate that on the level of individual events, the prediction of a significant non-random deviation was not confirmed. It can also be seen from Table 2 that six of the eleven events had produced cumulative results in the negative direction, though none were individually significant. Only one event (the Founders Day Parade) had produced a weakly suggestive result (p = .063) in the positive direction.

Graphical Data Representations

A *post hoc* examination of graphical representations of the individual data for the eleven events revealed two suggestive instances of transient structural patterning within the data that may be of incidental note. While they cannot be taken as clear evidence for an effect, they are reported here for their interesting results and any potential instructive value they may have.

Figure 1 shows the graphical representation for the RNG data collected during the course of Event 2, the Royal Banquet and Ball on April 21, 2006.

The data in Figure 2 show a strong trend in an upward direction from 10:00 to around 14:30, which then sharply reverses into an equally strong decreasing slope that lasts until 16:45 before reversing once more at the end of the test period.

These two examples seem to show possible transient, non-random structural patterns in the RNG data from their respective events that are not reflected in their quantitative results listed in Table 2. In contrast, Figure 3 shows an example of an event that displays very little sign of a possible persistent non-random pattern like those exhibited in Figures 1 & 2.

DISCUSSION

The results of the quantitative analysis carried out on the RNG data collected during 11 public celebration events held as part of the Albuquerque Tricentennial between December 2005 and October 2006 fail to provide support for the prediction of a significant non-random deviation, both collectively across events and on the level of individual events. Only one event had produced a weakly suggestive result in the positive direction, and the nonsignificant results of six events had been in the negative direction. However, a *post hoc* examination of the graphical data representations for two individual events seemed to suggest the possibility of short-lived, non-random structural patterns occurring within the test periods for those events.

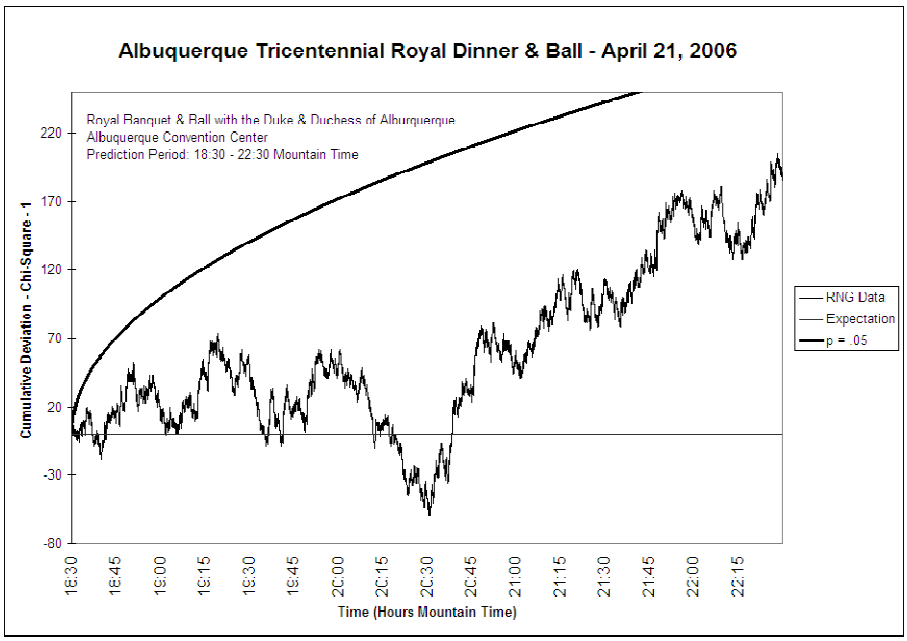

Fig 1. Graphical representation of the cumulative deviation of Chi-square minus the degrees of freedom for the RNG data taken for Event 1, the Royal Banquet & Ball, held on the evening of April 21, 2006. The smooth curved arc indicates the location of p = .05 as time passes.

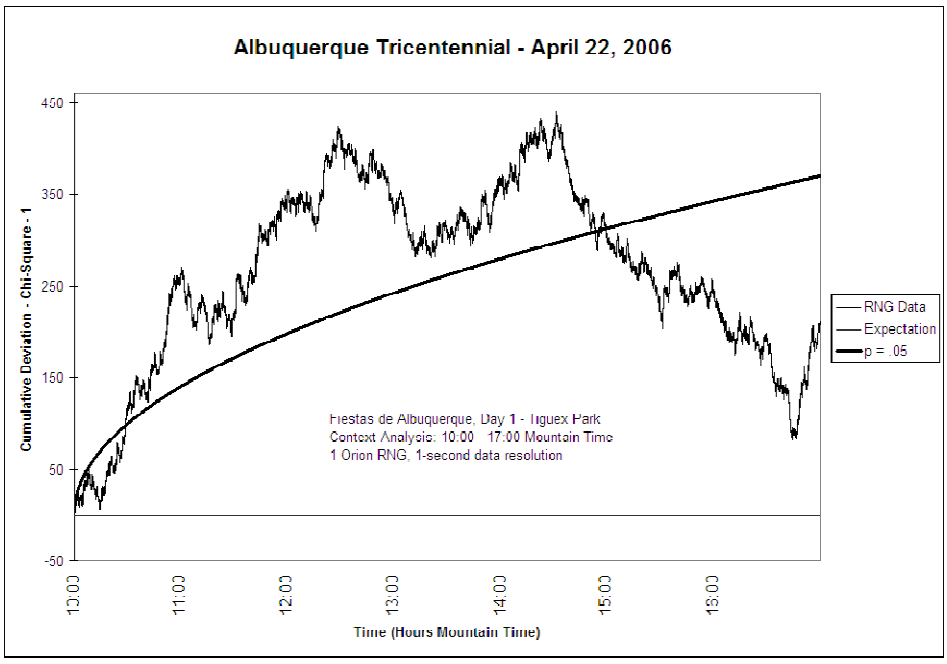

Fig 2. Graphical representation of the cumulative deviation of Chi-square minus the degrees of freedom for the RNG data taken for Event 5, the first "Tricentennial Fiestas de Albuquerque," held throughout the morning and afternoon of April 22, 2006. The smooth curved arc indicates the location of p = .05 as time passes.

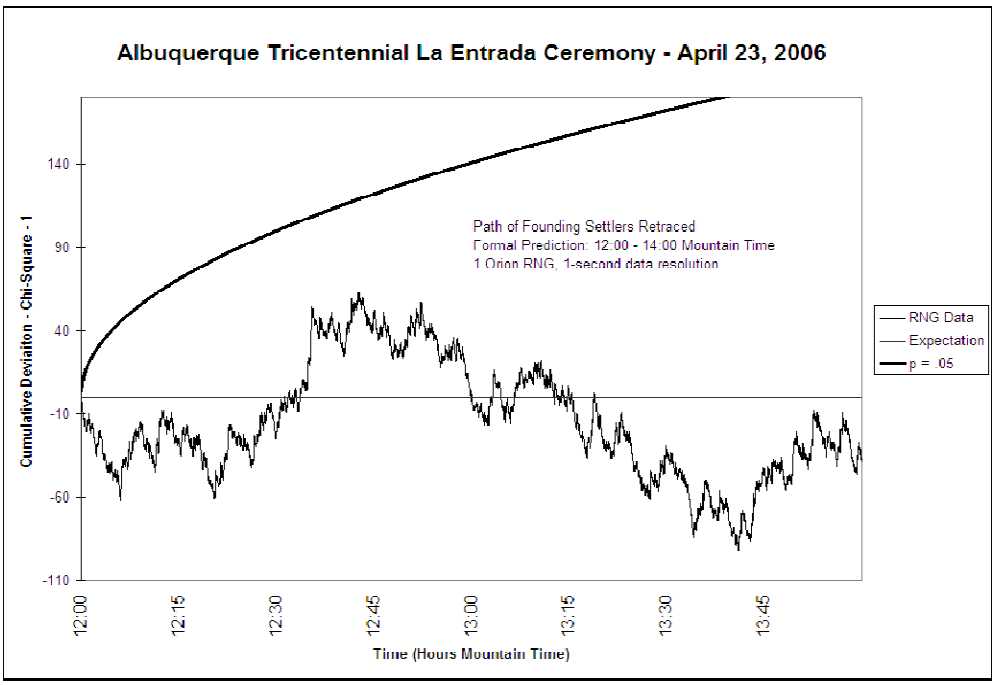

Fig 3. Graphical representation of the cumulative deviation of Chi-square minus the degrees of freedom for the RNG data taken for Event 7, the *La Entrada* Ceremony, held on the afternoon of April 23, 2006. The smooth curved arc indicates the location of $p = .05$ as time passes.

Aside from the common factors of the subtle, varying nature of mind-matter interaction effects (as evidenced in their small effect sizes; see, e.g., Bösch, Steinkamp, & Boller, 2006; Jahn et al., 1997; Jahn & Dunne, 2005; Radin, 1997, Ch. 8; Radin, 2006, Ch. 9; Radin & Nelson, 1989, 2003; Radin, Nelson, Dobyns, & Houtkooper, 2006, for discussions) and chance fluctuations, there may be other possible factors to consider in attempting to account for the present null results. It may be argued that one factor could be an effect of distance between the RNG and the events. Though the celebration events were held at various locations throughout Albuquerque, the majority of them were located in the downtown area, between 4.5 to 5.5 miles away from the author's home. As previously noted, distance was not considered to be a serious factor at the start of this study based on findings by Dunne and Jahn (1992) that suggested mind-matter interaction effects are not hindered by large distance (anywhere from 1 to nearly 9,000 miles) separations between an RNG and the individual attempting to influence it. The results of field RNG studies examining both local (Hagel & Tschapke, 2004) and global events (Nelson, 2001; Nelson et al., 1998, pp. 439, 443 – 444) from a set distance also seem to suggest this possibility. An informal examination of associated z-score as a function of distance from the event indicated a nonsignificant decline in z-score with increased distance ($r = -.543$, $N = 10$, $p = .102$), as shown in Figure 4.[6] This may provide only a weak hint of distance dependence.

One may perhaps speculate on the suggestion of a possible equilibrium factor stemming from one of the *post hoc* examples. The data representation in Figure 2 seems to show a sharp upward trend that is followed by a sharp counteracting downward trend towards the end of the test period that drives the data trace back toward expectation, leading to the terminal nonsignificant results. Trends like this seem to suggest that as a random system is non-randomly perturbed, a near-equal counterbalancing effect occurs in the system to bring it back toward nominal randomness, akin to an energy conservation effect in physics. Similar kinds of effects have been observed in other mind-matter interaction experiments (e.g., Jahn, Nelson, & Dunne, 1985; Pallikari-Viras, 1997; Radin, 1993) and in at least one field RNG study (Radin & Atwater, 2006), and have been called "statistical equilibrium" (Radin, 1993) or "statistical balancing" (Pallikari-Viras, 1997) effects based on their overt similarity to energy conservation. Very little is currently known about these equilibrium effects, and further research is needed to learn more about their

[6] Event 1 was excluded from this examination, as there was no measureable reference point available for this event.

characteristics and their possible extension into field RNG data. It is not clear whether or not such an effect did enter into the present data, though if one did, the two *post hoc* examples may suggest that it was a relatively short-lived one.

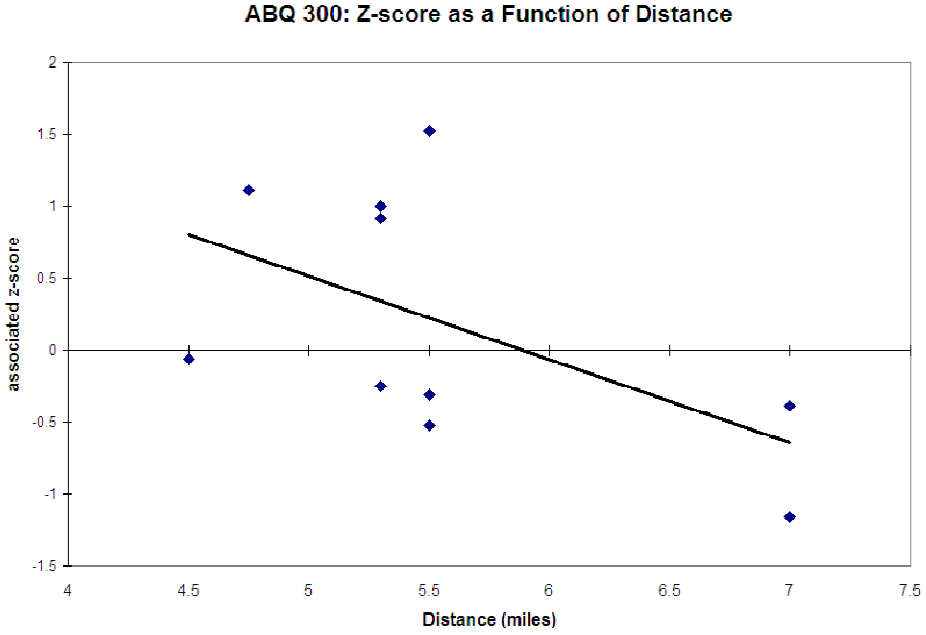

Fig 4. Scatter plot showing associated *z*-scores from Table 2 as a function of increased distance between the location of the RNG at the author's home and the celebration event locations.

A third possible factor is one that was addressed in a previous field RNG study conducted by the author, that of the psychological atmosphere of the attending crowd in mass spectator events (Williams, 2006). Although the Albuquerque Tricentennial celebration events did frequently draw large crowds and widespread media attention in the local area, they may not have been as mentally "coherent and unified" as other group-oriented venues where significant deviations have been found (e.g., Nelson et al., 1996, 1998; Nelson & Mayer, 1997; Nelson & Radin, 2003; Radin, Rebman, & Cross, 1996; Rowe, 1998). In particular, the author noticed from television news coverage that constantly focused mass attention and shared emotion, two characteristics that seem to underlie "field consciousness" effects, may have been somewhat lacking during some of the large crowd events (e.g., Events 5 & 9: the Fiestas de Albuquerque, and Event 11: the End Ceremony). In wandering crowd events such as parades, street fairs, and some stadium sports, the mass attention of all those in attendance at the event is rarely concentrated on a single sub-event or performance for extended periods of time; in most cases, conscious attention is cast in all different directions within a wandering crowd, and thus may be labeled as more "noisy" than "coherent." A similar observation had been made by the author about the crowd atmosphere of the 2005 Gathering of Nations Powwow, and may have been one thing that contributed to the null results of the field RNG study of that event. A possible counterargument to this comes from the findings of Bierman (1996) and Hagel and Tschapke (2004) who found significant non-random deviations in RNG data in association with stadium crowd sporting events, and from the findings of Hirukawa and Ishikawa (2004), who found significant deviations during the *Aomori-Nebuta*, which is a wandering crowd street parade. The specific dynamics of the crowd events examined in these latter studies that may have contributed to their positive results are still unclear, and further study in this direction may be needed in order to better identify them. As the author suggested previously (Williams, 2006), future field RNG studies should perhaps take note of the psychological atmosphere of the crowd, as this may not only provide the means of gathering additional data with which to address this issue, but may also in the long run help to determine which kinds of events may be more conducive to "field consciousness" effects.

ACKNOWLEDGMENTS

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REFERENCES

Aron, A., & Aron, E. N. (1997). *Statistics for the Behavioral and Social Sciences*. Upper Saddle River, NJ: Prentice-Hall.

Bierman, D. J. (1996). Exploring correlations between local emotional and global emotional events and the behavior of a random number generator. *Journal of Scientific Exploration*, **10**, 363 – 373.

Bösch, H., Steinkamp, F., & Boller, E. (2006). Examining psychokinesis: The interaction of human intention with random number generators – A meta-analysis. *Psychological Bulletin*, **132**, July. 497 – 523.

Dunne, B. J., & Jahn, R. G. (1992). Experiments in remote human/machine interaction. *Journal of Scientific Exploration*, **6**, 311 – 322.

Guilford, J. P., & Fruchter, B. (1973). *Fundamental Statistics in Psychology and Education*. New York: McGraw-Hill.

Hagel, J., & Tschapke, M. (2004). The local event detector (LED) – An experimental setup for an exploratory study of correlations between collective emotional events and random number sequences. *Proceedings of Presented Papers: The Parapsychological Association 47th Annual Convention*, 379 – 388.

Hirukawa, T., & Ishikawa, M. (2004). Anomalous fluctuation of RNG data in Nebuta: Summer festival in Northeast Japan. *Proceedings of Presented Papers: The Parapsychological Association 47th Annual Convention*, 389 – 397.

Jahn, R. G., & Dunne, B. J. (2005). The PEAR proposition. *Journal of Scientific Exploration*, **19**, 195 – 145.

Jahn, R. G., Dunne, B. J., Nelson, R. D., Dobyns, Y. H., & Bradish, G. J. (1997). Correlations of random binary sequences with pre-stated operator intention: A review of a 12-year program. *Journal of Scientific Exploration*, **11**, 345 – 367.

Jahn, R. G., Nelson, R. D., & Dunne, B. J. (1985). Variance effects in REG score distributions. *Technical Note PEAR 85001*. Princeton, NJ: Princeton Engineering Anomalies Research Laboratory, Princeton University, School of Engineering/Applied Science.

McKay, D. (2006, October 7). Lite-brite. *The Albuquerque Journal*, p. E1.

Nelson, R. D. (1997). Wishing for good weather: A natural experiment in group consciousness. *Journal of Scientific Exploration*, **11**, 47 – 58.

Nelson, R. D. (2001). Correlation of global events with REG data: An Internet-based, nonlocal anomalies experiment. *Journal of Parapsychology*, **65**, 247 – 271.

Nelson, R. D. (2002). Global harmony. Global Consciousness Project exploratory analysis. Available over the Internet at: http://noosphere.princeton.edu/groupmedit.html. Downloaded August 1, 2002.

Nelson, R. D. (2006). Anomalous structure in GCP data: A focus on New Year's Eve. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 115 – 126.

Nelson, R. D., Bradish, G. J., Dobyns, Y. H., Dunne, B. J., & Jahn, R. G. (1996). FieldREG anomalies in group situations. *Journal of Scientific Exploration*, **10**, 111 – 141.

Nelson, R. D., Jahn, R. G., Dunne, B. J., Dobyns, Y. H., & Bradish, G. J. (1998). FieldREG II: Consciousness field effects: Replications and explorations. *Journal of Scientific Exploration*, **12**, 425 – 454.

Nelson, R. D., & Mayer, E. L. (1997). Departures from expectation in random event sequences: A FieldREG application at the Christmas Revels. *Internal Report PEAR 97.01/ICRL Report #97.1.* Princeton, NJ: Princeton Engineering Anomalies Research Laboratory, Princeton University, School of Engineering/Applied Science, 12 pp.

Nelson, R. D., & Radin, D. I. (2003). FieldREG experiments and group consciousness: Extending REG/RNG research to real-world situations. In W. B. Jonas & C. C. Crawford (Eds.) *Healing, Intention, and Energy Medicine: Science, Research Methods and Clinical Implications* (pp. 49 – 57). Edinburgh, UK: Churchill Livingstone.

Pallikari-Viras, F. (1997). Further evidence for a statistical balancing in probabilistic systems influenced by the anomalous effect of conscious intention. *Journal of the Society for Psychical Research*, **62**, 114 – 137.

Radin, D. I. (1993). Environmental modulation and statistical equilibrium in mind-matter interaction. *Subtle Energies*, **4**, 1 – 30.

Radin, D. I. (1997). *The Conscious Universe: The Scientific Truth of Psychic Phenomena*. San Francisco: HarperEdge.

Radin, D. I. (2006). *Entangled Minds: Extrasensory Experiences in a Quantum Reality*. New York: Paraview Pocket Books.

Radin, D. I., & Atwater, F. H. (2006). Entrained minds and the behavior of random physical systems. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 153 – 163.

Radin, D. I., & Nelson, R. D. (1989). Evidence for consciousness-related anomalies in random physical systems. *Foundations of Physics*, **19**, 1499 – 1514.

Radin, D. I., & Nelson, R. D. (2003). A meta-analysis of mind-matter interaction experiments from 1959 to 2000. In W. B. Jonas & C. C. Crawford (Eds.) *Healing, Intention, and Energy Medicine: Science, Research Methods and Clinical Implications* (pp. 39 – 48). Edinburgh, UK: Churchill Livingstone.

Radin, D., Nelson, R., Dobyns, Y., & Houtkooper, J. (2006). Reexamining psychokinesis: Comment on Bösch, Steinkamp, and Boller (2006). *Psychological Bulletin*, **132**, 529 – 532.

Radin, D. I., Rebman, J. M., & Cross, M. P. (1996). Anomalous organization of random events by group consciousness: Two exploratory experiments. *Journal of Scientific Exploration*, 10, 143 – 168.

Rowe, W. D. (1998). Physical measurement of episodes of focused group energy. *Journal of Scientific Exploration*, 12, 569 – 581.

Snedecor, G. W., & Cochran, W. G. (1980). *Statistical Methods* (7th Ed.). Ames, IA: Iowa State University Press.

Williams, B. J. (2004). GCP technical note: Global harmony revisited. Global Consciousness Project exploratory analysis, December 2. Available for download over the Internet at: http://noosphere.princeton.edu/groupmedit.html

Williams, B. J. (2006). Field RNG exploration during a public Native American powwow. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 237 – 247.

APPENDIX 1

Full list of projects related to the paranormal that did *not* include a psi task

Year	Title	Author(s)	Supervisor(s)
1987	An experimental evaluation of a belief in psi	Reed	Morris
1987	Self disclosure through non-verbal leakage - How to read minds through what bodies are doing	Lindsay	Morris
1989	Attitude and assessment: The role of personal belief in objective evaluation	Roe	Morris & Milton
1989	The effect of varying levels of instruction/experience upon the judging of free-response ESP data	McKie	Delanoy
1993	Perceived control, probability judgement and belief in psi phenomena	McClure	Morris
1994	Factors affecting the attribution of meaning to coincidence in judging free-response ESP tasks	Austin	Morris
1994	The attaching of significance to coincidence	Cupples	Morris
1995	The measurement of perceptual defence: Further exploration using Pandora's Box	Robins	Morris & Watt
1995	The coincidence prone personality and the attribution of meaning to coincidence	Cheeseman	Morris
1995	Extremity of belief: rigidity, resistance to shift and revising attributions made to anecdotal coincidence	Levy	Morris
2000	The effects of a lucky event and increased illusion of control on people's belief in luck	Wright, Wright & Adams	Watt
2001	Do people's beliefs in ESP affect the way they evaluate evidence confirming or disconfirming their beliefs?	Cook	Morris
2003	An exploration of the relationship between perception of control in childhood, locus of control and paranormal belief	Watson & Wilson	Watt
2004	Evaluations of television mediums: The effects of prior belief and presentation style (one-sided vs. two-sided)	Flint & Warmington	Watt
2004	The effect of credibility variation in television disclaimers, with reference to television mediums	Anderson & Nesbitt	Watt
2005	Paranormal belief: locus of control, defence mechanisms and coping styles	Campbell	Watt
2007	Developing a new measurement of paranormal belief using the Implicit Association Test	Danelian & Stewart	Watt
2007	The therapeutic consequences of visiting a medium	O'Neill	Watt

APPENDIX 2

Full list of projects that include a psi task.

Year	Title	Author(s)	Supervisor(s)
1989	A first revision of Lovitts' (1981) sheep-goat effect turned upside down	West	Morris
1989	Inferring correspondence in a free-response ESP judging task: Effects of training and judging strategy	Fairfoul	Delanoy & Morris
1990	A novel self-report measure of volitional styles and performance on a computer-based psychokinesis task	MacLullich	Morris
1992	The attribution of meaning to coincidence	Newell	Morris
1993	ESP, personality and belief: An interactional approach	Mekie	Morris & Delanoy
1993	The effects of creative ability and individual differences on extrasensory perception in the ganzfeld	Cunningham	Morris
1993	An experimental investigation into the effects of attitude and target type on psi in the ganzfeld: An attempt at replication and extension	McAlpine	Morris
1993	Applying volitional imagery strategies learned in a psychokinesis game to managing the smoking habit	Dumughn	Morris
1993	Imagery, volition, and belief factors in relation to scoring on a PK computer game	Gentles	Morris
1993	Investigating the effects of two different volitional strategies, and level of competitive anxiety, on performance in a computer-based test of psychokinesis	Grice	Morris
1993	Measuring ESP using dowsing with comparison to personality traits	Hayes	Morris
1993	The effect of arousal on an exploratory extrasensory perception experiment	Boswell	Delanoy
1994	Remote staring detection and personality correlates	Howat	Morris & Delanoy
1994	The extra-sensory perception of emotions as measured by cognitive (conscious) and physiological (unconscious) responses	Sah	Delanoy & Morris
1996	An experimental parapsychology study into the concept of interconnectedness	Lort-Phillips	Morris
1996	Volitional competence and performance on a PK task	Sullivan	Morris
1997	An examination of the effects of an auditory stimulus of drumming at the theta frequency on an automated Ganzfeld experiment	Symmons	Morris
1997	An investigation into the phenomenological dimensions of the meditative state and their associations with ESP	Baber	Morris
1997	Attention focusing facilitated through remote mental interaction: A replication and exploration of parameters	Brady	Morris
1997	Dream ESP: A comparison of lucid and normal dreaming using complex and simple targets	Langbridge	Morris
1998	EMG biofeedback in facial muscles expected to enhance detection of future affective states in those	Kettle	Morris

	muscles		
1998	Asymmetry of facial EMG in posed and spontaneous facial expressions of emotion: A psychophysiological study with reference to presentiment effects	McGee & Menzies	Morris
1998	The relationship between perceptual vigilance/defensiveness and psychophysiological responses to remote staring whilst in the ganzeld condition	Juniper & Edlmann	Morris
1999	An investigation into the effect of a sender in a card guessing experiment	Moss	Steinkamp
1999	Performance on a choice reaction time time task facilitated through remote mental influence	Roberts & Moore	Morris, Delanoy & Watt
1999	Can future emotions be perceived unconsciously? An investigation into the presentiment effect with reference to extraversion	Norfolk & Rose	Morris & Delanoy
1999	The effect of meditation on PK performance in novice meditators	Lumley-Savile	Morris
2000	Anomalous arousal levels in relation to sensation seeking: Presentiment or anticipatory strategies?	Dimmock & Tawse	Morris & Stevens
2001	Imagery in the ganzfeld: The effects of extroversion and judging instructions upon imagery characteristics	Colyer	Morris
2001	How does self-confidence relate to PK performance on a dice-influencing task	Prince	Morris
2003	Unconscious precognition, experimenter effects, and participant individual differences: An EDA study	Crichton, Lowe, Dowding, Wilson & Wright	Morris & Stevens
2003	Investigating unconscious telepathic communication of a remote auditory startle and the effect of auditory entrainment	Munckton & Westcott	Morris
2003	Evidence of anomalous information transfer with a creative population in the ganzfeld	Summer & Yim	Morris
2004	Differences in baseline skin conductance to neutral and arousing stimuli with respect to normal and applied magnetic fields	Costley & Gregory	Morris & Stevens
	The effects of different auditory stimuli and of relaxation in evoking presentiment	Cochrane & Wilson	Morris
2004	Exploring the why of creative psi in musical agent receiver pairings: Does unconscious psi perception mediate psi hitting?	Cohen & Reid	Morris
2005	Psychic DMILS: Can remote helping facilitate performance on an ESP game?	Hopkinson & Fraser	Watt
2005	Facilitation of attention focusing by a remote helper: comparison of informed and uninformed conditions	Martin & Miller	Watt

EXPLORATORY FIELD RNG STUDY DURING A GROUP WORKSHOP ON PSYCHIC EXPERIENCES

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ABSTRACT

In an attempt to further explore the apparent correlation between group mental coherence and non-random statistical deviations in the output of random physical systems, sample data were collected from an electronic random number generator (RNG) actively running during eleven sessions of a five-day group workshop on embodiment and psychic experiences. It was predicted early on that the RNG data would tend to show a positive deviation away from standard randomness, both collectively as a whole and on the level of individual sessions. However, analysis revealed a collective deviation that was opposite to prediction and nonsignificant overall. Eight of the individual sessions had also shown negative deviations, though none were independently significant. A *post hoc* analysis that only included the "active" sessions of the workshop (i.e., those sessions involving psi-related group exercises) seemed to reveal a collective deviation in the RNG output that, if predicted beforehand, would have been significantly negative ($p = .037$). Further *post hoc* examination of a graphical meanshift representation of all session data combined by way of a Stouffer's Z seemed to indicate a similar negative deviation, which appears to have been driven largely by a single active session that produced a rather strong negative trend. Ways in which the results might be useful in developing hypotheses for testing in future field RNG studies held during group workshops and similar settings are discussed.

INTRODUCTION

Over the past decade, several field studies utilizing portable random number generators (RNGs) have produced varying degrees of evidence to suggest an apparent mind-matter interaction-related "field consciousness" or "group consciousness" effect associated with group social events (Bierman, 1996; Hagel & Tschapke, 2004; Hirukawa & Ishikawa, 2004; Nelson et al., 1996, 1998; Nelson & Radin, 2003; Radin, 1997, Ch. 10; Radin, 2006, Ch. 11; Radin, Rebman, & Cross, 1996; Rowe, 1998). One of the conceptual hypotheses underlying this effect is that some degree of "mental coherence" exists between the individual members of the involved group based on their collective emotional or intellectual dynamics, such that they feel that they are sharing the same experience or working together as one collective unit. The idea is that as the minds of the people in the group become more ordered through mental coherence, then matter in the surrounding environment may also become more ordered, as well (see, e.g., Nelson et al., 1996, p. 137; Radin, 1997, pp. 157 – 161; Radin et al., 1996, pp. 144 – 145, for more detailed discussion). Metaphors that have been used to describe this kind of mental coherence in everyday life may range from people saying that they "just clicked" upon meeting and finding out that they have so much in common, to productive working groups saying that their members were "on the same page" in describing the strong sense of rapport that helped fuel their progress. When group consciousness effects are extended to a global scale (Nelson, 2001), this mental coherence may be hypothesized to occur in the form of a wide degree of focus that arises when the attention and emotions of the world's population are suddenly drawn to the occurrence of a major world event. The clearest example of this so far may be September 11, 2001, when several potential anomalies were observed in the data from a global network of RNGs using different measures and time resolutions (Nelson, Radin, Shoup, & Bancel, 2002; Williams, 2002). Another

clear example may be seen in the worldwide celebration of New Year's Eve (Nelson, 2006), as individuals in each time zone collectively focus on the strike of midnight.

Several potential difficulties arise in studies of group consciousness effects that may contribute to the variance observed across study results. One is the apparent nature of the mind-matter interaction effects that are assumed to underlie group consciousness. Although a great deal of experimental data has accumulated over the years in relation to mind-matter interaction effects (see, e.g., Bösch, Steinkamp, & Boller, 2006; Jahn et al., 1997, 2000; Radin, 1997, Ch. 8; Radin, 2006, Ch. 9; Radin & Nelson, 1989, 2003; Radin, Nelson, Dobyns, & Houtkooper, 2006), evaluation of the gathered data also suggests that the effects are very subtle and seem to operate on the statistical level, making them difficult to replicate across experiments. Another is the difficulty in predicting when and where group consciousness effects may occur. The results of field RNG studies conducted in multiple venues seem to indicate that group consciousness effects often vary across the different venues (e.g., Nelson et al., 1996, 1998; Radin, 1997, Ch. 10). Some of this variation may be due to the different kinds of social context and atmosphere that may be present at these venues. One field RNG study recently conducted by the author at a highly-publicized Native American powwow seemed to suggest this possibility based on his personal observations that the psychological atmosphere of the event did not appear to be as highly mentally coherent as initially predicted, one of several proposed ways to possibly account for the observed null results (Williams, 2006). A similar difficulty has been observed in the case of group consciousness effects on a global scale, where world events that were initially predicted to show notable positive deviations in randomness based on the wide degree of attention and emotional response they seemed to draw instead showed negative or even no clear deviations at all when the RNG network data were analyzed (Nelson, 2001, pp. 262 – 264). Inherent in this may also be the difficulty of determining if and when these differing contexts and atmospheres may give rise to mental coherence.

In order to further examine the facets of this latter problem, an exploratory field RNG study was conducted during a five-day group workshop on "Embodiment and Psychic Experience" held by Dr. William G. Roll at the Esalen Institute in Big Sur, California. This workshop was thought to be a promising venue in which to seek group consciousness effects for several reasons. First, several previous field RNG studies conducted at working group meetings and healing workshops had found notable deviations from randomness, particularly in cases where the group and/or setting was small and intimate (Nelson et al., 1996, 1998; Nelson & Radin, 2003; Radin & Atwater, 2006; Radin et al., 1996; Rowe, 1998). The workshops held at Esalen are typically of this nature. In addition, the results of at least two mind-matter interaction studies (Dunne, 1991; Honorton & Barksdale, 1972) seem to suggest that a collective focused intention by two or more individuals can also produce randomness deviations in an RNG, the effects of which can sometimes be slightly higher in magnitude than those produced by the focus of a single individual (Dunne, 1991).

Second, some of the mental focusing activities held in workshops, such as meditation, may be conducive to altered states of consciousness that could also be psi-conducive. Non-random deviations have been observed in some field RNG studies involving group meditations (Nelson, 1997, 2002; Williams, 2004), and in at least one mind-matter interaction study (Schmidt & Pantas, 1972), a selected subject had induced a relaxed, alert mental state in himself through Zen meditation before attempting to influence an RNG, with significant results. Nelson and Schwartz (2006) have also reported significant correlations between mean deviations in RNG and subjective depth of two mental states of absorption (meditative trance and perceived time distortion), further suggesting a possible effect of altered conscious states. Some field RNG results seem to suggest that the effects of distant healing or mental focus activities may permeate into the space of the healing area or workshop room (Crawford et al., 2003; Radin et al., 2004), where they may linger as "place memories" (Williams & Roll, 2006). Various degrees of emotion may also be elicited through workshop activities, and some preliminary field RNG studies suggest that strong emotional expression may be conducive to mind-matter interaction effects (Bierman, 1996; Blasband, 2000). Furthermore, the comfort and rapport that may be established between group members through positive emotion (e.g., laughing, singing, etc.) may also be psi conducive, as suggested in successful sitter group settings (Batcheldor, 1984; Bourgeois, 1994; Owen & Sparrow, 1976; Wilson et al., 2006).

Third, many of the exercises held during the workshop sessions were related to receptive psi, encouraging the individual participants to temporarily relinquish some of their individual identity and integrate into a closely-knit group. This may be seen as analogous to the formation of a group long body, a concept developed by Aanstoos (1986) from the Iroquois spiritual tradition to advance the phenomenology of psi experiences, which was introduced to the workshop group. The long body is the larger body of interconnection that links people, places, and objects through memory and meaning, which opens the way for psi interactions (Aanstoos, 2005; Roll, 1987, 1988, 1993, 2005; Williams, 2005). Roll (1989) has stated: "From this [long body] perspective, the human mind and the human body are a synthesis of many minds and many bodies…In our daily lives, when we act as one single-minded body, the many voices are joined into one. This joining forms the basis of our individuality and of our corporeal existence. It is also the paranormal core of our normal existence" (p. 68). This seems akin to the kind of mental unity proposed to underlie group consciousness, thereby allowing a possible crossover between the two concepts. It has been proposed that one of the factors contributing to a successful sitter group is the formation of a group long body (Duncan & Roll, 1995, p. 152), and it was thought that a similar factor, brought about through the psi-related exercises, might also open the way for group consciousness effects during the course of the workshop.

METHOD

Participants

A total of ten people participated in the "Embodiment and Psychic Experience" workshop, consisting of four men and six women (age range: 28 – 80 years), which includes the workshop leader (Roll) and the author. About midway through the workshop, the group was reduced to nine when one female member chose to return home due to the illness of a significant other.

Apparatus

A truly random number generator (Orion, Inc./ICATT, Amsterdam, the Netherlands, http://www.randomnumbergenerator.nl/) based on electronic noise was connected to the serial port of a Compaq 1.4-GHz laptop computer (Compaq/Hewlett-Packard, Cupertino, CA) that utilized the Microsoft Windows-based FRED software package (Institute of Noetic Sciences, Petaluma, CA) to collect one 200-bit sample per second from the RNG. One 30-minute calibration session was held prior to the start of the workshop, and Table 1 shows the collected number of samples, empirical mean, and standard deviation for this calibration period, along with those for the data from the individual workshop sessions. The data collectively average to an empirical mean of 100.033 and a standard deviation of 7.060, consistent with an expected theoretical mean of 100 and a standard deviation of 7.071. Calibration tests by the manufacturer prior to shipment further confirm the standard randomness of the RNG device. This RNG had also been used in a previous field RNG study conducted by the author (Williams, 2006).

Procedure

The workshop was held from August 13 to 18, 2006, in a single designated meeting room located on the southeast end of the Esalen Institute, and consisted of 13 individual two-hour sessions. Of these sessions, 11 were the subject of data collection (data were not collected for the remaining two sessions because the computer used in the study was also used for a visual presentation by the author held during those sessions, requiring disconnection of the RNG to allow for serial port connections to a digital projector). To provide a subjective overview of the diverse content and resulting atmosphere of the workshop, a brief summary of each of the 11 individual data sessions is as follows:

TABLE 1
EMPIRICAL MEANS & STANDARD DEVIATIONS FOR ROLL
ESALEN WORKSHOP DATA

Session #	Session	N	Mean	SD
C	Calibration	1800	100.063	7.186
1	Introductory Session	5663	100.062	7.014
2	Soul Dance	7696	100.14	7.044
3	Healing Meditation	7203	100.137	6.986
4	Guided Regression	7720	100.115	6.989
5	Janus Discussion	7664	100.049	7.101
6	Readings 1	8678	99.871	7.048
7	Readings 2	9605	100.038	7.034
8	Psychometry	9131	99.894	7.068
9	NDE Discussion	7601	100.113	7.077
10	Psi Session	7077	99.92	7.049
11	Final Session	6217	99.999	7.121
Total		**86055**	**100.033**	**7.060**

Session 1: Introductory Session. The first session of the workshop, held on the evening of August 13, 2006, involved the participants gathering together for individual introductions and a general overview of the goals of the workshop. An attempt to invite a warm, friendly atmosphere among the group was furthered through personal, enjoyable conversation, and the session was concluded with a singing bowl meditation led by the workshop leader.

Session 2: The Soul Dance. In this session, an attempt was made to begin developing a group long body, as well as engage the long bodies of the individual participants, by way of the soul dance. The dance itself is freely interpretative, allowing the dancers to move as they like to soft meditative music. The participants danced in pairs, palms against palms, with closed eyes. During the final part of the session, they with an imagined departed individual from their long body. Some participants seemed to have developed mild altered states of consciousness during the dance, and a few reported experiencing a sense of presence either behind them or in the room during the dance with an imagined long body partner.

Session 3: Group World Healing Meditation. A group meditation focused on helping to heal and improve the state of the world was held during this session, guided through visual imagery provided by the workshop leader.

Session 4: Guided Past-Life Regression. During this evening session, the participants were each made comfortable and led through a progressive relaxation period. Guided by visual imagery from the workshop leader, each participant made an attempt to draw forth memories of a life that they had experienced prior to their current one while in this relaxed state. The room lights were dimmed during the relaxation and regression periods to help encourage the evocation of the alpha brain wave state in the participants, which appears to be conducive to receptive psi. The participants each shared their individual subjective experiences with the group afterwards (which ranged from deeply detailed to none at all), and the session was concluded with a singing bowl meditation.

Session 5: Janus Discussion. The participants spent this session in open discussion of the topics and ideas presented in a scholarly paper entitled "The Janus Face of the Mind," and in a review of the book *Afterlife Encounters* by Dianne Arcangel, both of which had been written by the workshop leader.

Session 6: Psychic Readings 1. This was the first of two sessions that involved attempts at psychic reading by the participants. The group was split into pairs, and one participant, acting as a "psychic," spent a period of about 15 minutes giving a reading to their partner, acting as a "sitter." After each 15-minute period, one member of each participant pair rotated so that new psychic-sitter pairs were formed, and another reading was given by the psychic to this new sitter.

Session 7: Psychic Readings 2. This session was a continuation of Session 6, following the same procedure. Each participant was given a chance to be paired with every other participant in the group, as well as to equally alternate as psychic and sitter. Some discussion was held on individual readings afterwards.

Session 8: Psychometry. In this session, each participant attempted the form of receptive psi known as psychometry, or token object reading. Participants were asked to bring a small personal object to the session, and these were placed in paper bags, out of sight of the other participants. The bags were then randomized by the workshop leader and distributed among the participants so that each had a bag containing an object belonging to another participant. The participants then reached into the bag and handled the object contained within using their left hand (which is controlled by the right hemisphere, the side of the brain thought to be associated with psi), writing down any mental impressions they had while doing so. The participants then claimed their objects, and each read the written impressions of the participant that had "read" their object. The group then held discussion on any apparent accuracy contained within their readings.

Session 9: NDE Discussion. The participants spent this session engaging in discussion of reported near-death experiences and their apparent relevance to psi and the issue of survival after death.

Session 10: Psi Session (Séance). In this evening session, an attempt was made to elicit the psi abilities of the group by holding a psi session that simulated a séance-like mediumship sitting from the early days of psychical research. Guided by the workshop leader, the participants sat in a circle, held hands, and attempted communication with a recently deceased individual known to a given participant (two sittings were held). The room lights were extinguished, and a burning oil candle provided by one participant was placed at the center of the circle to allow minimal room illumination and serve as a point of focus for the participants. Some participants seemed to have developed altered states of consciousness during the sittings (including one apparent trance state through which a mediumistic communicator spoke), reported feeling faint breezes of air passing through the area around the circle, and/or reported feeling or seeing a presence in the room. Subjective experiences during the sittings were shared by the participants following each one, and each seemed to have a beneficial outcome.

Session 11: Final Session. The final session of the workshop was held on the morning of August 18, 2006. During the session, the workshop leader presented videotaped documentary segments describing some of his investigations of reported poltergeist and haunting phenomena, and open discussion on them was held. A final group discussion reviewing the workshop as a whole was then held, and the workshop was concluded with a final singing bowl meditation.

Approximately 10 to 15 minutes prior to the start of each workshop session, the computer and attached RNG were set up by the author on the floor on the far side of the workshop room and data collection was started. In order to reduce the possibility of observer effects, the FRED program sequence on the computer was initiated, checked once by the author a few minutes later to make sure that data were being collected properly, and then left for the remainder of the session to collect data on its own, unobserved. The workshop participants were aware from the beginning that an RNG was running in the room, and they knew of its function as a random system and as a possible "detector" of group consciousness. However, no feedback was given to the participants regarding the RNG's output until after the workshop was over, and no emphasis was placed on the concept of group consciousness during the workshop (i.e., the concept was not part of the workshop lesson), nor was there any effort by the group to try and "perceive" or "sense" moments of group consciousness. To help ensure that the data remained unobserved throughout the sessions, the computer's position was angled on the floor so that only the raised back cover of the computer's monitor would be visible to the group in the center of the room, and the computer's screensaver was engaged so that nothing would be visible on the monitor screen three minutes after it was checked by the author prior to the session start. The author carefully monitored any movements the participants had made in the direction of the computer, and none had made any visible attempt to alter its position or behavior during any of the sessions.

Analysis & Predictions

The general prediction was for the RNG data to show a significant deviation away from standard randomness primarily in the positive direction, both individually in the case of each session and collectively across all sessions. The prediction was tested through analysis of the RNG data using the following conventional statistics procedure (see Nelson, 2001, for more extensive details): The raw sample data are first converted to normalized *z*-scores following the equation $z = (x - 100)/\sqrt{50}$, where x is the individual RNG sample for a given second, 100 is the theoretical mean for a binomial distribution, and 50 is the trial sum variance. These *z*-scores are then squared to create a mean deviation value with 1 degree of freedom (*df*) that is Chi-square distributed. Since Chi-square values are additive, a cumulative summation of all of the scores is taken across time (with *df* = number of values summed) to represent the overall measure of mean deviation, and an associated probability value is obtained. Graphical representations of the data over time can then be generated from this cumulative summation (Aron & Aron, 1997; Nelson, 2001; Snedecor & Cochran, 1980). An associated *z*-score was also calculated based on the obtained Chi-square and *df* values (Guilford & Fruchter, 1973, p. 517). This same data analysis procedure has been used previously in several field RNG studies (e.g., Bierman, 1996; Hirukawa & Ishikawa, 2004; Nelson, 1997, 2001, 2002, 2006; Nelson et al., 1996, 1998, 2002; Nelson & Radin, 2003; Rowe, 1998; Williams, 2002, 2004, 2006).

Aside from the general prediction, two additional *post hoc* exploratory analyses were carried out. The first analysis collectively examined only the data from the workshop sessions in which the psi-related exercises were the focus. The second analysis examined all of the collected session data as a single workshop dataset by combining them as a composite Stouffer's *Z*, wherein the individual session data, after being converted into *z*-scores, are summed across sessions and normalized by the square root of the number of being summed. They are then squared and plotted in a cumulative summation as described for the general prediction.

RESULTS

General Prediction

Table 2 shows the individual and combined results for the 11 workshop sessions. The results indicate that the data collectively show a negative deviation, opposite to what was predicted, but overall they are not significantly different from chance. Thus, the prediction of a significant positive deviation in the collective data across events was not confirmed.

TABLE 2
ROLL ESALEN WORKSHOP RNG RESULTS, ALL SESSION DATA

Roll Esalen Workshop Session	Date	Time Begin	Chi-Square	df	p-value	assoc. z
First Session - Introduction	8/13/2006	20:44:56	5571.44	5663	0.804	-0.859
Soul Dance	8/14/2006	10:05:28	7639.28	7696	0.674	-0.453
Group Healing Meditation	8/14/2006	16:19:57	7034.2	7203	0.921	-1.411
Guided Past-Life Regression	8/14/2006	20:12:42	7544.7	7720	0.922	-1.414
Janus Discussion	8/15/2006	10:07:34	7728.84	7664	0.298	0.526
Psychic Readings 1	8/16/2006	10:02:31	8624.68	8678	0.655	-0.401
Psychic Readings 2	8/16/2006	16:15:35	9505.14	9605	0.763	-0.718
Psychometry	8/17/2006	10:05:18	9124.84	9131	0.516	-0.041
NDE Discussion	8/17/2006	16:07:30	7615.7	7601	0.45	0.123
Psi Session (Séance)	8/17/2006	20:08:53	7034.1	7077	0.638	-0.356
Final Session	8/18/2006	10:27:06	6305.86	6217	0.212	0.798
Total			**83728.78**	**84255**	**0.90**	**-1.282**

Note: Begin times listed are in Pacific Daylight Time.

On the level of individual session results, Table 2 indicates that the prediction of significant positive deviation was also not confirmed, with eight of the sessions showing negative deviations that are opposite to prediction. None of these deviations had achieved significance, and the negative deviations for two of the sessions (Session 3: Group Healing Meditation, & Session 4: Guided Past-Life Regression) could only be considered weakly suggestive, at best (p = .921, equivalent p = .079; & p = .922, equivalent p = .078, respectively). However, further examination of the data from Session 4 through graphical data representation seems to reveal other possible indications of transient, non-random structuring during that particular session (presented elsewhere in this section).

Exploratory Analysis 1: Psi-Related Exercise ("Active") Sessions

It was noticed by the author throughout the workshop that the sessions in which psi-related exercises were the focus of activity (labeled as "active" sessions) seemed to be more engaging to the participants, and were therefore suspected to be more psi-conducive than sessions in which simple discussion was the primary activity (labeled as "passive" sessions). In all, seven of the eleven sessions were deemed to be "active" (with the remaining four being "passive"), and Table 3 shows the individual and collective results for these "active sessions."

TABLE 3
ROLL ESALEN WORKSHOP RNG RESULTS, ACTIVE SESSION DATA ONLY

Roll Esalen Workshop Session	Date	Chi-Square	df	p-value	assoc. z
Soul Dance	8/14/2006	7639.28	7696	0.674	-0.453
Group Healing Meditation	8/14/2006	7034.2	7203	0.921	-1.411
Guided Past-Life Regression	8/14/2006	7544.7	7720	0.922	-1.414
Psychic Readings 1	8/16/2006	8624.68	8678	0.655	-0.401
Psychic Readings 2	8/16/2006	9505.14	9605	0.763	-0.718
Psychometry	8/17/2006	9124.84	9131	0.516	-0.041
Psi Session (Séance)	8/17/2006	7034.1	7077	0.638	-0.356
Total		**56506.94**	**57110**	**0.963**	**-1.787**

The data shown in Table 3 collectively compound into an overall negative trend that would have been statistically significant (p = .963, equivalent to p = .037) had it been predicted for *a priori*.

Exploratory Analysis 2: Composite Session Data

Figure 1 shows the graphical representation of the cumulative deviation of Chi-square for all the workshop session data combined as a single workshop dataset through a composite Stouffer's Z.[1]

The graph in Figure 1 suggests an overall negative deviation for the combined session data that would have p = .962 (equivalent to p = .038) if predicted for *a priori*.

[1] A reviewer of this paper was confused as to why to the number of trials collected in Figure 1 and the summed *df*-value given in Table 2 are inconsistent. This is due to the reduction process that follows from calculating a Stouffer's Z. Table 2 sums the *df* from each of the individual sessions when their z-scores are squared. When calculating a Stouffer's Z, however, these individual sessions are effectively collapsed into a single column of data that will have a notably smaller *df* sum when the Z-scores are squared. This is the method used by the Global Consciousness Project (Nelson, 2001) to examine the data from the multiple RNGs in its global network as a whole, rather than examining each RNG individually. In an analogous approach, I treated each of the eleven columns of z-scores in the dataset (with each column corresponding to a given workshop session) as if each came from an individual RNG (when it really came from the same one), and collapsed them all down via the Stouffer's Z into one column before squaring them, making the resulting *df* sum much smaller than in Table 2, where they are taken as individual columns. See also the last paragraph of Analysis & Predictions in the Methods section for the description of the Stouffer's Z approach.

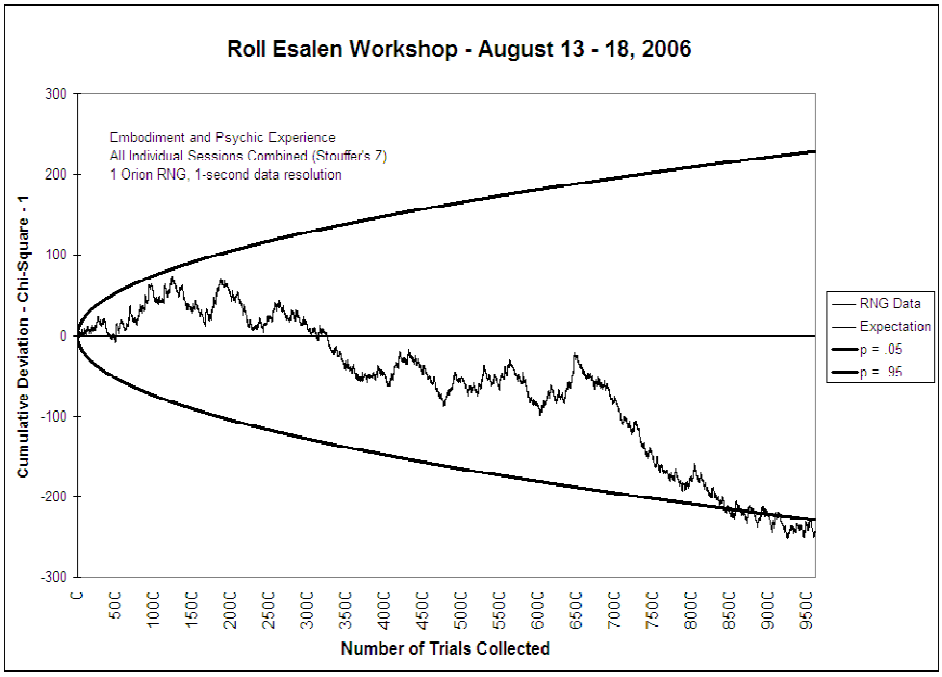

Fig 1. Graphical representation of the cumulative deviation of Chi-square minus the degrees of freedom for all workshop session RNG data, combined by way of a Stouffer's Z. The smooth curved arcs indicate the location of $p = .05$ (above expectation) and $p = .95$ (below expectation) as time passes.

Examination of the graphical representations of each individual session suggests that this combined result may have been driven to some degree by an interesting trend in the data collected during Session 4 (Guided Past-Life Regression). The graphical data plot for this particular session is shown in Figure 2.

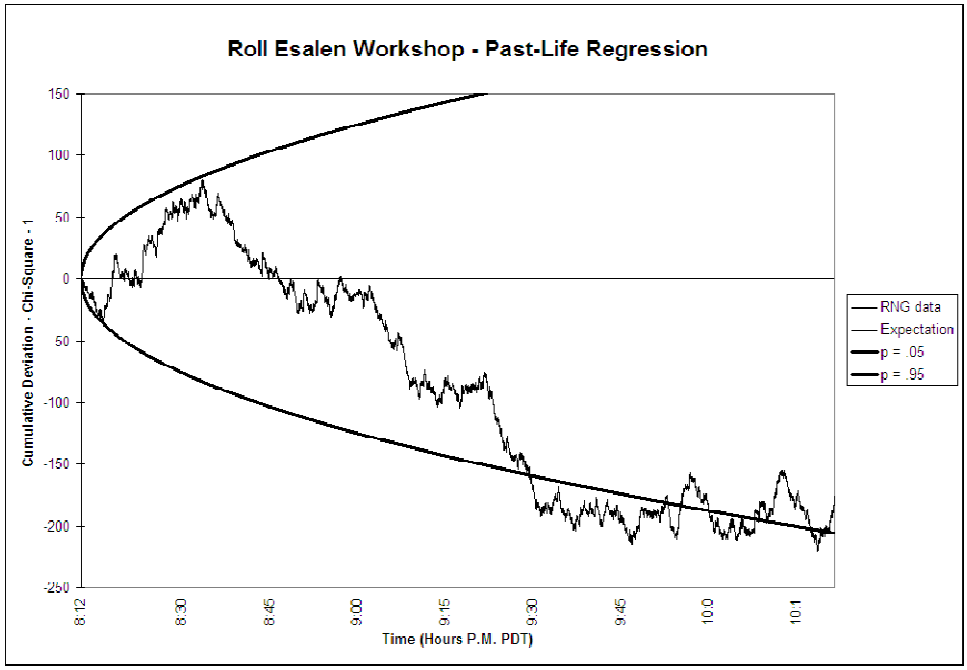

Fig 2. Graphical representation of the cumulative deviation of Chi-square minus the degrees of freedom for the RNG data from Session 4 (Guided Past-Life Regression). The smooth curved arcs indicate the location of $p = .05$ (above expectation) and $p = .95$ (below expectation) as time passes.

Following an initial positive trend that dominates about the first 25 minutes of Session 4, the data shown in Figure 2 reverse direction and show a striking negative trend that levels back to a random walk around 9:30 P.M., which possibly suggests a transient non-random pattern in this data for this session. Further analysis revealed that when these data are removed from the combined data, the trend shown in Figure 1 is no longer significant (p = .898, equivalent to p = .102). Thus, the trend observed in Figure 1 may have been reliant to some degree on the result for a single session.

DISCUSSION

Rather than showing a deviation in the positive direction as predicted, the collective results of RNG sample data gathered during the eleven individual workshop sessions had shown a nonsignificant deviation in the negative direction, opposite to prediction. In addition, eight of the eleven sessions had shown negative deviations, with only two of these having anything close to weakly suggestive statistical results. The first of two supplemental *post hoc* exploratory analyses had revealed an overall negative deviation for the "active" workshop sessions in which psi-related exercises were the focal activity that would have had potential significance if it had been predicted in advance, and the second *post hoc* analysis found an overall negative deviation for all session data combined as a single workshop dataset that also would have been significant if predicted beforehand. The latter result, however, seems to have been somewhat reliant on the result of a strong negative trend found in the data from Session 4 of the workshop.

Possible ways to account for the null results of the general prediction include taking into account the subtle nature of mind-matter interaction effects, experimenter effects, and issues having to do with the psychological group atmosphere of the workshop. The first always remains a possibility given the regular occurrence of small effect sizes in mind-matter interaction experiments that can make them difficult to replicate, even in cases where large sample sizes are accumulated (Bösch, Steinkamp, & Boller, 2006; Jahn et al., 1997, 2000; Radin, 1997, Ch. 8; Radin, 2006, Ch. 9; Radin & Nelson, 1989, 2003; Radin, Nelson, Dobyns, & Houtkooper, 2006). For example, Radin and Nelson (2003) found that the mean z-score for mind-matter interaction experiments was only 0.73 for studies conducted before 1987 and 0.61 for studies conducted after. In the case where group consciousness effects were examined on a global scale (Nelson, 2001), the mean z-score was only 0.53 (Nelson et al., 2002), suggesting that the signal-to-noise ratio for mind-matter interaction and field RNG studies is appreciably small. As a result, Nelson and Bancel (2006) estimate that 50 to 100 replications are needed to achieve a minimum power level of 90%. Due to the low signal-to-noise ratio, attaining a significant result in individual field RNG studies is not always realizable.

An attempt was made to reduce the likelihood of the second possibility occurring by not having the data observed by the workshop participants as it was being collected, and not revealing any of the results to them until after the workshop had ended. However, as Radin and Atwater (2006) point out, this does not preclude the possibility of experimenter effects entering into the data when they finally are observed, either when they are in the process of being saved to the computer's hard drive or when they were being analyzed by the author. The author's own field RNG work has produced null results in the past (e.g., Williams, 2006), which may argue for a possible experimenter effect. However, it should be noticed that the data had mostly shown deviations in the negative direction, whereas the prediction from the outset of the study was for the data to deviate in a positive direction, an observation that may be somewhat contrary to the idea of an experimenter effect given that the results did not conform to the experimenter's expectation.

The third possibility suggests that the social group situation of the workshop was not one in which a group consciousness effect could have occurred. This too remains a possibility, though in the author's estimation it seems somewhat unlikely given that the workshop participants generally seemed to enjoy each others' company, and that there were relatively few dynamic changes that could have greatly affected the group atmosphere (e.g., one member having to abruptly leave due to her significant other's illness). Still, it is possible that even small changes in mood or activity could have greatly influenced the group

situation in a way that was not clear to others. The possible influences originating from other workshops in progress elsewhere on the Esalen grounds at the same time as the "Embodiment and Psychic Experience" workshop may also have to be taken into consideration. Given that some evidence exists to suggest that mind-matter interaction effects can be non-local (Dunne & Jahn, 1992), it remains a possibility that such effects from other workshops could have had a confounding influence (in this case, one that was suppressive) on the RNG data. This was considered by the author as a possibility from the outset of the study, though it was not possible to gauge because it also was not feasible to monitor the activities of as many as five to six other workshops occurring at the same time as the one described here.

Given the null results of the general prediction and the purely exploratory nature of the results of the two supplemental *post hoc* analyses, it is not possible to arrive at very many conclusions in this study. However, the results do offer at least a few foundations for hypotheses that may be tested further in future field RNG studies conducted during group workshops and similar settings. The first is that the data will collectively show a deviation in the negative direction. A similar negative deviation in RNG data was observed during at least one session of a group workshop on creative spirituality has been previously reported by Rowe (1998), although this is an isolated incident so far and has not been observed in other field RNG studies of group workshops on different topics, such as distant healing (Nelson et al., 1996, 1998; Nelson & Radin, 2003; Radin et al., 1996). Radin and Atwater (2006) also observed negative deviations in field RNGs running during a series of group workshops on mental entrainment, although these were in RNGs at a distance from the workshop setting. Perhaps a more fitting basis to this prediction is the apparent similarity of the present data to the field RNG data collected by the Global Consciousness Project (Nelson, 2001) during world meditation events, a number of which have shown negative deviations away from randomness (e.g., see the listed examples by Nelson, 2002, and in Williams, 2004, Appendix Table 1). Group meditation was a part of at least some of the activity of the workshop described here and could have been a partial contributor, although further formal study is needed to more fully explore any possible link between meditation and group consciousness effects. A second prediction is for the data collected from workshop sessions devoted to group mental exercises (particularly if they are related to receptive psi) to collectively show a negative deviation in randomness, whereas the data from sessions in which neutral group discussion is the focus may be predicted to show nominal randomness.

In the hopes of exploring and refining these hypotheses further, a field RNG replication study is being tentatively planned for a similar Esalen workshop by Roll to be held later in 2007. If these hypotheses are supported by the data from this planned replication study and other field RNG studies on similar workshops, then they may perhaps hint at the possibility of an inverse relation between receptive psi activity and mind-matter interaction effects.

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REFERENCES

Aanstoos, C. M. (1986). Psi and the phenomenology of the long body. *Theta*, **13 – 14**, 49 – 51.

Aanstoos, C. M. (2005). Phenomenology of embodiment. *Proceedings of Presented Papers: The Parapsychological Association 48th Annual Convention*.

Aron, A., & Aron, E. N. (1997). *Statistics for the Behavioral and Social Sciences*. Upper Saddle River, NJ: Prentice-Hall.

Batcheldor, K. J. (1984). Contributions to the theory of PK induction from sitter-group work. *Journal of the American Society for Psychical Research*, **78**, 105 – 122.

Bierman, D. J. (1996). Exploring correlations between local emotional and global emotional events and the behavior of a random number generator. *Journal of Scientific Exploration*, **10**, 363 – 373.

Blasband, R. A. (2000). The ordering of random events by emotional expression. *Journal of Scientific Exploration*, **14**, 195 – 216.

Bösch, H., Steinkamp, F., & Boller, E. (2006). Examining psychokinesis: The interaction of human intention with random number generators – a meta-analysis. *Psychological Bulletin*, **132**, 497 – 523.

Bourgeois, R. L. (1994). Psychokinesis and contact with an artificial spirit: A replication of the Philip phenomena. Web publication, Franklin Pearce College. Available over the Internet at: http://www.fpc.edu/pages/Academics/behave/psych/web94-1.htm. Downloaded September 28, 2004.

Crawford, C. C., Jonas, W. B., Nelson, R., Wirkus, M., & Wirkus, M. (2003). Alterations in random event measures associated with a healing practice. *Journal of Alternative and Complementary Medicine*, **9**, 345 – 353.

Duncan, L., & Roll, W. G. (1995). *Psychic Connections: A Journey into the Mysterious World of Psi*. New York: Delacorte Press.

Dunne, B. J. (1991). Co-operator experiments with an REG device. *Technical Note PEAR 91005*. Princeton, NJ: Princeton Engineering Anomalies Research Laboratory, School of Engineering/Applied Science, Princeton University, April.

Dunne, B. J., & Jahn, R. G. (1992). Experiments in remote human/machine interaction. *Journal of Scientific Exploration*, **6**, 311 – 322.

Guilford, J. P., & Fruchter, B. (1973). *Fundamental Statistics in Psychology and Education*. New York: McGraw-Hill.

Hagel, J., & Tschapke, M. (2004). The local event detector (LED) – An experimental setup for an exploratory study of correlations between collective emotional events and random number sequences. *Proceedings of Presented Papers: The Parapsychological Association 47th Annual Convention*, 379 – 388.

Hirukawa, T., & Ishikawa, M. (2004). Anomalous fluctuation of RNG data in Nebuta: Summer festival in Northeast Japan. *Proceedings of Presented Papers: The Parapsychological Association 47th Annual Convention*, 389 – 397.

Honorton, C., & Barksdale, W. (1972). PK performance with waking suggestions for muscle tension versus relaxation. *Journal of the American Society for Psychical Research*, **66**, 208 – 214.

Jahn, R., Dunne, B., Bradish, G., Dobyns, Y., Lettieri, A., Nelson, R., Mischo, J., Boller, E., Bösch, H., Vaitl, D., Houtkooper, J., & Walter, B. (2000). Mind/machine interaction consortium: PortREG replication experiments. *Journal of Scientific Exploration*, **14**, 499 – 555.

Jahn, R. G., Dunne, B. J., Nelson, R. D., Dobyns, Y. H., & Bradish, G. J. (1997). Correlations of random binary sequences with pre-stated operator intention: A review of a 12-year program. *Journal of Scientific Exploration*, **11**, 345 – 367.

Owen, I. M., & Sparrow, M. (1976). *Conjuring Up Philip: An Adventure in Psychokinesis*. New York: Harper & Row.

Nelson, L. A., & Schwartz, G. E. (2006). Consciousness and the anomalous organization of random events: The role of absorption. *Journal of Scientific Exploration*, **20**, 523 – 544.

Nelson, R. D. (1997). Multiple field REG/RNG recordings during a global event, parts I & II. *e-JAP: Electronic Journal of Anomalous Phenomena* 97.2. Available over the Internet at: http:// www.psy.uva.nl/eJAP. Downloaded March 1999.

Nelson, R. D. (2001). Correlation of global events with REG data: An Internet-based, nonlocal anomalies experiment. *Journal of Parapsychology*, **65**, 247 – 271.

Nelson, R. D. (2002). Global harmony. Global Consciousness Project exploratory analysis. Available over the Internet at: http://noosphere.princeton.edu/groupmedit.html. Downloaded August 1, 2002.

Nelson, R. D. (2006). Anomalous structure in GCP data: A focus on New Year's Eve. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 115 – 126.

Nelson, R. D., & Bancel, P. A. (2006). Anomalous anticipatory responses in networked random data.

Nelson, R. D., Bradish, G. J., Dobyns, Y. H., Dunne, B. J., & Jahn, R. G. (1996). FieldREG anomalies in group situations. *Journal of Scientific Exploration*, **10**, 111 – 141.

Nelson, R. D., Jahn, R. G., Dunne, B. J., Dobyns, Y. H., & Bradish, G. J. (1998). FieldREG II: Consciousness field effects: Replications and explorations. *Journal of Scientific Exploration*, **12**, 425 – 454.

Nelson, R. D., & Radin, D. I. (2003). FieldREG experiments and group consciousness: Extending REG/RNG research to real-world situations. In W. B. Jonas & C. C. Crawford (Eds.) *Healing, Intention, and Energy Medicine: Science, Research Methods and Clinical Implications* (pp. 49 – 57). Edinburgh, UK: Churchill Livingstone.

Nelson, R. D., Radin, D. I., Shoup, R., & Bancel, P. A. (2002). Correlations of continuous random data with major world events. *Foundations of Physics Letters*, **15**, 537 – 550.

Radin, D. I. (1997). *The Conscious Universe: The Scientific Truth of Psychic Phenomena*. San Francisco: HarperEdge.

Radin, D. I. (2006). *Entangled Minds: Extrasensory Experiences in a Quantum Reality*. New York: Paraview Pocket Books.

Radin, D. I., & Atwater, F. H. (2006). Entrained minds and the behavior of random physical systems. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 153 – 163.

Radin, D. I., & Nelson, R. D. (1989). Evidence for consciousness-related anomalies in random physical systems. *Foundations of Physics*, **19**, 1499 – 1514.

Radin, D. I., & Nelson, R. D. (2003). A meta-analysis of mind-matter interaction experiments from 1959 to 2000. In W. B. Jonas & C. C. Crawford (Eds.) *Healing, Intention, and Energy Medicine: Science, Research Methods and Clinical Implications* (pp. 39 – 48). Edinburgh, UK: Churchill Livingstone.

Radin, D., Nelson, R., Dobyns, Y., & Houtkooper, J. (2006). Reexamining psychokinesis: Comment on Bösch, Steinkamp, and Boller (2006). *Psychological Bulletin*, **132**, 529 – 532.

Radin, D. I., Rebman, J. M., & Cross, M. P. (1996). Anomalous organization of random events by group consciousness: Two exploratory experiments. *Journal of Scientific Exploration*, **10**, 143 – 168.

Radin, D. I., Taft, R., & Yount, G. (2004). Effects of healing intention on cultured cells and truly random events. *Journal of Alternative and Complementary Medicine*, **10**, 103 – 112.

Roll, W. G. (1987). Memory and the long body. *Theta*, **15**, 10 – 29.

Roll, W. G. (1988). Psi and the phenomenology of memory. In D. H. Weiner & R. L. Morris (Eds.) *Research in Parapsychology 1987* (pp. 131 – 134). Metuchen, NJ: Scarecrow Press.

Roll, W. G. (1989). Memory and the long body. In L. A. Henkel & R. E. Berger (Eds.) *Research in Parapsychology 1988* (pp. 67 – 72). Metuchen, NJ: Scarecrow Press.

Roll, W. G. (1993). Mind and method. In L. Coly & J. D. S. McMahon (Eds.) *Proceedings of an International Conference: Psi Research Methodology: A Re-examination* (pp. 274 – 291). New York: Parapsychology Foundation, Inc.

Roll, W. G. (2005). Psi and the long body. *Proceedings of Presented Papers: The Parapsychological Association 48th Annual Convention*, 149 – 161.

Rowe, W. D. (1998). Physical measurement of episodes of focused group energy. *Journal of Scientific Exploration*, **12**, 569 – 581.

Schmidt, H., & Pantas, L. (1972). Psi tests with internally different machines. *Journal of Parapsychology*, **36**, 222 – 232.

Snedecor, G. W., & Cochran, W. G. (1980). *Statistical Methods* (7th Ed.). Ames, IA: Iowa State University Press.

Williams, B. J. (2002). Exploratory block analysis of field consciousness effects on global RNGs on September 11, 2001. Global Consciousness Project exploratory analysis, August 10. Available over the Internet at: http://noosphere.princeton.edu/williams/GCP911.html.

Williams, B. J. (2004). GCP technical note: Global harmony revisited. Global Consciousness Project exploratory analysis, December 2. Available for download over the Internet at: http://noosphere.princeton.edu/groupmedit.html

Williams, B. J. (2005). Pueblo parapsychology: Psi and the longbody from the Southwest Indian perspective. *Proceedings of Presented Papers: The Parapsychological Association 48th Annual Convention*, 204 – 218.

Williams, B. J. (2006). Field RNG exploration during a public Native American powwow. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 237 – 247.

Williams, B. J., & Roll, W. G. (2006). Psi, place memory, & laboratory space. *Proceedings of Presented Papers: The Parapsychological Association 49th Annual Convention*, 248 – 258.

Wilson, M., Williams, B. J., Harte, T. M., & Roll, W. G. (2006). The Daniel experiment: Sitter group contributions with field RNG and MESA environmental recordings. Paper presented at the 25th Annual Meeting of the Society for Scientific Exploration, Orem, UT, June 8 – 10.

SPIRIT CONTROLS AND THE BRAIN

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ABSTRACT

The mediumistic phenomenon of spirit control or trance personality has been present since the early days of psychical research, and remains an aspect of mediumship that is not well understood. Roll (2006a) has argued that humans possess a dual mind, the mind of the left brain hemisphere and the mind of the right brain hemisphere. The left hemisphere uses the sensory-motor system of the body to interact with local objects. It is the principal seat of language and thereby gives rise to the idea of an individual self that is associated with the body. The right hemisphere uses an extrasensory-psychokinetic system to interact with nonlocal objects and gives rise to a transpersonal or long body self. In this paper, we propose that spirit controls may be conceptualized as mental constructs that are created and personified by the medium, and that they represent identities consistent with the medium's left hemispheric sense of self. The emergence of spirit controls is predicted by Persinger's (1993) model of vectorial hemisphericity. A comparison of spirit controls with the alternate personalities of dissociative identity disorder (DID) shows that the two are similar in several respects and suggests that they may result from the same neurological processes. Ways in which the proposal may be tested further are suggested.

INTRODUCTION

We make a distinction between psychics and mediums. A psychic is an individual who displays an above average ability in extrasensory perception and uses this ability to acquire information about nonlocal objects without extraneous help. A medium is either a mental medium or a physical medium. A mental medium is a psychic who attributes the exercise of ESP to one or more spirit controls that are believed to act as intermediaries in the medium's attempt to acquire information from the departed or other sources. Similarly, physical mediums attribute displays of strong expressive psi (PK) in their presence to spirit controls, even though the medium could actually be the PK agent. Physical mediums, at least the genuine sort, are much more rare than mental mediums. In either case, a spirit control usually emerges when the medium is in trance, causing it to be regarded as the medium's trance personality. A spirit control, so to say, is the medium's medium.

A session or experiment with a medium is known as a sitting and researchers and others present are known as sitters. Mediumistic sittings have been going on for well over a century (Gauld, 1977, 1982; Gregory, 1985; Roll, 1960; Roll, 1982a, Section 3; Schouten, 1994), but large gaps remain in our knowledge about the neuropsychology of trance and spirit controls. Our discussion will focus primarily on this issue.

To understand spirit controls, caution must be taken in how the problem is approached. One reason that so little is known about spirit controls may be that the wrong questions have been asked. The distinction suggested by Lawrence LeShan (1975, 1995) between a structural entity and a functional entity is helpful in this context. A structural entity is a material object with measurable physical dimensions that is subject

to physical laws, while a functional has no material properties by which it can be identified or measured. Thus, a functional entity only exists as a concept. As an example of a functional entity, LeShan mentions the square root of –1. Although this number does not refer to anything that actually exists or can exist, it has provided a solution to problems in mathematics, physics, and engineering. In view of the fact that spirit controls lack physical characteristics, LeShan argues that they should be regarded as functional entities.

Since functional entities are concepts, LeShan (1975, 1995) points out that questions regarding their "what" and "where" are meaningless. On the other hand, questions about their conceptual ramifications, such as their "when" and "why," can be meaningful. Taking Mrs. Eileen J. Garrett's spirit control "Uvani" as an example, LeShan says that one should not ask what Uvani is, but rather, "*When* is Uvani?" And we might add, "*Why* is Uvani?" These are psychological questions that are best addressed by psychology.

SPIRIT CONTROLS AND THE PERSONALITY OF MEDIUMS

The reports of psychical researchers who have worked with trance mediums suggest that spirit controls are more psychological than parapsychological. One of Mrs. Leonore Piper's earliest controls, a supposed deceased French physician named "Dr. Phinuit," may have been inspired by her visit to the medium J. R. Cocke in June 1884, whose trance personality was named "Finny." Finny said that he was French and that his real name was Finnett (Tyrrell, 1961, p. 167). In addition to readings, Piper's Dr. Phinuit sometimes gave medical diagnoses and advice to sitters, but he knew little about the medical practices and standards in France. Some of Mrs. Piper's other controls presented themselves as the spirits of deceased psychical researchers. While a few of these "spirit-researcher controls" seemed authentic to the researchers, most of them appeared fragmentary or false, in that they did not provide enough information to be identified as the persons they claimed to have been, and rarely showed signs of recognizing individuals who were intimately known to them in life. With respect to Mrs. Piper's spirit-researcher controls of Gurney, Myers, and Hodgson, Oliver Lodge (1909) stated:

> …I feel bound to say that in the old days when conversing with the Gurney control through Mrs. Piper…I felt very much as if I were conversing under difficulties with Edmund Gurney. And he appeared to be in real "control" for the time-so that lapses and uncertainties and occasional confusions, in his case, were rather rare. But when the Myers and Hodgson controls now send messages through Mrs. Piper…I have very little feeling of that kind. They seemed in my case rather shadowy and, so to speak, uninteresting communicators (p. 282 – 283).

In a report on the sittings with Mrs. Piper, Eleanor Sidgwick (in Tyrrell, 1961) states:

> Since 1901 a control calling itself Henry Sidgwick has put in occasional appearances in Mrs. Piper's trance. The personation has been, however, of the feeblest description; a fact all the more strange because Mrs. Piper was personally acquainted with Dr. Sidgwick (p. 172).

In a report regarding Mrs. Piper's Gurney control, Sidgwick (1915) writes:

> Gurney died in the summer of 1888, and a Gurney control made its appearance through Mrs. Piper in America on several occasions in March 1889, when Professor William James was present. He gives some account of it in *Proceedings* [*of the SPR*], vol VI, pp. 655 – 6, which was published in 1890, calling the control "E" [Gurney's first name was Edmund], and says "neither then, nor at any other time, was there to my mind the slightest verisimilitude in the personation" (p. 300).

Also in the opinion of Hodgson (1892), the Gurney control did not resemble the living Gurney:

> If we assume that this control was the "make-up" of Mrs. Piper's secondary personality, it apparently involved some very subtle use of information drawn telepathically from at least the minds of the sitters, and at the same time the most extravagant ignorance and confusion concerning other facts, some which were known to the sitters, and which we should expect to be vivid in the remembrance of "E" (Tyrrell, 1961, pp. 175 – 176).

Further support for this position comes from Sidgwick's (1900, 1915) observation that the personality of Mrs. Piper seemed to show through the controls in ways that were not consistent with these individuals in life. For example, the controls showed a complete ignorance of science, philosophy, or any other academic field in which the individuals had excelled when they were alive (Sidgwick, 1915, p. 315 – 317). In addition, there were displays of shared associations and phrases across controls, and many showed an uncharacteristic interest in trivial matters (Gauld, 1977, p. 581). In other words, they seemed to be limited to the knowledge, personality, interests, and speech of Mrs. Piper. Although it is arguable that the lack of clarity in the personalities of the researcher spirit controls may be due to the inherently weak and subtle nature of ESP, it seems more likely that the personalities of these entities were derived from Mrs. Piper's personality and imagination combined with what she knew about the researchers from having met them when they were alive, and sometimes also combined with information she obtained about them through ESP with the sitters.

Mrs. Eileen J. Garrett sometimes expressed doubt about the independence of her spirit controls and at other times accepted them at face value (Angoff, 1974; McMahon, 1994). In response to a question from Lawrence LeShan (1995) concerning her controls, Mrs. Garrett wrote:

> Larry, I have to answer you in what seems to be a light and humorous way, but it's the best I can do! It is as if on Monday, Wednesday and Friday I think that they are spirits as they claim, and on Tuesday, Thursday, and Saturday I think that they are multiple personality split-offs I have invented in order to make my work easier. And as if on Sunday I try not to think about the problem (p. 166).

Mrs. Garrett's mixed opinion about her controls may have been due in part to the consistency in their personalities and viewpoints over the years (which was true especially for Uvani, her main control), and in part to skepticism about the controls expressed by LeShan and others who studied her. Two incidents cited by LeShan (1995) illustrate this. In one, the psychic Rosalind Heywood attempted to use her ESP in order to perceive the physical appearance of Abdul Latif, another of Mrs. Garrett's controls, while Heywood was engaged in conversation with him. According to LeShan, she said, "I put out my antennae and it seemed to me that he only existed for the subject under discussion" (p. 170).

In the second incident (p. 170), psychologist Ira Progoff asked Uvani during a sitting with Mrs. Garrett, "How have you been since we last met?" The question seemed to completely confuse Uvani and he made no answer, despite the fact that he himself had asked Progoff the same question during previous sittings and had thereby shown that he understood the question.

The few empirical studies that have been done regarding spirit controls support the argument that they are expressions of the medium's personality. With statistical advice from Robert Thouless (1936 – 1937), Whately Carington (1933 – 1934, 1935, 1936 – 1937) conducted a quantitative study of three mediums and their respective spirit controls: Mrs. Leonard and Feda, Mrs. Garrett and Uvani, and Mrs. Sharplin and Silver. Using a stopwatch during a word association test, he measured the response times to the words by the mediums in their waking state and in trance when their controls were in charge. The results indicated that two of the medium-control pairs (Mrs. Leonard & Feda, and Mrs. Garrett & Uvani) had significantly matching personality characteristics, whereas the third pair (Mrs. Sharplin & Silver) showed none. For the two pairs in which a relationship was found, this took the form of "counter-similarity" in their response times; that is, a negative correlation: Terms to which the medium took a long time to respond, took a short time for the controls, and vice versa.

In a series of ESP card experiments, J. B. Rhine (1934) compared Mrs. Garrett's ESP performance in her waking state with the ESP performance of Uvani. Mrs. Garrett and Uvani were each tested for telepathy and clairvoyance in five uneven groups of runs. The results are shown in Figure 1.

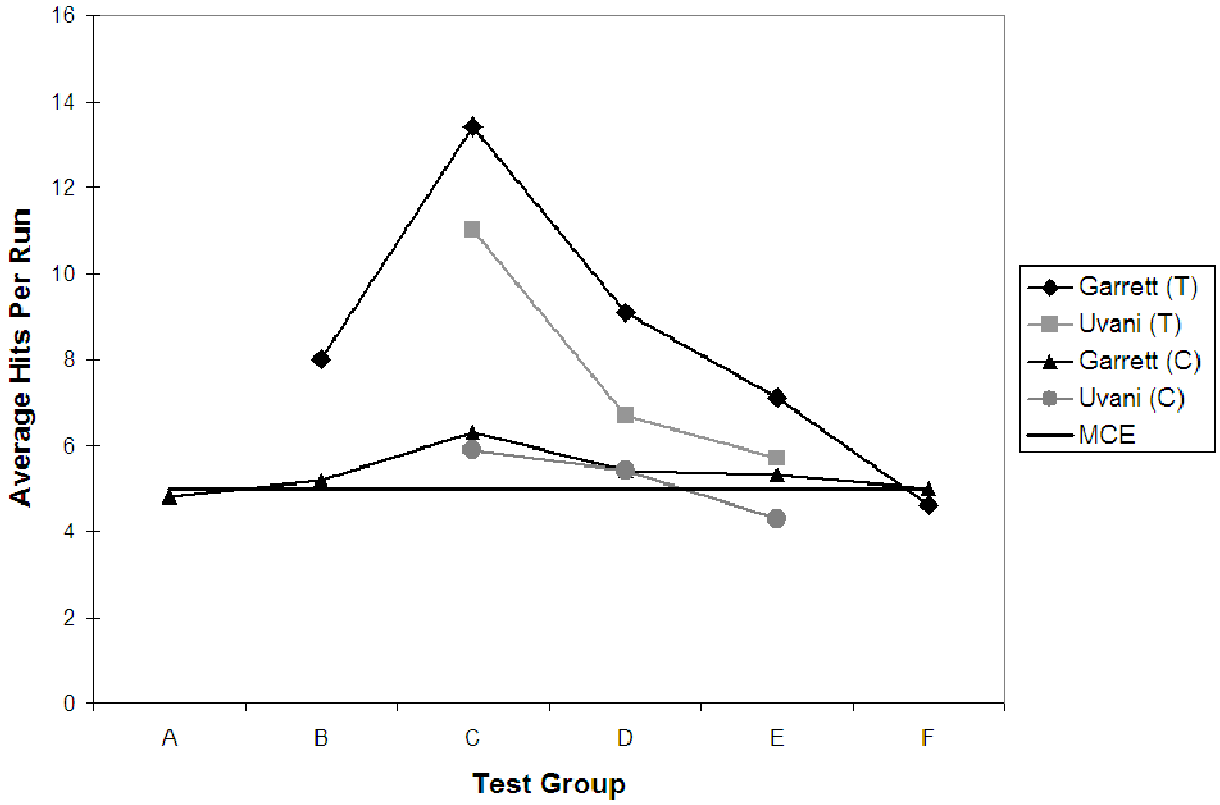

Fig 1. Graphical representation of five groups of ESP card test runs showing the average number of hits per run respectively scored in each group by Mrs. Eileen Garrett and her spirit control Uvani under telepathy (T) conditions, and under clairvoyance (C) conditions. The smooth horizontal line at 5 indicates mean chance expectation (MCE) per run. Reproduced from data presented in Rhine (1934).

A comparison of the ESP test results for Mrs. Garrett and Uvani reveals striking parallels. Both produced an above average number of hits per run under telepathy conditions before declining to mean chance levels. They also both failed in the clairvoyance condition, scoring around chance. Although he had expressed a willingness to try the card tests, Uvani claimed that he had no ESP ability of his own, insisting that any he might exhibit would actually be those of "the instrument" (his term for Mrs. Garrett). In discussing the results, Rhine (1937) commented, "Uvani would seem to be right: the gifts are the gifts of the medium, whatever Uvani himself may be" (p. 225).

SIMILARITIES BETWEEN THE SPIRIT CONTROL PHENOMENON AND DISSOCIATIVE IDENTITY DISORDER

Since the early days of psychical research, researchers (Braude, 1988; Mitchell, 1921; M. Prince, 1900 – 1901; W. F. Prince, 1915, 1916; Troubridge, 1922) have noticed that spirit controls resemble multiple personalities. Although relatively unexplored at the present, it remains a relevant question (Alvarado, 2004). Multiple personality is now referred to as dissociative identity disorder (DID), a rare disorder in which a patient displays two or more distinct personality states, each of which may have its own autobiographical memory, temperament, behavioral habits, medical conditions, cognitive functioning, and social relations that are different from those of the patient. The alternate personalities often seem to have been created by the patient because of extreme trauma and its psychological impact.[1] In other words,

[1] The term "dissociative identity *disorder*" is a misnomer unless the condition is painful or results in problems for the person and/or his or her social group.

alternate personalities may be viewed as psychological defense mechanisms to protect the person's core personality from the effects of trauma, and may be induced under similar conditions of stress or trauma. Subjective reports from patients diagnosed with DID show that the switching from one personality state to another is often accompanied by the sudden onset of drowsiness, blackouts, disorientation, and/or amnesia. Usually an alternate personality exhibits no awareness of the thoughts, actions, or existence of the other personalities. In some cases, however, such awareness (known as co-consciousness) has occurred either spontaneously or through psychotherapy (for a detailed overview of DID and discussion of cases, see, e.g., Kluft, 1991, and Putnam, 1989).

Like the alternate personalites of DID, the spirit controls of mediums are experienced as separate and autonomous entities with detailed personalities of their own. Abrupt changes in depth or tone of voice, posture, and overt behavior characterize both DID and spirit controls. Price (1960, p. 205), Gauld (1977, p. 581), and Braude (1988, p. 180) point out that many controls either claim to be deceased children, or show childish behavior. William Brown (in Tyrrell, 1961) noted that Mrs. Leonard's control, "'Feda,' who is apparently of a childish nature,…may psychologically be regarded as a regression in relation to Mrs. Leonard's adult consciousness" (p. 284). Putnam et al. (1986) found child alternate personalities to be a predominant aspect of 85% of the 100 cases of DID they examined.

Another similarity can be found in the epistemological relation between the parts of an individual's mind that appear to be dissociated, particularly in the limited memory and awareness that mediums display while in trance (Braude, 1988). Rhine (1934, p. 99) noted that Mrs. Garrett had no memory of what took place during the time her controls were in charge, which is similar to the amnesia found for DID patients across personalities (Putnam, 1989; Putnam et al., 1986). Mrs. Garrett's control Uvani seemed to have some awareness of her existence because he referred to her as "the instrument" (p. 103), thereby suggesting a degree of co-consciousness. A similar suggestion may be applied to Mrs. Piper and her controls as noted by Sidgwick (1915): "Mrs. Piper in a state of self-induced hypnosis may sometimes deliberately and consciously personate the control, and at others believe herself to be [her controls] Rector or Phinuit, while at still other times something between the two may occur and she may have a more or less hazy consciousness of being Rector, but also of being Mrs. Piper" (pp. 326 – 327).

One common and frequent factor leading to the development of dissociative disorders (including DID) may be the exposure during childhood to aversive family conditions, neglect, isolation, and/or abuse (Atlas, Weissman, & Liebowitz, 1997; Ellason, Ross, & Fuchs, 1996; Putnam, 1989; Putnam et al., 1986). Similarly, Mrs. Leonard (Roll, 1982b) and Mrs. Garrett (1939, 1949; McMahon, 1994; Roll, 1982b) were noted to have had an unhappy, isolated childhood, which, in Mrs. Garrett's case, was also an abusive one. In order to dissociate themselves from their mental anguish, these two mediums may have developed fantasy-prone personalities (Roll, 1982b). During her childhood, Mrs. Leonard reported visions of "Happy Valleys," and Mrs. Garrett (1949) experienced "The Children," two imaginary girls and a boy who were her playmates. Mrs. Garrett (1949) wrote in her memoirs: "During all my life I had unconsciously developed the technique of escape in order to avoid suffering. I could now perceive how this practice had perhaps prepared the way for the development of the trance state" (pp. 123 – 124). Fantasy-proneness has been hypothesized to be a developmental concomitant of DID (Brenneis, 1996; Lynn, Rhue, & Green, 1988[2]; Putnam, 1989, pp. 52 – 54): The childhood capacity for fantasy is extended to dissociative states such that these become endowed with psychological and physiological attributes and thereby appear to take on a specific sense of self, analogous to an elaborate imaginary playmate of childhood. Putnam (1989) notes: "Alter personalities sometimes report that they first arose as imaginary companions but later took on a life of their own when the child was unable to cope with abuse or some other trauma" (p. 52). Wilson and Barber (1983) found that individuals who are highly fantasy-prone have two characteristics germane to our topic: They exhibit highly imaginative and vivid fantasies often incorporating several sensory modalities, and they often believe themselves to be psychic and to have had frequent ESP-type

[2] This reference was provided to us by one of the referees of this paper and has not been verified because we have no archival access to the *British Journal of Experimental & Clinical Hypnosis* at the time of this writing. By the time of the PA convention we expect to have read the actual paper. We thank this referee for drawing this reference to our attention.

experiences.[3] Both of these aspects seem to be reflected in Mrs. Garrett's (1949) accounts of "The Children." In addition to looking and acting like real playmates, her imaginary friends seemed to have ESP since they guided her to hidden things. In other words, "The Children" may have been Mrs. Garrett's first spirit controls.

Braude (1988) points out a similarity between the switching of alternate personalities in DID and the appearance of a spirit control for a medium. Immediately before a control takes charge of an entranced medium, the medium may display characteristic behaviors, such as a vacant stare, eye-rolling, body swaying, and groaning. Tyrrell (1961) notes that the early trances of Mrs. Piper were accompanied by convulsive movements, but that the change later "became quiet and placid" (p. 167). Rhine (1934) said that when Mrs. Garrett was in trance, "her eyes are turned upward as in sleep" (p. 99). The length of time it takes for a control to fully emerge varies, from instantaneous to several minutes.

Variations in bodily response and length of time during personality switch are also seen in DID. As in mediumship, bodily responses may include a vacant stare, eye-rolling, and body swaying (Putnam, 1989, p. 119 – 121). In their famed case "The Three Faces of Eve," Thigpen and Cleckley (1954) noted that their patient, Eve White, reported headaches and experiencing blackouts prior to the emergence of her second personality "Eve Black" (p. 137). Before her third personality "Jane" emerged for the first time (p. 144), Eve White became drowsy and slipped into what the therapist labeled a "sleep or trance" for approximately two minutes, after which she awoke as Jane. Putnam et al. (1986) found that the duration of the personality switch for 92% of their 100 DID cases ranged from seconds to as long as five minutes.

If spirit controls are forms of DID, it is to be expected that the two share the same functional areas within the brain. It appears that the temporal lobe may be involved in both. Mesulam (1981) reports 12 dissociative cases from the neurology unit of a Boston hospital, seven of which were suggestive of DID, while the other five involved illusions of possession. Aside from two cases with unclear readings, the electroencephalograms (EEGs) of the patients showed abnormal spike activity around the temporal lobes in either or both hemispheres. Such spikes may indicate complex partial epilepsy. Shenk and Bear (1981) reported on female patients with DID and related dissociative disorders. Of the 40 patients diagnosed with temporal lobe epilepsy, 33% exhibited dissociative episodes following the development of their epilepsy.

Studies using brain imaging technology have also implicated the temporal lobe in DID. Mathew, Jack, and West (1985) measured the cerebral blood flow of a female DID patient using positron emission tomography (PET). Comparison of PET scans taken when the patient was displaying her core personality and one of her alternate personalities revealed increased blood flow only in her right temporal lobe, which was attributed to functional hyperactivity in the region since the patient showed no signs of temporal lobe epilepsy in her clinical evaluation. Hughes et al. (1990) used EEG data they collected over a two-month period from a DID patient with ten alternate personalities to produce brain maps of the patient and each of her personalities. Comparisons of the brain maps revealed differences for four of her personalities in the left temporal and right posterior regions of her brain. These differences were primarily in the theta and beta wave frequency ranges. Similar maps made from EEG data taken while the patient was merely pretending to be her alternate personalities or when a professional actress was imitating the personalities did not show these differences. On four occasions, Saxe et al. (1992) monitored the cerebral blood flow of a DID patient with four alternate personalities using single photon emission computerized tomography (SPECT). The images of the patient's brain revealed increased blood flow in her left temporal lobe across her four personality states. Most recently, Tsai et al. (1999) used functional magnetic resonance imaging (fMRI) to obtain brain images of a DID patient as she switched personality states. They found that the change from her core personality to her alternate personality was associated with an inhibition in the bilateral hippocampus and in the right parahippocampal and medial temporal regions. In contrast, when the patient switched back from her alternate personality to her core personality, activation was observed in her right hippocampus.

Perhaps the closest comparable study with mediumship is an EEG study by Nelson (1970) of 12 trance mediums, of which 10 showed signs of instability in the temporal lobe region as indicated on their EEGs

[3] In the course of informal discussions, Wilson has told the second author that she herself is fantasy-prone, a fact that undoubtedly made her especially knowledgable about this condition.

(there were no control subjects). None of the mediums were known to have a history of seizure disorder. A more recent pilot survey by Reinsel (2003) similarly showed that a group of eighteen mediums scored significantly higher on a measure of complex partial temporal lobe epilepsy than did a group of eleven control subjects. We assume that the mediums (or their controls) in the studies by Nelson (1970) and Reinsel (2003) had shown evidence of ESP, whether or not the evidence was any good. If they had not, the term "medium" would be a misnomer.

Surveys of individuals who are not identified as mediums or psychics support the existence of a relationship between ostensible ESP experiences and temporal lobe signs. Neppe (1983) found that six of 12 members of a psychical research organization in South Africa to whom he gave a temporal lobe signs questionnaire had reported several psi experiences[4], while the other six reported few or no experiences. The psi experients showed significantly more temporal lobe signs than did the non-experients. In two studies by Persinger (1984) of groups of normal college students, he found a positive correlation between signs of complex partial seizure in the temporal lobe and the number of reported psi experiences. The finding was replicated by Persinger and Valliant (1985) with a third population of college students. In a survey by Palmer and Neppe (2003) of a neuropsychiatric population of 100 patients diagnosed with temporal lobe dysfunction, they found that 60 patients reported significantly more psi experiences than a comparison population of 27 patients with no temporal lobe dysfunction. They also found that the female patients had significantly more such symptoms than the male patients. Studies by Persinger and Makarec (1987, 1990), Persinger and Richards (1994), and Roberts et al. (1990) indicate that temporal lobe signs are present to a lesser degree in normal populations, suggesting that humans may be distributed across a continuum of temporal lobe lability. Perhaps individuals who frequently report ESP experiences, such as psychics and mediums, are to be found towards the upper end of this continuum.

DID patients and mediums with spirit controls may sometimes show similar EEG differences across alternate personalities and spirit controls. Some of the researchers who have done long-term studies of DID patients report EEG differences, mostly within the alpha range, across the alternate personalities (Larmore et al., 1977; Ludwig et al., 1972; Putnam, 1984; Thompson et al., 1937; Thigpen & Cleckley, 1954). However, Coons, Milstein, and Marley (1982), who performed the single study that included a control, found very few differences across personalities in the EEGs of two DID patients and the EEG of their healthy control, who imitated DID symptoms. These differences, moreover, could mostly be attributed to extraneous factors such as concentration, mood, muscle tension, and duration of EEG recording.

A few psi researchers have reported differences in EEG patterns across the controls of trance mediums. In an exploratory study by the Psychical Research Foundation, Solfvin, Roll, and Kelly (1977) collected telemetric EEG data from the medium Jan Cutler while she was in her waking state, and when she "left her body" and was "taken over" by either of her two controls, William and Mrs. William. The three personalities showed significantly different frequency patterns, although muscle artifacts could not be completely ruled out. Similarly, Heseltine and Kirk (1979) conducted an EEG study with a medium "J. G." and her two controls Hotep and Shoalin. Different EEG patterns were observed between the controls (the study did not compare the medium's EEG to those of her controls). It is of interest that the alpha brain wave pattern, which has been observed by some researchers in the EEGs of DID patients, has been found to correlate with successful ESP performance (Alexander et al., 1998; Cadoret, 1964; Honorton, 1969; Honorton et al., 1971; Morris, 1977; Morris et al., 1972; Rao & Feola, 1973; Stanford & Palmer, 1975). This is another possible indication that the same or similar neurological processes underlie DID and spirit controls. A model proposed by Persinger suggests what these processes may be.

[4] Neppe (1983) uses the broader term "subjective paranormal experiences," which could be interpreted as meaning that the experiences are not limited to those that show evidence of psi. However, he states, "I introduced the concept of subjective paranormal experience to refer to 'subjectively perceived happenings pertaining to psi phenomena in individuals'" (p. 2); that is, he is using "paranormal" synonymously with "psi."

PERSINGER'S MODEL OF VECTORIAL CEREBRAL HEMISPHERICITY

The emergence of spirit controls may be accommodated by Persinger's (1993) model of vectorial cerebral hemisphericity. The model postulates that the subjective experience of an incorporeal presence or an ego-alien entity may result from a transient episode of coherent interaction between the two hemispheres of the brain through the inclusion of neuronal patterns from both hemispheres at once (a process called intercalation), wherein the right hemispheric equivalent of the sense of self "intrudes" into left hemispheric processing. This interhemispheric coherence[5] would occur primarily between the temporal-parietal cortices and their adjacent ventral limbic structures, and would be facilitated by any process that decreases the reciprocal inhibition that is maintained by the corpus callosum and other interhemispheric connections. Examples of such processes may include cerebral asymmetry due to brain organization in people with right hemispheric dominance, cortical and functional restructuring following brain injury, and reduced left prefrontal metabolism (Persinger, 1993; Persinger & Healey, 2002). Cortical restructuring has been indicated in the brain imaging studies of psychics Sean Harribance (Alexander et al., 1998; Persinger, 2001; Roll et al., 2002) and Ingo Swann (Persinger, 2001; Persinger et al., 2002).

The subjective experiences resulting from right hemispheric intrusions into left hemispheric processes can include sensing the illusory presence of a sentient being or an ego-alien entity within one's personal space. Cook and Persinger (1997) induced this sensation by applying patterns of weak, complex magnetic fields to the junction between the temporal and parietal lobes. Bilateral application of weak (1 microtesla) magnetic field patterns to this junction elicited a sense of presence in a psychic and two groups of nonpsychic subjects. Attempts by the subjects to focus on the exact location of the sensed presence were followed by the impression either of a change in its location or of movement by the presence. Roll and Persinger (1998) were also able to induce the sensation in the psychic Sean Harribance by applying the fields to his right hemisphere, a sensation that he ordinarily attributed to ESP. A study by Cook and Persinger (2001) compared the responses of a group of 8 subjects with signs of above-average temporal lobe sensitivity to those of another group of 8 subjects with below-average sensitivity signs. A weak, frequency-modulated magnetic field was applied either along the right hemisphere or bilaterally across both hemispheres. The group with below-average signs reported no sensations in either condition, whereas 75% of the group with above-average signs reported a sensed presence when the field was applied to the right hemisphere, and 60% reported a presence when the field was bilaterally applied. Persinger and Healey (2002) replicated the findings of Cook and Persinger (1997) with a population of 48 subjects, finding a greater amount of reported presences, negative feelings, and odd smells in subjects who received magnetic stimulation to the temporal-parietal junction of either the right or both hemispheres as compared to subjects who only received stimulation of the left hemisphere or no stimulation at all. A third study by Persinger (2003) with 100 nonpsychics found that experiences of a sensed presence were more frequently reported by female than by male subjects. In a similar vein, Arzy et al. (2006) induced a feeling "of someone being close by" in a female patient being treated for complex partial epilepsy by electrically stimulating the temporal-parietal junction of her left hemisphere. The woman reported experiencing a "shadow" person nearby who mimicked her body posture and movements, indicating that she was perceiving an illusory analogue of her own body. The woman's epileptic focus was localized in her left temporal-parietal junction, and Arzy et al. (2006) suggest that her experience was consistent with this area being involved in self-processing and thereby with the cognitive distinction between self and other. Her experience was also consistent with the integration of multi-sensory aspects of body representation in the somatosensory cortex. A crucial structure found to be involved in the integration process is the angular gyrus, found within the temporal-parietal junction (Blanke et al., 2004; Brandt & Dieterich, 1999; Lobel et al., 1998).

Attempts by a group of Swedish researchers (Granqvist et al., 2005; Larsson et al., 2005) to independently replicate one aspect of Persinger's model and research (pertaining to the experience of a

[5] We have adopted the term "interhemispheric coherence" from Persinger (1993), where it refers to the interaction between the two hemispheres that give rise to right hemispheric intrusions in left brain processing. Coherence has another meaning in electrophysiology, where it refers to a co-varying relationship between two or more electrode sites.

sensed presence) were not successful. Persinger and Koren (2005) argue that the methodology used by the group deviated too much from the original methodology developed by Persinger and colleagues to be regarded as a true replication. A second analysis by St-Pierre and Persinger (2006) of the original studies by Persinger and colleagues suggests that the Swedish group did not follow specific timing patterns in the application of the magnetic field, and that this may have led to the group's null results.[6]

In view of the temporal lobe instability found in trance mediums by Nelson (1970) and the positive correlation between temporal lobe signs and spontaneous psi experiences (Neppe, 1983; Palmer & Neppe, 2003; Persinger, 1984; Persinger & Valliant, 1985), we hypothesize that the experience of spirit controls by mediums is facilitated by right hemispheric intrusion into left hemispheric processes. Aside from a sense of presence, mediation of temporal-parietal information through the corpus callosum (facilitated by the hemispheric intrusions) may give rise to perceptions of distorted body image and/or intrusive voices (Persinger, 1993, p. 918), which some mediums may interpret as being the physical form and independent voice of their spirit control.[7] A spirit control that is experienced as an autonomic entity by the medium may be an analogue of the medium's own body and may thereby implicate the temporal-parietal junction and the angular gyrus within this junction. This would lead to the prediction that fMRI scanning will show activation of the angular gyrus when a medium senses the presence of his or her spirit control. Such experiences may be encouraged by temporal lobe instability or by cortical and functional restructuring in or around the temporal-parietal junction. Activities that may facilitate interhemispheric coherence, such as transcendental meditation (which increases interhemispheric homogeneity of electrocortical activity in the alpha and theta ranges; Persinger, 1992) and binaural auditory stimulation (Johnson & Persinger, 1994), may be conducive to this process.

SPIRIT CONTROLS AND THE RIGHT BRAIN HEMISPHERE

Roger Sperry (1982) showed that the two hemispheres of the human brain function independently and differently when they are no longer linked. This was experienced by his epileptic patients after he had severed their corpus callosum to provide relief from their symptoms. Sperry found that, in contrast to the left hemisphere, the right hemisphere is adept at processing nonverbal, non-analytical, non-sequential, and visuospatial tasks, including "the reading of faces, copying of designs…the discrimination of and recall of nondescript factual and visual shapes, spatial transpositions, and transformations…and perceiving whole forms from a collection of parts" (pp. 57 – 58). Other cerebral lateralization studies have shown that the right hemisphere is primarily involved in the recognition and expression of emotions (Gainotti, 1979; Geschwind, 1990) and in tracking the passage of time (Lewis & Miall, 2006). In contrast, the left hemisphere is adept at serial learning and analytical thinking, and is the seat of language production and comprehension (Geschwind, 1990). The left hemisphere is dominant during waking consciousness and is mainly concerned with the "here and now;" that is, with objects that can be reached by the body's sensory-motor functions. In other words, with local objects. In contrast, the right hemisphere evidently interacts with distant, or nonlocal, objects by means of extrasensory-psychokinetic functions that seem to originate within this hemisphere (Roll, 2006a, 2006b; Roll et al., 2006).

[6] Given that Persinger's vectorial hemisphericity model is still controversial based on these findings, we acknowledge that the discussion in this section remains tentative and awaits further evidence that either supports or disproves the model.

[7] The vectorial hemisphericity model is not only intended to explain sensed presences, but also subjective perceptual experiences, including mystical experiences, religious conversions, and distortions in space-time. Persinger (1993, pp. 918 – 919, 923) outlines brain pathways that the model predicts may underlie these experiences. Persistent interhemispheric coherence "would facilitate the multiple egodystonic or ego-alien experiences that constitute some Schneiderian symptoms (Ross, 1989); they include thought insertion, thought withdrawal and 'hearing' extrapersonal voices…" (p. 923). Putnam (1989, p. 81 – 82) notes that some DID patients report lesser symptoms that are akin to Schneider's first-order symptoms for schizophrenia, including hearing voices and feeling as though their bodies are being controlled by an external force, as in automatic writing. It should be pointed out that this form of motor automatism is deliberately used by many mediums and their spirit controls to facilitate the flow of ESP, thereby pointing to a further similarity between the alternate personalities of DID and spirit controls. The vectorial hemisphericity model does not only apply to experiences of full-fledged personalities, but also to indistinct figures and voices. Persinger regards such experiences as undeveloped constructs of imaginary personalities.

There is a small amount of experimental evidence that ESP may be a function of the right hemisphere. Braud and Braud (1975) found an advantage of borderline significance in free-response ESP trials after the subjects had listened to a tape intended to elicit right hemispheric mentation as compared to trials following a left mentation tape. They called right hemispheric mentation, "the psi conducive syndrome." In a study designed to determine if the left hemisphere interferes with ESP, Broughton (1976) compared conditions where the subjects were occupied with reading, a left hemispheric activity that may distract this hemisphere from blocking ESP, with trials without reading. The tests also addressed the laterality issue by having the subjects record their responses with either the left or right hand. There were tendencies for higher ESP scores when the left hemisphere was occupied with reading, and for greater divergence from chance when the left hand (controlled by the right hemisphere) was used. After completing the experiment, Broughton (1978) learned about the discovery that hemispheric differences are less pronounced for females than for males, which has been attributed to the fact that the corpus callosum has more connections in the female brain. A reexamination of his data showed that the interference effect was in fact only present for the male subjects. However, the interference effect and the sex difference did not show up in two later studies (Broughton, 1978). Broughton (1977) has pointed to the proclivity for ESP to take the form of visual images as indicating right hemispheric mentation. For instance, White (1964) found that most of the psychics in her survey relied on visual images, and Kelly et al. (1975) observed that in tests with the psychic, Bill Delmore, his ESP was "encoded in the form of fleeting visual images." Broughton also noted that dreaming, which seems psi conducive (e.g., Ullman, Krippner, with Vaughan, 1973), may be a function of the right hemisphere. Ehrenwald (1979) noted that the drawings of patients with injuries to their left occipital-parietal region, including one of his own patients, were strikingly similar to drawings from subjects in telepathy experiments. He wrote, "The world of the patient suffering from optical agnosia...closely resembles the telepathic or clairvoyant percipient's impression of his target...psi phenomena, lacking as they do, the precise spatio-temporal ordering and organizing qualities of the dominant hemisphere, are processed in…the right side of the brain" (p. 221).

There are some exceptions to the finding that ESP is predominantly right hemispheric. Tests by Maher and her associates (Maher, 1986; Maher, Peratsakis, & Schmeidler, 1979; Maher & Schmeidler, 1977) suggest that ESP may be processed by either hemisphere. Alexander and Broughton (2001) reported a ganzfeld study in which right hemisphere dominant subjects scored fewer direct hits than subjects with left hemispheric dominance (the difference in scoring rate was not significant).

In contrast, recent brain imaging studies of two psychics suggest involvement of the right hemisphere. Quantitative EEG (QEEG) and SPECT measurements of the psychic Sean Harribance by Alexander et al. (1998) and by Roll et al. (2002) showed focal anomalies and concentrations of activity in the occipital-parietal region of Harribance's right hemisphere while he was engaged in ESP tasks. Subsequent magnetic stimulation of Harribance's right occipitoparietal region induced sensations that he attributes to ESP (Roll & Persinger, 1998; Roll et al., 2002). EEG and fMRI scans of the brain of the psychic, Ingo Swann, also indicate increased activity, as well as changes in structural and functional organization, in the occipitoparietal region of Swann's right hemisphere (Persinger, 2001; Persinger et al., 2002).

SPIRIT CONTROLS AND PSYCHOMETRY

In order to prevent mediums and their spirit controls from relying on telepathy from sitters who knew the deceased target personality, absent sittings were instituted in which neither the sitters nor anyone else present knew about this deceased person. Instead, a personal item, a so-called psychometric object, from this person was used as a link to the medium. This procedure would hardly have prevented the medium from acquiring the needed information from the minds of living individuals not present at the sitting, but the method had a secondary and more important effect in that it excluded the sitter as a source of sensory cues.

Psychometric objects are routinely used by many mediums and psychics as links to people, whether living or dead, and to events distant or near in space-time (Barrington, Stevenson, & Weaver, 2005; Renier, with Lucks, 2005; Roll, 2004; Schwartz, 1978/2001, Ch. 2, 4, 5, & 6), but the role of physical

objects in acquiring ESP information has been difficult to comprehend. In any case, the fact that mediums and psychics use the same procedure may suggest that they utilize the same process. Following the requirement (Occam's razor) that the simpler hypothesis is preferable to the more complex one, the hypothetical process used by psychics, which only requires the postulate of ESP, is preferable to the hypothesis of mediumship, which requires spirit controls plus ESP.

CONCLUSIONS

A spirit control does not seem to represent a distinct and autonomous entity, but can be conceptualized as a mental construct created and personified by the medium in order to interact with nonlocal objects but without infringing on the medium's (left-hemispheric) sense of self. The construct would thereby be consistent with the medium's sense of self at the same time as it would occupy the space-time of the right hemisphere. Given that the right hemisphere encompasses nonlocal objects, the construct would be conceptualized by the medium as capable of interacting with such objects, including the minds of the departed. The construct itself may be formed based on cognitive details relevant to the medium's own personality and knowledge that are available through his or her own memory and may be further detailed and/or personified through imagination. Alvarado (2004) points to the work of psychical researchers such as Flournoy, Lebiedzinski, and Sudre, who suggested that indirect suggestion, belief, and demand characteristics on the part of sitter or researcher may contribute to the development of the details that make up the personality of a spirit control. Assuming that trance is a form of dissociation, then some constructs may be formed and emerge only under the conditions of the dissociative state. If the formation of the constructs also incorporates the medium's own memory and imagination (the latter would be most applicable to mediums who may have had fantasy-prone personalities from childhood; Roll, 1982b), then ESP information may be incorporated into the personality of the controls through the apparent link between ESP and memory (Roll, 1966, 1975; Irwin, 1979).

Our proposal leads to testable hypotheses. While the closest analogue we have to the apparent neuropsychological correlates of mediumistic phenomena comes from studies of psychics, similar EEG and brain imaging research with mediums and their spirit controls is needed in order to test the applicability of such correlates to mediumship. We predict that fMRI scanning will show activation of the angular gyrus and the areas around the temporal-parietal junction when a medium senses the presence of his or her spirit control.

We have noted that spirit controls display characteristics that are similar to those exhibited by the alternate personalities of patients with dissociative identity disorder. Closer clinical case studies, and especially neurological work that compares mediums and DID patients, are need in order to better determine if the two populations differ in anything but the terms by which they are described; i.e., as having DID dysfunction or as possessing the gift of mediumship. Such research will be aided by the advanced imaging technology that is now available. This will give us the capability to peer through the skull and examine the functional brain correlates of the alternate personalities of DID and the spirit controls of mediums. Before then we must discover mediums with spirit controls *and* ESP.

It seems likely that some so-called mediums have no psychic ability either with or without their supposed spirit controls. Such individuals are akin to DID patients and should not be regarded as mediums. It is also likely, and may indeed be predicted, that some DID individuals are "closet mediums;" that is, that they will exhibit above average ESP under the right circumstances. Instead of being burdens to themselves and society, they might join the helping professions as grief therapist or as serving other functions that require knowledge beyond the immediate environment.

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REFERENCES

Alexander, C. H., & Broughton, R. S. (2001). Cerebral hemisphere dominance and ESP performance in the autoganzfeld. *Journal of Parapsychology*, **65**, 397 – 416.

Alexander, C. H., Persinger, M. A., Roll, W. G., & Webster, D. L. (1998). EEG and SPECT data of a selected subject during psi tasks: The discovery of a neurophysiological correlate. *Proceedings of Presented Papers: The Parapsychological Association 41st Annual Convention*, 3 – 12.

Alvarado, C. S. (2004). On trances and spirit communicators: Research ideas from the old literature. *Proceedings of Presented Papers: The Parapsychological Association 47th Annual Convention*, 313 – 314.

Angoff, A. (1974). *Eileen Garrett and the World Beyond the Senses*. New York: William Morrow.

Arzy, S., Seeck, M., Ortigue, S., Spinelli, L., & Blanke, O. (2006). Induction of an illusory shadow person. *Nature*, **443**, 287.

Atlas, J. A., Weissman, K., & Liebowitz, S. (1997). Adolescent inpatients' history of abuse and dissociative identity disorder. *Psychological Reports*, **80**, 1086.

Barrington, R. M., Stevenson, I., & Weaver, Z. (2005). *The World in a Grain of Sand: The Clairvoyance of Stefan Ossowiecki*. Jefferson, NC: McFarland & Company.

Blanke, O., Landis, T., Spinelli, L., & Seeck, M. (2004). Out-of-body experience and autoscopy of neurological origin. *Brain*, **127**, 243 – 258.

Brandt, T., & Dieterich, M. (1999). The vestibular cortex: Its location, functions and disorders. *Annals of the New York Academy of Sciences*, **871**, 293 – 312.

Braud, W., & Braud, L. W. (1975). The psi conducive syndrome: Free response GESP performance following evocation of "left-hemispheric" vs. "right-hemispheric" functioning. In J. D. Morris, W. G. Roll, & R. L. Morris (Eds.) Research in Parapsychology 1974 (pp. 17 – 20). Metuchen, NJ: Scarecrow Press.

Braude, S. (1988). Mediumship and multiple personality. *Journal of the Society for Psychical Research*, **55**, 177 – 195.

Brenneis, C. B. (1996). Multiple personality: Fantasy proneness, demand characteristics, and indirect communication. *Psychoanalytic Psychology*, **13**, 367 – 387.

Broughton, R. S. (1976a). Brain hemisphere specialization and its possible effects on ESP performance. In J. D. Morris, W. G. Roll, & R. L. Morris (Eds.), *Research in Parapsychology 1975* (pp. 98 – 102). Metuchen, NJ: Scarecrow Press.

Broughton, R. S. (1976b). Possible brain laterality effects on ESP performance. *Journal of the Society for Psychical Research*, 48, 384 – 399.

Broughton, R. S. (1977). Brain hemisphere specialization and ESP: What have we learned? *Proceedings of the 26th Annual Convention of the Parapsychological Association*, 373 – 384.

Broughton, R. S. (1978). *Brain Hemisphere Differences in Paranormal Abilities: With Special Reference to the Influence of Experimenter Expectancies*. Unpublished Ph.D. thesis, University of Edinburgh.

Cadoret, R. J. (1964). An exploratory experiment: Continuous EEG recording during clairvoyant card tests. *Journal of Parapsychology*, **28**, 226.

Carington, W. (1933 – 1934). The quantitative study of trance personalities. I. Preliminary studies: Mrs. Garrett, Rudi Schneider, Mrs. Leonard. *Proceedings of the Society for Psychical Research*, **42**, 173 – 240.

Carington, W. (1935). The quantitative study of trance personalities. II. Improvements in analysis. *Proceedings of the Society for Psychical Research*, **43**, 319 – 361.

Carington, W. (1936 – 1937). The quantitative study of trance personalities. *Proceedings of the Society for Psychical Research*, **44**, 189 – 222, 276 – 277.

Cook, C. M., & Persinger, M. A. (1997). Experimental induction of the "sensed presence" in normal subjects and an experimental subject. *Perceptual and Motor Skills*, **85**, 683 – 693.

Cook, C. M., & Persinger, M. A. (2001). Geophysical variables and behavior: XCII. Experimental elicitation of the experience of a sentient being by right hemispheric, weak magnetic fields: Interaction with temporal lobe sensitivity. *Perceptual and Motor Skills*, **92**, 447 – 448.

Coons, P. M., Milstein, V., & Marley, C. (1982). EEG studies of two multiple personalities and a control. *Archives of General Psychiatry*, **39**, 823 – 825.

Ehrenwald, J. (1979). The right hemisphere: Pathway to psi and creativity. In B. Shapin & L. Coly (Eds.) *Mind/Brain and Parapsychology* (pp. 221 – 232). New York: Parapsychology Foundation, Inc.

Ellason, J. W., Ross, C. A., & Fuchs, D. L. (1996). Lifetime Axis I and II comorbidity and childhood trauma in dissociative identity disorder. *Psychiatry*, **59**, 255 – 266.

Garrett, E. J. (1939). *My Life as a Search for the Meaning of Mediumship*. New York: Oquaga Press.

Garrett, E. J. (1949). *Adventures in the Supernormal: A Personal Memoir*. New York: Helix Press.

Gauld, A. (1977). Discarnate survival. In B. B. Wolman (Ed.) *Handbook of Parapsychology* (pp. 577 – 630). New York: Van Nostrand Reinhold.

Gauld, A. (1982). *Mediumship and Survival: A Century of Investigation.* London: Heinemann.

Geschwind, N. (1990). Specializations of the human brain. In R. R. Llinás (Ed.) *The Workings of the Brain: Development, Memory, and Perception* (pp. 105 – 120). New York: W. H. Freeman and Company.

Granqvist, P., Fredrikson, M., Unge, P., Hagenfeldt, A., Valind, S., Larhammar, D., & Larsson, M. (2005). Sensed presence and mystical experiences are predicted by suggestibility, not by the application of transcranial weak complex magnetic fields. *Neuroscience Letters*, **379**, 1 – 6.

Gregory, A. (1985). *The Strange Case of Rudi Schneider*. Metuchen, NJ: Scarecrow Press.

Heseltine, G. L., & Kirk, J. H. (1979). *EEG Activity of a Trance Medium*. San Antonio, TX: Science Unlimited Research Foundation.

Hodgson, R. (1892). A record of observations of certain phenomena of trance. *Proceedings of the Society for Psychical Research*, **8**, 1 – 167.

Hodgson, R. (1898). A further record of observations of certain phenomena of trance. *Proceedings of the Society for Psychical Research*, **13**, 284 – 582.

Honorton. C. (1969). Relationship between EEG alpha activity and ESP card-guessing performance. *Journal of the American Society for Psychical Research*, **63**, 365 – 374.

Honorton, C., Davidson, R., & Bindler, P. (1971). Feedback-augmented EEG alpha, shifts in subjective state, and ESP card-guessing performance. *Journal of the American Society for Psychical Research*, **65**, 308 – 323.

Hughes, J. R., Kuhlman, D. T., Fichtner, C. G., & Gruenfeld, M. J. (1990). Brain mapping in a case of multiple personality. *Clinical Electroencephalography*, **21**, 200 – 209.

Irwin, H. J. (1979). *Psi and the Mind: An Information-Processing Approach*. Metuchen, NJ: Scarecrow Press.

Johnson, C. P. L., & Persinger, M. A. (1994). The sensed presence may be facilitated by interhemispheric intercalation: Relative efficacy of the Mind's Eye, Hemi-Sync tape, and bilateral temporal magnetic field stimulation. *Perceptual and Motor Skills*, **79**, 351 – 354.

Kelly, E .F., Kanthamani, H., Child, I. L., & Young, F .W. (1975). On the relation between visual and ESP confusion structures in an exceptional ESP subject. *Journal of the American Society for Psychical Research*, **69**, 1 – 31.

Kluft, R. P. (1991). Clinical presentations of multiple personality disorder. *Psychiatric Clinics of North America*, **14**, 605 – 629.

Larmore, K., Ludwig, A. M., & Cain, R. L. (1977). Multiple personality: An objective case study. *British Journal of Psychiatry*, **131**, 35 – 40.

Larsson, M., Larhammer, D., Fredrikson, M., & Granqvist, P. (2005). Reply to M. A. Persinger and S. A. Koren's response to Granqvist et al. "Sensed presence and mystical experiences are predicted by suggestibility, not by the application of transcranial weak magnetic fields." *Neuroscience Letters*, **380**, 348 – 350.

LeShan, L. (1975). *The Medium, the Mystic, and the Physicist*. New York: Ballantine Books.

LeShan, L. (1995). When is Uvani? *Journal of the American Society for Psychical Research*, **89**, 165 – 175.

Lewis, P. A., & Miall, R. C. (2006). Remembering the time: A continuous clock. *Trends in Cognitive Sciences*, **10**, 401 – 406.

Lobel, E., Kleine, J. F., Bihan, D. L., Leroy-Willig, A., & Berthoz, A. (1998). Functional MRI of galvanic vestibular stimulation. *Journal of Neurophysiology*, **80**, 2699 – 2709.

Lodge, O. (1909). Report on some trance communications received chiefly through Mrs. Piper. *Proceedings of the Society for Psychical Research*, **23**, 127 – 285.

Ludwig, A. M., Brandsma, F. M., Wilbur, C. B., Bendfeldt, F., & Jameson, D. H. (1972). The objective study of a multiple personality. *Archives of General Psychiatry*, **26**, 298 – 310.

Lynn, S., Rhue, J., & Green, J. (1988). Multiple personality and fantasy proneness: Is there an association or dissociation? *British Journal of Experimental and Clinical Hypnosis*, **5**, 138 – 142.

Maher, M. (1986). Correlated hemispheric asymmetry in the sensory and ESP processing of "emotional" and "nonemotional" stimuli. *European Journal of Parapsychology*, **6**, 217 – 257.

Maher, M., Peratsakis, D., & Schmeidler, G. R. (1979). Cerebral lateralization effects in ESP processing: An attempted replication. *Journal of the American Society for Psychical Research*, **73**, 167 – 177.

Maher, M., & Schmeidler, G. R. (1977). Cerebral lateralization effects in ESP processing. *Journal of the American Society for Psychical Research*, **71**, 261 – 271.

Mathew, R. J., Jack, R. A., & West, W. S. (1985). Regional cerebral blood flow in a patient with multiple personality. *American Journal of Psychiatry*, **142**, 504 – 505.

McMahon, J. D. S. (1994). *Eileen J. Garrett: A Woman Who Made a Difference.* New York: Parapsychology Foundation, Inc.

Mesulam, M.-M. (1981). Dissociative states with abnormal temporal lobe EEG: Multiple personality and the illusion of possession. *Archives of Neurology*, **38**, 176 – 181.

Mitchell, T. W. (1921). The Doris Fischer case of multiple personality. *Proceedings of the Society for Psychical Research*, **31**, 30 – 74.

Morris R. L. (1977). Parapsychology, biology, and anpsi. In B. B. Wolman (Ed.) *Handbook of Parapsychology* (pp. 687 – 729). New York: Van Nostrand Reinhold.

Morris R. L., Roll, W. G., Klein, J., & Wheeler, G. (1972). EEG patterns and ESP results in forced-choice experiments with Lalsingh Harribance. *Journal of the American Society for Psychical Research*, **66**, 253 – 268.

Nelson, G. K. (1970). Preliminary study of the electroencephalograms of mediums. *Parapsychologia*, **4**, 30 – 35.

Neppe, V. M. (1983). Temporal lobe symptomatology in subjective paranormal experients. *Journal of the American Society for Psychical Research*, **77**, 1 – 29.

Owen, I. M., & Sparrow, M. (1976). *Conjuring Up Philip: An Adventure in Psychokinesis*. New York: Harper & Row.

Palmer, J., & Neppe, V. M. (2003). A controlled analysis of subjective paranormal experiences in temporal lobe dysfunction in a neuropsychiatric population. *Journal of Parapsychology*, **67**, 75 – 97.

Persinger, M. A. (1984). Propensity to report paranormal experiences is correlated with temporal lobe signs. *Perceptual and Motor Skills*, **59**, 583 – 586.

Persinger, M. A. (1992). Enhanced incidence of "the sensed presence" in people who have learned to meditate: Support for the right hemispheric intrusion hypothesis. *Perceptual and Motor Skills*, **75**, 1308 – 1310.

Persinger, M. A. (1993). Vectorial cerebral hemisphericity as differential sources for the sensed presence, mystical experiences, and religious conversions. *Perceptual and Motor Skills*, **76**, 915 – 930.

Persinger, M. A. (2001). The neuropsychiatry of paranormal experiences. *Journal of Neuropsychiatry and the Clinical Neurosciences*, **13**, 515 – 524.

Persinger, M. A. (2003). The sensed presence within experimental settings: Implications for the male and female concept of self. *Journal of Psychology: Interdisciplinary and Applied*, **137**, 5 – 16.

Persinger, M. A., & Healey, F. (2002). Experimental facilitation of the sensed presence: Possible intercalation between the hemispheres induced by complex magnetic fields. *Journal of Nervous and Mental Disease*, **100**, 533 – 541.

Persinger, M. A., & Koren, S. A. (2005). A response to Granqvist et al. "Sensed presence and mystical experiences are predicted by suggestibility, not by the application of transcranial weak magnetic fields." *Neuroscience Letters*, **380**, 346 – 347.

Persinger, M. A., & Makarec, K. (1987). Temporal lobe signs and correlative behaviors displayed by normal populations. *Journal of General Psychology*, **114**, 179 – 185.

Persinger, M. A., & Makarec, K. (1990). Complex partial epileptic-like signs as a continuum from normals to epileptics: Normative data and clinical populations. *Journal of Clinical Psychology*, **49**, 33 – 45.

Persinger, M. A., & Richards, P. M. (1994). Quantitative electroencephalographic validation of left and right temporal lobe signs and indicators in normal people. *Perceptual and Motor Skills*, **79**, 1571 – 1578.

Persinger, M. A., Roll, W. G., Tiller, S. G., Koren, S. A., & Cook, C. M. (2002). Remote viewing with the artist Ingo Swann: Neuropsychological profile, electroencephalographic correlates, magnetic resonance imaging (MRI), and possible mechanisms. *Perceptual and Motor Skills*, **94**, 927 – 949.

Persinger, M. A., & Valliant, P. M. (1985). Temporal lobe signs and reports of subjective paranormal experiences in a normal population: A replication. *Perceptual and Motor Skills*, **60**, 903 – 909.

Price, H. H. (1960). Mediumship and human survival. *Journal of Parapsychology*, **24**, 199 – 219.

Prince, M. (1900 – 1901). The development and genealogy of the Misses Beauchamp: A preliminary report of a case of multiple personality. *Proceedings of the Society for Psychical Research*, **15**, 466 – 483.

Prince, W. F. (1915). The Doris case of multiple personality. *Proceedings of the Society for Psychical Research*, **9**, 1 – 700.

Prince, W. F. (1916). The Doris case of multiple personality. *Proceedings of the Society for Psychical Research*, **10**, 701 – 1419.

Putnam, F. W. (1984). The psychophysiologic investigation of multiple personality disorder: A review. *Psychiatric Clinics of North America*, **7**, 31 – 39.

Putnam, F. W. (1989). *Diagnosis and Treatment of Multiple Personality Disorder*. New York: Guilford Press.

Putnam, F. W., Guroff, J. J., Silberman, E. K., Barban, L., & Post, R. K. (1986). The clinical phenomenology of multiple personality disorder: Review of 100 recent cases. *Journal of Clinical Psychiatry*, **47**, 285 – 293.

Rao, K. R., & Feola, J. (1973). Alpha rhythm and ESP in a free response situation. In W. G. Roll, R. L. Morris, & J. D. Morris (Eds.) *Research in Parapsychology 1972* (pp. 141 – 144). Metuchen, NJ: Scarecrow Press.

Reinsel, R. (2003). Dissociation and mental health in mediums and sensitives: A pilot survey [Abstract]. *Journal of Parapsychology*, **67**, 261 – 262.

Renier, N., with Lucks, N. (2005). *A Mind for Murder*. New York: Berkeley Books.

Rhine, J. B. (1934). Telepathy and clairvoyance in the normal and trance states of a "medium." *Character and Personality*, **3**, 91 – 111.

Rhine, J. B. (1937). *New Frontiers of the Mind*. New York: Farrar & Rinehart, Inc.

Roberts, R. J., Varney, N. R., Hulbert, J. R., Paulsen, J. S., Richardson, E. D., Springer, J. A., Shepherd, J. S., Swan, C. M., Legrand, J. A., Harvey, J. H., Struchen, M. A., & Hines, M. E. (1990). The neuropathology of everyday life: The frequency of partial seizure symptoms among normals. *Neuropsychology*, **4**, 63 – 85.

Roll, W. G. (1960). The contribution of studies of "mediumship" to research on survival after death. *Journal of Parapsychology*, **24**, 258 – 278.

Roll, W. G. (1966). ESP and memory. *International Journal of Neuropsychiatry*, **2**, 505 – 521.

Roll, W. G. (1975). *Theory and Experiment in Psychical Research* [M.Litt. Thesis, Oxford University, 1959]. New York: Arno Press.

Roll, W. G. (1982a). The changing perspective on life after death. In S. Krippner (Ed.) *Advances in Parapsychological Research 3* (pp. 147 – 291). New York: Plenum Press.

Roll, W. G. (1982b). Mediums and RSPK agents as fantasy-prone individuals. In W. G. Roll, R. L. Morris, & R. A. White (Eds.) *Research in Parapsychology 1981* (pp. 42 – 44). Metuchen, NJ: Scarecrow Press.

Roll, W. G. (2004). Early studies in psychometry. *Journal of Scientific Exploration*, **18**, 711 – 720.

Roll, W. G. (2006a). The Janus face of the mind. Paper presented at the 25th Annual Meeting of the Society for Scientific Exploration, Orem, Utah, June 10.

Roll, W. G. (2006b). A discussion of the evidence that personal consciousness persists after death with special reference to poltergeist phenomena. *Australian Journal of Parapsychology*, **6**, 5 – 20.

Roll, W. G., & Persinger, M. A. (1998). Is ESP a form of perception? Contributions from a study of Sean Harribance. *Proceedings of Presented Papers: The Parapsychological Association 41st Annual Convention* (pp. 199 – 209). Durham, NC: Parapsychological Association, Inc.

Roll, W. G., Persinger, M. A., Alexander, C. H., & Williams, B. J. (2006). Psi and the brain. Unpublished manuscript.

Roll, W. G., Persinger, M. A., Webster, D. L., Tiller, S. G., & Cook, C. M. (2002). Neurobehavioral and neurometabolic (SPECT) correlates of paranormal information: Involvement of the right hemisphere and its sensitivity to weak complex magnetic fields. *International Journal of Neuroscience*, **112**, 197 – 224.

Ross, C. A. (1989). *Multiple Personality Disorder: Diagnosis, Clinical Features, and Treatment*. New York: John Wiley.

Saxe, G. N., Vasile, R. G., Hill, T. C., Bloomingdale, K., & van der Kolk, B. A. (1992). SPECT imaging and multiple personality disorder. *Journal of Nervous and Mental Disease*, **180**, 662 – 663.

Schouten, S. A. (1994). An overview of quantitatively evaluated studies with mediums and psychics. *Journal of the American Society for Psychical Research*, **88**, 221 – 254.

Schwartz, S. A. (1978/2001). *The Secret Vaults of Time: Psychic Archeology and the Quest for Man's Beginnings*. Charlottesville, VA: Hampton Roads Publishing.

Shenk, L., & Bear, D. (1981). Multiple personality and related dissociative phenomena in patients with temporal lobe epilepsy. *American Journal of Psychiatry*, **138**, 1311 – 1316.

Sidgwick, E. (1900). Discussion of the trance phenomena of Mrs. Piper. *Proceedings of the Society for Psychical Research*, **15**, 16 – 38.

Sidgwick, E. (1915). A contribution to the study of the psychology of Mrs. Piper's trance phenomena. *Proceedings of the Society for Psychical Research*, **28**, 1 – 657.

Solfvin, G. F., Roll, W. G., & Kelly, E. F. (1977). A psychophysiological study of mediumistic communicators. *Parapsychology Review*, **8**, 21 – 22.

Sperry, R. W. (1982). *Science and Moral Priority: Merging Mind, Brain, and Human Values*. New York: Columbus University Press.

Stanford, R. G., & Palmer, J. (1975). Free-response ESP performance and occipital alpha rhythms. *Journal of the American Society for Psychical Research*, **69**, 235 – 244.

St-Pierre, L., & Persinger, M. A. (2006). Experimental facilitation of the sensed presence is predicted by the specific patterns of the applied magnetic fields, not by suggestibility: Re-analyses of 19 experiments. *International Journal of Neuroscience*, **116**, 1079 – 1096.

Thigpen, C. H., & Cleckley, H. (1954). A case of multiple personality. *Journal of Abnormal and Social Psychology*, **41**, 135 – 151.

Thompson, M. M., Forbes, T. W., & Bolles, M. M. (1937). Brain potential rhythms in a case showing self-induced trance states. *American Journal of Psychiatry*, **93**, 1313 – 1314.

Thouless, R. H. (1936 – 1937). Review of Mr. Whately Carington's work on trance personalities. *Proceedings of the Society for Psychical Research*, **44**, 223 – 275.

Troubridge, U. (1922). The *modus operandi* in so-called mediumistic trance. *Proceedings of the Society for Psychical Research*, **32**, 344 – 378.

Tsai, G. E., Condie, D., Wu, M.-T. & Chang, I.-W. (1999). Functional magnetic resonance imaging of personality switches in a woman with dissociative identity disorder. *Harvard Review of Psychiatry*, **7**, 119 – 122.

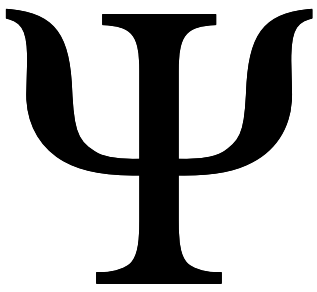
Tyrrell, G. N. M. (1961). *Science and Psychical Phenomena*. New Hyde Park, NY: University Books (Originally published in 1953 by the Society for Psychical Research).

Ullman, M., Krippner, S., with Vaughan, A. (1973). *Dream Telepathy: Experiments in Nocturnal ESP*. New York: Macmillan Publishing.

White, R. A. (1964). A comparison of old and new methods of response to targets in ESP experiments. *Journal of the American Society for Psychical Research*, **58**, 21 – 56.

Wilson, S. C., & Barber, T. X. (1983). The fantasy-prone personality: Implications for understanding imagery, hypnosis, and parapsychological phenomena. In A. A. Sheikh (Ed.) *Imagery: Current Theory, Research, and Applications* (pp. 340 – 387). New York: John Wiley.

RESEARCH BRIEFS



POLTERGEISTS AS EXTERNAL REPRESENTATIONS OF A MENTAL STATE

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INTRODUCTION

Owen and Sparrow (1974) hypothesized that any group of people could generate 'psychokinetic' phenomena while attributing the events to a group-created imaginary communicator. The rationale behind this was inspired by Brookes-Smith and Hunt's (1970) suggestion of 'ownership resistance' as the in-built reluctance of those, having such experiences in the outside world, to identify themselves as the cause of the events. Brookes-Smith and Hunt suggested that by attributing the occurrence of any phenomena to an external source, rather than to a member of the group, further occurrences of poltergeist experiences were facilitated, as group members were not perturbed by the realization that they had paranormal ability.

In a controlled, scientific environment, Owen and Sparrow's sitter group mimicked the 'séance' or 'tale tilting' type of gathering, and its environment, meeting weekly, for over a year. Initially, one member of the group created a fictitious character to be contacted and blamed for events, who they named 'Philip'. As the meetings progressed the character's personal details were elaborated by the whole group. At first the group did not report any unusual events, but after they adopted Batcheldor's (1966) suggestion of using a more socially conducive atmosphere they began to report extensive events. Batcheldor (1966, 1984) studied the characteristics of table tilting groups and séances, finding that the group would often indulge in rhythmic singing and laughter while achieving the experience which they gathered to create. At the third sitting, the experiences felt by the Owen group (Owen and Sparrow, 1974) began with a vibration felt in the table, leading to knocks, raps, temperature drops and table levitation. These experiences continued over the next two years, with a system of raps adopted as a method of communication. The answers achieved changed if one member of the group disagreed with what the character answered, suggesting that the knocks and raps conformed to an unspoken group consensus.

The main catalysts needed to produce successful experiences appeared to be instant belief of the group that events would take place, caused by their character, a jovial and fun atmosphere, and regular meetings. Heightened belief, as highlighted by Batcheldor (1984) became an important part of the sittings, with even the most skeptical group members encouraged to suspend skepticism and attempt to believe, if only for the duration of the sittings, that their character existed and would communicate with them. Owen and Sparrow (1976) went on to create further, apparently successful groups.

Other studies in Parapsychology, which appear to suggest a pivotal role of mental state on experience of unusual phenomena include Persinger's (1989) findings that certain 'paranormal' experiences correlate with anxiety, are precipitated by depression, and correspond with electromagnetic environmental changes. Similarly, Roll's (1972) investigations of 'poltergeist' type events in the public arena, led him to suggest that such phenomena may be caused by a tension release from an individual, who will then go on to claim, post-experience, that they feel happier and more relaxed. Roll hypothesized that an inability to release this tension could be detrimental to the individual, and the anomalous activity may be a method of improving the psychological state of the individual.

In the present study, Owen's (1974, 1976) sittings were recreated and developed, encompassing an experimental, longitudinal study of repeated measures. This provided three independent variables of: (1) event/session type, split into events and non-event sessions; (2) measures of mood prior and following each session; and (3) Session time and whether an event occurred,, split into two event and two non-event sessions, the earlier event and non-event session and the later event and non-event sessions. Though this study encompasses the methodology suggested by Owen and Sparrow, it differs in being recorded fully; something Owen claimed was not always followed for the 'Philip' sittings, with as much equipment as

possible, including the completion of mood scales at regular intervals during the sittings. These scales provide a more formal record of mood state, when compared to more anecdotal suggestions. The study has, on occasion, been repeated by Universities such as the University of Adelaide (Thalbourne and Storm, personal communication, 24/11/03), but the amount of time and effort (Owen's group held meetings once per week, for well over a year, so this may be a key to the experience, while modern day attitudes/lifestyles do not tend to allow for such dedication by participants/researchers) needed to organize the sittings may be something which deters many parapsychologists from further investigation of the work. However, the experiences of Owen, Sparrow, Batcheldor, Brookes-Smith and Hunt would suggest that further replication of this experiment, and study of the psycho-social variables which aid the experience, however real it may be, may prove valuable in understanding what actually occurs and the optimal conditions which facilitate this type of experience.

METHOD

Participants

Six 'investigative group' members (five male, one female; mean age = 39.7 years, with SD of 9.8.) were chosen for their prior experience.

Materials and Equipment

Prior to and after each session participants completed Storm and Thalbourne's (2001) States of Mind Scale. From trial five onwards, Fisk and Warr's (1996) Feelings at the Moment Scale, was used as an additional measure of participants' emotions, before and after each session. After trials eleven and seventeen Treadwell, Kumar and Lavertue's (2001) Group Cohesion Scale (Form B) was used, to gauge the change in cohesion between these sessions.

Environmental change was measured using: one to four sensitive temperature gauges, two hygrometers, measuring humidity, an audio cassette recorder, a video camera attached to a VCR and monitor, a chart recorder at 25mm/min output attached to a Trifield (Electromagnetic Fluctuation) Meter set to SUM, which indicated its sensitivity at 200mv FSD (measuring electromagnetic changes in the atmosphere, such as movement, analogue signals and geomagnetic fluctuations, something often sited as having relation to anomalous incidents, such as those investigated by Persinger (e.g. 1989), a pendulum, a large battery and a (Single Lens Reflex) stills camera. A field diary recorded the significant details for every session.

Procedure

Seventeen sessions were held, approximately once every two weeks, over a 10-month period. At the preliminary meeting equipment was tested, initial questionnaires completed and future procedure discussed, with creation of their fictional character. Events were initially accepted if they compared to those of the standard of the original 'Philip Experiment', or if a physical environment reading was significantly unusual. Particular recording of 'events' were used if they were comparable to previous reported paranormal experiences (e.g. those reviewed by Gauld and Cornell (1979)), including significant temperature fluctuation, unexplainable sounds (knocks and raps), or if they were obviously anomalous such as unexplained moving objects. Before and after each session, positivity of mood was measured via the scales. The dependant variables became the overall score for the Feelings at the Moment Scale= DV1 (mom), measuring depression and liveliness, and States of Mind Scale= DV2 (mind), measuring weariness, attentiveness etc.

After a short period of meditation, conforming to Honorton's (1977) suggestion that this could aid the experience, the group began by asking the character questions, and to answer these through 'events', such as knocks or temperature drops. Focused questioning was interspersed with general chat and laughter. Participants logged any subjective personal experience calling only 'event' to suggest this to the rest of the

group. The timing of these was continually recorded. After each sitting other possibilities for experiences would be tested, and the field diary was completed. The Group Cohesion form A was filled out after session eleven, and form B after session seventeen.

RESULTS

'Event' sessions chosen for analysis were sessions eight and sixteen. Events recorded were subjective, EMF significant readings, and a significant temperature drop of 0.4 degrees, within fifteen minutes. These were chosen for having objectively recorded 'events' as well as subjective suggestions. These events were those which were apparently anomalous, with a temperature drop of 0.4 degrees being unlikely as due to local environment, as the group tested affecting the gauges with their own breathing finding much less of a rise, and less of a drop when they remained silent for a while. The readings on the EMF meter were large peaks, which did not appear to be replicable by the group by their movement, or when cars passing outside caused vibrations. They were taken as possible events when the group had asked a question of the character just prior to receiving a noticeably large peak on the reading. Non-event sessions chosen were sessions thirteen and fourteen as they contained no objective recordings of possible events, such as on the gauges, recorders or EMF meter. These sessions provided the best examples of sittings, as they were fully recorded, without problems such as the video camera breaking down (as happened on a few occasions). Event sessions also had more 'objective' characteristics, and therefore more able to stand up to tests, than mere subjective suggestions, in line with those of the 'Philip' group. Non-event sessions were represented by sessions when nothing was claimed either suggested subjectively or recorded objectively.

A repeated measures factorial ANOVA of the Feelings at the Moment and States of Mind, in a two tailed investigation of whether mood could affect the outcome of the sittings, tested two sittings when events were recorded against two sittings when events were not recorded. Using Wilkes Lambda two factor ANOVA for positivity of mood on the Feelings Scale it indicated a significant difference in positivity between occurrence of an event in a sitting and non-experience in non-event sittings. That is, phenomena were more likely during sittings when the group, as a whole, felt more positive. ($F = 6.963$, $p<0.05$)

The same analysis of the States of Mind scale indicated no significance of mind state between event and none-event sittings. It did, however, indicate significant interaction between the before and after readings, of each sitting, suggesting the state of mind was generally more positive before the sitting took place, when there were 'events' recorded, and also after ($F = 6.646$, $p<0.05$). While it is possible that mood could be increased naturally by the suggested occurrence of phenomena, it appeared that when the group were measured prior to the sitting, on some occasions they would not retain this high mood for the study between a successful sitting, and the following sitting. The means of each showed a slight drop in mood after event sittings, with a large drop after non-event sittings.

DISCUSSION

This study followed as closely as possible the methodology of Owen and Sparrow (1976) and Batcheldor's (1966). The only deviations were that the sittings did not last for a year, and were not always regularly spaced, and the group members were reluctant to sing during the sittings. In this study it was found that group mood would be positive prior to, and following an event sitting, and less positive prior to and after a none-event sitting. This would appear to support both Roll (1972) and Owen (1976): namely that positive mood may precede and follow an event sitting.

Owen and Sparrow (1974), and Batcheldor (1966) suggested mood as a catalyst to the experience, and the present study shows that the retention of the good mood between sittings is also an essential factor, suggesting the 'perfect' sitter group maybe one whose members are unlikely to have any problems with each other during the intervening period between sittings, and who are able to retain the excitement, positive expectation and high spirits prior to each future sitting.

Events, such as the table movement experienced by the 'Philip' group, did not occur, but more frequent and further sittings, and a certain method and grouping might provide the right ingredients to recreate such events. More accurate following of the 'Philip' group method may provide further success in this study, although it is difficult for sufficient people to meet so regularly or frequently. However, if as Owen suggested, it is possible for anyone to recreate a moving table, or any object, or environmental knocks which reply to a question, there appears to be some element of social and mood psychology involved.

ACKNOWLEDGMENTS

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REFERENCES

Batcheldor, K.J. (1966) Table levitation for sitter group inducing phenomena. *Journal of the Society for Psychical Research, 43,* 129.

Batcheldor, K.J. (1984) Contributions to the theory of PK induction from sitter group work. *Journal of the Society for Psychical Research, 78:* 105-122.

Brookes-Smith, C. and Hunt, D.W. (1970) Some experiments in Psychokinesis. *Journal of the Society for Psychical esearch, 45:* 265-281.

Fisk, J.E. and Warr, P. (1996) Age related impairment in associative learning: The role of anxiety, arousal and learning self efficacy. *Personality and Individual Differences, 21:* 675-686.

Gauld, A., and Cornell, A. D. (1979) *Poltergeists* London: Routledge and Kegan Paul

Honorton, C. (1977) Psi and internal attention states. In B.B. Wolman (Ed) Handbook of Parapsychology. New York: Van Nostrand Reinhold

Owen, I.M. and Sparrow, M. (1976) *Conjuring Up Philip.* New York: Harper and Row.

Persinger, M.A. (1989) Geophysical variables and behaviour: LV. Predicting the details of visitor experiences and the personality of experients: The temporal lobe factor. *Perceptual and Motor Skills,* **68,** (1): 55-65.

Roll, W.G. (1972) *The Poltergeist.* New York: Signet.

Storm, L. and Thalbourne, M.A. (2001) Studies of the I Ching: I. A replication. *Journal of Parapsychology, 65, (2):* 105-123.

Treadwell, T., Kumar, V.K. and Lavertue, N. (2001) The group cohesion scale: Revised reliability and validity. *International Journal of Action Methods. 54, (1):* 3-12.

COGNITIVE DISINHIBITION AND PSI: EXPLORING THE FILTER THEORY OF PSI-AWARENESS

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INTRODUCTION

Filter theories of psi postulate that psi-mediated information operates as a 'weak stimulus' that is likely to be filtered out of conscious awareness (e.g. Myers, 1903/2001; Thalbourne, Bartemucci, Delin, Fox, & Nofi, 1997), and that psi might more commonly function at a subliminal level, without representation in awareness (e.g. Roney-Dougal, 1986). This research brief presents the methodology of a study in which an experimental paradigm, developed to examine the efficacy of hypothesised filtering mechanisms of consciousness, is adapted to include a psi component.

Inhibitory processes are thought to play a role in selective attention, discarding behaviourally irrelevant information in order to reduce working memory load (Wuthrich & Bates, 2001). A stream of research has focused on 'cognitive inhibition,' through experimental paradigms such as latent inhibition (LI). LI assesses inhibitory processes in selective attention. In a typical LI experiment there are two conditions, where, during an initial task, participants are either: 1) repeatedly exposed to a particular stimulus (the pre-exposure [PE] condition); or 2) not exposed to this stimulus (the non-pre-exposure [NPE] condition). The stimulus is irrelevant to this initial task and serves no function. Thus, it is hypothesised that those in the PE condition will inhibit its representation from awareness. In a subsequent task (the experimental task), this stimulus assumes relevant status; it must be attended to in order to solve a problem. Those in the NPE condition solve the problem faster; this is presumed to be because the stimulus has not been inhibited (e.g. Gray, Fernandez, Williams, Ruddle & Snowden, 2002).

In the current study a standard visual LI protocol has been replicated, and two conditions added: 1) psi-pre-exposure (ψPE), where a sender will attempt to transmit the stimulus telepathically during the initial task; and 2) non-psi-pre-exposure (NψPE). Thus, we assess whether psi-mediated information might be inhibited from awareness when it is not needed, thus affecting subsequent cognitive performance.

There is some evidence to suggest that high schizotypy and creativity abolish the LI effect (Carson et al., 2003; Gray et al., 2002), from which it has been inferred that schizotypy and creativity have in common less stringent filtering of mental elements into awareness. Creativity, schizotypy and belief in the paranormal are incorporated in the current study to address the idea that certain profiles will relate to increased awareness of the (psi) stimulus.

Study Hypotheses

It is hypothesized that: 1) performance on the experimental task will be impaired in the PE condition compared to the NPE condition; 2) there will be a significant difference in performance on the experimental task between the ψPE and the NψPE conditions (direction is not predicted, as weak pre-exposure has been shown to improve performance). Further hypotheses predict that creativity characterised by 'intrapersonal awareness' (Holt et al., 2004), positive dimensions of schizotypy(Simmonds, 2003) and belief in the paranormal will all: 3) correlate significantly with enhanced performance on the experimental task in the PE condition; and 4) correlate significantly with performance in the ψPE condition.

METHOD

Design

The study has a 2 x 2 design, with two independent factors: 1) pre-exposure (with two levels: PE and NPE 2) psi-pre-exposure (with two levels: ψPE and NψPE). Participants are randomly allocated to one of these conditions. The dependent variable is the number of exposures of the stimulus on the experimental task that are required to solve the problem.

Participants

Eighty participants will be recruited from the psychology participant pools at three universities in the UK: Northampton, Liverpool Hope and York. They will each be paid £10. NH and SM will act as experimenters, running 40 trials each; and will act as senders when not an experimenter.

Materials and Equipment

Latent inhibition programm.: The LI task was based on that used by Gray et al. (2002) and written in E-prime by SM. Stage one (the initial task) consists of a series of trigrams (three unrelated letters, e.g. WQL), in black capitals measuring $1cm^2$, separated by 1mm, and displayed in the centre of the computer screen against a solid grey background. In the PE condition these trigrams are surrounded by the outline of a white equilateral triangle (with sides measuring 7.5 cm). In the NPE condition the triangle does not appear. The trigrams are exposed for 1.5 seconds, with intervals of .25 seconds between exposures. There are 40 different trigrams. All 40 are presented in a pseudo-random order, twice, so that there are 80 presentations, each trigram appearing two times. The participants' task is to count how many times the sequence is repeated. Stage two is the experimental task. The same trigrams are presented again, with up to 160 exposures (40 trigrams four times each). The trigrams are surrounded by the outline of an inverted white equilateral pentagon (with sides measuring 4.5 cm) on up to 140 presentations, and by the triangle (as described above) on 20 presentations (pseudo-randomly interspersed). The trigrams are exposed for 2 seconds, with intervals of .25 seconds between exposures. In stage two a counter (in a white typeface, measuring $1cm^2$) is continually present in the top right corner of the computer screen. The number constituting the counter begins at 50 and increments concurrent with the onset of the .25 second interval that follows the presentation of a triangle. The participants' task is to press the spacebar when they predict that the counter will increment.

Laptop. The LI task is run on a Toshiba laptop: processor 1.50 GHz; with 496 MB of RAM.

Randomisation envelopes. CS prepared two sealed envelopes for each trial, containing a note delineating either: 1) sender condition; 2) LI condition; based on an algorithmic random sequence.

Psychometric Measures

A battery of creativity questionnaires, as reported by Holt, Delanoy and Roe (2004).

Shapes: a drawing task, where nine simple abstract lines are turned into 'objects', based on the divergent thinking model of creativity (Guildford, 1967). Responses are scored by: *flexibility*, the total number of different ideas produced: and *originality*, the rarity of ideas.

The Australian Sheep-Goat Scale (Thalbourne & Delin, 1993): 18 items covering experiences of and belief in extrasensory perception, psychokinesis, and the possibility of contact with spirits.

The parapsychological experience subscale of the Assessment Schedule for Altered States of Consciousness (van Quekelberghe, Altstotter-Gleich, & Hertwick, 1991): Six items enquiring about experiences of extrasensory perception and direct mental influence on living systems.

The Short Oxford-Liverpool Inventory of Feelings and Experiences (Mason, Linney & Claridge, 2005). This 43-item scale assesses four dimensions of the schizotypal personality trait: unusual experiences, cognitive disorganisation, introvertive anhedonia and impulsive non-conformity.

Procedure

Potential participants are given an information sheet, or emailed a link to a website, that describes the study, explaining that the authors are investigating the relationship between belief in the paranormal/anomalous experiences and different types of creativity and problem-solving. If they wish to participate they then complete the battery of questionnaires delineated above in their own time. An appointment is then made for the participant to complete a series of problem-solving tasks, typically in a quiet room at one of the universities.

At the start of the experimental session, the stages of the protocol are described to the participant. These are fourfold and consist of: the LI task (which is described as two computerised problem-solving tasks); the figural divergent-thinking task, Shapes (which is described as a 'doodling' task, scored according to originality of ideas and the number of different ideas produced); plus one verbal and one visual-spatial problem-solving task (the Vocabulary and Block Design subtests of the Abbreviated Wechsler Adult Intelligence Scale), the outcome of which will be used in subsequent analyses. The completion of these tasks takes 30-40 minutes. After being so informed, and being made aware of participant rights (in accordance with British Psychological Society ethical guidelines) the participant reads a written version of this introductory information and signs a consent form.

Meanwhile the experimenter opens the randomisation envelope for the trial which allocates the participant to either the PE or NPE condition. They then open the appropriate programme on the laptop and when the participant is ready give them instructions on how to perform the two tasks. In the first task the participant is asked to choose one trigram and count how many times it appears. At the end of this task there is a 1 minute break, in which the participant is asked to record their answer on a piece of paper and prepare for the next task. In the second task, the participant is asked to discern the rule that causes the counter on the screen to increment. The experimenter explains that the rule can be deduced from the information presented on the screen. The solution is that the counter increments after the stimulus (triangle) appears. The participant is asked to press the spacebar every time that they predict that the counter will increment. The counter also increments if the spacebar is pressed at an incorrect time (i.e. at any time other than when a triangle is present on the screen) and decrements if the spacebar is pressed at the correct time (while a triangle is presented). Thus, participants are told that the aim is to try to make the counter's number as low as possible. When they correctly predict the increment five times in a row the programme stops and thanks them for completing the task. Otherwise, the programme runs through all 160 presentations of the trigrams before thanking them for completing the task.

The participant initiates each task by pressing the spacebar, after reading written instructions for it on the screen. The experimenter leaves the room when the participant is ready to begin the first task. The experimenter (NH/SM) has already arranged with the sender-experimenter (SM/NH) to be prepared to 'send' or 'not send'. The experimenter immediately phones the waiting sender to notify them that the participant is reading the instructions for the initial task. The sender opens the randomisation envelope informing them whether to send or not send. In the sending (ψPE) condition the sender opens a computerised image of the white equilateral triangle and focuses on sending this telepathically to the participant for three minutes (the length of the initial task plus the one minute break in-between the tasks). They also open a text, sent to them by the experimenter, containing the name of the participant. In the NψPE condition the sender reads the *New York Times* for 3 minutes and deletes the text concerning the participant without opening it. The experimenter reads the *New York Times* during this period irrespective of the sending condition. After a further 30 minutes (the estimated time to complete the remaining tasks) the sender texts the experimenter to inform them of the sending condition.

When the participant has finished the LI tasks the experimenter returns and describes the Shapes task to them (as above). They are left on their own for 5 minutes to complete this. The experimenter then returns and remains with them for completion of the verbal and visual-spatial tasks. When all tasks are completed the participant is thanked for taking part. They are informed of the experimental conditions and which one they were allocated to and of hypotheses concerning 'filters of attention'. The ψPE and NψPE conditions are described to them in terms of being either 'remotely helped' or 'not helped' to solve the experimental

task by one of the authors from a different university. Participants are encouraged to ask any questions about the study before being given £10 in appreciation of their time and effort.

RESULTS AND DISCUSSION

Data collection is underway and it is anticipated that the outcomes of this study will be briefly presented.

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REFERENCES

Carson, S., Peterson, J. & Higgins, D. (2003). Decreased latent inhibition is associated with increased creative achievement in high functioning individuals. *Journal of Personality and Social Psychology*, **85**, 499-506.

Gray, N., Fernandez, M., Williams, J., Ruddle, R., & Snowden R. (2002). Which schizotypal dimensions abolish latent inhibition? *British Journal of Clinical Psychology,* **41**, 271-284.

Guildford, J. (1967). *The nature of human intelligence*. New York: McGraw-Hill.

Holt, N., Delanoy, D. & Roe, C. (2004). Creativity, subjective paranormal experiences and altered states of consciousness. *Proceedings of the Parapsychological Association 47th Annual Convention*, 433-436.

Mason, O., Linney, Y. & Claridge, G. (2005). Short scales for measuring schizotypy. *Schizophrenia Research*, **78**, 293-296.

Myers, F. (1903/2001). *Human personality and its survival of bodily death*. Charlottesville, VA: Hampton Roads.

Quekelberghe van, R., Alstotter-Gleich, C., & Hertweck, E. (1991). Assessment schedule for altered states of consciousness. *The Journal of Parapsychology*, **55**, 377-390.

Roney-Dougal, S. (1986). Subliminal and psi perception: A review of the literature. *Journal of the Society for Psychical Research*, **53**, 405-434.

Simmonds, C. (2003). *Investigating schizotypy as an anomaly-prone personality.* Unpublished Ph.D thesis. University of Leicester/University College Northampton.

Thalbourne, M., & Delin, P. (1993). A new instrument for measuring the sheep-goat variable: Its psychometric properties and factor structure. *Journal of the Society for Psychical Research*, **59**, 172-186.

Thalbourne, M., Bartemucci, L., Delin, P., Fox, B., & Nofi, O. (1997). Transliminality: Its nature and correlates. *The Journal of the American Society for Psychical Research*, **91**, 305-332.

Wuthrich, V., & Bates, T. (2001). Schizotypy and latent inhibition: non-linear linkage between psychometric and cognitive. *Personality and Individual Differences*, **30**, 783-798.

ASSESSING THE ROLE OF PERSONALITY AND THE PROVISION OF FEEDBACK IN DREAM ESP RESEARCH

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INTRODUCTION

Evidence from spontaneous cases suggests that instances of ostensible ESP are most common while dreaming (Rhine, 1962), and early experiments at the Maimonides Medical Center involving ESP in dreams were remarkably successful (Ullman & Krippner, with Vaughan, 1973).

More recently, dream ESP protocols have been proposed that do not require REM monitoring and awakening of participants during dream periods, and so have obviated the need for complex equipment and resources (see review by Sherwood & Roe, 2003). In a typical study (e.g., Sherwood, Dalton, Steinkamp & Watt 2000), participants sleep in their own homes as normal and simply endeavour to keep a dream diary; essential experimental controls are not compromised, because computerised methods allow the target to be selected randomly, played automatically in a manner that ensures security from sensory leakage, presents material systematically to participants for judging, and scrupulously records all data before revealing the target.

Sherwood and Roe (2003) found that although post-Maimonides replications have been extremely varied in method and heterogeneous in outcome, the cumulative database still gives rise to a significant deviation that suggests a dream ESP effect. It is also worth noting that of five direct comparisons of performance in ganzfeld and dream ESP conditions, four reported better performance in the latter, significantly so in three studies (Sherwood & Roe, 2003, pp. 96-98). Taken together, these findings offer encouragement for further experimental investigations of ESP in dreams.

However, much of the research on dream ESP to date has been proof-oriented, concerned simply with demonstrating that an anomaly has occurred, rather than being process-oriented and concerned with mapping patterns of performance. Consequently, we would argue, we have learned relatively little about optimal persons or conditions for eliciting a dream ESP effect. In this study we aimed to begin to address this shortcoming by considering the effects upon performance of participant attributes and target feedback.

In attempting to identify individual differences measures we took our inspiration from Honorton's (1997) review of predictors of success among novice participants in a series of ganzfeld ESP experiments. He highlighted four variables that discriminated between successful and unsuccessful participants, with better performance being associated with participants who reported prior psi experiences, had previously participated in formal testing (but not involving the ganzfeld), were classified as Feeling-Perceiving (FP) personality types on the Myers-Briggs Type Indicator (MBTI), and who practised a mental discipline such as meditation.

In this study participant attributes are measured using a Personal Information Form (PIF), which includes all aspects of Honorton's (1997) four-factor model, namely: reported personal psi experiences; Myers-Briggs Feeling/Perception type, as measured using the Keirsey Temperament Sorter (KTS: Keirsey, 1998), a variant of the MBTI; prior psi testing and involvement with mental disciplines. We will also consider common alternatives for components of the model: extraversion (as measured using the KTS) and paranormal belief (as measured within the PIF).

The introduction of a feedback condition within this study is an attempt to explore the issue of 'displacement' (see Carpenter, 1977; Palmer, 1986) in which the information generated by a participant during a given trial seems to correspond with one of that trial's alternative targets. It has been suggested previously (Soal & Bateman, 1954) that this may be due to the participant being precognitive of this item, in preference to the target item. In the feedback condition we will avoid this by allowing the participant to

view only the target item and attempt to direct their precognitive intention to it by providing them with positive feedback regarding any correspondences between this item and their dream mentation.

STUDY AIMS

To assess the effect of reinforcing target content through directed feedback on performance in a dream clairvoyance task, two conditions are compared in a randomised repeated-measures design: a standard 'judging' condition in which participants view four clips consisting of the target for their trial and three decoys, and use their dream diary material to identify which was the target; and a 'feedback' condition in which participants are only presented with the target and their task is to identify correspondences with their dream diary material. The dependent variable is the z-score for target similarity ratings as provided by a blind independent judge. We will also explore the correlation between this performance and scores on each aspect of a four-factor model identified by Honorton (1997).

METHOD

Participants

Forty participants will be recruited from a variety of sources including the undergraduate population, attendees at spiritualist churches and psychic fairs, and an established research database. Participants will sleep in their own homes and come to The University of Northampton to complete judging/feedback. Participants will not be selected on the basis of their gender or age. An individual will also be recruited to act as the independent judge.

Procedure

Once recruited, participants will be sent a PIF which they can either return by post ahead of their trial or bring with them on the day of judging. Participants will be sent a hard copy of a dream diary too. The dream diary contains instructions, information about confidentiality and contact information for the main researcher. It also informs them that the session takes place over three consecutive nights, consisting of a practice night and two trial nights and provides them with the dates for these nights.

For each of these nights participants should sleep at home, as normal. Upon awakening, either during the night or in the morning, they fill in the dream diary, writing down as much detail about their dreams as possible. Participants can include any associations between their waking lives and their dreams that they feel might be relevant to the trial. The practice night allows participants to become accustomed to this procedure. On trial nights a computer in the University of Northampton campus will randomly select and then repeatedly play a target video clip between 2:00am and 6:30am (different clips are selected for each of the trial nights). This procedure is automated such that no one knows the identity of the target clips until they are revealed after judging. The participant's task is to try and incorporate elements of the target material into their dreams.

Having completed all three nights, the participant travels to the University sometime during the day to complete the judging. They will be met by LF, who will engage in a brief discussion of the participant's experiences, followed by the participant reading out their dream diary content. Participants will then be taken to the judging computer where they will complete both the judging and the feedback conditions with the order randomised across participants; they will always use mentation from night 2 in the first condition they are presented with and mentation from night 3 in the second. In the judging condition they will be presented with four video clips (i.e. the target from that trial night and 3 decoys) and will rate each on a scale of 0-99 for similarity with their dream mentation. After the four clips have been rated, the target will be revealed. In the feedback condition the participant will view only one clip (i.e. the target for that trial night) and then discuss this with the experimenter to identify any correspondences between this clip and their dream mentation. The participant will not, after the clips are revealed, be allowed to amend any

information. After all data has been collected, an independent judge[1] will be employed to judge the trial night data from both nights 2 and 3 and will be blind as to the condition in which the participant used these.

PLANNED ANALYSES

Data collection is ongoing and is scheduled to be completed in July. We expect to be able to report on the results of planned analyses at the convention.

The main planned analyses will consider the following hypotheses

- Participant performance, in terms of z score of target rating, will be significantly higher than chance expectation for each experimental night.
- Participant performance in the feedback condition will be significantly better than that in the judging condition
- There will be significant correlations between participant performance and all aspects of Honorton's (1997) four-factor model, extraversion and paranormal belief.

REFERENCES

Carpenter, J. C. (1977). Intrasubject and subject-agent effects in ESP experiments. In B. B. Wolman (Ed.), *Handbook of parapsychology* (pp. 202-272). New York: Van Nostrand Reinhold company.

Holt, N., & Roe, C.A. (in press). The sender as a PK agent in ESP studies: The Effects of agent and target system lability upon performance at a novel PK task. *Journal of Parapsychology.*Spring 2006.

Honorton, C. (1997). The Ganzfeld novice: four predictors of initial ESP performance. *JP, 61,* 143-158.

Keirsey, D. (1998). *Please Understand Me II: Temperament Character Intelligence.* Del Mar, CA: Prometheus Nemesis Book Company.

Palmer, J. (1986) Statistical methods on ESP research. In H.L Edge, R.L. Morris, J. Palmer, & J. Rush. *Foundations of parapsychology* (pp.138-160). Boston: Routledge and Kegan Paul.

Rhine, L. E. (1962). Psychological processes in ESP experiences. Part I. Dreams. *JP, 27*, 172-199.

Roe, C.A., & Holt, N., (in press). The effects of strategy ('willing' versus absorption) and feedback (immediate versus delayed) on PK performance. *Journal of Parapsychology*, Spring 2006.

Sherwood, S. J., Dalton, K., Steinkamp, F., & Watt, C. (2000). Dream clairvoyance study II using dynamic video-clips: Investigation of consensus voting judging procedures and target emotionality. *Dreaming, 10,* 221-236.

Sherwood, S.J., & Roe, C.A. (2003). A review of dream ESP studies conducted since the Maimonides dream ESP programme. *Journal of Consciousness Studies, 10*, 85-109.

Soal, S.G. & Bateman, F. (1954). *Modern experiments in telepathy.* New Haven: Yale University Press.

Ullman, M., & Krippner, S., & Vaughan, A. (1973). *Dream telepathy: Experiments in nocturnal ESP.* Jefferson, NC: McFarland & Co.

[1] One referee queried our decision to work with just one independent judge. However, this has been our standard practice (see Holt & Roe, in press; Roe & Holt, in press), and no other experienced judge was available to us.

A REMOTE VIEWING PILOT STUDY USING A GANZFELD INDUCTION PROCEDURE

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INTRODUCTION

Remote viewing (RV) can be defined as 'The ability to perceive and to be able to describe what would be experienced if one were at some specified distant location' (after Hansel, 1989, p. 160), and although the method can vary in practice, experimental work typically involves a protocol in which the sender immerses themselves in the target material by being at, and attending to the features of, the remote location, and participating in activities that are appropriate to the site. From its inception at SRI as a means of testing for ESP with Ingo Swann and its first published formal testing with Pat Price (Targ & Puthoff, 1974, 2005), the method seems to have been remarkably successful; so much so that when Utts (1996) was asked to review the evidence accumulated under the SRI and SAIC programmes, she was moved to conclude: "Using the standards applied to any other area of science it is concluded that psychic functioning has been well established".

Some of the early work at SRI has been criticized (Marks & Kamman, 1980), particularly in identifying potential problems with the randomization and editing of transcripts which may have left cues to the order in which sites served as targets. These concerns have been addressed in later, successful replications (e.g., Schlitz & Gruber, 1980), which took great care to ensure that neither the order of target selection nor of the transcripts could be inferred from material they contained, but part of that solution involves either editing the transcripts, which itself can be grounds for criticism (e.g., Marks & Kamman, 1980, p. 16), or deferring feedback about target identities until the end of the series, which may be demotivating (see, e.g., Tart, 2007). Of course, these concerns only apply to studies in which the same participant serves as viewer for a number of trials in the series, and thus is potentially able to refer in their transcripts to earlier targets and later planned sessions. This would not be possible if one were to adopt a design in which a larger number of participants contributed just one trial each.

Militating against the use of a larger sample of participants is the difficulty in finding a sufficient number of able participants; for example, Utts (1996) estimated that only around 1% of those screened were suitable for RV work. This might be overcome if an induction procedure could be identified that facilitated the performance of novice participants. One such candidate that will be evaluated here is the ganzfeld induction procedure. Although the ganzfeld does not necessarily induce a hypnagogic state (Wackermann, Pütz, Büchi, Strauch & Lehmann, 2002), it does seem to share properties with other psi-conducive states that distinguish it from a 'standard' RV protocol, such as systematically reducing external sensory stimulation and directing the participants' attention to internal sources of information (Braud, 1978; Honorton, 1977; Parker, 1975). There is some evidence to suggest that novice participants may be able to succeed at a free response ESP task under laboratory conditions where it incorporates a ganzfeld-induced altered state of consciousness (e.g., Bem & Honorton, 1994; Dalton, 1997; Parker, 2000).

In this study novice participants served as remote viewers but underwent a ganzfeld induction procedure before attempting to describe a randomly-selected target site at which an agent was located. Our primary hypothesis was that an independent judge would be able to use the remote viewers' mentations to identify the target sites when presented alongside decoys to a degree that was significantly better than chance expectation, using sum of ranks as the pre-specified principal outcome measure.

METHOD

Participants

Fourteen pairs of participants were tested with one member of the pair acting as the remote viewer and the other as sender/agent. All pairs were friends and were known to SF. This number of trials was not pre-specified but does reflect completion of data collection by a predetermined date. No trials were aborted or otherwise omitted.

Materials

An array of eight target locations were selected that could be reached from the laboratory within five minutes on foot, but which were phenomenologically distinct along the following dimensions: indoor vs outdoor, noisy vs quiet, dynamic vs still. Example locations are illustrated in Figure 1.

Fig 1 Example target locations

Procedure

Fourteen pairs of participants were tested with one member of each pair acting as the remote viewer (R) and the other as sender/agent (S). R and S met together with the experimenter (E) and CR in a sound-attenuated laboratory. E discussed the nature of the study and answered any outstanding questions. While S was still present, R was prepared for ganzfeld stimulation by making themselves comfortable in an armchair, placing eyeshields over their eyes and putting on headphones over which white noise would be

played. Details of target locations, including a description of the site and instructions on how to reach it from the laboratory, were provided in eight identical sealed envelopes prepared by CR. S chose one of these as the target for that trial (i.e. selection with replacement), and was instructed to open this envelope once he or she had left the building and to proceed directly to the target site. Once the session was ready to commence, R began to listen via headphones to a set of relaxation instructions. Two stopwatches were started simultaneously, with one being given to S and one kept by E so that activities could be accurately coordinated. S left the sound attenuated room to visit the target site, and CR also left, taking all unselected envelopes back to his office. E remained in the laboratory with R throughout.

After 15 minutes had elapsed the relaxation tape ended to be replaced with white noise and a reminder for the participant to verbalise any impressions they experienced, so that the experimenter could generate a written record of their mentation. The ganzfeld session lasted for 25 minutes, after which S returned to identify the target site and discuss correspondences. No judging was undertaken by the remote viewers themselves. A copy of all mentation sheets were lodged with CR on completion of each trial.

After fourteen trials had been completed copies of all the mentations were forwarded to a blind judge along with descriptions of each of the eight locations in the target pool. For each mentation the eight target locations were ranked in terms of similarity, with the most similar being ranked '1' and least '8'.

RESULTS AND DISCUSSION

The ranks given to the actual target location on each of the 14 trials is described in Table 1. In terms of first place ranks for targets, the direct hit rate here is 28%, which is higher than MCE of 12.5%, but not significantly so, $z = 1.41$. A binary hit rate can be computed by treating all rank positions from 1-4 as a 'hit' and ranks 5-8 as a 'miss'. On this measure, 12 of the 14 trials were hits, which is significantly above chance expectation, $z = 2.40$, $p < .02$, 2-tailed. However, our primary outcome measure was to consider the weighted sum of ranks, where more credit is given for higher ranks to give a more sensitive measure, the observed value of 42 is highly significant, $p = .008$ (Milton & Stevens, 1997), suggesting that participants' mentations were significantly more similar to actual target locations than to decoy sites. As such, this study might be considered to be a successful replication of earlier work (Schlitz & Gruber, 1980; Utts, 1996).

TABLE 1
MEAN SCORES AND STANDARD DEVIATIONS OF PARANORMAL BELIEF, CONTROL OF LIFE EVENTS, LIKELIHOOD OF LIFE EVENTS AND TRAIT ANXIETY

Rank	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***
Frequency	4	3	1	4	1	0	0	1
Percentage	28.6	21.4	7.1	28.6	7.1	0	0	7.1

However, we did have a concern that it might be possible for preferential biases for certain sites during judging to artifactually inflate hit rates if it happened to coincide with target selections (after Hyman, 1994) — with so few trials it was not possible to ensure that all the alternative locations were selected as target even approximately equally often (MCE here is for each site to be selected 1.75 times). Indeed, actual target selection was not evenly distributed across the 8 sites, with two locations each having been the target on 4 of the 14 trials whereas two other locations were never chosen as target.

We attempted to measure the impact of any preferential bias by calculating the mean rank for locations on trials for which it was *not* the target, and correlating this against the number of times a site was selected as target, and this gives a highly significant *rho* = -.83, $p = .01$, suggesting that these biases are associated

and so may have contributed to the above-chance performance here. However, for sites that were selected as target at least once the mean rank awarded when serving as the target is 2.9 whereas the mean rank when not the target is lower at 4.3, suggesting that high ranking is not simply a matter of personal preference, although given the low power of this comparison (N = 6) this difference is not significant, Wilcoxon W = 3.

The results will be further explored during the presentation, in particular with respect to qualitative data, and some attempt will be made to account for the outcome in terms of location factors.

REFERENCES

Bem, D. J. & Honorton, C. (1994). Does psi exist? *Psychological Bulletin*, *115*, 4-18.

Braud, W.G. (1978). Psi-conducive conditions: Explorations and interpretations. In B. Shapin & L. Coly (Eds.) Psi and states of awareness: *Proceedings of the 26th annual conference of the Parapsychology Foundation*. (pp. 1-41.) New York: Parapsychology Foundation.

Dalton, K. (1997). Exploring the links: Creativity and psi in the ganzfeld. *Proceedings of presented papers: Parapsychological Association 40th annual convention.* (pp. 119-134)

Hansel, C.E.M. (1989). *The search for psychic power*: *ESP & parapsychology revisited*. Buffalo, NY: Prometheus Books.

Honorton, C. (1977). Psi and internal attention states. In B. B. Wolman (Ed.), *Handbook of parapsychology* (pp. 435-472). New York: Van Nostrand Reinhold.

Hyman, R. (1994). Anomaly or artifact? *Psychological Bulletin*, *115*, 19-24.

Marks, D., & Kamman, R. (1980). *The psychology of the psychic*. Buffalo, NY: Prometheus books.

Milton, J. & Stevens, P. (1997). An extended table and computer program for exact sum of ranks probabilities. *Proceedings of presented papers: Parapsychological Association 40th annual convention.* (pp. 240-262.)

Parker, A. (1975). States of mind: ESP and altered states of consciousness. London: Malaby Press.

Parker, A. (2000). A review of the ganzfeld work at Gothenburg University. *Journal of the Society for Psychical Research*, *64*, 1-15.

Targ, R., & Puthoff, H. (1974). Information transmission under conditions of sensory shielding. *Nature*, *252*, 602-607.

Targ, R., & Puthoff, H. E. (2005). Mind reach: Scientists look at psychic abilities. Charlottesville, VA: Hampton Roads.

Tart, C.T. (2007). Letter to the Editor. *Journal of the Society for Psychical Research*, *71*,

Schlitz, M., & Gruber, E. (1980). Transcontinental remote viewing. Journal of Parapsychology, 44, 305-317.

Utts, J. (1996). An assessment of the evidence for psychic functioning. *Journal of Scientific Exploration, 10*, 3-30.

Utts, J., & May, E. (2003). Non-sensory access to information: Remote viewing. In W. B. Jonas & C. C. Crawford (Eds.), *Healing, intention and energy medicine: Science, research methods and clinical implications* (pp. 59-73). Edinburgh: Churchill Livingstone.

Wackermann, J., Pütz, P., Büchi, S., Strauch, I., & Lehmann, D. (2002). Brain electrical activity and subjective experience during altered states of consciousness: Ganzfeld and hypnagogic states. *International Journal of Psychophysiology*, *46*, 123-146.

THE PSYCHOLOGY AND PHENOMENOLOGY OF MEDIUMSHIP: AN EXPLORATORY SURVEY

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INTRODUCTION

It is claimed that mediumship produces evidence of survival after death (Roll, 1960), which implies that information is received by some unknown means from a deceased person. Previous investigations into mediumship have tended to focus on a proof-orientated approach, which have either tried to provide evidence for the existence of post-mortem communications (e.g., Robertson & Roy, 2001; Schwartz, Geoffrion, Jain, Lewis, & Russek, 2003), or have tested alleged mediumship abilities (e.g., O'Keefe & Wiseman, 2005). This approach ignores important features of mediumship, such as the subjective meanings attributed by mediums for their claimed abilities. Rather than test whether communicating personalities derive from a discarnate source or are a product of the medium's mind, the approach taken in this research is more process-orientated: The experiences of mediums and their insights into the mediumship process will be explored.

There are several studies in the recent literature that have attempted to investigate mediumship from the psychological perspective, to see if there are any necessary or sufficient attributes that appear to define a medium, including: a questionnaire and personality study of 50 British psychics and mediums (Hearne, 1989); an interview and personality study of seven disciples of the channelled entity "Ramtha" in the United States (Krippner, Wickramasekera, Wickramasekera, & Winstead, 1998); a case study to explore mediumship from the psychodynamic perspective (De Carvalho & Do Amaral, 1994); and the interface between mediumship and "multiple personality disorder" (e.g., Hughes, 1992). A study which has partly inspired the current research, is a pilot survey of mediums conducted by Reinsel (2003). Reinsel tested the idea that mediumship is analogous to dissociative identity disorder (DID)[1] by asking whether mediums score within the normal range on personality measures, or show signs of psychopathology. Both Mediums and Sensitives scored significantly higher than Controls on depersonalisation ($p<.05$ for both groups) and absorption (Mediums: $p=.002$, Sensitives: $p=.047$). Only the Mediums scored higher than Controls on (CPES) Persinger's complex partial epilepsy signs ($p=.024$). Mental health did not differ between the three groups, although a slight trend was detected for higher scores in mediums on the Mental Health Inventory (MHI-17), which suggested better mental health for mediums.

Research on mediumship within the field of anthropology has been extensive, and studies exploring spirit possession mediumship and dissociative experiences in Brazilian and Cuban mediums have identified potential characteristics that seem prominent in the profiles of mediums (Laria, 2000; Moreira-Almeida, Neto, & Greyson, 2006; Seligman, 2005). One interesting concept that has intrigued cross-cultural psychologists is whether mediumship is associated with mental well-being or pathology, which has inspired researchers to ask whether the mediumship role is functional, or if mediums differ in psychological adjustment? In an unpublished dissertation, Laria (2000) pointed out that "normal" dissociation is usually associated with low levels of intensity and frequency, and pathological or clinical dissociation is associated with high levels of intensity and frequency. However, his results showed that Cuban Spiritist mediums reported high levels of normal dissociative experiences and lower levels of psychopathology than individuals with mental health problems.

[1] A psychiatric diagnosis given to individuals who supposedly have two or more identities or personalities that have their own way of interacting and perceiving (DSM-IV, 1994, American Psychiatric Association)

METHOD

Materials

The survey package includes; a cover letter, which contains a brief introduction to the research, information on ethical issues, and details of how to complete the survey; a pre-paid return envelope; a separate envelope to place personal details in; contact details of the researcher and a questionnaire consisting of two parts: a) Mediumship Activity Questionnaire b) Five psychological measures

Instruments

Mediumship Activity Questionnaire. A self-designed questionnaire to explore mediums' experiences and what they think is involved in mediumship. The questionnaire has 14 items and includes sections on life history and background, the process and nature of mediumship and the content of mediumship readings. Examples of questions are: "How did you first discover you had the ability to be a medium?"; and "Are there any procedures, rituals or mental actions you follow in order to receive spirit communications?".

Dissociative Experiences Scale (DES) (Carlson & Putman, 1993). A 28-item standardised measure of dissociation, which can distinguish between pathological and non-pathological dissociation.

Boundary Questionnaire (BQ-18), short-form (Kunzendorf, Hartmann, Cohen, & Cutler, 1997). The original Boundary Questionnaire has 138-items, which are divided into 12 categories (Hartman, 1991). Kunzendorf et al (1997) developed a shorter version of the BQ with 18-items, by selecting those items from each of the twelve subscales showing the highest correlations with the full 138-item Boundary Questionnaire.

Mental Health Inventory (MHI-17) (Stewart, Ware, Sherbourne, & Wells, 1992). A 17-item scale, which produces overall scores for psychological well-being (happiness, emotional ties) and psychological distress (anxiety, depression, loss of behavioural or emotional control).

Big Five Inventory (BFI) (John, Donahue, & Kentle, 1991). A 44-item questionnaire, which measures the five personality traits of Openness, Conscientious, Extraversion, Agreeableness, and Neuroticism. The BFI has demonstrated good reliability and convergent validity with other Big Five measures, such as the NEO Personality Inventory (Costa & McCrae, 1985).

Creative Experiences Scale (Merckelbach, Horselenberg, & Muris, 2001). A brief measure of fantasy proneness, which contains 25-items, to which the respondent answers "Yes" or "No". An example of a question is: "Sometimes I act as if I am somebody else and I completely identify myself with that role".

Participants

There will be two sample groups: practising spiritualist mediums and a comparison group of non-medium spiritualists. Approximately 230 spiritualist mediums who have won awards for mediumship demonstration from the Spiritualist National Union (SNU) will be included in the survey. An additional 500 individuals who attend spiritualist churches, but do not consider themselves mediums will be given the survey package.

Procedure

Observations were initially made of mediumship demonstrations at a local spiritualist church and participation was gained on a week-long residential training course held at the Arthur Findlay College entitled: "Mediumship, Spirit Awareness and Developing Your Potential". Attendance at an informal awareness group intended for the development of psychic and mediumship ability is also ongoing. These

exploratory experiences contributed to the design of a mediumship activity questionnaire to be included in the research and will also aid in the production of an interview schedule for a later study.

The survey pack was piloted with three spiritualist mediums to assess whether any of the questions or instructions were ambiguous, unclear or offensive. Following this, 1000 packs were produced to use in the survey. Names and addresses of approximately 230 mediums who have gained awards for demonstrating their mediumship at spiritualist churches within 14 districts in England, Scotland and Wales are available in the public domain and are obtainable via the SNU website. These mediums will be sent a survey pack with a pre-paid return envelope for the completed survey. A separate envelope will be included in the pack for mediums to include their personal details, in case they would like feedback on the study and/or would like to take part in an in-depth interview for a later study.

A random selection of churches will be contacted from each of the 14 SNU geographical districts in England, Scotland and Wales. These churches will be visited in person so that the research can be explained to the Church President and survey packs can be left in the church for potential non-medium spiritualists to take and complete. This will include church members and/or individuals who have come to see a mediumship demonstration. An advantage to visiting the Churches in person is that concerns about the research can be clarified, and it ensures packs are left for distribution.

PLANNED ANALYSIS

Data analysis methods are yet to be formalised. However, I shall investigate whether mediums and non-mediums differ on the psychological measures. More advance methods are likely to include a cluster analysis or logistic regression. Analysis of information from the mediumship activity questionnaire will involve a thematic analysis. An Interpretative Phenomenological Approach (IPA; Smith, 1996) will be taken to analyse information gained in a second study involving interviews with mediums.

REFERENCES

Carlson, E. B., & Putman, F. W. (1993). An update on the Dissociative Experiences Scale. *Dissociation, 6*, 16-27.

Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Odessa, FL: Psychological Assessment Resources.

De Carvalho, A. P., & Do Amaral, C. E. G. (1994). Mediumship, psychodynamics and ESP: the case of Cristina. *Journal of the Society for Psychical Research, 60*, 29-37.

Hartman, E. (1991). *Boundaries in the Mind*. New York: Basic Books.

Hearne, K. M. T. (1989). A questionnaire and personality study of self-styled psychics and mediums. *Journal of the Society for Psychical Research, 55*, 404-411.

Hughes, D. J. (1992). Differences between trance channeling and multiple personality disorder on structured interview. *The Journal of Transpersonal Psychology, 24*(2), 181-192.

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The Big Five Inventory-Versions 4a and 54*. Berkeley: University of California, Berkeley, Institute of Personality and Social Research.

Krippner, S., Wickramasekera, I., Wickramasekera, J., & Winstead, I., C.W. (1998). The Ramtha phenomenon: Psychological, phenomenological, and geomagnetic data. *The Journal of the American Society for Psychical Research, 92*, 1-24.

Kunzendorf, R. G., Hartmann, E., Cohen, R., & Cutler, J. (1997). Bizarreness of the dreams and daydreams reported by individuals with thin and thick boundaries. *Dreaming, 7*(4), 265-271.

Laria, A. J. (2000). *Dissociative experiences among Cuban mental health patients and spiritist mediums.* University of Massachusetts, Boston, US.

Merckelbach, H., Horselenberg, R., & Muris, P. (2001). The Creative Experiences Questionnaire (CEQ): a brief self-report measure of fantasy proneness. *Personality and Individual Differences, 31*, 987-995.

Moreira-Almeida, A., Neto, F. L., & Greyson, B. (2006). Dissociative and psychotic experiences in Brazilian Spiritist Mediums. *Psychotherapy and Psychosomatics*.

O'Keefe, C., & Wiseman, R. (2005). Testing alleged mediumship: Methods and Results. *British Journal of Psychology, 96*(2), 165-179.

Reinsel, R. (2003). *Dissociation and mental health in mediums and sensitives: A pilot survey.* Paper presented at the Parapsychology Association Convention.

Robertson, T. J., & Roy, A. E. (2001). A preliminary study of the acceptance by non-recipients of mediums' statements to recipients. *Journal of the Society for Psychical Research, 65*(863), 91-106.

Roll, W. G. (1960). The contribution of studies of mediumship to research on survival after death. *Journal of Parapsychology, 24*, 258-270.

Schwartz, G. E., Geoffrion, S., Jain, S., Lewis, S., & Russek, L. G. (2003). Evidence of anomalous information retrieval between two mediums: Replication in a double-blind design. *Journal of the Society for Psychical Research, 67*(871), 115-130.

Seligman, R. (2005). Distress, dissociation, and embodied experience: Reconsidering the pathways to mediumship and mental health. *Ethos, 33*(1), 71-100.

Smith, J. A. (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health, 11*(2), 261-271.

Stewart, A. L., Ware, J. E., Jr., Sherbourne, C. D., & Wells, K. B. (1992). Psychological distress/ well-being and cognitive functioning measures. In A. L. Stewart & J. E. Ware, Jr. (Eds.), *Measuring functioning and well-being: The Medical Outcomes Study approach*. Durham, NC and London: Duke University Press.

POSSESSION TRANCE AND SUICIDE IN A COLOMBIAN TRIBE

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INTRODUCTION

Between June 12 and 19, 2005, the film production team for "Unknown Factor," a Discovery Channel documentary for its Latin America network, visited the Embera tribe to collect information about supposed "possession trance" episodes and suicides among the youth of that community. DSM-IV describes "possession trance" (PT) as "the replacement of a customary sense of personal identity by a new identity, ascribed to the influence of a spirit, power or deity, and associated with stereotyped involuntary movements and amnesia" (APA, 2000, p. 532). Possession trance is classified inside the category of "dissociative disorder not otherwise specified (NOS)." Other authors have developed similar descriptions of this phenomenon (e.g., Bourguignon, 1976; Cardeña, 1992), assuming that it has a psychological origin.

The objective of this research was to gather data to determine if some other possible disorder exists that could provide an explanation of the symptoms displayed in the Embera tribe that would lead to additional information related to suicidal behavior.

The Community

Embera Union is a community of 350 people located in the northwest frontier of Colombia, near the Panama border. Since 2001, 28 suicides and 26 possession trance (PT) episodes have affected young persons in the village, especially women between the ages of 11 and 23 years. These events were painful and concerned the entire community. Until 2000, the Emberas had no history of suicide in their community, nor even an Embera word to describe it or any references to it in the legends of the community.

Many of the villagers believed that the spirits of the deceased were taking possession of the young people, inviting them to death by throwing themselves into rivers or over precipices or simply kneeling down, tying a rope around their necks, and strangling themselves. For several weeks prior to the suicides, surviving victims reported feeling a strange force; they became aggressive, insulting the community's wise persons, and changed their voices and suffered amnesia. They also entered into a state of melancholy and became passive. They felt themselves vulnerable, which was the time that they felt that the spirits impelled them to commit suicide.

The community requested the services of Atensio Salazar, a spiritual guide or *Jaibana* (a word that comes from the expression "jai," meaning "spirit"). Salazar told the villagers that "they are not killing themselves; those deaths do not originate from their own will. Bad spirits introduce themselves inside these weak and sad people, and they hang themselves. It originates with people who have been killed during war and who haven't been buried" (translated from Spanish). The war that Salazar referred to was a battle between the Colombian army and guerilla groups in December 2001, after which the villagers found bodies of 30 paramilitary troops hanging in trees and many other corpses near the river.

METHOD

The methods of gathering data to support the initial hypothesis that the disorder was PT rather than a pathology of organic origin consisted of testing fecal samples from pigs, interviewing survivors and their parents, making a community census, and performing a genetic analysis of community members.

Fecal Samples from Pigs

Fecal samples from 7 pigs were analyzed. The community had many sanitary risks that made possible the existence of neurocysticercosis, which is the encystment of larvae or eggs of the *tenia solium* in cerebral tissue. Infestation is acquired by egg ingestion, generally via fecal contamination of food. Infected people present seizures, intracranial hypertension and meningitis (Del Brutto, 1992). Neurocysticercosis is the most common cause of acquired epilepsy worldwide (Fayaca & Ibañez, 2002), and it is one of the major conditions that differentiates psychogenic non-epileptic seizures (PNES) from epileptic seizures (ES).

Interviews of Survivors and Their Parents

Qualitative data were obtained through observation of the community and a semi-structured diagnostic interview of 7 surviving girls, their parents and the community's spiritual leader (Atensio Salazar).

Community Census

The sample of 308 people consisted of 48.4% men and 51.6% women, including 26 people affected by symptoms of PT; the average age was 18. There were 113 children under age 10, 81 normal men, 88 normal women, 4 men with PT and 22 women with PT. Supplementary data about diseases, nutrition and the history of village were also collected.

Genetic Analysis

Repetition of surnames in the community indicated that there are many consanguineous links, thus increasing the probability of homozygosis and consequent appearance of anomalies with a recessive autosomic genetic base. Among the most extensive lineages, endogamy is quite feasible. The Salazar lineage, for example, includes 77 members in the community, or 25% of the village. A genetic analysis was done in search of anomalies that could explain some of characteristic episodes.

When an individual characteristic manifests in two ways within the population, it may correspond to a simple genetically based phenotype. To evaluate this possibility, we can estimate the probability that subjects belonging to family w have phenotype p, and that x have phenotype q. The order of birth is inconsequential. so (s! /w! x!) $p^w q^x$ (Neel & Schull, 1954). Following these parameters, we can estimate expected phenotypic frequencies in a sample of families and statistically evaluate the distance or difference between the empirical sample and a theoretical sample. In all these calculations, we used the computer program Simple Segregation Analysis, implemented with Microsoft Quick BASIC4.5 language. A segregation analysis was applied to data of 5 nuclear families, where there was at least one case of PT in any one of their modalities.

RESULTS

Segregation Analysis

The 5 families, selected because they had the presence of the symptoms in at least one individual, included 12 young people expressing symptoms of PT.

If we hypothesize a recessive autosomic genetic pattern, expected frequencies are 6 children with disturbances and 6 normal. With an assumption of a recessive autosomic genetic pattern, the differences in observed frequencies in the selected families were not statistically relevant (X=1,355; df=1). When the supposition is dominance, the expected frequency is 7 children with disturbances and 5 normal, and the differences in observed frequencies among the selected families were statistically relevant (X=4,082;df=1). Further, data from families Nº 29th and 59th are incompatible with a dominant gene distribution model (Figure 1). Thus, the result fits well with an autonomic recessive heritage model. Perhaps some of the symptoms were due to a genetic origin but, because it is a small sample, we could not accept the segregation analysis results as definitive.

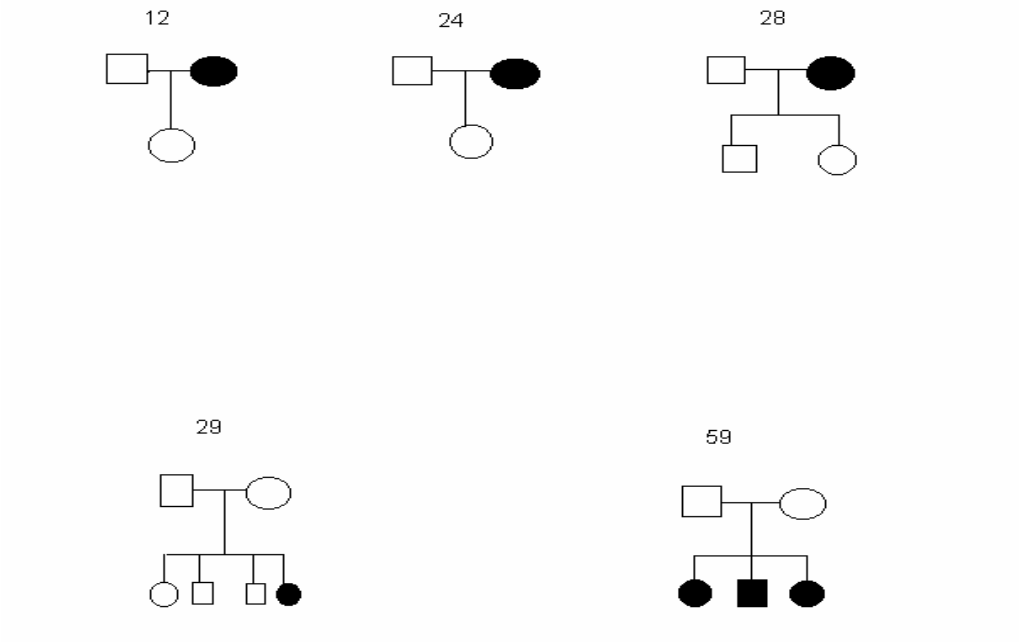

Fig 1. Analyzed families genogram. (In boldface, people suffering PT). Probabilities of such a pedigree's being associated with a dominant gene or a recessive gene disease are 4.3% and 24.4%, respectively.

Symptom Comparison Between Men and Women

Table 1 compares the frequency of PT in young men and women. For significance at the .05 level, the chi-square should be higher than or equal to 3.84. It is significant, so there is adequate evidence to say that PT is not independent from sex.

DISCUSSION

Physiological or Psychological Symptoms?

The PT cases in the Embera tribe appeared to have been related to genotype and sex. Women presented symptoms at rates 5 times higher than that of men, although there was no linkage to sex (inheritance of

chromosome X), since there are families with healthy parents who have children with this disturbance. A recent review of research on gender and psychogenic non-epileptic seizures concluded that the female to male ratio in PNES is about 4:1 (Gales & Rowan, 2000, pp 111, cited in Litwin & Cardeña, 2000). The much higher preponderance of women among PNES patients in our sample replicates previous studies about the relationship between gender and PNES. Women in the general population present much higher levels of somatoform disorders and a greater probability of developing post-traumatic stress disorder after traumatic events. The increased probability of somatoform disorders and dissociation in women might be partly explained by the greater rate of sexual abuse of women than of men (Litwin & Cardeña, 2000). It also must be mentioned that in some reports (see Litwin & Cardeña, op cit), PNES patients had a significantly later mean age of seizure onset (thirties for PNES, twenties for ES), fewer years of recurrent seizures, and more seizures per week (in PNES patients). The previous findings were reported in North American samples (Litwin & Cardeña, op cit). However, the same authors points out that there could be differences in the onset and characteristics of seizures across cultures.

TABLE 1
SYMPTOMS AS A FUNCTION OF SEX

	No PT	PT	
Men	**81** [73.7]	**4** [11.3]	**85**
Women	**88** [95.3]	**22** [14.7]	**110**
Total	**169**	**26**	**195**

Note: Observed frequencies are in boldface and expected frequencies are in brackets. Degrees of freedom: 1. Chi-square = 9.62.

Results are unfavorable for the neurocysticercosis hypothesis. Laboratory analysis was negative for the presence of tenia proglottis or larvae of strongyloides.

It is possible that the villagers' tales about PT misinterpreted Tourette's syndrome (characterized by presence of multiple physical and vocal tics) as a possession, although Tourette's syndrome has an autosomal dominant genetic trait and is four times as likely to occur in men as women.

Temporal lobe epilepsy and/or catamenial epilepsy (seizure exacerbation in relation to menstrual cycle, related with temporal lobe disorders) could be the underlying disease; however, results obtained in the interview and our film record of PT in girls aims at PNES. PNES are paroxysmal changes in behavior that resemble epileptic seizures but are without organic cause. PNES symptoms include unresponsive staring, minor motor movements, bizarre behavior, and generalized movements. They are psychological in origin. (Bowman & Cons, 2000).

We ruled out paranoid subtype schizophrenia, which has its onset at 25-40 years, and catatonic subtype schizophrenia, which has its onset in women in their 20s to early 30s. We did not find evidence supporting other differential diagnoses, like Sydenham's chorea, Wilson disease, Venezuelan Equine Encephalitis and Lyme disease.

There was some evidence that data we received concerning the seizures and suicides were adjusted to the initial hypothesis of PT. The relationship between auto destructive behavior and suicides with syndromes of PT has also been reported in investigations of cultures in Southeast Asia (Lewis-Fernandez, 1994). Those who reported experiences related to PT were often oppressed women with few options to protest who win social support and find a way to prosecute their demands through PT (Lewis-Fernandez, 1994). While there was no sign of neurological illness that could explain the symptoms, theories related to some subjacent hereditary illness could not be discarded because of the results of genetic analysis.

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REFERENCES

American Psychiatric Association Committee. (2000). *Diagnostic and statistical manual: DSM-IV-TR* (4th Ed). Washington, D.C: American Psychiatric Association.

Aminoff, M, Greenberg, D, and Simon, R. (2005). *Clinical Neurology* (6th Ed.). Norwalk, CT. Lange Publishers.

Bourguignon, E. (1976). *Possession*. San Francisco: Chandler & Sharp.

Bowman, E., & Coons, P. (2000). The different diagnosis of epilepsy, pseudoseizures, dissociative identity disorder and dissociative disorder not otherwise specified. *Bulletin of the Menninger Clinic* 64, 164-180.

Cardeña, E. (1992). Trance and possession as dissociative disorders. *Transcultural Psychiatric Research Review, 29*, 283-297.

Del Bruto, O., Santibáñez, R., Noboa, C., Aguirre, R., Díaz, E. and Alarcón, T. (1992). Epilepsy due to neurocysticercosis: Analysis of 203 patients. *Neurology, 42,389*-392.

Foyaca S., Ibañez, V. (2002). Clinical trial of praziquantel and prednisone in rural patients with neurocysticercosis presenting recurrent epileptic attacks. The Internet Journal of Neurology, 1(2), 1-12.

Lewis-Fernandez, R. (1994). Culture and dissociation: A comparison of nervous attacks among Puerto Ricans and possession syndrome in India. In D. Spiegel (Ed.), *Dissociation: Culture, mind and body* (pp.123-170). Washington, DC: American Psychiatric Press.

Litwin, R., & Cardeña, E. (2000). Demographic and seizure variables, but not hypnotizability or dissociation, differentiated psychogenic from organic seizures. Journal of Trauma and Dissociation, 1, 99-122.

Neel, J.V. and Schull, W.J. (1954). *Human heredity*. Chicago: The University of Chicago Press.

GENETIC ANALYSIS OF PSI EXPERIENCES

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INTRODUCTION

The parapsychological literature reports few studies about the possible relationship between genotype and spontaneous psi experiences, in spite of the fact that it has been widely demonstrated that genes are a contributing factor to the variability of behavior and psychopathology, as well as to personality and cognitive capacities (e.g. Plomin et al, 1980; Strickberger, 1976). In recent research, Cohn (1999) explored the genetics of subjective psi experiences. She found second sight (a psychic ability that has for centuries been accepted as real in Scotland and other countries) to be hereditary. The assessment was based upon questionnaire and interview material. Specifically, a person was labeled as having second sight if they reported any experiences falling into certain categories, such as having visions of a funeral procession or death shroud; having visions of a person shortly before, at the moment of, or after death; or having visions of a person not recognized but later met or precognitive visions which involve sound, light, scent or physical sensation (Cohn, 1999 pp 355). In her sample of 130 families from Scotland, second sight may have been associated with a dominant autosomal gene, particularly if the family was small; this means the behavior was related to the inheritance of at least one of the two genes that always manifest in the behavioral phenotype (i.e. second sight). Nevertheless, Cohn also had some families where second sight seemed to be associated with a recessive autosomal gene, which implies that there must be two identical alleles in the genotype, one from the mother and one from the father, for the second sight to be realized. This hypothesis of the relation between genes and psi is not new. Authors such as Randall (1975) and Levin (1996) have argued both for and against the relevance of genetics to psi phenomena. On the other hand, Johnson (1982) and Lepes (1992, 1994) have tried to demonstrate this relationship empirically, though without clear results.

The aim of our research is to study the possible relationship between spontaneous psi experiences and related people's genotypes. In order to achieve this goal we have chosen the segregation analysis technique for nuclear family data (Neel and Schull, 1954). This is a probabilistic method that tests whether an observed family pattern of phenotypes is compatible with an explicit model of inheritance such as dominant autosomal, recessive autosomal, or other. It also provides a statistical test to evaluate the hypothesis of a specific pattern of inheritance for a trait.

If we find an autosomal dominant gene associated trait, we would expect that persons who report psi *must* have at least one parent with the same trait and *may* have descendant (daughters or sons) with psi experiences. On the other hand, if we find an autosomal recessive inheritance pattern, it is possible that a father and mother without any observable psi might produce offspring who do have observable psi experiences. If both parents experience psi so will all their children, because the family doesn't have the dominant gene that makes psi impossible.

METHOD

Participants

A survey was conducted on 41 nuclear families (consisting of father, mother and children), living at "Villa Los Presidentes", in the neighborhood of Macul, Santiago de Chile. Data were collected by means of systematic, partly random sampling. The blocks in the Villa were chosen randomly, based on a map. Within each randomly selected block, all families were systematically interviewed. However, not all of them met the requirement of being a nuclear family. Twenty percent of the data came from families living

in other, similar neighborhoods of the city. All of the participants were from middle-class families. All family members responded individually to the questionnaire.

Materials

Respondents completed a questionnaire about psi experiences and other relevant issues. The questionnaire contained 16 items, 12 of which are relevant for the present research. There were three demographic items about age, education, and occupation. The questionnaire (with yes/ no categories) included one family-ties item (blood relation with the rest of the family members), four psi items (telepathy, clairvoyance, contact with dead, and premonition), and three religious items (belief in god, mystical experience, and adherence to some organized cult). The psi items were those used by Haraldsson and Houtkooper (1991) in their multinational analysis of psi experiences.

Procedure

The authors and four volunteer surveyors went to the houses of the participants and tried to convince them to respond to a short questionnaire. Only some of these met the requirement of being nuclear families. All the family members were old enough to respond verbally or in writing to our questionnaire. All of them were interviewed in their houses on weekends in fall 2003-spring 2004. Sometimes some family members were absent. In these cases we went again in an effort to obtain complete data for all family members. However, in some cases, we never could get data from the entire family (see Results).

Analysis

Correlations. Pearson correlations were calculated between all pairs of variables from the questionnaire, using Microsoft Excel. Although the majority of these variables are of two or more categories, it is possible to demonstrate that the binomial, multinomial and the Pearson statistics lead to the same results, so Pearson's coefficient is a good preliminary tool (Mode, 1967).

Segregation. The Mendelian model of inheritance predicts the probabilities of the offspring having certain genotypes and phenotypes, given the genotypes of the parents. Segregation analysis involves comparing the expected theoretical probabilities with the real frequencies of the descendants with and without the trait. When an individual characteristic manifests in two ways within the population, it may correspond to a simple genetic based phenotype (a pair of genes with dominance – recessiveness). Some of the psi variables studied might coincide with this autosomal Mendelian model. To evaluate this possibility, we estimated the probability that s participants belonging to family w have the phenotype p, and that x participants have the phenotype q: $(s! / w! x!) p^w q^x$ (Neel and Schull, 1954). According to these parameters, we can estimate the expected phenotypic frequencies in a sample of families and afterwards evaluate statistically the distance, or difference, between the empirical sample and a theoretical sample. In all these calculations we used the computer program Simple Segregation Analysis (SSA), implemented with MS QuickBASIC 4.5 and double precision arithmetic (Mora, 1994).

RESULTS

Sample

The questionnaire was given to 230 people, only 171 of whom were members of 41 nuclear families and thus suitable for genetic analysis. Fifty-three percent of the participants were male ($N = 91$) and 47% were female ($N = 80$). The age range was from seven to 77 years (*Mean* = 36.5; *SD* = 18.7). Regarding levels of education, 13% ($N = 23$) reported elementary level, 87% ($N = 149$) secondary level, and 41% ($N = 71$) higher levels. Responses to the question about religion showed 82% ($N = 140$) claimed to have some specific religious belief. Within this group, 91% considered themselves catholic, 7% protestant, and 2% other religions.

The analysis showed that 80% (N = 136) answered affirmatively one or more of the items about psi experiences. Table 1 shows the Pearson's correlations among the variables.

TABLE 1
PEARSON'S CORRELATIONS BETWEEN DEMOGRAPHIC (D), GENETIC (G) AND PSI (P) VARIABLES

	Sex	Age	Stud	Occu	FT	Telep	Clair	Dead	Premo
	D	**D**	**D**	**D**	**G**	**P**	**P**	**P**	**P**
Sex	1.0	-.031	-.126	**-.257*****	**.235****	**.233****	.148	**.174***	**.182***
Age		1.0	**.212****	**.315*****	**-.689*****	**.242****	.147	.104	.060
Stud			1.0	**.786*****	-.111	.108	-.076	-.007	.074
Occu				1.0	**-.252*****	.093	-.088	-.028	.066
FT					1.0	-.050	-.019	.005	.032
Telep						1.0	**.482*****	**.324*****	**.305*****
Clair							1.0	**.308*****	**.208****
Dead								1.0	**.313*****
Premo									1.0

* $p < .05$ **$p < .01$ ***$p < .001$

Stud: Studies; Occu: Occupation
FT: Family Ties; Telep: Telepathy
Clair: Clairvoyance; Dead: Contact with dead
Premo: Premonition.

All the psi variables intercorrelated positively. Telepathy showed the highest correlations with the other psi variables. Contact with the dead and premonition were more frequent in women than in men. Telepathy also correlated positively with age.

Segregation Analysis

Having ordered the data according to the blood relationships among the participants, we analysed separately the variables indicated in Table 2. As a control, the same analysis was applied to *age* and to *affiliation with a religious cult*, which obviously would not have a genetic determination, so the analysis will contradict the model.

When we calculate the X^2 distance (which approximates to the χ^2 distance; V. Steel and Torrie, 1980) between observed and expected frequencies according to the autosomal mendelian model and the Hardy-Weinberg-Castle theorem (Neel and Schull, 1954), all the psi variables show a large deviation from the model when expression of a dominant gene is assumed.

TABLE 2
PHENOTYPIC FREQUENCIES AND X^2 DISTANCES

Variable	A	B	C	X^2_D	X^2_R
Clairvoyance	16	31	19	10.525***	0.519
Contact with dead	51	60	46	3.990*	0.998
Premonition	49	60	46	6.686**	0.381
Telepathy	32	50	31	14.513***	0.062
Affiliation to a Religious cult	69	72	70	0.809	0.058
Age	9	65	36	175..922***	33.877***

* $p < .05$ ** $p < .01$ *** $p < .001$

A: Observed phenotypic frequencies (in the offspring).
B: Expected phenotypic frequencies according to dominance hypothesis.
C: Expected phenotypic frequencies according to recessiveness hypothesis.
X^2_D: dominance's distance; X^2_R: recessiveness' distance.

In contrast, nonsignificant distances between the expected phenotypic frequencies and actual phenotypic frequencies of the sample were observed when recessive gene models were assumed. This means that the expected theoretical psi frequencies (clairvoyance, contact with dead, premonition and telepathy) are very similar to those from the sample of families.

As we expected, the results for the control variables of *age* and *affiliation with a religious cult* contradict the segregation analysis assumptions of dominance or recessiveness. For *age*, the results differed greatly from both models. For *affiliation with a religious cult*, both results showed a small difference from both models. Considering that the two models predict completely different patterns than those obtained, we can rule out a Mendelian model of inheritance as an explanation for the traits of *age* and *affiliation to a religious cult*, and we can conclude that both are cultural phenomena or at least reflect a non-Mendelian, multiple gene transmission pattern.

DISCUSSION

Our results support the hypothesis of at least one hereditary factor, autosomal and recessive, that contributes to inter-individual psi differences. Also, they suggest that telepathy, clairvoyance, and premonition are different manifestations of the same psi trait, these three variables show (1) the highest intercorrelations and (2) the best conformance to the inheritance model.

The recessive autosomal gene hypothesis has two interesting implications: (1) It is possible that a father and mother with no psi experiences might produce offspring who do have psi experiences; (2) If both parents show psi, all their children will as well, because the family lacks the dominant gene that makes psi impossible.

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REFERENCES

Cohn, S. (1999). Second Sight and Family History: Pedigree and Segregation Analyses. *J. of Scient. Exploration* 13(3): 351-372.

Haraldsson, E., & Houtkooper, J. (1991). Psychic experiences in the multinational human values study: Who reports them?. *Journal of the American Society for Psychical Research, 85*, 145-165.

Johnson, M. (1982). An attempt to select for psi hability in paramesium aurelia. *Journal of the Society for Psychical Research, 31*, 272-282.

Lépes, I. T. (1992). A psi effect with the Drosophila melanogaster fly. *Journal of the Society for Psychical Research, 58*, 181-188.

Lépes, I., & Argibay, J. (1994). Possible psi effect with Drosophila melanogaster. *Journal of the Society for Psychical Research, 60*, 78-85.

Levin, M. (1996). On the lack of evidence for the evolution of psi as an argument against the reality of the paranormal. *Journal of the Society for Psychical Research, 90*, 221-230.

Mode, E. (1967). *Elements of Probability and Statistics.* Englewood Cliffs, U.S.A: PRENTICE-HALL.

Mora, W. (1994). *El aspecto genético en el origen de la onicofagia*. Informe de Investigación, Universidad Educares, Rancagua, Chile.

Neel, J., & Schull, W. (1954). *Human Heredity*. Chicago & London: THE UNIVERSITY OF CHICAGO PRESS.

Plomin, R., DeFries, J. & McClearn, G. (1984). *Genética de la Conducta.* Madrid: ALIANZA EDITORIAL.

Randall, J. L. (1975). *Parapsychology and the nature of life*. New York: HARPER & ROW.

Schilling, S., Mora, W., Ramírez, C., Césped, M., Arata, S., Rojas, J & Colipí, C. (2004). *Análisis genético de experiencias psi en familias chilenas*. Curitiba: UNIBEM, II Encontro PSI. *Proceedings of presented papers*: 92 – 96.

Strickberger, M. (1976). *Genetics*. (2d ed) New York: MACMILLAN.

Steel, R., & J. Torrie (1980). *Principles and Procedures of Statistics*. M^{c}GRAW-HILL.

EVALUATING PHOTOGRAPHIC ANOMALIES: EXAMINING THE ROLES OF PHOTOGRAPHIC EXPERTISE, CONTEXT, PARANORMAL BELIEF, AND TOLERANCE OF AMBIGUITY

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INTRODUCTION

Haunting experients report an array of anomalous phenomena, such as apparitions and unexplained movements of objects, which tend to be isolated to a particular site or locale. One particular phenomenon associated with hauntings, which has yielded great interest in the popular media, is the capture of apparent anomalies in photographs taken at allegedly haunted locations. Multiple studies have begun to investigate the incidence, underlying mechanisms, and interpretation of photographic anomalies in parapsychological and Fortean contexts (Houran, 1997; Lange & Houran, 1997; Maher, 2000; Maher & Hansen, 1997; Schwartz & Creath, 2005). Maher and Hansen (1997) reported a higher frequency of anomalous prints in the active areas of the haunt site than the inactive areas, though other studies (Houran, 1997; Maher, 2000) have failed to replicate this finding. A study by Lange and Houran (1997) found that specific types of anomalous images were more common with certain media types (e.g. density spots with color prints).

In an attempt to build upon these studies, the authors conducted a study investigating the incidence of photographic anomalies in an allegedly haunted site and a control site (Terhune, Ventola, & Houran, 2007). At the haunt site, multiple individuals experienced classic haunt phenomena, such as auditory and visual apparitions, whereas no such phenomena were reported at the control site. The two residences were located next-door to one another and were both constructed in the mid-twentieth century. Given their close proximity to one another, the two sites did not differ in terms of location or other possible mediating local environmental variables that may be responsible for haunt phenomena (Houran, 2000; Persinger & Koren, 2001). Additionally, Terhune et al. measured a number of contextual variables that could possibly mediate the experience of haunt perceptions or in the elicitation of photographic anomalies, such as lighting levels, spatial dimensions, the number of mirrors, the number of pictures with and without human forms, the number of windows and air vents, humidity, ambient temperature, carbon monoxide (CO), and local ambient EM fields. The haunt site displayed lower ambient temperature and higher humidity levels than the control site, but otherwise the sites were well-matched on these variables. Seven rooms at each of the two sites were established as experimental areas. Each cohort of representative areas included a dining room, three common areas (living rooms, hallways, and kitchens), a basement room, and two bedrooms.

All experimenters were blind to the identity of the sites, and all personnel were additionally blind to the nature of the study. A professional photographer captured black-and-white, color, and infrared photographs and measured lighting levels. Digital and Polaroid photographs were taken and processed by the experimenters. These five media types are representative of the most common still film formats readily available to consumers and amateur photographers. A trial consisted of the serial acquisition of one photograph of each of the five media types from the same vantage point, and the order of trials was randomized. At the conclusion of the study, the authors learned that the residents had experienced such phenomena in the days leading up to, and during, the investigation. Thus this site was reportedly active during data collection.

Eight photographers with professional and/or educational experience assessed the prints for the presence of anomalies. Photographic consultants were blind to both the purpose of the experiment and the identity of the sites and were told only that the prints were taken within the context of a parapsychological field experiment. Anomaly ratings for prints captured at the haunt site were found to be greater than those taken at the control site. Similarly, within the haunt site, areas that had played host to haunt effects yielded greater anomaly ratings than areas in which no phenomena were reported, as found by Maher and Hansen (1997). In a vein similar to the findings of Lange and Houran (1997), color prints received the greatest anomaly ratings in the overall sample as well as the sub-samples of prints taken at the haunt and control sites. Anomaly print ratings did not appear to be related to the variety of physical variables that were blindly measured at the sites. However, there was a weakly suggestive negative correlation between lighting levels and anomaly ratings. Similarly, a suggestive negative relationship between consultants' years of experience and anomaly ratings was found.

Despite the controlled nature of our study (Terhune et al., 2007), the correlational analyses were under-powered due to the small number of photographic consultants. The current research attempts to replicate and extend this study by conducting photographic assessments online with the same print database in order to increase the sample size. The study is further extended through the recruitment of different participant groups, the inclusion of an independent variable of context, and the measurement of tolerance of ambiguity alongside the measurement of paranormal belief. This study employs a 2 (Context) x 2 (Site) x 3 (Group) x 5 (Media Type) mixed factorial design. Context is a between-groups variable with two levels: informed and uninformed. Site is a within-groups variable with two levels: haunt and control. Group is a between-groups variable with three levels: control, paranormal enthusiast, and professional photograher. Finally, Media Type is a within-groups variable with five levels: black-and-white, color, digital, infrared, and Polaroid.

METHOD

Participants are recruited through web pages that are germane to their cohort. All are recruited with the understanding that they will examine a series of photographs for the presence of photographic anomalies. Those who choose to participate are directed to a short form inquiring about age, sex, and level of photographic expertise. Participants are then provided with a unique user ID and password and are randomly assigned to one of four order conditions. The site's welcome page provides the opportunity for informed consent. After signing in, participants complete one of two psychometric instruments in a counterbalanced order: the *Revised Paranormal Belief Scale* (RPBS; Lange, Irwin & Houran, 2000) or Lange and Houran's (1999) Rasch-scaled version of MacDonald's (1970) AT-20, a commonly used measure of tolerance of ambiguity.

Participants next receive a set of instructions for evaluating the photographs. They are asked to look over each photograph carefully and assess whether it contains anomalies. Following Terhune et al. (2007), an anomalous image is operationally defined to consultants as *one which contains any obscurities, defects, bizarre images or the like, which cannot be conventionally explained by the presence of natural artifacts present during the actual photography session (such as light reflections, dust, or smoke), or the subsequent processing of the film*. Participants are instructed to rate the degree to which each print matches the aforementioned definition on a four-point Likert scale (1: definitely not anomalous, 2: somewhat not anomalous, 3: somewhat anomalous, and 4: definitely anomalous). Following the instructions, half of the participants are directed to a page informing them that the catalog of prints were taken within the context of a parapsychological investigation of an allegedly 'active' haunting and that some of the photographs may contain anomalies ('informed condition'). The other half of the participants proceed directly to the online catalog of prints without such information ('uninformed condition').

Pages are broken down by trial, with the five prints from each trial presented as thumbnail pictures on the left side of the trial page. Trial presentation order is randomized. Participants select each thumbnail to view a larger version of the print. They are asked to rate each print using the four-point rating responses and to identify the type of anomaly (if any) from among the following possible responses: no anomalies,

light streak(s), fogging, density spot(s), amorphous form(s), shadow(s), defined image(s), or other (with space provided to list the type of anomaly). At all times, participants are able to reference the operational definition of 'anomalous image' as well as the specifications of the cameras that took each picture. Participants spend as much time as needed to view each of the prints within a given trial and the time spent on each trial is recorded.

Following the completion of the evaluation session, participants are administered the questionnaire that they have yet to complete (the RPBS or the AT-20). They are thanked for their participation, debriefed, and given the opportunity to provide their e-mail address if they wish to learn the results of the study.

The following predictions are being tested:

1) There will be a main effect of Context with prints in the informed condition exhibiting greater anomaly ratings.

2) There will be a main effect of Site with prints captured at the haunt site receiving greater anomaly ratings than those taken at the control site. Active areas within the haunt site are also expected to exhibit greater anomaly ratings than inactive areas within the haunt site.

3) There will be a main effect of Group with paranormal enthusiasts assigning the greatest anomaly ratings to prints.

4) There will be a main effect of Media Type with color prints receiving the highest anomaly ratings.

5) There will be a Context x Group interaction with the ratings of paranormal enthusiasts being more positively affected in the informed context than the other two groups.

6) There will be a Context x Site interaction with haunt anomaly ratings exhibiting a greater difference between contexts than control anomaly ratings.

7) There will be a Context x Group x Media Type interaction with particular types of anomalies being more commonly reported in the informed context, especially by paranormal enthusiasts.

8) The type of anomaly identified (light streak, fogging, density spot, amorphous form, shadow, and defined image) will co-vary with the respective print media type.

9) Participant cohorts will exhibit differential correlations between paranormal belief, tolerance of ambiguity, and anomaly ratings.

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REFERENCES

Houran, J. (1997). Predicting anomalous effects on film: An empirical test. *Perceptual and Motor Skills*, *84*, 691-694.

Lange, R., & Houran, J. (1997). Fortean phenomena caught on film: Evidence or artifact? *Journal of Scientific Exploration*, *11*, 41-46.

Lange, R., & Houran, J. (1999). Scaling MacDonald's AT-20 using item-response theory. *Personality and Individual Differences*, *26*, 467-475.

Lange, R., Irwin, H.J., & Houran, J. (2000). Top-down purification of Tobacyk's Revised Paranormal Belief Scale. *Personality and Individual Differences*, *29*, 131-156.

MacDonald, A. P., Jr. (1970). Revised scale for ambiguity tolerance: Reliability and validity. *Psychological Reports*, *26*, 791-798.

Maher, M.C. (2000). Investigation of the General Wayne Inn. *Journal of Parapsychology*, *64*, 365-390.

Maher, M.C., & Hansen, G.P. (1997). Quantitative investigation of a legally disputed "haunted house." *Proceedings of Presented Papers: the Parapsychological Association 40th Annual Convention held in conjunction with the Society for Psychical Research* (pp. 184-201).

Persinger, M.A., & Koren, S.A. (2001). Predicting the characteristics of haunt phenomena from geomagnetic factors and brain sensitivity: Evidence from field and experimental studies. In J. Houran & R. Lange (Eds.), *Hauntings and Poltergeists: Multidisciplinary Perspectives* (pp. 179-194). Jefferson, NC: McFarland.

Schwartz, G.E., & Creath, K. (2005). Anomalous orbic "spirit" photographs? A conventional optical explanation. *Journal of Scientific Exploration*, *19*, 343-358.

Terhune, D.B., Ventola, A., & Houran, J. (2007). An analysis of contextual variables and the incidence of photographic anomalies at an alleged haunt and a control site. *Journal of Scientific Exploration, 21*, 99-120.

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THE OCCURRENCE, PHENOMENOLOGY AND PSYCHOLOGICAL CORRELATES OF OUT-OF BODY AND NEAR DEATH EXPERIENCES

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INTRODUCTION

The Out-of-Body Experience (OBE) has been a topic of concern in the psychological sciences for over 100 years (Alvarado, 1992). The experience is characterized by features including sensations of vibrations and shocks when 'leaving' the physical body (Irwin, 1999) and seeing the physical body from an out-of-body perspective (Green, 1968). This study will examine three inter-related themes regarding OBEs; 1) an analysis of the circumstance and phenomenology of the OBE, 2) constructing a psychological profile of out-of-body experients (OBErs) compared to non-experients (non-OBErs), and 3) the relationship between OBEs, other paranormal experiences, and paranormal belief.

The majority of OBE research has tended to be either survey studies, mainly utilizing student samples, or laboratory work with persons claiming to be adept at inducing OBEs (Alvarado, 2000). Such work has found the OBE to occur under a variety of circumstances, e.g. spontaneously (Blackmore, 1986), induced meditatively (Kohr, 1980), occasioned by alcohol and recreational drug taking (Tart, 1971), and as part of a near-death experience (Ring, 1980). While this research has revealed much about the circumstances in which the OBE occurs it can be criticized for largely taking a 'top-down' approach and failing to consider a more bottom-up approach, in which the experiences of OBErs are first elicited in detail before forming testable hypotheses which would provide the best psychological insight into the phenomenon (Alvarado, 1997). The work in phase one of this study will aim to address this consideration.

Phase two will be concerned with developing a psychological theory of the OBE which explains its occurrence and phenomenology in the general population. To date three main psychological theories have been advanced to explain the occurrence of the OBE; Palmer's (1978) psychodynamic model, Blackmore's (1984) cognitive-perceptual model, and Irwin's (2000) dissociation model. Although these theories have different emphases, they share the idea that the OBE is triggered by the disruption of somatic input. Blanke et al (2005) have presented a neurological account of the OBE's occurrence. However, this work does not account for a number of features of the OBE, such as its occurrence in hypnogogic states, how or why a visual representation of the body is often created, or why the experient necessarily has to experience the self as separate from the physical body (Murray & Fox, 2005).

More recently, Murray and Fox (e.g. Murray & Fox, 2005; Murray& Fox , 2006) have built upon these theories in a series of studies in which they found that OBEs are more likely to occur in people who usually have a weak sense of embodiment, characterized by a generalized dissociation between their self and body that can be measured on a number of body experience dimensions (perceptual, affective and social). In this work OBErs were found to score significantly higher than non-OBErs on measures of somatoform dissociation, self-consciousness, body dissatisfaction, and lower on a measure of confidence in their physical self-presentation.

A short-coming of the above work is that participants were divided into OBErs and non-OBErs, potentially obscuring differences between different types of OBE. Far from representing a unitary experience, the term 'out-of-body experience' refers to a variety of different experiences, which may have different underlying causes or 'triggers', as well as distinct phenomenological characteristics. Evidence for these differences comes Murray & Fox (2006) who found that spontaneous OBErs scored higher on measures of self-awareness/consciousness, and to be more dissatisfied with their bodies than were NDErs, which lends support to their argument that people who have spontaneous OBEs not only have qualitatively

different bodily experiences than people who do not, but differ in respect to OBEs experienced in other circumstances. In relation to these different instantiations of OBEs, phase two of the study intendeds to explore hypotheses regarding how each type of OBE is characterized in terms of affective, perceptual and social dimensions, as well as phenomenologically.

Phase three focuses on developing and implementing an interactive web environment in order to facilitate OBErs' reports of paranormal experience. This will have two broad facets. Firstly, OBErs will provide details of their paranormal experiences as they occur, using an event log function. To date there has been no in-depth consideration of paranormal experience and belief in relation to the form the OBE takes where the information has been collected contemporaneously. Secondly, OBErs will engage in regular dialogue with other OBErs within one of several virtual groups (comprised of experients reporting particular types of OBE as discussed above). Group members will engage in weekly discussion on topics derived from the work carried out in phases one and two. The aim will be to examine the dialogue of participants to gain a deeper understanding of the different features and phenomenology of the various forms the OBE takes. Each week, after the group discussion, participants will complete a personal journal wherein they reflect upon the discussion, and their participation.

Objectives of Research

1. The elicitation of phenomenological detail regarding the circumstances surrounding OBE occurrence;
2. The development of a psychological theory of the OBE and profiling of the experients;
3. A detailed examination of the relationship between OBEs, other paranormal experiences, and paranormal belief;
4. The development of novel methods of data collection and analysis in parapsychological research;

METHOD

Phase 1

Sample. Participants (n=15) will be obtained via media advertisement, and will comprise of a variety of OBErs; near-death related (n=3), as part of an experience during which they felt physically threatened but not near-death (n=3), spontaneous (n=3), meditatively achieved (n=3), and drug/alcohol induced (n=3).

Interview Procedure. Participants will be interviewed at a venue and time of their convenience. An interview schedule will be derived from consideration of an in-depth literature review, and from comments submitted by OBErs who have taken part in previous research at Manchester.

Data Analysis. Data will be analyzed using Interpretative Phenomenological Analysis (IPA) (Smith et al., 1999). IPA has its roots in phenomenological psychology and symbolic interactionism, and so both the life worlds of participants, and how meaning occurs and is made sense of in social interaction, are considered important (Op cit). The approach highlights the importance of individual and personal perceptions, and aims to achieve an 'insider's view' of the research topic. However proponents of IPA acknowledge that participants' feelings and thoughts are not immediately transparent in the production of verbal reports. A key feature of the analysis process is the interpretative frame of reference of the researcher themselves and the assumption that the resulting interpretations about the respondent's cognitions can be meaningful. IPA also represents a general approach to data-driven research rather than a prescriptive methodology.

Applied to this study, IPA will provide an understanding of the meaning and experience of particular forms of OBE, and will also document the particular phenomenologies of these different OBE forms which will drive the work in later phases. This will include the selection of quantitative measures for a web-based questionnaire (phase two), as well as the content for the interactive web environment (phase three). Collectively, this work is envisaged to develop theory regarding the psychological mechanisms

which underlie the occurrence of the OBE, its perceived realism, the phenomenological content of the experience, and its resultant psychological impact upon the experient.

Phase 2

Sample. OBErs and non-OBErs (n=1500 approx.), recruited by international media advertisement, will be invited to complete an internet survey. This broad based strategy is aimed at collecting a wide range of examples of the different forms of OBEs of interest, and which would be hard to obtain in large numbers within a similarly costed community sample project.

Materials & Procedure. The survey will be comprised of validated scales, such as body investment (Orbach & Mikulincer, 1998), somatoform dissociation (Nijenhuis et al, 1996), and social physique anxiety (Hart et al, 1989), as well as new items/scales developed from the qualitative work in phase one. These scales/items will encompass affective, perceptual, and social experience in relation to having had an OBE or not, and the type of OBE.

Data Analysis. Data will be subjected to statistical analysis to identify differences between each OBE type. Analysis will also focus on the broad differences between OBErs and Non-OBErs as well as differences between sub-groups of OBErs. Although no firm decisions have been taken at this point regarding the final content or design of the instrument, it is envisaged at this stage that a Multivariate Analysis of Variance (MANOVA) and/or a Discriminant Function Analysis (DFA) will be used given the fact that multiple continuous dependent variables will be tested and either single or multiple discrete variables will form the independent groups.

Phase 3

Sample. Approximately 25 participants from phase two from each OBE category described earlier will be randomly selected to take part.

Materials and Procedure. Participants will be given a personal log-in code for the web environment and a virtual pseudonym to preserve anonymity. When participants first log in to their web space they will complete a small number of items/scales (developed from phases one and two) to determine which of the OBE discussion groups they are assigned to. A second code will give participants entry to the group discussion forums. Within the web environment there will also be 1) an event log section where participants can detail appropriate experiences and 2) a personal journal section where they can add their weekly reflections regarding group discussions. Once submitted, participants will be able to read their entries for all these sections, but will not be able to modify them.

Data Analysis. Data will be collected over a three month period. Event log data will be content analyzed and comparisons will be made across the different forms of OBE for both features and frequency of paranormal occurrence. Group discussion data will be 1) analyzed using IPA and 2) content analyzed for OBE features, experience and frequency of occurrence.

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REFERENCES

Alvarado, C.S. (1992) The psychological approach to out-of-body experiences: a review of early and modern developments. *Journal of Psychology, 126(3),* 237-240.

Alvarado, C.S. (1997) Mapping the characteristics of out-of-body experiences. *Journal of the American Society for Psychical Research, 91,* 15-32.

Alvarado, C.S. (2000) *Out-of-body experiences.* In Cardeña, E., Lynn, S.J. and Krippner, S. (eds.) *Varieties of Anomalous Experience: Examining the Scientific Evidence.* Washington, DC: American Psychological Association. (pp. 183-218).

Blackmore, S.J. (1984) A psychological theory of the out-of-body experience. J*ournal of Parapsychology, 48,* 201-218.

Blackmore, S. J. (1986). Spontaneous and Deliberate OBEs: A Questionnaire Survey. Journal of the Society for Psychical Research, 53(802), 218-224.

Blanke, O., Mohr, C., Michel, C.M., Pascual-Leone, A., Brugger, P., Seeck, M. Landis, T., Landis, T., and Thut, G. (2005) Linking out-of-body experiences and self-processing to mental own-body imagery at the temporoparietal junction. *Journal of Neuroscience, 25(3),* 550-557.

Green, C. (1968). Out-of-the-Body Experiences. London: Hamish Hamilton.

Hart, E.A., Leary, M.R., Rejeski, W.J. (1989) The measurement of social physique anxiety. *Journal of Sport and Exercise Psychology, 11,* 94-104.

Irwin, H. J. (1999). Out-of-Body Experiences. In *An Introduction to Parapsychology* (3rd ed., pp. 219-241): McFarland & Company. – reference added as part of changes

Irwin, H.J. (2000) The disembodied self: an empirical study of dissociation and the out-of-body experience. *Journal of Parapsychology, 64(3),* 261-276.

Kohr, R. L. (1980). A Survey of Psi Experiences Among Members of a Special Population. *Journal of the American Society for Psychical Research, 74,* 395-411.

Murray, C.D. and Fox, J. (2005) Body image in persons with and without prior out-of-body experiences. *British Journal of Psychology, 96,* 441-456.

Murray, C.D. and Fox, J (2006) Differences in body image between people reporting near-death and spontaneous out-of-body-experiences. *Journal of the Society for Psychical Research, 70(2),* 79-91.

Nijenhuis, E.R.S, Spinhoven, P., van Dyke, R., van der Hart, O. and Vanderlinden, J. (1996) The development and psychometric characteristics of the somatoform dissociation questionnaire. *The Journal of Nervous and Mental Disease, 184(11),* 688-694.

Orbach, I. and Mikulincer, M. (1998). The body investment scale: construction and validation of a body experience scale. Psychological Assessment, 10(4), 415–425.

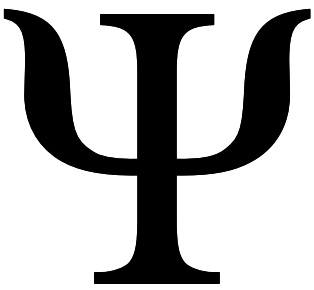
Palmer, J. (1978) The out-of-body experience: a psychological theory. *Parapsychology Review, 9(5),* 19-22.

Ring, K. (1980). Life at Death: A Scientific Investigation of the Near-Death Experience. New York: Coward, McCann & Geoghegan.

Smith, J.A., Jarman, M. and Osborn, M. (1999) Doing interpretative phenomenological analysis. In M. Murray and K. Chamberlain (eds.) Qualitative Health Psychology: Theories and Methods. London: Sage (Pp.218-240).

Tart, C. T. (1971). On Being Stoned: A Psychological Study of Marijuana Intoxication. Palo Alto, CA: Science & Behaviour Books.

PANEL ABSTRACTS



THREE PARAPSYCHOLOGICAL ASSOCIATION GOALS: A 50TH-ANNIVERSARY ASSESSMENT

Organizer and Chair: Rex G. Stanford, PA President

THE STRUCTURE OF THE ASSESSMENT

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The Constitution of the Parapsychological Association described as the objectives of this organization "to advance parapsychology as a science, to disseminate knowledge of the field, and to integrate the findings with those of other branches of science" (*Proceedings of the Parapsychological Association*, Number 1, 1957-1964 p. 4). For this, the 50th Annual Convention, three distinguished PA Members (Drs. Eberhard W. Bauer, Stanley Krippner, and Edwin C. May) were each asked to describe his personal assessment of how the field has fared in the past 50 years relative to a particular one of these objectives, with Bauer addressing "advancement," Krippner, "dissemination," and May, "integration with other branches of science." An equally distinguished discussant, Dr. Jessica Utts, was invited to comment on these presentations and offer her own integration and reflection after hearing, at the actual session, the full remarks of the presenters. (For this reason, no abstract of her remarks is available for publication.) The panelists and the discussant agreed to these assignments, recognizing that their expressed views were intended to represent personal views, not necessarily those of this organization, its Board of Director, its officers, or its membership.

GOAL I: ADVANCEMENT OF PARAPSYCHOLOGY AS A SCIENCE

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On the PA's 50th Anniversary, we justifiably can ask, perhaps with some trepidation, how far we have come in realizing this original aim. Has parapsychology proven successful as a science? Have we really made progress? Or, to put it in another way: Is it socially or professionally desirable (or, even, acceptable) for a young scientist to become known as a parapsychologist or known to have been involved in parapsychology?

Even if there might be a broad consensus among active PA members that parapsychology represents 'an interdisciplinary area of research,' it is not clear whether criteria for assessing scientific advancement should be modelled after the example of a cultural, social or behavioural science (e.g., psychology) or after the example of natural science (e.g., biology or physics). In the first case, one might employ a somewhat more lax criterion because we would not expect the same rate of growth of substantive and conceptual knowledge as in biology or physics, but rather, might tend to rate advance in terms of the adoption of certain fashionable methods or in terms of the adoption of new styles of discourse. It is my feeling that this is what happens in parapsychology.

There exists, as a comparative or content analysis of PA Presidential Addresses over 50 years would reveal, a broad spectrum of opinions on the advancement issue. Consider also that when we are looking

for evidence of 'advances', 'progress' or 'success' in orthodox sciences, most of us would see them in (a) empirically validated theoretical insights into the nature (or limitations) of the phenomena in question, (b) practical and/or technological applications of such phenomena in everyday life, and (c) positive evaluation of the research enterprise by the academic and scientific communities. The realization of any one or all of these criteria would result in heightened prestige and greater recognition for the field and its investigators. Judged by such criteria of scientific advancement, parapsychology is still in its infancy. Even among 'professional parapsychologists,' there may be no strong consensus about such basic issues as (a) the domain or scope of the discipline, (b) the structure and strength of paranormal effects that theories are obliged to explain, and (c) the existence of solid, repeatable findings as a basis for drawing conclusions about process. Not surprisingly, then, claims about or expectations of a breakthrough in the psi-research domain are met with some scepticism, even among PA members.

It would, though, be unfair to say that there are no promising signs of scientific advancement within parapsychology. First, we should not forget that successful psi research is not restricted to the formal PA community. Then, there is progress in the technological sophistication and in the statistical refinement in experimental parapsychology. There is also clear progress in the academic recognition of 'anomalistic psychology,' especially in U. K., where ten universities offer courses in parapsychology within psychology departments – a sociological fact that I would like to call the 'Bob Morris legacy of an interdisciplinary, integrative parapsychology.' A good example of that is the very active 'Centre for the Study of Anomalous Psychological Processes' (CSAPP) at the University College Northampton, where a new MSc course 'Transpersonal Psychology and Consciousness Studies' (including a 'Parapsychology' module) is offered. Another promising sign is the development of what might be called 'clinical parapsychology,' which means special counseling and information services for people feeling distressed or impaired by paranormal or anomalous experiences. For me, however, the most promising sign that parapsychological research has made progress is a new theoretical understanding of the so-called psi phenomena. We really should abandon the old signal model underlying the Rhinean paradigm, which implies that mind is a real force, and come to a full appreciation of the experimental and theoretical consequences of the correlational model whose foundations were laid down in the 1974 Geneva Conference "Quantum Physics and Parapsychology" and culminated provisionally in the 2006 San Diego conference "Frontiers of Time – Retrocausation – Experiment and Theory." I suggest that treating psi phenomena as entanglement correlations in a generalized quantum theory belongs to those "ideas that will catalyze the growth of parapsychology," to quote Gardner Murphy from his first dinner address, "Progress in Parapsychology" (JASPR, 53, 1959, pp. 12-22) to the PA Convention nearly 50 years ago.

GOAL II: DISSEMINATION OF THE KNOWLEDGE OF PARAPSYCHOLOGY

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These are the best of times and these are the worst of times for dissemination of knowledge about psi research. They are the best of times in that some excellent books have been published, both by psi researchers and by people outside the mainstream of the field. Numerous blogs mention psi research, sometimes accurately and sometimes inaccurately. These are the worst of times in that most of the professional journals in the field have gone belly up, being months or even years behind their purported publication date. There are a handful of laboratories in the entire world doing respectable research in psi phenomena, and this might account for the lack of articles available to fill the journals. Lack of subscriptions and high publication costs may be another factor. On the other hand, the Internet is taking up the slack, with websites, listserves, and online journals disseminating information in ways that would have been unpredictable a decade ago. The field is ripe with new paradigms, novel theoretical ideas, and

even practical applications. But funding sources are drying up, and conceptual and experimental breakthroughs depend upon financial support that is no longer present. In the meantime, so called "skeptical" magazines are doing well in the subscription department; much of this is due to the fact that they are directing their efforts toward the anti-evolutionists, the religious fundamentalists, and those who are blurring the line between church and state domains, efforts that many parapsychologists would applaud. Some of the work in psi research is being done by non-parapsychologists and it would be ironic if breakthroughs came from these sources.

GOAL III: THE INTEGRATION OF PARAPSYCHOLOGY WITH OTHER BRANCHES OF SCIENCE

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With some notable exceptions, the path of science is intimately connected to technology. That is, theories of various sorts are only as good as the technology is capable of verifying them. For example in physics in the early days of the 20th century, the Rayleigh-Jeans law—the relationship between the electromagnetic emission of a heated "black body" and the associated wavelength of that radiation—was the going theory of the day. However, technology improved to allow the measurement of shorter and shorter wavelengths, and what was found was that the theory failed to match observation by many orders of magnitude—so much so that the term coined by Paul Ehrenfest, "the Rayleigh-Jeans ultraviolet catastrophe" survives today. This catastrophe was part of the inspiration for Max Plank and the beginning of quantum theory, which realigned "black body" emission theory with measurement. Technology has had and obviously continues to have a positive and significant impact upon research parapsychology—perhaps not yet as much in direct theory development as in the development of experimental protocols. Better and more reliable data, however, clearly do have an impact upon theory. One of the primary tasks for investigators in any arena is to reduce the source of variance in experiments *prior* to measurements. Years ago, computers and other automatic recording devices eliminated inadvertent recording errors and sharply reduced said variance. Advances in statistics allowed researchers to parse variance *pos hoc* (e.g. ANOVA). For the most part modern parapsychology research has abandoned force-choice protocols in favor of free-response ones and reaped the benefit of more than a 10-fold increase in effect size (i.e., nominally 0.02 to 0.25). In part, this increase results from an *a priori* variance reduction by eliminating the substantial memory/imagination problem associated with force choice guessing. One problem in ESP experiments survives but may be solved with a new research trend. When an ESP experiment participant is asked to provide data in the laboratory, we implicitly require two assumptions to be true: that person will have an ESP experience and will be able to report that experience in words and/or drawings accurately. Both assumptions are shaky at best and probably either or both are usually not valid and constitute a source of unwanted variance. Technology may come to the rescue through the use of psychophysiological experiments that appear to bypass the cognitive experience reporting problem. The prestimulus response and presentiment experiments illustrate the point. Advances in our understanding of parapsychological phenomena will come only with more variance reduction and technology improvements. Our discipline has not yet taken advantage of all the technology that is currently available. The burden and responsibility lies with us to learn about these systems; become competent in their use; and, not to avoid replication simply because the experiments and analyses are complex. To quote the late Richard Feynman, "It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong."

FORGOTTEN PIONEERS OF PARAPSYCHOLOGY

Organizers: Eberhard Bauer and Carlos S. Alvarado
Chair: Carlos S. Alvarado

THE MANY FACES OF A PARAPSYCHOLOGICAL PIONEER: MAX DESSOIR (1867-1947)

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In a certain sense, German philosopher-psychologist Max Dessoir (1867-1947) probably is the best-remembered of the "forgotten" parapsychological pioneers. After all, in an 1889 article, he had introduced the term "parapsychology" which we still use today to identify the areas of our scientific interest and to name our professional organization. In recent decades, that paper has become something of a standard reference. Today, we are able to show that Dessoir had privately suggested the term "parapsychology" even two years previously, in 1887. Yet, beyond that early terminological initiative, very little else is known among modern international parapsychologists about Dessoir, his many other scientific activities pertaining to parapsychology and his remarkably manifold scientific career in various disciplines. But there's much worth knowing.

In many respects, Dessoir may be considered a young genius (who, incidentally, played the violin for the German Emperor as a child). Dessoir was 20 when he suggested the term "parapsychology", presumably for the first time. He was only 18 when he had sittings with the notorious medium Henry Slade. At the same age he joined the Society for Psychical Research. He had just turned 19 when he published his first full article, in English, in the SPR Proceedings. At the age of 21, he published the first of two volumes of a comprehensive bibliography of then recent publications on hypnotism (including eight papers that he already had published himself). That bibliography is so obviously useful even from a modern perspective that it was re-issued in the United States in 2002. Max Dessoir was just 24 when he published his famous booklet on the "Double Ego" that led some to describe its author as an "immediate precursor of Freud and his school." Two years later he published, under a pen name, a booklet of "psychological sketches" including a lengthy chapter on the psychology of legerdemain and its relevance to psychical research, which is still considered one of the best treatments of the subject. Before the age of 26, Dessoir had received both a doctorate in philosophy and an MD degree, could look back on probably over 100 scientific publications (including half a dozen books) and was soon to become a professor of philosophy at the University of Berlin.

In subsequent years, Dessoir published a voluminous book recounting his experiences with Slade, Palladino, and many other mediums and also dealing in depth with what he termed the "Secret Sciences." Also, being one of Schrenck-Notzing's major opponents, he was the *spiritus rector* behind many parapsychological controversies in Germany during the 1920s, and he initiated important publications such as the *Zeitschrift für kritischen Okkultismus* and the so-called "Three Men's Book" with its highly skeptical analyses of physical mediumship.

Apart from that, Dessoir was responsible for the establishment of aesthetics as an academic discipline in its own right, he did much to promote systematic historiography of philosophy, he was hired, in 1915, by the Empirial Government to do a study on war psychology (which, to the probable dismay of those who had contracted him, Dessoir very subtly turned into an anti-war treatment), he pioneered public education through radio broadcasts throughout the 1920s, and wrote several books on art and aesthetics, on the history of philosophy, on psychology in everyday-life, and on the art of holding public speeches. The Nazis virtually terminated Dessoir's scientific career in 1933.

In 1945, Dessoir's Berlin home was hit by a presumably American bomb. His library and his extremely important scientific files were destroyed. Dessoir escaped to Königstein near Frankfurt where he died, forgotten by many, in 1947, a few months after his eightieth birthday. Those two post-war years, however, were sufficient time for him to author two more books: an important, highly instructive autobiography and what may be considered a synopsis of his views on parapsychology at the end of his life.

Max Dessoir was the person to give parapsychology its name. He spent considerable parts especially of his early life and career in search of what he called "established and comprehensible facts" in parapsychology. He always was one of the most outspoken critics of the field and at the same time one of the staunchest defenders of its legitimacy. And he ended his life as a reluctant believer at least in telepathy.

RUFUS OSGOOD MASON (1830-1903) AND THE POPULARIZATION OF PSYCHICAL RESEARCH IN AMERICA

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American physician Rufus Osgood Mason is one of the forgotten figures of late nineteenth-century American psychical research. Born in 1830 in Sullivan, New Hampshire, Mason initially studied in a theological seminary, and later went into medical school, graduating as an M.D. in 1869. He practiced medicine in New York City, where he died in 1903 at the age of 73. While Mason wrote about different medical topics, he distinguished himself for his defense of the therapeutic use of hypnosis. In addition. Mason published on double personality, reporting on a case he observed.

Mason's main publication in psychical research was his book *Telepathy and the Subliminal Mind* (1897), in which he compiled many articles, some of which appeared before in the *New York Times*. His work in the field centered on two areas: case studies, and popularization.

Mason, being a member of the Society for Psychical Research (SPR), occasionally sent cases to the Society. For example, the December 1894 issue of the *Journal of the Society for Psychical Research* has a case Mason observed in 1870 of alleged supernormal phenomena shown by a hypnotized young hysterical woman. In other publications Mason described cases of ESP dreams, hypnotically-induced mental travels to distant locations, and planchette writing. In an article published in *The Arena* in 1891, he speculated on the existence of a "psychic medium" connecting minds to explain telepathy. These studies, he believed, led us to conclude that "sensation is conveyed from the operator to the subject by some other means than through the recognized channels of sensation." Such phenomena, he stated at the end of his *Telepathy and the Subliminal Mind*, could not be explained by conventional psychological and physiological explanations.

Most of Mason's efforts centered on the popularization of the work of the SPR in the United States. In the above mentioned 1891 article he discussed the SPR's thought-transference experiments. This was followed by a discussion of thought-transference and other aspects of the work of the SPR in a series of articles in 1893 issues of the *New York Times*. In the articles psychical research was presented to the American public as the cutting edge of psychology.

He also discussed frequently Frederic W.H. Myers' (1843-1901) ideas of the subliminal mind. Arguing that supernormal phenomena were part of the normal functions of the mind, Mason argued in newspaper articles and in his book *Telepathy and the Subliminal Mind* that the subliminal self was the agent responsible for telepathic manifestations that were in turn communicated to the conscious mind. Later in 1903 Mason published in the *New York Times* a two part article reviewing Myers' *Human Personality and Its Survival of Bodily Death* (1903), a work that he praised. His views of Myers' work provided a balance the more negative views of the book of American psychologists.

While Mason's cases are interesting, he was not a major contributor to the empirical data base of nineteenth-century psychical research. His main contribution was his efforts to popularize the field in the United States, with particular attention to the work of the SPR, and the subliminal psychology of Myers.

EMIL MATTIESEN, GERMAN COMPOSER AND 'METAPSYCHOLOGIST'

EBERHARD BAUER

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Emil Mattiesen was of Baltic origin. Born on January 24th, 1875 in Dorpat, the son of a councillor, he showed quite early a noticeable musical talent – at the age of eight he set ballads of Felix Dahn to music. In 1892 he started to study philosophy, natural sciences and music at the University of Dorpat and continued his studies one year later at the University of Leipzig. In 1896 he got his Ph. D. with a thesis dealing with the philosophical critique in the work of Locke and Berkeley.

Between the years 1989 and 1903 Mattiesen was going round the world. His aim was to learn different languages, religions, philosophical and ideological systems in a most comprehensive way. For years he lived in several Asiatic countries to get a first- hand knowledge of the religious systems. Between 1904 and 1908 he spent academic years in Cambridge and London and started to write down his first major work which was finished in 1914 but which could be published only after the First World War in 1925 under the title *Der Jenseitige Mensch. Eine Einführung in die Metapsychologie der mystischen Erfahrung [Man of Next World. An Introduction into the Metapsychology of the Mystical Experience]*. This book, the ambitious attempt to give the psychology of religion a new basis by integrating paranormal phenomena – Mattiesen called them 'facts of metapsychology' - into the phenomenology, psychology and psychopathology of religious, mystical and other "transliminal" experiences – it's a real treasury of knowledge what could called today "altered states of consciousness."

From 1908 Mattiesen was living in Berlin where he developed his musical talent in a systematic way. In the following years he published as a composer seventeen albums [Liederhefte] of songs and ballads. This double talent – as a composer and as a parapsychologist ('metapsychologist') – is a characteristic trait of Mattiesen's work. From 1925 he was living a quiet and retired life near Rostock only devoted to writing his second major work which dealt with the survival problem. The first two volumes appeared in 1936, and the third one in 1939. It was entitled *Das persönliche Überleben des Todes: eine Darstellung der Erfahrungsbeweise [The Personal Survival of Death: An Account of the Empirical Evidence]*. The same year, the Second World War had just begun, on September 25, Emil Mattiesen died of leukaemia. He was 64 years old.

Mattiesen's legacy to (German) psychical research and parapsychology are two extensive works, comprising all together more than 2,100 pages, which were published by Walter de Gruyter, still today one of the most prestigious publishing houses in Germany for scientific and academic literature, specializing in law, medicine, natural sciences, history, philosophy, theology and religious science. The reasons why Mattiesen's name is nevertheless nearly forgotten, are intimately connected with following historical and cultural factors: (1) Mattiesen was living in a self-chosen isolation. He did not participate in the public controversy dealing with "occult" phenomena in Germany during the late 1920s and early 1930s (see, for the contrary, the role of Max Dessoir); (2) although Mattiesen was praised as the figurehead of the spiritistic movement in Germany, there was no adequate audience for the sophisticated discussion of his arguments, comparable with the British SPR; (3) when Mattiesen's *opus magnum* on survival research was published, the National Socialism had come to power in Germany and there were no parapsychological journals or organizations available which could provide a forum for a detailed and critical discussion; (4) for whatever reasons, Mattiesen's work remained totally unknown the English speaking world; his books were never reviewed in the journals of the British and American SPR.

CHRISTOPH SCHRÖDER (1871-1952): THE HUB OF A PARAPSYCHOLOGICAL NETWORK

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Besides his professional life, little is known about the biographical data of Prof. Dr. Christoph Schröder, Berlin-Lichterfelde-Ost. Trained as a zoologist, he specialized in entomology in which field he edited a three volume textbook, a two volume survey on the insects of Central Europe, particularly Germany, and published a book on the biology of insects. He made his living as a teacher of biology at a Berlin lyceum.

Hinrich Olhaver of Hamburg, a successful businessman and devoted spiritualist, author of "Die Toten leben" (i.e. The Dead are Alive) had been the founder of a spiritualist group, named *Revalo Bund* (i.e. Revalo Union) whereby *Revalo* is just an anagram of his name. This Revalo Bund published, starting in 1925, a monthly journal which in 1927 changed its name to *Zeitschrift für psychische Forschung* (abbr. *Z.ps.F., Journal for Psychical Research*). When it faltered after another two years, Schröder commenced publishing his own *Zeitschrift für metapsychische Forschung* (abbr. *Z.mp.F.; Journal for Metapsychical Research* – very strange that Schröder used the French terminology) running from 1930 through 1941. In his first issue, Schröder denies any connection between his new journal and the former *Z.ps.F.*, yet not only are they like twins in reference to their layout, also most authors of the two subsequent journals are identical, including Schröder himself who edited Grunewald's report on his visit to Talpa after the latter's untimely death.

The *Z.mp.F.* was edited "in connection with the Institute for Metapsychical Research" which in fact was located at Schröder's residence. In 1925, Schröder had founded this "Institute," not least in order to take over the ingenious apparatus designed by Grunewald.

In parapsychology, the early focus of Schröder's attention was on what he called the "Frau Maria Rudloff'sche Spiegelphänomenik" (i.e. the mirror phenomena of Mrs. Maria Rudloff). Maria Rudloff, also known by her alias "Maria Vollhart" (Malcolm Bird spells the name as „Vollhardt"), coincidentally was the mother-in-law of Christoph Schröder. Earlier, she has been the subject of the studies of Friedrich Schwab M.D., that were published in his book on teleplasm (an alternative term for ectoplasm) and telekinesis. By "mirror phenomena" the appearance of crude drawings, such as stick-figures, on mirrors or other flat glass surfaces (windows), mostly overnight, is understood. In isolated cases, lines resembling Arabic characters appeared. The substance of these drawings is said to have been dried-up blood plasma. (The glass surfaces did not survive the bombings of World War II, and the phenomenon remains disputed.) Mrs. Vollhart/Rudloff also showed some dermal effects, numerous parallel scratches on the back of her hand, as if they had been made by using a brush.

In 1926, Countess Wassilko, together with Eleonore Zugun, visited Schröder and his family, resulting in kind of competition between the two mediums.

There have been five International Congresses for Psychical Research in the years between the two World Wars, organized by Carl Vett – kind of forerunners of the PA Conventions –; of these, Schröder took part at least in the Congress held 1927 at the Sorbonne in Paris.

During the trial of the famous clairvoyant (or rather pseudo-clairvoyant) Erik Jan Hanussen (real name: Hermann Steinschneider) he served, together with Walter Kröner, as an authorised expert (Leitmeritz, Czech Republic, 1931).

Starting in 1932, Schröder published an additional quarterly, "Mitteilungen der Gesellschaft für metapsychische Forschung" (i. e. Notes from the Society for Metapsychical Research) which was bound together with his *Z.mp.F.*, so every third issue was split between the two periodicals. He was running this "Society for Metapsychical Research" though being previously affiliated to the "Deutsche Gesellschaft für wissenschaftlichen Okkultismus" (DGWO, German Society for Scientific Occultism) in the context of which he had published his brochure "Grundversuche auf dem Gebiete der psychischen

Grenzwissenschaften" (i. e. Basic Experiments in Psychic Scientific Fringe Areas) in 1924. In 1937, the quarterly changed its name to "Die Unsichtbare Wirklichkeit" (abbr. U.W., The Invisible Reality).

Schröder, not tremendously important a parapsychological researcher as such, was nonetheless pivotal in parapsychological networking due to the fact that in the journals he edited (regardless of their confusing and often changing names) many noted parapsychologists of that time found a forum to publish their papers, e. g. Grunewald, Mattiesen, the Austrian Kasnacich and some others. It needs to be particularly emphasized that his periodicals were published until 1941, i. e. even during the first years of the war. In contrast, the (admittedly more important) *Zeitschrift für Parapsychologie* (i.e. *Journal for Parapsychology*) terminated its appearance by mid-1934 when Gabriele, Baroness Schrenck-Notzing, Albert's widow, resolved to withdraw her financial support, leaving Schröder's journals the sole surviving ones in Germany.

"BIOLOGY WITHOUT METAPSYCHICS, A BIRD WITHOUT WINGS": ORLANDO CANAVESIO'S CONTRIBUTIONS TO PARAPSYCHOLOGY

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Surgeon and neurologist Orlando Canavesio, one of the pioneers of parapsychology in Argentina, was born in Buenos Aires in 1915. He focused on medical and biological aspects of psychic phenomena, and also he was one of the few Argentinean experts in the advance of scientific diagnosis in mental disease. He founded the Asociación Médica de Metapsíquica Argentina, AMMA (Argentinean Medical Association of Metapsychics) in 1946. The Association published the journal *Revista Médica de Metapsíquica*, of which AMMA issued only three copies.

He was interested in using EEG in psychical research to study brain activity associated with ESP performance, what he referred to as the "metapsychic state." He studied self-claimed psychics such as the dowsers Enrique Marchessini, and Luis Acquavella, Eric Couternay Luck, Federico Poletti, and Conrado Castiglione, who worked as psychics.

Some of Canavesio's main studies included an early EEG study, and many comprehensive case studies of a single psychic, such as Eric C. Luck one of his "star" psychic. In a paper published in 1947, he said that states conducive to ESP ranged "from deep-sleep, normal or somnambulic, to an apparent wakefulness characterized by an expectant attention, concentration or isolation". In a study with psychic Eric Courtenay Luck, Canavesio took EEG measures while Luck went into trance and reported that the "alpha rhythm disappears, becomes more or less regular, and the potential diminishes by 60%". Canavesio thought that dowsing performances were better suited for EGG testing. Canavesio's medical dissertation was entitled *Electroencefalografía en los Estados Metapsíquicos* (Electroencephalography in Metapsychic States). It was the first dissertation in Latin America based on a parapsychological topic, and it was granted by the Faculty of Medicine of the University of Córdoba.

Canavesio attempted to place parapsychology within government institutions and universities. Canavesio was appointed head of the Instituto de Psicolopatología Aplicada (Institute of Applied Psychopathology), which was established in 1948 to determine whether the spiritualist movement could represent a public mental health concern. Canavesio also was a strong defender of the incorporation of parapsychology (or metapsychics) in the chairs of psychology medicine at the faculties of medicine in Argentina.

In addition, Canavesio participated in numerous public events. He gave a number of lectures in scholarly forums, as well as in radio programs, and in newspapers. Argentina was represented for the first time in one of the most important international parapsychological events when Canavesio participated in the First International Conference of Parapsychological Studies held at in Utrecht in 1953. He presented

some of the work he reported in his dissertation. He also participated in a psychical research conference on parapsychology in Bologna.

Unfortunately, most of Canavesio's efforts did not have much impact. One aspect possibly leading to the neglect of his work was that the psychological movement displaced the medical approach to parapsychology, so that psychologists, and not physicians, were usually the professionals that were the most interested in and involved in parapsychology. Some felt that Canavesio´s work had several pitfalls, and that it lacked an adequate methodology. Canavesio's approach was mainly qualitative, instead of the quantitative approach) used by some European psychical researchers.

Canavesio was interested in other topics, such as dowsing, psychology, medicine, experimental psychopathology, and Jung's theories. He also participated in PK experiments conducted by parapsychologist José María Feola who directed the "Grupo La Plata". This group was a home-circle formed by non-spiritualists interested in the physical phenomena of Spiritualism, who carried out a series of experimental sessions of table-tiping, table levitations, raps, and other phenomena between 1950 and 1955.

On December 14, 1957, travelling to Mar del Plata city in his car, Orlando Canavesio had an accident, as a consequence of which his left leg had to be amputated. He died soon after. Canavesio was only thirty-eight years old, and was starting a new parapsychological society at Rafaela. Its guiding principle was expressed in a motto printed on the cover of the journal: "Biology without metapsychics, a bird without wings."

CHARLES EDWARD STUART (1907-1947) AND EXPERIMENTAL ESP RESEARCH

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Charles Stuart was an important member of the ESP research team at Duke University from 1931 until his death in 1947 at the age of 39. Born in 1907 in Pennsylvania, Stuart obtained a BA in mathematics with a minor in philosophy from Duke University in 1932. While an undergraduate he volunteered to be tested for ESP and produced an endless stream of card-guessing results, which, among other findings, contributed to the establishment of the decline effect. In Rhine's monograph, *Extra-sensory Perception*, published in 1934, Stuart's photograph appeared on the frontispiece as one of the Laboratory's high-scoring "star" subjects. Stuart was also featured in the text as one of Rhine's principal assistants, along with J. Gaither Pratt.

Moving into the Duke Ph.D. program in psychology after his graduation, Stuart became a formal member of the Rhine group. His Ph.D. was awarded in 1941, only the second time Duke University had conferred the degree for a dissertation devoted to psychical research. Titled "An Analysis to Determine a Test Predictive of Extrachance Scoring in Card-Guessing Tests," it highlighted both Stuart's methodological and his mathematical expertise. Like Pratt, Stuart spent two years working away from the Laboratory. In Stuart's case, he was the fourth Thomas Welton Stanford Fellow in Psychical Research at Stanford University, serving in that capacity from 1942 to 1944, following John L. Coover (1912-1937), John L. Kennedy (1937-1939), and Douglas G. Ellson (1939-1942).

Stuart suffered from heart disease throughout his adult life and, consequently, was not among the group of young men who left Duke in 1941 to serve in World War II. Although his illness sometimes kept him from the Laboratory, he was one of the most prolific members of his cohort. Not only was Stuart a contributor to the debate over statistical methods then being developed in psychology and parapsychology, not only did he take the lead in the Laboratory's interaction with its critics, not only did he co-author an early testing manual with Pratt as well as provide a key contribution to the Laboratory's magnum opus, *Extrasensory Perception after Sixty Years,* but Stuart also conducted and published a wide variety of

experiments. For example, he refined Warcollier's drawing methodology and established a robust line of free-response testing both to bring the experience of ESP in life more fully into the Laboratory and to maintain subjects' motivation across a testing session.

Committed to methodological relevance in light of then "modern" psychology as well as to a reasoned response to substantive criticism, as a single researcher or in collaboration with others, Stuart's experiments are exemplars of good design. Among them were: examinations of the relationship of atmospheric conditions, personality characteristics, changes in guessing tempo, and subjects' estimations of success to forced-choice scoring; and classroom versus single subject test administration, and subjects' target "reception" styles to free-response scoring. To his credit, Laboratory members remembered him as a congenial colleague, dedicated not only to his own and the field's advancement but also to that of his colleagues.

IAN STEVENSON'S WORK IN PARAPSYCHOLOGY

Organizer and Chair: Carlos S. Alvarado

IAN STEVENSON ON THE IMPORTANCE OF SPONTANEOUS CASES

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Ian Stevenson is well known for his work with spontaneous cases. This includes cases of children claiming to remember previous lives, as well as accounts of ESP experiences, apparitions, and near-death experiences. Such work differed from the emphasis many parapsychologists, particularly in PA circles, have placed on the study of psychic phenomena. Stevenson defended the importance and necessity of research with spontaneous cases throughout his career.

In his first PA Presidential Address in 1968, entitled "The Substantiability of Spontaneous Cases," Stevenson discussed the topic in detail. In his view, spontaneous cases could provide evidence for the existence of a phenomenon, and were superior to experiments in that in cases it was possible to know what information was communicated, while the same was not the case in many experiments. He also argued that emphasis on experiments could limit too much the database of material necessary for the development of theory in the field. In Stevenson's view criticisms of the weakness of human testimony, while valid in some cases, did not necessarily apply to all.

Stevenson returned to the topic briefly in his second Presidential Address to the PA in 1980, in which he discussed the idea of a mind separate from the body. As he said: "The common factors of successful experiments appear to be emotion … but we can observe the effects of strong emotion much better in spontaneous cases than in laboratory experiments. The important events of life that generate strong emotions do not happen in laboratories, or not often. I am referring here to such events as serious illness, accidents, other stresses, and — above all — death."

Detailed discussions of the weaknesses and strengths of human testimony have appeared in Stevenson's books. In *Cases of the Reincarnation Type: Vol. 1: Ten Cases in India* (1975), he focused on a variety of issues regarding reincarnation-type cases. As before, Stevenson's major message was that while evidence from cases was not perfect, it was an exaggeration to claim that the weaknesses of human testimony disqualified all possible evidence for psychic phenomena coming from spontaneous cases.

Stevenson returned to aspects of case studies in two papers published in 1987. In "Changing Fashions in the Study of Spontaneous Cases" he argued that emphasis on experimental evidence may have hindered our efforts to learn things about the phenomena that can only be obtained from case studies. He called from a more balanced science based both on experiments and the study of spontaneous cases. In the second paper, "Why Investigate Spontaneous Cases?," Stevenson focused on the importance of careful investigation of testimony to avoid errors.

Overall, Stevenson's message was clear. He believed that parapsychology was destined to be an incomplete science if it continued the emphasis on experimental data. Furthermore, he cautioned us repeatedly of citing the weakness of human testimony as a blanket statement to dispose of cases. Instead, he reminded us, we needed to approach the issue of human testimony empirically.

IAN STEVENSON'S REINCARNATION RESEARCH

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In psychical research there was a long tradition of investigating evidence relevant for the question of life *after* death. Stevenson started a new field of inquiry, namely the investigation of phenomena that might give evidence for life *before* birth, i. e. for the theory of reincarnation. He will be primarily be remembered for his pioneering field investigations and numerous publications in this area, nine books and numerous papers.

His first publication on this topic, "The Evidence for Survival from Claimed Memories of Former Incarnations," was published in *JASPR* in 1960. It was a winning essay of a contest in honor of William James. There he analysed 44 cases that he had found in the literature, gave a brief description of seven of them, and with his characteristic thoughtfulness and circumspection he discussed nine hypotheses that might possibly explain them. He made some proposals for further research which should be carried out. From this paper it is evident that he had been collecting cases of this kind long before this publication in 1960.

With support from Chester Carlson Stevenson started active field research into cases of children who claimed to have memories of a previous life. In 1966 he published *Twenty Cases Suggestive of Reincarnation* on cases he had investigated in India, Sri Lanka, Brazil, Alaska and Lebanon. After this the major thrust of his research concerned memories of a previous life. He visited a great number of countries in search of them. There followed further publications, eight books and numerous papers on individual cases as well as on their characteristics, interpretion and potential explanatory value. In his later years he became increasingly interested in birthmarks and birth defects that seemed related to past-life memories. On this topic he wrote two large volumes (2268 pages!) *Reincarnation and Biology: A Contribution to the Etiology of Birthmarks and Birth Defects*. His last book *European Cases of Reincarnation* was published in 2003. All his books and papers reflected the thoroughness of his fieldwork and his great committment to details.

In his work Stevenson was not spared criticism nor derision. He was accused of a bias towards superficial and sloppy fieldwork, and he was continuously reminded of the great difficulties of interpreting his data on past-life memories, of which he was fully aware and often discussed in his various publications.

Stevenson gradually developed a team of interpreters and coworkers in various countries, and got some of his staff at the then Division of Parapsychology at the University of Virginia involved in this work, such as Emily Williams Kelly, Antonia Mills and Jim Tucker. In the late 1980s he convinced Jurgen Keil and myself to do independant studies of children claiming past life memories which resulted in the publication of a few papers.

Stevenson´s output of writings on this subject was enourmous. Also astounding is that his work was based on extensive field trips to foreign countries.

IAN STEVENSON'S CONTRIBUTIONS TO RESEARCH WITH SPONTANEOUS ESP EXPERIENCES

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In his first published paper on parapsychology, "The Uncomfortable Facts about Extrasensory Perception," published in *Harper's Magazine* in 1959, Ian Stevenson wrote favorably about the early investigations of spontaneous ESP. When Stevenson started publishing his own case studies from 1960 on, most of the scientific studies of psychic phenomena focused on experimental studies. His work, however, had some contemporary context, as seen in the studies of group of cases of Louisa E. Rhine, and G. Sannwald, as well as in the single case reports of others such as Rosalind Heywood, and Guy W. Lambert.

Stevenson's first work with ESP cases was with precognitive experiences. His first paper on the subject appeared in 1960 in *JASPR* and was entitled "A Review and Analysis of Paranormal Experiences Connected with the Sinking of the Titanic," a topic he revisited in a 1965 paper. In 1961 he delineated the criteria and characteristics of precognitive experiences. In other papers published in the 1960s Stevenson documented the form of imagery in the experiences, and argued for the importance of the percipient's previous experiences in facilitating specific topics in precognitive dreams. Stevenson's last paper on precognition was "Precognition of Disasters" (1970), in which he presented a review of previously published cases on the subject.

In another influential study published with Jamuna Prasad, "A Survey of Spontaneous Psychical Experiences in School Children of Uttar Pradesh, India" (1968), the spontaneous ESP experiences of Indian school children were investigated using questionnaire responses. As has been documented in other studies before and after, dream experiences were more common than waking experiences.

Stevenson's main and most detailed work with spontaneous ESP was reported in his book *Telepathic Impressions* (1970), in which ESP impression experiences were studied. These included imageless experiences in which the person had thoughts, feelings, emotions, physical symptoms, or impulses to take action, which corresponded to a relevant veridical event taking place at a distance. The work had two parts. In the first part he analyzed published cases. In the second he presented 35 new cases he investigated. The analyses included such aspects as interaction with demographic variables, relationship between percipient and agent, state of consciousness in which the experience occurred, and action taken by the percipient as a function of having an agent thinking about them.

In his last publication on the subject, "A Series of Possibly Paranormal Recurrent Dreams" (1992), Stevenson presented a study of a single case of apparent recurrent veridical dreams. He commented on the importance of vividness as a possible identifying factor of ESP dreams.

Stevenson emphasized the careful study of cases. From the beginning of his career, to his death, he believed that careful investigation of cases could provide evidence for the existence of ESP. Furthermore, his work was an important contribution to the cataloging and understanding of the features of ESP experiences, and provided a healthy and much needed balance to the emphasis on experimental research in modern parapsychology.

IAN STEVENSON ON MENTAL MEDIUMSHIP

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Although Ian Stevenson is best known for his extensive research on cases suggestive of reincarnation, his interests comprised all areas of survival research. Of these secondary topics, Stevenson made the most contributions to the study of mental mediumship. These contributions centered on two topics: "drop-in" communicators and the combination lock test.

Drop-in communicators are intruders who come to a sitting uninvited, and Stevenson considered them more evidential of survival than standard communicators. He adhered to the general proposition that the most likely source of paranormal information, whether in survival- or non-survival contexts, is the candidate with the strongest motivation to communicate. Neither the medium nor the sitters generally have a motive to communicate with a drop-in, and if it can be reasonably inferred that the drop-in did possess a motive to communicate, the likelihood that the drop-in is the information source, and hence real, is markedly increased.

Stevenson authored or co-authored full reports of five drop-in cases. These reports were of the same genre as those of his reincarnation cases, with a detailed listing of accurate and inaccurate statements, successful and unsuccessful attempts to obtain corroborating documentation, and an analysis of fraud, cryptomnesia, and ESP from the living as alternative hypotheses to survival. For balance, he also published a critique of several non-evidential cases from a single medium.

Arguably the most impressive of Stevenson's drop-in cases was one he co-investigated with panelist Erlendur Haraldsson. The communicator was a drunkard nicknamed "Runki", who dropped in on multiple sessions by the famous Icelandic medium Hafsteinn Bjornsson. As in the other three detailed cases, the communicator (Runki) did not die of natural causes; he drowned. His body washed ashore but was missing a thighbone, and Runki's motive for communicating was for someone to find it. After making inquiries one of the sitters determined that the thighbone had been buried behind a wall in the sitter's own house, and the bone was recovered. In addition to providing verifiable information, Bjornsson also adopted Runki's passion for snuff and alcohol during the sessions. The investigators also conducted a controlled mediumship experiment with Bjornsson that produced significant results.

The combination lock test was a variant of a procedure developed by Robert Thouless. Persons 55+ years and in good mental/physical health would generate a word or phrase that was meaningful to them but not easily guessed by their surviving relatives. Using a special code, the word or phrase would be translated into a six-number lock combination. Aspirants would set the lock before death and attempt to communicate the word or phrase to a medium after death. As a control, mediums would try to open the lock before the aspirant died. At least ten locks were registered with Stevenson, most notably those of Thouless and Stevenson's former colleague J. G. Pratt. However, to date no one has been able to open any of the locks. Stevenson set two locks himself, and it will be interesting to see if he can succeed where his predecessors have so far failed.