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Message to our Readers

Welcome to the third volume of the *European Journal of Parapsychology* to be produced from Edinburgh. We hope that you will forgive the delay in publication of this year's journal, caused by maternity leave and pressures of work. We are pleased to say that so many papers were submitted for this journal that several have had to be held over for volume 11, 1995. Therefore, volume 11 is likely to appear back on schedule, around Spring 1995. We welcome your interest in the *EJP* and would urge you to continue sending in papers, reviews, comments and letters for publication.

We are very proud to be able to provide for each article abstracts translated into six foreign languages. This would have been impossible without the generous help of the following individuals: Carlos Alvarado (Spanish); Michel-Ange Amorim (French); Massimo Biondi (Italian); Gerd Hövelmann

(German); Hans Michels (Dutch); and Fátima Regina Machado & Wellington Zangari (Portuguese). We extend our sincere thanks to all these translators, who gave their time free of charge and at short notice. We would also like to thank all the anonymous referees whose careful considerations have improved the quality of the articles we publish. Finally, of course, we thank all the authors who have contributed their work and without whom there would be no journal.

The *European Journal of Parapsychology* is jointly produced by an editorial team: Caroline Watt does desktop publishing; Julie Milton is the copy editor; Deborah Delanoy and Robert Morris assist in the handling of articles; and the University of Edinburgh prints the journal. We hope that the journal will stimulate interest in parapsychology and will promote communication between parapsychologists.

Individual Differences in Aura Vision: Relationships to Visual Imagery and Imaginative-Fantasy Experiences

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Abstract: Aura vision, or the claimed experience of perceiving lights, haloes, or energy fields around a person's body, was studied in relation to imaginal variables and claims of other experiences. Nineteen individuals reporting experiences of aura vision were compared to an equal number of control subjects who had not seen auras. Both groups were matched by sex and age. Participants completed the Questionnaire on Auras and Other Experiences (QAOE), the Vividness of Visual Imagery Questionnaire (VVIQ), and the Inventory of Childhood Memories and Imaginings: Children's Form (ICMIC). It was predicted that the aura group would claim more vividness of visual imagery and more imaginative and fantasy-related experiences than the control group. The predictions were confirmed both for the VVIQ (aura group, mean = 27; control group, mean = 38: $t[36] = -2.72$, $p[\text{one-tailed}] = .005$ [lower scores indicate higher vividness]) and for the ICMIC (aura group, mean = 21; control group, mean = 14, $t[36] = 3.85$, $p[\text{one-tailed}] = .0002$). ICMIC scores were significantly correlated with the level of ability to see the aura at will ($r_s = .60$, $p < .001$, two-tailed) even though mean scores were based only on the subset of ICMIC items that do not concern psi-related experiences. In addition, the aura group had a significantly higher frequency of such claims as seeing apparitions ($p = .0006$), experiencing ESP in dreams ($p = .008$), having mystical experiences ($p = .01$), out-of-body experiences ($p = .0002$), and seeing with eyes closed ($p = .004$) than did the control group. In addition, the aura group reported more frequent practice of meditation than the control group ($p = .008$).

The results of the study support the idea that claims of aura vision are related to claims of vivid visual imagery and fantasy and other imaginative experiences as well as to a variety of other psi-related experiences and some non-psi-related experiences. It is argued that further studies of aura vision could profitably focus on imaginal, neuropsychological, and perceptual correlates of the experience, as well as on integrating occult, religious and folk beliefs about the experience with correlational and phenomenological research findings.

Thalbourne (1982) defines the aura as a 'field of subtle, multicoloured, luminous radiation said to surround living bodies as a halo or cocoon' (p. 4). This phenomenon has a long conceptual tradition in the religious, occult, and psychical research literatures (for reviews see Alvarado, 1987;

Montandon, 1927, Chapter 2; Perera Molina, 1981; Regush, 1977; and Spence, 1920, pp. 50-51). Observations of the aura have been recorded in a variety of contexts, from reports in the old hypnosis literature in which hypnotized subjects sometimes claimed to see a luminous 'fluid around the eyes, fingers, noses, [and] ears of the magnetizer and of the persons with whom they were in rapport' (de Rochas, 1904, p. 14), to reports of various luminous effects seen

An earlier version of this paper was presented at the 1993 Annual Convention of the Parapsychological Association, held in Toronto, Canada.

around mystics and saints (for a review see Alvarado, 1987), and to descriptions of the auras of seemingly gifted individuals or self-proclaimed psychics (e.g., Garrett, 1939; Karagulla, 1967).

The literature on auras offers a variety of explanations to account for the phenomenon. The occult and experiential traditions postulate the existence of subtle bodies and energies of a type not acknowledged by science but supposedly perceived by means of ESP (e.g., *The Aura*, 1955; Leadbeater, 1902; Schwartz, 1980). Other explanations for reports of aura vision include the possible perception of physical fields around the human body, normally invisible to the naked eye (e.g., ultraviolet light, thermic fields), as well as a variety of hallucinatory concepts (for reviews see Bigu, 1976; and Tart, 1972). In addition, perceptual illusions, afterimages, contrast effects, or entoptic phenomena (the perception of spots or 'floaters' in the line of vision for which the experiencer has no physical explanation) have also been offered as explanations for aura reports (e.g., Dale, Anderson & Wyman, 1978; Fraser-Harris, 1932; Neher, 1980; Owen & Morgan, 1974; Rawcliffe, 1952).

Most modern parapsychologists have shied away from aura reports as a research topic because of their pervasive presence in a variety of occult, spiritual and folk belief systems. Evidence of our neglect is apparent in the low frequency of papers on the topic that appear in 'mainstream' parapsychology. For example, excluding this paper, only five papers in which the main focus was on aura vision have been presented at the annual convention of the Parapsychological Association from its first meeting in 1957 to the most recent meeting in 1994. None of these five papers discussed individuals' observations of the aura, a topic we emphasize in this paper¹.

¹ Of the five papers that were presented, three were about Kirlian photography (Burton & Joines, 1974; Burton, Joines, & Stevens, 1975; Kejariwal, Chattopadhyaya & Choudhury, 1983), one discussed possible electrical explanations of the phenomenon (Stevens, Burton, & Joines, 1975), and one described an attempt to detect an aura

In fact many consider reports of aura vision to be outside of the scope of scientific parapsychology altogether. Gardner Murphy, writing with Laura Dale (1961, p. 286), argued that no existing data on aura reports supported the idea that the topic was worth studying. More recently, Nash (1986, pp. 151-152) classified aura reports under the heading, 'questionable ESP phenomena'.

There is no doubt that little serious work has been done in this area. In addition, some of the work that has been conducted has been so problematic that serious scientists are loath to reference it. This is especially true of reports in which overly optimistic researchers describe supposedly consistent results concerning the characteristics and functions of aura viewing without presenting any clear description of the methodology used, or without treating alternative conventional explanations seriously (e.g., Slate, 1988; G.S. White, 1928). We argue, however, that reports of aura vision should be of interest to parapsychologists for a number of reasons. Many anecdotal observations suggest that 'aura reading' may be relevant to unconventional medical diagnosis, perhaps by serving as an imaginal vehicle for the expression of ESP-acquired information (e.g., Karagulla, 1967) or for information acquired through normal senses but not otherwise available to the conscious mind. Seeing auras also seems to be associated with reports of the development of psi sensitivity after near-death experiences (Greyson, 1983) as well as to be correlated with other such extraordinary claims as seeing apparitions and claiming to have had OBEs (Kohr, 1980; Palmer, 1979). Additionally, some gifted subjects who have shown evidence of psychic functioning in experimental contexts have also reported aura vision as part of their overall pattern of psychic experiences (e.g., Garrett, 1939, Chapters 3 and 5; Swann, 1975, pp. 21-22). There are also reports in the literature in which an

around the human body through the use of instrumentation (Karolyi, Nandagopal & Wigg, 1983).

anomalous 'glow' surrounding a human body was claimed to have been perceived collectively (Alvarado, 1987). Aura vision reports have also been related to investigations of possible human radiations in the history of psychical research, such as the search for a 'mesmeric fluid' and the 'od force', among other such concepts of the hypothetical force put forth in the older literature as possible causal agents underlying both ESP and PK phenomena (for reviews of these concepts see Montandon, 1927, and Sudre, 1956/1962, Chapter 6).

We argue that aura vision reports are part of human experience and as such deserve and require study in and of themselves, with and without efforts to relate aura vision to possible paranormal components. Our perspective is consistent with Palmer's (1986) recent 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., Blackmore, 1988; Schouten, 1986; R.A. White, 1990). To paraphrase Irwin (1989, 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. Our research was conducted along these lines.

Although aura reports have generally been neglected in parapsychology, a few serious studies have been published. For example, some recent surveys of psychic phenomena reported the incidence of aura reports in specific populations (see Table 1). In studies in which random sampling was used the incidence of aura vision reports ranged from 0% to 7% (i.e., Chadha, Alvarado & Sahni's, n.d., unpublished study; Haraldsson, Gudmundsdottir, Ragnarsson & Jonsson, 1977; Murray, 1983; and Palmer, 1979). The incidence of the phenomenon reported when groups were nonrandomly sampled was somewhat higher, ranging from 9% to 48%.

Some researchers have tried to detect a physical cause underlying reports of aura vision. They have tested gifted individuals who claimed to be able to detect auras (e.g., Ellison, 1962; Loftin, 1990; Neher, 1980, pp. 187-188; Owen, 1972; Owen & Morgan, 1974; Tart & Palmer, 1979). In other studies, researchers have used apparatus such as screens or goggles treated with special chemicals in an effort to render the aura visible (e.g., Bagnall, 1937; de Fontenay, 1912; Kilner, 1920). Cameras and photographic plates (e.g., Baraduc, 1896; Bond, 1933), electrophotography (e.g., see the papers in Krippner & Rubin, 1973) and other instruments (e.g., Dobrin, Kirsch, Kirsch, Pierrakos, Schwartz, Wolff, & Zeira, 1979; Karolyi, Nandagopal & Wigg, 1983) have also been used by some researchers. In addition there are at least two studies of EEG correlates to reports of aura vision (Green & Green, 1977, pp. 239-240; Whitton, 1974)².

In this paper we are taking a first step toward understanding the psychological correlates of the experience. There are precedents in the literature for this type of research. Owen (1972), for example, administered an unpublished (and presumably unvalidated) questionnaire to measure the 'power of visual imagery'. Most of the aura viewers he tested (8 out of 11) obtained scores above the median value obtained by a separate sample of 70 subjects who did not claim aura vision. Pekala, Kumar & Cummings (1992) reported a positive but non-significant relationship between reports of aura vision and hypnotic susceptibility.

Some surveys have correlated aura claims with other ostensible psi experiences. For example, Palmer (1979) found positive correlations between aura reports and the practice of meditation for his sample of college students then at the University of Virginia in Charlottesville, Virginia in the US. He also found correlations between aura reports and vivid

² Also relevant here are the critiques of Kilner's work (Ellison, 1967) and discussions of artifacts in Kirlian photography (Burton, Joines, & Stevens, 1975; Montandon, 1977).

INDIVIDUAL DIFFERENCES IN AURA VISION

Table 1
Incidence of aura vision in survey studies

Study	Participants	Country	Random sampling	Sample size	% Aura vision	% Multiple aura vision
Murray, 1983	Residents of urban area	Phillipines	Yes ^a	80	0	-
Chadha <i>et al.</i> , n.d.	College students	India	Yes ^a	270	4	40
Haraldsson <i>et al.</i> , 1977	Selected from National Registry	Iceland	Yes	902	5	-
Palmer, 1979	Townpeople	USA	Yes	354	5	87
Palmer, 1979	College students	USA	Yes	268	6	67
Pekala <i>et al.</i> , 1992	College Students	USA	No	575	7	-
Zingrone & Alvarado, 1994	College library personnel	USA	No	55	7	-
Neppe, 1981	Members of cultural society	South Africa	No	57	9	-
Thalbourne, 1994	Members of the SPR	UK/USA & other	No	402	13	-
Alvarado, 1994	College students (parapsychology class)	USA	No	15	13	-
Murray, 1983	Members of Isneg tribe in remote rural community	Phillipines	Yes ^a	80	28	-
Richards, 1988	Participants of programs and projects of ARE ^b	USA	No	465	44	-
Kohr, 1980	Members of ARE ^b	USA	No	406	47	87
Tart, 1971	Marijuana users	USA	No	150	48	-

Note: Studies have been arranged from the lowest to the highest incidence of aura vision.

^a Stratified sample. ^b Association for Research and Enlightenment.

dreams, lucid dreams, mystical experiences and practice of dream analysis for his sample of townspeople living in the same town. Kohr (1980) surveyed members of the Association for Research and Enlightenment, in Virginia Beach, Virginia, in the US and obtained positive and significant correlations between reports of aura vision and dream analysis, the practice of meditation, mystical experiences, and other experiences such as waking and dream ESP, OBEs, and apparitions.

We wish to emphasize that our paper, the analysis of a small case collection of aura reports and their psychological correlates, is an exploratory study that we hope will provide a first step towards a more meaningful and large-scale study of the phenomenology of the experience and of the psychology of the experiencers. First, we will present some brief descriptions of their experiences from among those provided by our small group of 'aura viewers'. Second, we will compare members of the aura group to a group of control participants on two psychological questionnaires, and on reported incidence of claims of psi phenomena, dream variables such as vividness and lucidity, and reports of such visual/physical experiences as headaches, afterimage persistence, and the presence of entoptic spots in the line of vision as measured by a short questionnaire of our own construction. We believe that the study of individual differences in aura vision reporters is important if for no other reason than that it relates a phenomenon traditionally enshrouded in the mystery of occult traditions to more familiar forms of psychological functioning.

We hypothesized that a relationship exists between claims of vivid visual imagery and aura vision reports such that 'aura viewers' would also report significantly more vivid visual imagery than persons who did not report seeing auras. We based our assumptions partly on the writings of some theorists who have argued that an individual may create an hallucinatory image of an aura from information perceived through normal senses or

through ESP (Ellison, 1962; Tart, 1972) which led us to expect that persons who are more adept at internal imagery would also be more likely to experience such external hallucinatory images. That is, we thought it would be interesting to test whether when:

The observer looks at the target person... [he may] pick up various physical, and behavioral characteristics from seeing him. He may also receive an information input, to varying degrees, from his own *psychic* faculties... Then, somewhere on an unconscious level, these inputs are transformed into a mental image and delivered to consciousness so that he 'sees' an aura surrounding the target person (Tart, 1972, p. 15).

Presumably such information could be derived from normal sources of information as well as anomalous ones and expressed to the observer through an hallucinatory aura. It is also possible that aura viewers may be perceiving some measurable physical phenomenon (whether based on temperature variants or some other physiological attribute of body states). Additionally, reports of aura vision may be related to measurable cognitive variables. Neher (1980) speculated on the importance of (presumably visual) imagery in aura vision. He said: 'The expectation of seeing an aura is... sufficient to produce the perception of an aura in some individuals with *strong imagery*' (p. 187, our italics). Owen's (1972) informal imagery testing supported just such an idea.

We also hypothesized that 'aura viewers' would show evidence of being more fantasy-prone than persons who did not report seeing auras. Our hypothesis was based on the thinking of Wilson & Barber (1983), among others, who claimed that high-fantasy prone subjects report a variety of both imagery-related and psi experiences.

Because of the peculiarities of the scoring procedures of one of our questionnaires, our hypotheses resulted in the

expectation that a significant negative correlation would be found between our aura questionnaire and our vividness questionnaire for aura reporters (signifying that reports of aura viewing correlated with a greater frequency of claims of experiences of vivid visual imagery), and a significant positive correlation between our aura questionnaire and our fantasy proneness questionnaire for aura reporters (signifying that aura viewing correlated with more claims of fantasy and imaginal experiences in childhood, thus more fantasy-proneness).

Method

Selection of Participants and Procedure

Thirty-eight people participated in our study — 19 'aura viewers' and 19 persons who did not report seeing auras who served as a control group. The 'non-aura viewers' were matched to the aura viewers by sex and approximate age. The non-aura viewers were selected by convenience from among the acquaintances of the authors and from other volunteers who exhibited no particular knowledge of parapsychology and who had not previously reported either paranormal or other unusual experiences³. The cases reported by our aura viewers were collected by one of us (CSA) during the years 1984-1985. Some of these participants were referred by colleagues whereas other participants replied to an advertisement published in various newsletters related to psychic phenomena. The advertisement called for persons who had seen luminous phenomena around dying persons, because that was the initial interest of one of us (CSA) at the time. Later, the project was expanded to include reports of auras occurring in a variety of other, non-death related contexts. None of the aura viewers met either one of us personally. Rather, one of us (CSA) corresponded with them by mail. Aura viewers completed the Questionnaire of Auras and Other Experiences

(QAOE) designed by CSA to obtain detailed information and a written description of each respondent's most recent aura experience (if more than one was experienced). The QAOE contained other questions about the aura as well as questions about other ostensibly psychic or psi-related experiences, and questions about perceptual and visual experiences that may have some neuropathological significance (i.e., questions about the frequency of headaches, the persistence of afterimages, and the frequency of entopic phenomena). In addition, aura viewers completed Marks' Vividness of Visual Imagery Questionnaire (the VVIQ) and Susan Myers' 'Inventory of Childhood Memories and Imaginings: Children's Form (the ICMIC). After completed questionnaires were returned, one of us (CSA) corresponded further with the experiencers if it was necessary to clarify aspects of the written description or of the responses to forced-choice questionnaire items. Further contact was only necessary on those few occasions when the respondents answered the aura questionnaire on the basis of multiple experiences, rather than the most recent one, or when one of the other questionnaires was improperly completed. The control group also filled out the QAOE, the VVIQ and the ICMIC. In some cases, where clarifications were necessary, one of us (CSA) provided information to the control group through verbal contact.

Questionnaires

The QAOE was developed by CSA to collect information on auras and other experiences (see Appendix for the text of the questionnaire). The key question was adapted from one used by Palmer (1979) in his survey of students and townspeople in Charlottesville, Virginia in the US. It asked: 'Have you ever seen a light or lights, or an energy field around any part of a person's body which, as far as you could tell, were not due to 'normal' or 'natural' causes? (i.e., a 'halo' or 'aura').' The respondent was asked to write a narrative description of the experience so that we would be able to

³ We wish to thank Kathy Dalton for recruiting some of our control participants.

assess whether or not the initial question had been understood. As can be seen in the Appendix, the rest of the QAOE focused on such characteristics of the aura report as the circumstances in which the aura was seen (e.g., during normal activities, during a headache), and other features of the experience including: the part of the body around which the aura was seen; its dimensions, shape, and colour(s); and whether it was collectively perceived. Other questions asked about frequency of aura vision and about other variables such as the frequency of headaches, apparitional experiences, ESP in dreams, OBEs, and lucid dreams.

As we mentioned above, both groups completed the Visual Vividness of Imagery Questionnaire (VVIQ) (Marks, 1973), and the Inventory of Childhood Memories and Imaginings: Children's Form (ICMIC) (Myers, 1983). The VVIQ was originally administered by Marks (1973) twice, once with eyes closed and once with eyes open. Because it has been argued in the literature that the rationale for this practice is unclear and because no significant difference between scores obtained in both conditions has been reported (White, Sheehan & Ashton, 1977) insofar as we know, the scale was sent (or given) to the participants with no particular instructions other than those included in the text of the scale itself.⁴

Myer's ICMIC is a shortened version of Wilson and Barber's Creative Imagination Scale (1978), truncated so that it is easy to use for children. We chose the ICMIC because of its comprehensibility and brevity — attributes that lent to an ease of administration through the mail. Although we believe that none of the questions of the

ICMIC are inappropriate for an adult population, no adult norms for this scale have been published to our knowledge.

Data Analysis

One of us (NLZ) tallied the scores from the VVIQ and the ICMIC for both groups, remaining blind as to whether the respondent belonged to the aura group or to the control group. NLZ also input the questionnaire results and respondent identification data into a spreadsheet in a statistical package (Number Cruncher Statistical System 5.01) and ran the analyses. The data was later exported into another statistical package (StatPac Gold IV) for double-checking and further analysis. All data-entry and analyses were double-checked by both of us working together, as was the assignation of probability values. Because this is an exploratory study we did not strictly correct for multiple analyses; however we did adopt an alpha level of .01. With the exception of two analyses testing the main hypotheses of the study, all statistical tests were two-tailed.

Results

Characteristics of the Participants

Most of the participants in each group were women (79%). The age range in the aura group was 30 to 77, whereas participants in the control group ranged in age from 30 to 78. The median age for both groups was 46.5.

Descriptions of Auras

Because of the small number of aura reports we collected for this study, we did not attempt a detailed analysis of the features of the aura vision experience. However, we have presented some short descriptions from selected cases below to illustrate the type of phenomena the aura group reported. Including experience descriptions is no longer a common practice in reports of questionnaire studies of similar experiences (e.g., Kohr, 1980;

⁴ We are aware of the controversy over the validity and reliability of Mark's VVIQ as a test of vivid imagery (See Campos & Sueiro, 1993; Chara, 1989, 1992; Council, Chambers, Jundt & Good (1990-91); Chara, & Hamm, 1989; Marks, 1989; McKelvie, 1979, 1986, 1992a, 1992b; and McKelvie & Demers, 1979 for a sample of this debate). We are not using the VVIQ to indicate the real presence of vivid visual imagery in the imaginal repertoires of our participants; rather we are correlating the tendency to report vivid imagery experiences to the tendency to report aura vision experiences.

Palmer, 1979). Some questionnaires do not even require respondents to describe their experiences, thus leaving the researcher to hope that the experience upon which questionnaire responses are based is the experience the researcher had in mind in designing the study. We believe, therefore, that it is necessary to solicit such experience reports in questionnaire studies. We also believe it is necessary to include a sampling of such descriptions in the reports of questionnaire studies so that the reader may assess the meaning of obtained statistical relationships within the context of the experience descriptions.

In the descriptions that follow, the listed ages refer to the age of the respondents at the time of questionnaire completion, that is, in 1984 or 1985.

1. A 46 year old woman wrote that while she was taking care of a terminally ill cancer patient when she was a student nurse, she had the following experience:

While the patient was dying, I saw a white veil-like halo around her head and perfect peace and serenity was the overwhelming feeling that I experienced, the patient had a soft smile on her face at this time.

2. A 39 year old woman wrote:

I saw a man sitting at a bar surrounded by whitish purple light — he appeared dead. Later same evening he shot himself — prior to [the] event — he had attempted — he thought successfully — a murder.

3. In a letter to one of us (CSA) a 75 year old lady described luminous phenomena she saw around the body of a supervisor of hers who had given her a lot of trouble and was not liked in her office. The supervisor was talking to the respondent about a TV programme when:

Suddenly, a bright blue flashing light appeared around her head, shoulders, hips and thighs — I couldn't see her knees and feet as her desk obscured them. It looked like arrows

flashing up and down similar to a neon sign, and was about 3 inches in width. Transfigured, my eyes followed its pattern and I noticed the circuit seemed to break and in its stead were large black streaks in the area around her hips and upper thighs.

4. The following example is from a 50 year old woman who experienced two near-death experiences before seeing the aura. She was in church to attend the funeral of her uncle and to deliver one of the eulogies. At one point during the service she looked at her aunt:

Simultaneously, both she [the aunt] and my uncle's casket were outlined in a light which is brilliant but does not blind; it is warmth and it conveys unconditional love and 'the peace... which passes all understanding.' It radiated outward from them both until their entire family was surrounded. It illuminated them making them, for that moment, a unified one.

5. A 53 year old lady had the following experience related to her father:

I got up one morning got dressed for school came down the stairs and saw my father in the front hall looking so beautiful. He was glowing with a rosy glow.

Her father had been suffering from angina and died of a heart attack later the same day.

6. The following experience refers to an observation the respondent seemed to be making as she wrote her description of the experience. She described the aura of her brother in law:

The aura is opaque, vari-colored. Near the skin but not touching it the colors sunshine yellow to gold; very small layer. The next layer is red; dark; much larger area. Next layer is red-brown to brown; about medium in size. Final layer is dark-blue pal-

ing to a lighter blue. Not all the way to sky blue; darker. Along the neck and spinal area the color is disrupted by an irregular patch of the muddy brown to nearly black. I did ask if his back hurt him. He answered in the affirmative.

VVIQ and ICMIC Correlates of Aura Vision

As shown in Table 2 there were significant differences in the expected direction between the VVIQ and ICMIC scores of the aura and control groups. The aura group obtained a mean score of 27 on the VVIQ whereas the control group obtained a mean score of 38 on the same questionnaire. The difference between the mean scores of these two groups was significant at the .005 level, one-tailed ($t[37] = -2.72$), indicating that the aura group reported significantly more experiences of vivid visual imagery than did the control group. Similarly, on the ICMIC the aura group obtained a mean score of 21 and the control group a mean score of 15. The difference between the mean scores of these two groups was significant at the .0003 level, one-tailed ($t[37] = 3.85$). Because we were interested in deal-

ing with psi-related experiences separately we felt it was important to obtain a corrected ICMIC mean score, which was calculated by removing the psi-related experiences from the scale. When the mean score obtained by the aura group (mean = 18) was compared to the mean score obtained by the control group (mean = 13) on this corrected version of the ICMIC, the difference was still significant though less so ($t[37] = 2.65$, $p = .006$, one-tailed.) These findings indicate that the aura group reported significantly more fantasy-proneness than did the control group. Thus, both hypotheses were confirmed and the effect sizes (Cohen's d) obtained from all three comparisons fell within the range Cohen (1977) describes as 'large' effect sizes. Figures 1 and 2 present graphically the scores obtained by the matched pairs on both the VVIQ and the corrected ICMIC. As can be seen, 11 of the 19 pairs scored in the expected direction on the VVIQ (that is, participants in the aura group claimed to have had more experiences of vivid visual imagery than did their counterparts in the control group). Similarly, 14 of the 19 pairs scored in the expected direction

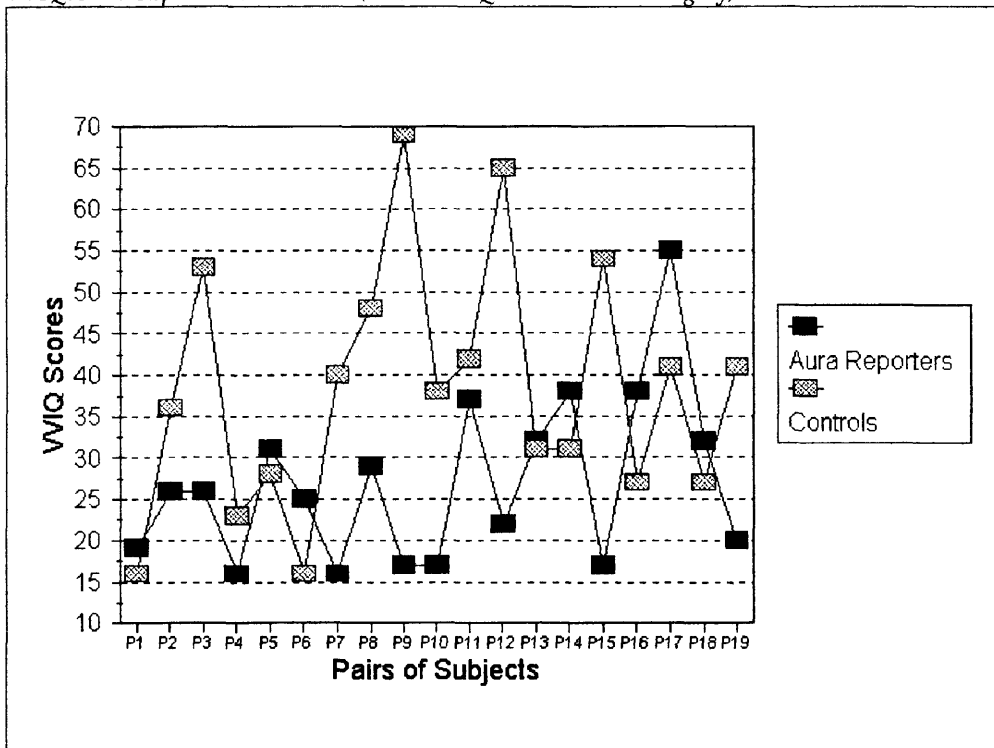
Table 2
Comparison of VVIQ and ICMIC mean scores in the aura and control groups

Test	Aura	Control	#Ss	<i>t</i>	<i>p</i>	Effect size — Cohen's <i>d</i>	Point biserial <i>r</i>
VVIQ	27	38	19	-2.72	.005	0.88	.41
ICMIC	21	15	19	3.85	.0003	1.29	.54
ICMIC-C	18	13	19	2.65	.006	0.86	.40

Note: All analyses are one-tailed. ICMIC-C scores are corrected ICMIC scores, that is, the mean scores obtained after questions that asked about psi-related experiences were dropped from the analysis. Thus, ICMIC-C scores reflect fantasy-proneness values obtained on non-psi-related items of the ICMIC. In all future tables ICMIC should be taken to mean ICMIC-C, that is, scores obtained from the corrected ICMIC.

Figure 1

VVIQ: Aura Reporters vs Controls (Lower VVIQ = More Vivid Imagery)



on the corrected ICMIC (that is, participants in the aura group claimed to have had more fantasy-prone experiences than did their counterparts in the control group).

Persons who claimed to have experienced aura vision were asked to indicate how many times they had seen auras by choosing an option on a scale from 1 to 4 in which 1 indicated one aura vision experience, 2 indicated 2 to 5 aura vision experiences, 3 indicated 6 to 20 aura vision experiences, and 4 indicated more than 20 aura vision experiences. Aura frequency scores from the answers to this question were correlated with both VVIQ mean scores and corrected ICMIC mean scores for the aura reporters. Neither analysis was significant (ICMIC $r_s[19] = .40, p = .10$, two-tailed; and VVIQ $r_s[19] = .04, p = .84$, two-tailed).

Persons who claimed to have experienced aura vision were also asked to rate

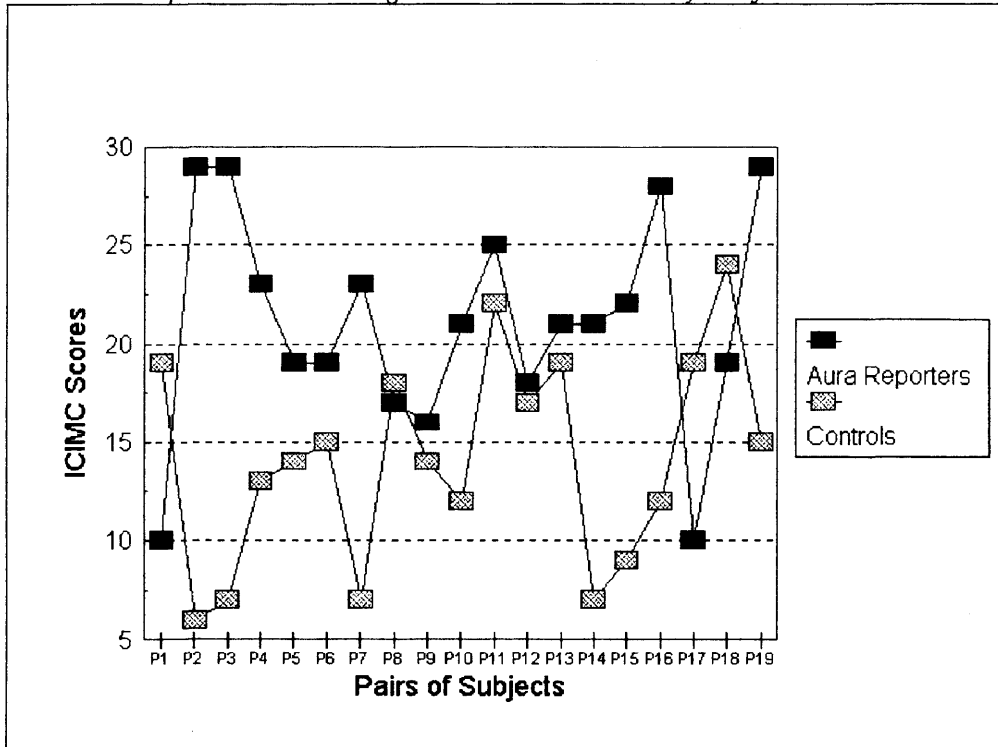
the frequency of their ability to see the aura at will by choosing an option on a scale from 1 to 3 in which 1 indicated that they were never able to see an aura at will, 2 indicated that they were sometimes able to see an aura at will, and 3 indicated that they were usually able to see an aura at will. Ratings on this question correlated positively and significantly with corrected ICMIC mean scores ($r_s[19] = .64, p = .004$) but not with VVIQ mean scores ($r_s[19] = -.02, p = .94$).

VVIQ and ICMIC Correlates of Psi-Related Experiences

An index value, the 'Psychic Experiences Index' (PEI), was calculated by counting the number of other psi-related experiences that the participant claimed. For this analysis, participants from both

Figure 2

ICMIC: Aura reporters vs controls (higher scores on ICMIC = more fantasy)



the aura group and the control group were counted. The other experiences listed on the QAOE deal with frequency of lucid dreams, 'seeing' with the eyes closed, mystical experiences, ESP in dreams, apparitions, and out-of-body experiences. If a participant claimed they had had the experience, whether or not they claimed to have had many such experiences, they were given a score of 1, with total scores accumulated across the seven experiences, yielding the PEI. Although the PEI was only suggestively and negatively correlated to VVIQ scores ($r_s[38] = -.35, p = .03$, two-tailed), it was significantly and positively correlated to the corrected ICMIC scores, that is, with the subset of the scale that does not contain psi-related experiences, ($r_s[38] = .47, p = .003$, two-tailed).

We were interested in whether or not the participants who reported having experienced one of the seven types of experiences listed above (the 'yes' group) differed significantly in either VVIQ or ICMIC mean scores from those who did not claim such experiences (the 'no' group). Table 3 lists the results of this comparison of 'yes' and 'no' participants on VVIQ mean scores. As can be seen, there was a significant difference between the VVIQ mean scores of participants who claimed to have 'seen' with their eyes closed ($t[36] = 2.90, p = .006$, two-tailed), and those who claimed to have experienced ESP in dreams ($t[37] = 3.11, p = .004$, two-tailed), such that participants in the 'yes' group obtained

Table 3

Comparison of VVIQ mean scores of participants who report experiences and those who do not report experiences

Item	'Yes'	VVIQ	'No'	VVIQ
	N	Mean Score	N	Mean Score
Afterimage (Long)	3	19	35	34
Apparitions	19	29	19	36
ESP in Dreams	17	26	21	38****
Headaches (Yes)	31	34	7	26
Headaches (Frequent)	6	44	32	31*
Lucid Dreams	29	35	8	28
Mystical Experiences	26	31	12	37
OBEs	13	26	25	36**
Practice of Meditation	19	29	19	36
Seeing with eyes closed	19	27	18	39***
Spots (Yes)	31	34	6	30
Spots (Frequent)	3	19	35	34

Note: Comparison was done with independent means *t* tests. Lower mean scores indicate more vivid visual imagery claimed.

**t*(36) = 2.30, *p* = .03 (suggestive at set alpha).

***t*(36) = 2.46, *p* = .02 (suggestive at set alpha).

****t*(35) = 2.90, *p* = .006.

*****t*(36) = 3.11, *p* = .004.

significantly lower VVIQ mean scores than participants in the 'no' group for these three experiences, thus indicating significantly more claims of experiences of vivid visual imagery. In addition, respondents who experienced OBEs had suggestively higher vividness of imagery claims than those who did not claim OBEs (*t*[36] = 2.46, *p* = .02).

Table 4 lists the results of this comparison of 'yes' and 'no' participants on corrected ICMIC mean scores. As can be seen, there was a significant difference only between participants who claimed to have 'seen' with their eyes closed (*t*[36] = 4.63, *p* = .0004, two-tailed), such that participants in the 'yes' group for these two experiences obtained significantly higher ICMIC mean scores (indicating significantly more fan-

tasy-proneness) than those participants who did not claim to have 'seen' with their eyes closed.

Table 5 lists the correlations between the frequency of reported psi-related experiences and the VVIQ and ICMIC scores of the participants who reported the experiences combined across both the aura and the control group. The frequency scale used for these experiences mirrored that used for reports of aura vision experiences, that is, the scale ran from 1 to 4 in which 1 indicated one reported experience, 2 indicated 2 to 5 reported experiences, 3 indicated 6 to 20 reported experiences, and 4 indicated more than 20 reported experiences. VVIQ mean scores were negatively correlated with the frequency of ESP in dream experiences reported (*r*_s[38] = -.38, *p* = .02, two-

Table 4

Comparison of ICMIC mean scores of participants who report experiences and those who do not report experiences

Item	'Yes' N	ICMIC Mean Score	'No' N	ICMIC Mean Score
Afterimage (Long)	3	21	35	15
Apparitions	19	17	19	14
ESP in Dreams	19	17	19	14
Headaches (Yes)	31	15	7	15
Headaches (Frequent)	6	15	32	16
Lucid Dreams	29	16	8	12
Mystical Experiences	26	16	12	14
OBEs	13	18	25	14*
Practice of Meditation	19	17	19	14
Seeing with eyes closed	19	18	18	12**
Spots (Yes)	31	16	6	14
Spots (Frequent)	3	21	35	15

Note: Comparison was done with independent means *t* tests using ICMIC corrected mean scores, that is, with psi-related items on the ICMIC removed and overall mean scores recalculated. Higher mean scores indicate more fantasy-proneness claimed.

* $t(37) = 2.74, p = .01$, two-tailed.

** $t(36) = 4.63, p = .0004$, two-tailed.

Table 5

Correlations between reported frequency of experiences and VVIQ and ICMIC scores

Item	N	VVIQ		ICMIC	
		<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Apparitions	37	-.13	.46	.42	.01**
ESP in Dreams	38	-.38	.02*	.28	.09
Headaches	38	.29	.07	.25	.14
Lucid Dreams	37	-.04	.81	.28	.10
Mystical Experiences	38	-.09	.57	.21	.22
OBEs	38	-.16	.33	.43	.007**
Seeing with eyes closed	37	-.31	.06	.57	.0002**
Spots	37	-.01	.95	.004	.99

Note: ICMIC scores have been corrected by removing psi-related items from individual scores. Analyses were done using Spearman's rho correlation. The frequencies of all psi-related experiences were rated on a scale from 1 (none) to 6 (over 20). Frequency of experiences not related to psi were rated as follows: headaches, from 1 (never) to 5 (almost daily); spots in line of vision, from 1 (never) to 4 (frequently).

* Suggestive (at set alpha).

** Significant.

tailed, a suggestive finding) such that participants who obtained lower VVIQ mean scores (indicating more reported experiences of vivid visual imagery) tended to report a higher frequency of ESP in dreams. For those participants who claimed to have experienced OBEs, their frequency ratings were positively and significantly correlated with their corrected ICMIC score ($r_s[38] = .43$, $p = .007$, two-tailed) indicating that those who reported more OBEs also reported more fantasy-prone experiences on their ICMIC responses. Similarly higher corrected ICMIC scores were also positively and significantly correlated with reported frequency of experiencing apparitions ($r_s[38] = .42$, $p < .01$, two-tailed) and with the reported frequency of the experience of 'seeing with eyes closed' ($r_s[37] = .57$, $p = .0002$, two-tailed).

Tables 3, 4 and 5 list analyses of items on the QAOE that cover experiences that have not as yet been theoretically related to psi-experiences (the duration of afterimages; the presence and frequency of headaches; and the presence and frequency of entopic phenomena, that is, spots or 'floaters' in the line of vision for which there are no physical causes known to the

experiencer. For the purposes of independent group t -tests, the experiencers' category of 'afterimage (long)' included only those persons who claimed to have experienced afterimages of more than a minute's duration when faced with a flash of light. The experiencer's category of 'headaches (frequent)' included only those persons who claimed the highest two levels of frequency of headaches (once a week or more). The experiencer's category of 'spots (frequent)' included only those persons who claimed the highest level of frequency of the experience of 'floaters' in their line of vision. As can be seen in Table 3, there was a suggestive difference between the mean VVIQ mean scores of frequent sufferers of headaches versus those who suffer no or few headaches such that less vividness of imagery was claimed by the frequent sufferers. No significant differences were found on any of these non-psi-related experiences on ICMIC corrected mean score comparisons, nor, as can be seen in Table 5, did the frequency of spots or headaches correlate with either VVIQ or corrected ICMIC mean scores.

Table 6
Percentage of experiences claimed by aura reporters and by control group

Experience	Aura Group % (N = 19)	Control Group % (N = 19)	Fisher's Exact p
Afterimage (Long Duration)	16	0	.22
Apparitions	84	16	.000 06
ESP in Dreams	68	21	.008
Headaches (Yes/No)	80	84	.99
Headaches (Frequent)	16	16	.99
Lucid Dreaming	83	76	.74
Mystical Experiences	90	47	.01
OBEs	68	0	.000 02
Practice of meditation	74	26	.008
Seeing with eyes closed	74	26	.004
Spots (Yes/No)	80	84	.99
Spots (Frequent)	16	0	.22

Note: The difference between the statistical outcome of practice of meditation and seeing with eyes closed is due to the fact that one aura group member failed to answer the later question.

Table 6 lists the reported incidence of both psi-related and non-psi-related experiences for the aura respondents and for the control group. Although all but one of the psi-related experience claims were significant, the most striking differences occurred in comparisons of OBE reporters (Aura group 'yes' = 68%, Control group 'yes' = 0%, $p = .00002$, two-tailed), and of apparition reporters (aura group 'yes' = 84%, control group 'yes' = 16%, $p = .00006$, two-tailed). None of the comparisons of incidence of non-psi-related experiences were significant, although we did find it interesting that no member of the control group reported either afterimages of long duration or frequent entopic experiences.

Table 7 lists the median ratings of the number of psi-related and other experiences for those members of the aura and control groups who claimed to have had these experiences. The differences between these median scores were tested using a Mann-Whitney U for which the resultant U statistic was transformed into a z-score for purposes of assigning probability values to the differences. As can be seen, the median frequency of psi-related experiences were

significantly greater for the aura vision reporters than for the members of the control group, with the exception of differences between the two groups in experiencing lucid dreams (nonsignificant) and the suggestive finding for mystical experiences ($z = 2.41$, $p = .02$). Median ratings on non-psi-related experiences were not significantly different for the aura and control groups, however.

Correlational analyses between VVIQ, ICMIC & QAOE

Table 8 lists the correlational analyses that were done on the mean scores of the VVIQ and corrected ICMIC means and the items of the QAOE, as well as inter-item correlations. Although the N of the study was too low to conduct a meaningful regression analysis, a number of significant relationships were uncovered. For example, the frequency of reported apparitional experiences correlated significantly with the frequency of ESP in dreams, OBEs, aura vision frequency, and the ability to see auras at will. Interestingly, the frequency of

Table 7

Median ratings of number of psi-related and other experiences in aura and control groups

Experience	Aura group	Control group	z	p
Afterimage Duration	1.0	1.0	1.61	.22
Apparitions	3.5	1.0	3.92	.0002
ESP in Dreams	2.0	1.0	2.61	.02
Headache Frequency	2.0	2.0	0.36	.99
Lucid Dreaming	3.5	3.0	1.36	.34
Mystical Experiences	3.0	1.0	2.41	.04
OBEs	3.0	1.0	3.61	.0006
Seeing with eyes closed	4.0	1.0	2.92	.008
Spots Frequency	3.0	2.0	1.60	.22

Note: Median ratings derived from scale ranging from 1 (none) to 6 (over 20). Statistical comparisons were made using the Mann-Whitney U Test. The resulting U statistic was transformed into a z-score for the purposes of assigning probability values. All comparisons are two-tailed.

Table 8

Correlational matrix, VVIQ, corrected ICMIC mean scores and QAOE items

	VV	Age	AF	AW	LD	MY	SE	HF	AP	ES	OB	PEI	AF	SP
Age	-.34*													
AF	.04	-.34												
AW	-.02	-.17	.84****											
LD	-.04	-.31	.08	.09										
MY	-.09	-.13	.15	.09	.33*									
SE	-.31	.14	.55*	.63**	.27	.56***								
HF	.29	-.30	.37	.17	.32	.14	.07							
AP	-.13	-.08	.73**	.55*	.25	.46**	.61****	.31						
ES	-.38*	.07	.39	.15	.33*	.36*	.50**	.26	.47					
OB	-.16	-.10	.37	.39	.46	.46**	.47**	.23	.64****	.62****				
PEI	-.35													
AF	-.14	-.17	.33	.27	.25	.25	.37*	.29	.58***	.51**	.61****	.46**		
SP	-.01	.17	.08	-.07	.08	.18	.36*	.30	.56***	.23	.30	.36*	.33*	
IC	-.25	-.28	.40	.64**	.28	.21	.57***	.25	.42**	.28	.43**	.47**	.46**	.01

* $p < .05$, suggestive at set alpha.** $p < .01$, significant.*** $p < .001$.**** $p < .0001$.

Legend: VV (VVIQ mean scores), AF (aura frequency), AW (auras at will), LD (lucid dreaming frequency), MY (mystical experience frequency), SE (seeing with the eyes closed frequency), HE (headache frequency), AP (apparitions frequency), ES (ESP dream frequency), OB (OBE frequency), PEI (Psychic Experiences Index), AF (afterimage duration), SP (spots in line of vision frequency), IC (corrected mean scores for ICMIC).

reported apparitional experiences also correlated significantly with duration of after-images and the frequency of entopic experiences. The frequency of reports of seeing with the eyes closed also correlated significantly with apparition experience frequency, ESP in dreams, OBEs, afterimage duration, and entopic phenomena as well as with aura frequency, the ability to see auras at will, and mystical experience frequency. Lucid dreaming frequency, the incidence of which was not significantly different in the aura group from the control group, correlated with mystical experience frequency, apparitions, ESP in dreams, and OBE frequency but not with aura frequency or the ability to see auras at will.

Because evidence for a sex difference in vividness of visual imagery and fantasy-proneness has occasionally been reported in the literature, we decided, as a final post hoc analysis, to check for sex differences in our data. Because we surveyed only eight men for this study (four aura vision reporters and their matched controls), it was not possible to do an analysis of variance to test possible interactions between sex, VVIQ and ICMIC scores and aura vision reports. Again, because of the low number of males in our sample, we did not feel that *t* tests would be meaningful. As a way to explore the question, however, we split our data into males/females, aura group/controls and examined the number of participants who obtained scores at or above the mean with those who obtained scores below the mean using Fisher Exact probability tests. Analyses of VVIQ and ICMIC scores for males versus females were nonsignificant overall, and also nonsignificant when aura vision reporters and control group members were examined separately. In the latter analyses we noticed that females in the aura group tended to score below the mean on the VVIQ (indicating more vividness of imagery) and above the mean on the ICMIC (indicating more fantasy-proneness). Consequently we performed four additional analyses in which we tested males in the aura group against males in the control group on VVIQ mean scores and on ICMIC mean scores. Similar analy-

ses were done for the females. On the VVIQ scores the distribution of males with scores at or above the mean was identical with that of males who scored below the mean. On the ICMIC test, while all the males in the aura group scored above the mean score (indicating more fantasy-proneness) and 3 out of 4 of the males in the control group scored below the mean, this difference was not significant. Similarly on the ICMIC scores, although 10 out of 15 of the females in the aura group scored above the mean on the ICMIC (indicating more fantasy-proneness) and 11 out of 15 of the control group scored below the mean (indicating less fantasy-proneness), the difference was not significant (two-tailed $p = .06$). The difference on VVIQ scores for females was suggestive at the .02 level, two-tailed with 12 out of the 15 aura group females scoring below the mean on the VVIQ (indicating more experiences of vivid visual imagery) and 10 of the 15 in the control group scoring above the mean. Therefore we concluded that no evidence for sex differences exists in our dataset; rather the results of these last analyses supported our previous findings in that the key variables seemed to be group membership, that is, whether or not the participant reported having had the experience of seeing an aura.

Discussion

We wish to qualify the generalizability of our findings by stressing that the aura group was self-selected. Our aura viewers were comprised mainly of individuals who wrote to one of us (CSA) in response to an advertisement. It is likely that persons who have many and intense experiences of psychic phenomena, and/or who live an intense imaginal life, are more motivated to write in to recount their experiences. It is possible that the results might have been different if, say, the cases had been obtained from large scale surveys, particularly if a random sampling procedure had been employed. Having stated this qualification, however, we are aware that some of our results are consistent with those of

other researchers who have gathered their data through random sampling and other large-scale survey methodologies.

Our main analyses confirmed the two hypotheses: that aura vision is related to higher levels of reports of vividness of visual imagery and of imaginative-fantasy experiences. This is consistent with Neher's (1980) speculations, and with Owen's (1972) exploratory research. It is also in conceptual agreement with studies that have found that measures of fantasy-proneness seem to be successful predictors of psychic phenomena other than aura vision (Myers, Austrin, Grisso & Nickeson, 1983; Wilson & Barber, 1983). Such findings suggest that aura vision is related to cognitive processes involving visual imagery and fantasy. However, this may not be the whole picture. The small number of aura report cases prevents us from exploring the influence of factors other than those measured by the VVIQ and the ICMIC such as sex and the context in which the aura experience occurred (e.g., emotional circumstances related to death).

The aura group reported a significantly higher frequency of practice of meditation and experiences of seeing with eyes closed, ESP in dreams, mystical experiences, apparitions, and out-of-body experiences. The number of multiple experiences claimed for these phenomena was also significantly higher in the aura group than in the control group. These findings agree with those reported by Kohr (1980) and by Palmer (1979) that relate auras to other experiences. That is, it is rare to find a person who reports auras but makes no other claims of psychic experiences. Examples of the tendency to experience a wide range of phenomena can be found in the writings of the medium Eileen Garrett (1939). 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 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.

We hope others will replicate and extend our findings. In what follows, we would like to offer some suggestions for future aura research based on a psychological approach, one that might include what Healy (1984) described in her discussion of auras and other phenomena as an experiencer's sensitivity due to permeable ego boundaries. This sensitivity, we suggest, may be related to field dependence, absorption or to dissociation. In addition, some physiological differences in perceptual processing may also underly it.

Marks & McKellar (1982) have suggested that auras are a form of eidetic imagery. This hypothesis could be examined in the laboratory by using tests based on drawings and diagrams such as those employed by Matsuoka, Onizawa, Hatakeyama and Yamaguchi (1987). After-image persistence — tested by presenting flashes of light to subjects — has been studied in relation to hypnotic susceptibility and visuospatial skills (Atkinson & Crawford, 1992). Similarly, auras may be studied or related to after-images and other variables.

We may also learn much about aura viewers by assessing their performance on a variety of perceptual tests. For example, does the perception of an aura follow constancy effects, that is, is the 'seen' aura recognizable regardless of changes in brightness, colour, shape, size or location? Would aura viewers perform differently from controls in tests designed to study the perception of movement or depth, or organization of perception? Assuming that we are dealing with perception of weak sensory stimuli, would aura viewers differ from controls in the magnitude of the minimum stimuli necessary to perceive the presence of any stimuli (absolute threshold) or in the minimum amount of stimulation needed to distinguish two stimuli one from the other (difference thresholds)?

Kenneth (1933) has suggested that some auras may be explained by cross-modal perception or synaesthesia. More recently Cytowic (1989) has reported aura-like

experiences in some synaesthetes he has studied, suggesting a possible common mechanism in both perceptual experiences.

The neuropsychology of aura vision reports should also receive attention. One possibly fruitful line of research to follow is that of Persinger (e.g., 1984), who has explored the relationship between temporal lobe signs and claims of psychic phenomena. Abraham (1983) has reported a higher incidence of haloes seen around objects by

individuals who suffer from LSD flashbacks. Past drug use may also be an interesting variable. In any case, we feel that the valuation of aura vision reports has, in the past, rested largely on social rather than empirical grounds. We hope our study can begin to shift the examination and discussion of these reports to a more data-driven plane.

Appendix

Questionnaire on Auras and Other Experiences⁵

Name

Address

Directions: Please circle the number to the left of your answer (unless directed otherwise). For example: On the first question, if you are a female you would circle number '2' next to the word 'female'. Please give only one answer for each question unless directed otherwise.

1. My sex is:

1. Male
2. Female

2. My race is:

1. Caucasian (White)
2. Negro (Black)
3. Oriental
4. Other (please specify):

3. My age is (please write in)

4. Place of birth (please write in)

5. My educational training includes: (Circle one only):

1. Less than high school
2. High school
3. Business or trade school
4. College (four years)
5. Master's degree
6. Doctoral degree

6. My religious belief is:

1. Protestant
2. Catholic
3. Jewish
4. An Eastern faith (please specify)
5. Agnostic

⁵ The wording of some questions was adapted from Palmer's (1979) survey.

INDIVIDUAL DIFFERENCES IN AURA VISION

6. Atheist
7. Other (please specify):

7. Have you ever seen a light or lights, or an energy field around any part of a person's body which, as far as you could tell, were not due to 'normal' or 'natural' causes? (i.e., a 'halo' or 'aura')

1. Yes
2. No

If your answer is 'no', please go up to question #24. If 'yes', and you have had more than one experience, please write a description of your observations below and answer questions #8-21 in relation to the experience about which you can recall the most detail. The following questions will refer to this phenomena as the aura.

Please describe in the space below your aura observation. You can use the next page or additional pages if necessary.

8. Under what circumstances did you see the aura?

1. During normal activities
2. Feeling very relaxed
3. Feeling very tense
4. Feeling drowsy
5. Under the influence of drugs
6. During trance or other non-drug-induced altered states of consciousness
7. During a headache
8. During illness (other than headaches)
9. During prayer or meditation
10. Other (please specify)

9. The aura was seen around the:

1. Head
2. Shoulders
3. Head and Shoulders
4. Arms
5. Legs
6. Hands
7. Eyes
8. All around the body
9. Other (please specify)

10. The aura was seen:

1. In contact with the body
2. With no connection to the body, but close to it
3. At some distance from the body

11. The aura extended from the body (you may give an approximation):

1. Less than one inch
2. 1-3 inches
3. 4-6 inches
4. 7-9 inches
5. 10-12 inches
6. More than 12 inches

12. The aura showed:

1. A uniform, smooth appearance
2. An irregular, jagged or broken appearance
3. Cannot tell (did not notice, does not apply, no recollection)

13. The aura was observed to be:

1. Opaque
2. Bright
3. Other (please specify)

14. The color of the aura can be described as:

1. White
2. Silver
3. Gray
4. Red
5. Blue
6. Yellow
7. Gold
8. Orange
9. Green
10. Violet
11. Colorless
12. Multicolor
13. Other (please specify)

15. The form of the aura can be described as:

1. Flash
2. Glow
3. Rays or beams
4. Globes
5. Aureole or halo
6. Flame
7. Mist, cloud, or smoke
8. Other (please specify)

16. The aura was:

1. Pulsating, swirling, vibrating or moving around
2. Static, with no movement at all

17. The aura had layers or different sections:

1. Yes
2. No

18. The aura had patches, spots, or dark or discolored areas:

1. Yes
2. No

19. The aura reflected emotional or mental aspects (e.g., moods, preoccupations) of the person showing it:

1. Yes
2. No

20. The aura reflected physical aspects of the person showing it (e.g., disease, pain).

1. Yes
2. No

21. Did another person see the aura at the same time you did?

1. Yes
2. No

INDIVIDUAL DIFFERENCES IN AURA VISION

If 'yes':

Did the other person see exactly the same thing you saw?

1. Yes
2. No

Would you write in the name and address of the person or persons sharing your experience so that we may contact them?

22. How many times have you seen an aura around a person?

1. Once
2. 2-5 times
3. 6-20 times
4. More than 20 times

23. Can you see the aura when you want to?

1. Never
2. Sometimes
3. Usually

24. Have you ever seen an aura around an object?

1. Yes
2. No

25. Have you ever seen an aura around an animal?

1. Yes
2. No

26. Have you ever had a dream in which you knew *during the dream* that you were dreaming and felt that you possessed all your waking faculties?

1. No
2. Once
3. 2-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

27. Have you ever had a profound and deeply moving 'spiritual', 'mystical' or transcendental experience?

1. No
2. Once
3. 2-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

28. Have you ever had the experience of seeming to see when your eyes were closed?

1. No
2. Once
3. 2-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

29. Have you ever practiced meditation? (For example, Transcendental or Zen meditation or another *formal* technique of stilling the mind.)

1. Yes
2. No

30. Do you suffer from headaches?

1. Never
2. Rarely
3. Once or twice a month
4. Once a week or more
5. Almost daily

31. Have you ever had, *while awake*, a vivid impression of seeing, hearing, or being touched by another being, which impression, as far as you could discover, was not due to any external physical or 'natural' cause? (Please do not include here experiences of the Christ or other religious figures.)

1. No
2. Once
3. 2-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

32. Have you ever had a dream which matched in detail an event which occurred before, during, or after your dream, and which you did not know about or did not expect at the time of the dream?

1. No
2. Once
3. 2-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

33. Have you ever had an experience in which you felt that 'you' were located 'outside of' or 'away from' your physical body; that is, the feeling that your consciousness, mind, or center of awareness was at a different place than your physical body? (If in doubt please answer 'no'.)

1. No
2. Once
3. 2-5 times
4. 6-10 times
5. 11-20 times
6. More than 20 times

34. When you have been exposed to a sudden flash of light (e.g., a camera flash), or when you stare at a light source (e.g., a light bulb), do you continue to see the light or its outline when you are no longer looking at it:

1. For a short time (1-20 seconds)
2. For a moderate time (21-60 seconds)
3. For a long time (more than a minute)

35. Do you ever see in your line of vision spots or specks that do not seem to be physically there?

1. Never
2. Rarely
3. Sometimes
4. Frequently

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Individuelle Unterschiede bei der Aura-Wahrnehmung: Beziehungen zu visueller Vorstellungskraft und Einbildungserlebnissen

Zusammenfassung: Die Aura-Wahrnehmung oder die Behauptung, man nehme Lichter, Heiligenscheine oder Energiefelder um einen menschlichen Körper herum wahr, wurde in ihrer Beziehung zu Vorstellungsvariablen und der Behauptung anderer Erfahrungen untersucht. Neunzehn Personen, die von Erfahrungen mit Aura-Wahrnehmungen berichteten, wurden mit einer gleichen Anzahl von Kontrollpersonen verglichen, die keine Auras gesehen haben. Beide Gruppen waren hinsichtlich Geschlecht und Alter ausgeglichen besetzt. Die Teilnehmer absolvierten den Fragebogen über Auras und andere Erfahrungen (Questionnaire on Auras and Other Experiences - QAOE), einen Fragebogen über die Lebhaftigkeit visueller Vorstellungen (Vividness of Visual Imagery Questionnaire - VVIQ) und den Inventar zu Kindheitserinnerungen und -vorstellungen (Inventory of Childhood Memories and Imaginings: Children's Form - ICMIC). Vorausgesagt wurde, daß die Aura-Gruppe über größere Lebhaftigkeit visueller Vorstellungen und vorstellungs- und phantasiebezogener Erfahrungen als die Kontrollgruppe berichten würde. Diese Voraussage wurde sowohl für den VVIQ (Aura-Gruppe: Mittelwert = 27, Kontrollgruppe: Mittelwert = 38, $t[36] = -2.72$, $p[\text{einseitig}] = .005$ [niedrigere Werte indizieren größere Lebhaftigkeit]) als auch für den ICMIC (Aura-Gruppe: Mittelwert = 21, Kontrollgruppe: Mittelwert = 14, $t[36] = 3.85$, $p[\text{einseitig}] = .0002$) bestätigt. Der ICMIC korrelierte signifikant mit dem Grad der Fähigkeit, Auras willentlich sehen zu können ($r_s = .60$, $p < .001$, zweiseitig), wenngleich die Mittelwerte sich lediglich auf diejenigen ICMIC-Items stützen, die keine psi-bezogenen Erfahrungen erheben. Zudem behauptete die Aura-Gruppe im Vergleich zur Kontrollgruppe signifikant häufiger Erfahrungen wie das Sehen von Erscheinungen ($p = .00006$), ASW in Träumen ($p = .008$), mystische Erfahrungen ($p = .01$), außerkörperliche Erfahrungen ($p = .00002$) und Sehen mit geschlossenen Augen ($p = .004$). Außerdem berichtete die Aura-Gruppe von häufigeren Meditationsübungen als die Kontrollgruppe ($p = .008$).

Die Ergebnisse dieser Untersuchung stützen den Gedanken, daß Behauptungen von Aura-Wahrnehmungen mit Behauptungen lebhafter visueller Vorstellungen und anderer imaginativer Erfahrungen sowie auch mit einer Vielfalt anderer psi-bezogener und auch einiger nicht psi-bezogener Erfahrungen verbunden sind. Künftige Untersuchungen der Aura-Wahrnehmung könnten sich mit Gewinn auf imaginative, neurophysiologische und Wahrnehmungskorrelate der Erfahrungen verlegen. Ebenso auch auf die Einbeziehung okkult, religiöser und traditionell gebundener Glaubenseinstellungen hinsichtlich dieser Erfahrungen.

Individuele verschillen in aurawaarneming: verband met visualisering, inbeeldingen en fantasie

Samenvatting: Aurawaarneming, de bewering dat men licht, ringen of energievelden rondom iemands lichaam ziet, werd onderzocht in samenhang met variabelen over verbeeldingskracht en beweringen over andere ervaringen. 19 proefpersonen die beweerden aura's te zien werden vergeleken met hetzelfde aantal dat nooit aura's had gezien. Beide groepen waren qua geslacht en

leeftijd vergelijkbaar. De deelnemers vulden de volgende tests in: Questionnaire on Auras and Other Experiences (QAOE, ervaring met aura's en andere verschijnselen), Vividness of Visual Imagery Questionnaire (VVIQ, hoe levendig kun je visualiseren) en Inventory of Childhood Memories and Imaginings: Children's Form (ICMIC, jeugdherinneringen). De voorspelling was dat de auragroep het hoogste zou scoren op zaken als een levendige visualisering, inbeeldingsvermogen en fantasie-ervaringen. Dat bleek inderdaad uit de VVIQ (gemiddelde van auragroep 27, van controlegroep 38 [lagere score is levendiger]; $t[36] = -2,72$; $p\text{-eenz.} = 0,005$) en ook uit de ICMIC (gemiddelde van auragroep 21, van controlegroep 14; $t[36] = 3,85$; $p\text{-eenz.} = 0,0002$). De score op de ICMIC toonde een significante correlatie met het vermogen aura's te zien wanneer men wilde ($r_s = 0,60$, $p\text{-tweez.} < 0,001$). Dat is opvallend omdat de gemiddelde scores alleen gebaseerd waren op de ICMIC-vragen die niet over psi-ervaringen gingen. Bovendien rapporteerde de auragroep meer ervaringen met materialisaties ($p = 0,00006$), ESP in dromen ($p = 0,008$), mystieke ervaringen ($p = 0,01$), uittredingen ($p = 0,00002$) en waarneming met gesloten ogen ($p = 0,004$) dan de controlegroep. Ook bleek de auragroep vaker te mediteren ($p = 0,008$).

Deze resultaten ondersteunen het idee dat beweringen over aurawaarneming samenhangen met beweringen over een levendige fantasie en visualisering en andere verbeelde ervaringen, maar ook met diverse andere al dan niet paranormale ervaringen. Verder onderzoek zou zich moeten richten op de rol van factoren als verbeelding, neurofysiologie en perceptie. Ook het verband tussen opvattingen uit occultisme, religie en volksgeloof en de resultaten uit correlatieel en fenomenologisch onderzoek verdient meer aandacht.

Differenze individuali nella visione dell'aura, in rapporto all'*imagery* visiva e alle esperienze immaginativo-fantastiche

Sommario: La visione dell'aura, ovvero l'affermazione di percepire luci, aloni o campi di energia attorno al corpo degli esseri umani, è stata studiata in riferimento alle variabili dell'esperienza visiva e alla dichiarazione di avere anche altre esperienze particolari. Diciannove individui che affermano di vedere l'aura sono stati confrontati a uno stesso numero di soggetti di controllo che non hanno mai visto aure. I due gruppi erano simili per le variabili sesso ed età. I partecipanti hanno riempito il Questionario sulle Aure e le Altre Esperienze (QAOE), il Questionario sulla Vividezza dell'Immagine Mentale (VVIQ) e la Scala Pediatrica di Memorie e Immagini: Formato Infantile (ICMIC). Si è presupposto che il gruppo di chi vedeva l'aura avrebbe sostenuto di avere sia un'*imagery* visiva che esperienze di immaginazione visiva e di tipo fantastico più vivide rispetto al gruppo di controllo. La predizione è stata confermata sia per il VVIQ (gruppo dell'aura: media 27; gruppo di controllo: media 38; $t[36] = -2,72$; p [a una coda] = 0,005 [i punteggi inferiori indicano una vividezza maggiore]) che per l'ICMIC (gruppo dell'aura: media 21; gruppo di controllo: media 14; $t[36] = 3,85$; p [a una coda] = 0,0002). L'ICMIC era correlato significativamente al livello di capacità di vedere l'aura a volontà ($r_s = 0,60$; $p < 0,001$, a due code), anche se i punteggi medi erano fondati solo sul sottogruppo delle domande dell'ICMIC che non riguardavano le esperienze correlate alla psi. Il gruppo dell'aura, inoltre, dichiarava con una frequenza significativamente superiore rispetto al gruppo di controllo di avere esperienze quali apparizioni ($p = 0,00006$), ESP nei sogni ($p = 0,008$), esperienze mistiche ($p = 0,01$), esperienze fuori del corpo ($p = 0,00002$), la visione ad occhi chiusi ($p = 0,004$). Il gruppo dell'aura, infine, ha riferito pratiche di meditazione più frequentemente del gruppo di controllo ($p = 0,008$).

I risultati di questo studio sostengono la tesi che l'affermazione di vedere l'aura è correlata tanto alle affermazioni di avere vivide *imagery* visiva ed esperienze fantastiche e immaginative d'altro tipo, quanto a una serie di altre esperienze, legate e non legate alla psi. Si avanza il suggerimento che ulteriori studi sulla visione dell'aura potrebbero utilmente venir incentrati sui correlati immaginativi, neuropsicologici e percettivi dell'esperienza, nonché sull'integrazione delle credenze occulte, religiose e folcloristiche relative a questa esperienza nei dati correlazionali e fenomenologici della ricerca.

Diferencias Individuales en la Visión del Aura: Relaciones con Imágenes Mentales y con Experiencias de Imaginación y Fantasía

Resumen: Reportes de ver el aura, o el percibir luces, halos, o campos de energía alrededor del cuerpo de una persona, fueron estudiados en relación a variables de imaginaria mental y de reportes de otras experiencias. Diecinueve personas que reportaron ver auras fueron comparadas a un mismo número de controles que no habían tenido experiencias de ver el aura. Ambos grupos fueron pareados en términos de sexo y edad. Los participantes contestaron el Cuestionario sobre Auras y Otras Experiencias (CAOE), el Vividness of Visual Imagery Questionnaire (VVIQ) (Cuestionario de Vividez de Imágenes Visuales, y el Inventory of Childhood Memories and Imaginings: Children's Forms (ICMIC) (Inventario de Memorias e Imaginaciones de la Niñez: Forma de Niños). Se predijo que el grupo de auras obtendría niveles mayores de vividez de imágenes visuales y de experiencias imaginativas y de fantasía que el grupo control. Las predicciones fueron confirmadas tanto para el VVIQ (Grupo Aura: $X = 27$, Grupo control: $X = 38$, $t[36] = -2.72$, $p[1\text{ cola}] = .005$ [puntuaciones bajas indican mayor vividez] y para el ICMIC (Grupo Aura: $X = 21$, Grupo control: $X = 14$, $t[36] = 3.85$, $p[1\text{ cola}] = .0002$). El ICMIC obtuvo correlaciones significativas con la habilidad de ver el aura a voluntad ($r_s = .60$, $p < .001$, 2 colas) aun cuando las puntuaciones se basaron solo en parte de los ítems del ICMIC que no preguntaban sobre experiencias relacionadas con psi. En adición, el grupo con reportes de auras obtuvo una frecuencia mayor significativa de reportes de apariciones ($p = .00006$), percepción extrasensorial en sueños ($p = .008$), experiencias místicas ($p = .01$), experiencias fuera del cuerpo ($p = .00002$), y la experiencia de ver con los ojos cerrados ($p = .004$) que el grupo control. El grupo con auras reportó una frecuencia mayor de práctica de meditación que el grupo control ($p = .008$).

Los resultados de este estudio apoyan la idea de que reportes de ver el aura están relacionados con la vividez de imágenes visuales, con experiencias de fantasía e imaginación, y con una variedad de experiencias psi y otras experiencias. Se propone que futuros estudios de la visión del aura podrían enfatizar correlaciones imaginarias, neuropsicológicas, y perceptuales de las experiencias, al igual que en tratar de integrar las creencias ocultas, religiosas y folklóricas sobre esta experiencia con estas correlaciones y con hallazgos sobre la fenomenología de la experiencia.

Diferenças Individuais na Visão da Aura: Relacionamento entre Vividez de Imagens Mentais e Experiências Imaginativo-Fantásticas

Resumo: A visão da aura ou a alegação de percepção de luzes, halos ou campos de energia ao redor do corpo de uma pessoa foi estudada em relação a variáveis de imagem e alegações de outras experiências. Dezenove indivíduos que relatam experiências de visão de aura foram comparados a um igual número de sujeitos controle que não tinham visto auras. Ambos os grupos foram combinados por sexo e idade. Os participantes preencheram o Questionário sobre Auras e Outras Experiências (sigla, em inglês, QAOE), o Questionário de Vividez das Imagens Visuais (sigla, em inglês, VVIQ), e o Inventário das Memórias Infantis e Imaginações: Formulário Infantil (sigla, em inglês, ICMIC). Foi previsto que o grupo da aura alegaria maior vividez das imagens visuais e imaginativas e das experiências relacionadas à fantasia do que o grupo controle. As previsões foram confirmadas tanto pelo VVIQ (Grupo da aura: Média = 27, grupo controle: Média = 38, $t[36] = -2.72$, $p[\text{unicaudal}] = 0.005$ [resultados mais baixos indicam maior vividez]) e para o ICMIC (Grupo da aura: Média = 21, grupo controle: Média = 14, $t[36] = 3.85$, $p[\text{unicaudal}] = 0.0002$). O ICMIC foi significativamente correlacionado ao nível de habilidade para se ver a aura à vontade ($r_s = 0.60$, $p < 0.001$, bicaudal) mesmo que os resultados médios estejam baseados somente no subconjunto dos itens do ICMIC que não questiona a respeito de experiências relacionadas a psi. Além disso, o grupo da aura teve uma frequência significativamente mais alta de alegações como aparições ($p = 0.00006$), ESP em sonhos ($p = 0.008$), experiências místicas ($p = 0.01$), experiências fora do corpo ($p = 0.00002$) e ver com os olhos fechados ($p = 0.004$) do que o grupo controle. Além disso, o grupo da aura relatou a prática mais frequente de meditação do que o grupo controle ($p = 0.008$).

Os resultados do estudo sustentam a idéia de que as alegações de visão de aura estão relacionadas às alegações de imaginação visual vívida e fantasia além de outras experiências imaginativas, como também a uma variedade de outras experiências relacionadas a psi e algumas experiências não relacionadas a psi. Argumenta-se que mais estudos da visão da aura poderiam vantajosamente focalizar correlatos imaginativos, neurofisiológicos e perceptivos da experiência assim como integrar crenças ocultas, religiosas e populares sobre a experiência com resultados de pesquisa fenomenológicas e correlacionais.

Différences individuelles dans la vision de l'aura: Leurs relations avec l'imagerie visuelle et les expériences de fantaisie imaginative

Résumé: La vision de l'aura, ou prétention à percevoir des lumières, halos, ou champs d'énergie autour du corps d'une personne, a été étudiée en relation avec des variables d'imagination et des revendications d'autres expériences. Dix-neuf individus ayant rapporté des expériences de vision d'aura ont été comparé à un nombre égal de sujets contrôles qui n'ont pas vu d'aura. Les deux groupes sont équivalents par le sexe et l'âge. Les participants ont rempli le Questionnaire sur les Auras et Autres Expériences (QAOE), le Questionnaire de Vivacité de l'Imagerie Visuelle (VVIQ), et l'Inventaire des Souvenirs et Imaginaire de l'Enfance: Version pour Enfants (ICMIC). On a prédit que le groupe Aura revendiquerait plus de vivacité dans l'imagerie visuelle et d'expériences imaginatives et de fantaisie que le groupe contrôle. Les prédictions ont été confirmées à la fois pour le VVIQ (groupe Aura: Moyenne = 27, groupe contrôle: Moyenne = 38, $t(36) = -2.72$, $p[\text{unilatéral}] = .005$ [les scores plus bas indiquent une vivacité plus élevée]) et pour le ICMIC (groupe Aura: Moyenne = 21, groupe contrôle: Moyenne = 14, $t(36) = 3.85$, $p[\text{unilatéral}] = .0002$). Le ICMIC a été significativement corrélé avec le niveau d'aptitude à voir l'aura à volonté ($r_s = .60$, $p < .001$, bilatéral) bien que les scores moyens aient été basés uniquement sur le sous-ensemble des items ICMIC qui ne posait pas de question sur des expériences liées au psi. En outre, le groupe Aura a eu une fréquence significativement plus élevée de revendications telles que les apparitions ($p = .00006$), l'ESP dans les rêves ($p = .008$), les expériences mystiques ($p = .01$), les expériences hors-du-corps ($p = .00002$), et voir avec les yeux fermés ($p = .004$) que n'a eue le groupe contrôle. De plus, le groupe Aura a rapporté une pratique plus fréquente de la méditation que le groupe contrôle ($p = .008$).

Les résultats de cette étude soutiennent l'idée que les revendications de vision de l'aura sont liées à celles de l'imagerie visuelle vivace et des expériences de fantaisie et autres imaginations aussi bien qu'à une variété d'autres expériences liées au psi et à certaines expériences non liées au psi. On argumente que davantage d'études sur la vision de l'aura pourraient se focaliser de façon profitable sur les corrélats imaginatifs, neuropsychologiques et perceptifs de cette expérience, et pourraient aussi bien intégrer les croyances occultes, religieuses et populaires sur cette expérience à des découvertes de la recherche corrélationalnelle et phénoménologique.

Modelling the Stratagems of Psychic Fraud

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Abstract: A thorough understanding of psychic fraud is essential for parapsychologists who wish to assess 'psychic claimants' (i.e. individuals who claim strong psychic ability). One of the most productive ways to gain such understanding would be through the formation of a cognitive model of psychic fraud that describes the deceptive strategies employed by pseudo-psychics. This paper outlines the beginnings of such a model, noting how a pseudo-psychic deceives an observer into misframing a fake demonstration as genuine, hinders the observer's development of 'normal' explanations, deceives the observer into rejecting 'normal' explanations as implausible, negotiates 'fraud conducive' conditions for a demonstration, exploits ineffective controls, and prepares 'outs' to explain away a failed demonstration or evidence of fraud. Finally, the paper notes that the model presented represents only a starting point for this endeavour, but that such modelling has real advantages for social psychology, cognitive psychology and parapsychology.

Introduction

Many individuals claim to possess psychic ability. Faith healers and psychic surgeons state that they are able to psychically cure illness. Law enforcement agencies are approached by individuals offering 'psychic tips' that they feel might help solve a crime (see Lyons & Truzzi, 1991). Alleged psychics have also been used within industrial settings, being asked, for example, to use their abilities to divine productive sites for mineral extraction (see Couttie, 1988).

Some parapsychologists are concerned with the assessment of such 'psychic claimants', believing that this line of inquiry is vital to parapsychology (see, e.g., Braude, 1986; Stevenson, 1990). These writers have stressed that such abilities are, to some individuals (including most of the general public), more convincing proof of psi than evidence derived from experimental parapsychology. Braude has also argued that human abilities are best studied *in extremis*, and in the environment in which they natu-

rally occur; he asserts that these criteria are more likely to be fulfilled by the assessment of psychic claimants, rather than by more experimentally based studies.

However, the testing of psychic claimants has been hindered both by actual subject fraud and allegations of cheating (see, e.g., Hansen, 1990; Rush, 1986). It is therefore vital that parapsychologists are able to counter trickery during an investigation. Unfortunately, most of the previous literature on psychic fraud has tended to concentrate upon the tactics of such trickery, usually taking the form of case studies of individual pseudo-psychics (i.e., individuals who consciously fabricate psychic ability), or 'cookbooks' of methods for fabricating psi. Only a very small number of theorists have started to outline some of the more general principles (or 'stratagems') of pseudo-psychic trickery (see, e.g., Hansen, 1990; Morris, 1986a, b;).

This emphasis is unfortunate because experimenters interested in countering psychic fraud may find it more helpful to

know about the stratagems of psychic fraud, as opposed to its tactics. This is, in part, because although there are only a limited number of stratagems involved in the fabrication of psi, there are an enormous number of tactics used to implement these stratagems. Trying to detect these tactics may be problematic. First, the literature of magic and psychic fraud is not well organised, and it may be difficult for an individual to discover all the ways in which an ostensible psychic phenomenon can be fabricated. Second, both magicians, and pseudo-psychics are continually inventing new tactics by which to fabricate psi. It would be problematic to discover the nature of these innovations, especially as some of this information is not widely disseminated, even within certain sections of the magical and pseudo-psychic communities.

Cognitive psychologists attempt to understand how individuals attend to, perceive, comprehend and store information. In addition, they are concerned with how this information is recalled and utilised during thinking and problem solving (see Matlin, 1983). The tools of cognitive psychology could be used to further our understanding of psychic fraud. A cognitive model could be formed to describe the way in which an individual's observation and judgement are disrupted by the pseudo-psychic, to fool that individual into believing that the pseudo-psychic possesses genuine psychic ability.

This type of modelling is particularly germane to the analysis of psychic fraud for many reasons. First, psychic fraud is clearly complex and occurs in the 'real world'. Several theorists (e.g., Brewer & Treyners, 1981; Neisser, 1978) have noted that cognitive models aim to account for such 'naturalistic' phenomena. Second, psychic fraud exploits human bias. Again, most cognitive models aim to account for bias in human cognitive processing (see, for example, Alba & Hasher, 1983; Hewstone, 1989; Nisbett & Ross, 1980). Third, much of the material used to construct the model (e.g., case studies of pseudo-psychics, theoretical ideas developed by pseudo-psychics

themselves) would clearly fall into the category of 'folk psychology'. Although some theorists (e.g., Churchland, 1984; Nisbett & Wilson, 1977) have advocated the view that such material may often be incomplete and inaccurate, other theorists recommend that such lay knowledge should be taken very seriously by psychologists, and can form a useful starting point for the construction of formal theories (see, e.g., Flanagan, 1984; Heider, 1958; Joynson, 1974).

This paper outlines the beginnings of a cognitive model that identifies the main stratagems of psychic fraud. This model has been constructed from literature within sociology, social cognition, cognitive psychology, psychical research, parapsychology, conjuring, and psychic fraud. The model briefly outlines some of the different stratagems involved when an individual is fooled by a pseudo-psychic. Any pseudo-psychic demonstration can be construed as communication from performer to audience, or pseudo-psychic to observer. The pseudo-psychic attempts to send the message 'I am psychic', to the observer. As with any other communication system, a sender must encode and present the message in ways that will be properly decoded and understood by the receiver. Thus the pseudo-psychic needs a full understanding of how the observer organises and interprets perceived events. This may involve learning about the observer's natural inclinations, so that they can be taken into account; or it may involve deliberate manipulations of them, to fit the available resources of the pseudo-psychic.

Misframing

Sociologists use the term 'frame' to refer to abstract structures that individuals use to define situations in a certain way (Goffman, 1974). Many situations can be framed in different ways. For example, a demonstration of ostensible psi could be perceived as a pseudo-psychic hoax or as a display of genuine psychic ability (see Nardi, 1984).

The framing of a demonstration will influence how the individual assesses that demonstration. For example, a person who believes that a demonstration is going to contain conjuring may go to great lengths to detect such trickery during and after that demonstration. This point has been noted by several writers. For example, Dingwall (1921) writes:

...the frame of mind in which a person goes to see magic and to a medium cannot be compared. In one case he goes either purely for amusement or possibly with the idea of discovering 'how it was done', whilst in the other he usually goes with the thought that it is possible that he will come into direct contact with the other world (p. 211).

The framing of a demonstration will also influence the meaning that an individual attributes to any ostensible psi produced during that demonstration. For example, the person may have framed the demonstration as a pseudo-psychic hoax. If this is the case, the individual may decide that any ostensible psi phenomena are the result of trickery. Alternatively, they may have framed a demonstration as a genuine psychic demonstration. If this is the case, the individual may decide that such phenomena represent genuine psi.

There are many ways in which a pseudo-psychic can manipulate people into misframing a fake demonstration as genuine.

Appear incapable of fraud

Pseudo-psychics realise that an individual may be unwilling to frame him as a trickster if they appear incapable of fraud. For this reason pseudo-psychics may, for example, deliberately conceal any manual dexterity they possess. Fuller (1975), when advising pseudo-psychics how to behave in the company of those they aim to deceive, notes:

Don't act like a magician...Act clumsy with your hands...You can do a double

lift and some easy coin moves, but never let anybody know that you can do any sleight of hand (p.11).

For the same reason, pseudo-psychics may conceal previous evidence, or accusations, of trickery. Hansen (1990) describes how Steve Shaw (one of the pseudo-psychics involved in Project Alpha) had been accused of trickery prior to Project Alpha (see McBurney & Greenberg, 1980), yet did not mention this to investigators at the McDonnell Parapsychology Laboratory. A pseudo-psychic may also conceal the true extent of his knowledge of conjuring. For example, 'Tim', the pseudo-psychic investigated by Delanoy (1987), was a member of the International Brotherhood of Magicians, but failed to mention this while being investigated.

Appear to have no motivation for fraud

Pseudo-psychics realise that an observer may be less likely to view him as fraudulent if they do not appear to have any motivation for cheating. To exploit such bias, pseudo-psychics may conceal evidence that suggests that they have any motivation to cheat. For example, fake faith healers may assure an individual that they never accept payment for their services, insinuating that they have no motive to deceive. However, as noted by Thomas (1989):

Apparent lack of financial inducements is no guarantee against fraudulent practice. Randi reports that 'psychic surgeons' did not charge a fee for their services: they received a registration fee and donations (p. 382).

Also, an observer may not realise the range of factors that motivate a pseudo-psychic to deceive. For example, various authors have suggested that some individuals deceive simply for enjoyment (e.g., Ekman, 1985; Moss, 1977). It has been suggested that this, in part, may account for the success enjoyed by the two girls who fabricated the Cottingley 'fairies' (see, e.g.,

Cooper, 1990; Randi, 1982). Randi notes how some people believed that:

The two girls had no stake in the deception that could have brought them money...The assumption made is that only money and notoriety are plausible motives. Ego and just plain fun are not thought to be sufficient (p. 37).

In addition, Morris (1986b) has noted how observers may fail to realise that pseudo-psychics can be motivated by a wish for personal fame, raised self-esteem, increased personal power, or a desire to be socially helpful.

Appear to be unwilling to engage in fraud

Pseudo-psychics may also convince individuals that they would not engage in psychic fraud, even if capable of it and motivated to do so. This may be achieved, in part, by the pseudo-psychic presenting himself or herself as having an honest, sincere, and friendly personality. For example, Fuller (1980), in his manual of pseudo-psychic trickery, advises:

...when you're being tested by a parapsychologist, you'll catch him doing something stupid - like leaving unguarded a sealed envelope with a target drawing. When this happens, bawl the hell out of him. It will impress him no end with your honesty. It will prove to him you can't be a charlatan (p.68).

Also, Delanoy (1987), when writing about her work with one pseudo-psychic, notes that 'I felt I had come to know Tim [the pseudo-psychic] fairly well. We had established what appeared to be an honest, friendly and trusting rapport' (p. 252).

Create a 'believable' claim

The pseudo-psychic may deliberately claim to produce the type of psi that the individual finds believable. For example, an individual may believe that PK can

rarely be used to produce very large physical effects. As such, the pseudo-psychic may only fake effects that appear (when compared to those of the magician) fairly trivial. For example, the pseudo-psychic may cause an object to simply move a small distance along a table top, as opposed to making it levitate above the table. As noted by Truzzi (1983), '...it is perhaps actually the very triviality of such an action that lends it plausibility' (p. 18).

Also, when being formally assessed, a sophisticated pseudo-psychic might discover trends in previous investigations of psi, and conform to those patterns. Randi (1986) has noted that part of the success of Project Alpha rested upon the two pseudo-psychics discovering, and then conforming to, their investigators' notions about psi. For example, Randi notes how:

Steve and Mike [the two pseudo-psychics] complained about the electronic equipment putting out 'bad vibes'...to satisfy this established bit of mythology....Also, they were careful to mention that in early childhood both had experienced electric shocks, after which they had become aware of their psychic powers (p. 164).

The pseudo-psychic may state that his or her psychic ability is only elicited under the conditions that the observer associates with the production of genuine psi. Thus, many pseudo-psychic manuals advise their readers to seek out and conform to the conditions under which an individual believes genuine psi might occur. For example, *Invocation* (a magazine devoted mainly to bizarre magic¹) contained articles that advised its readers on how to fabricate rituals that some individuals (e.g., those interested in occultism) may find particularly convincing (e.g., Karnak, 1977; Kirke, 1977).

¹ It should be noted that many of the articles in this magazine amount to little more than literary exercises, as they are never performed.

Produce a claim that the individual 'wants' to believe

The pseudo-psychic may exploit people's physical and emotional needs. An individual may have a serious illness and thus a strong need to recover. A pseudo-psychic may therefore claim to possess psychic healing powers, in the hope that the individual will be strongly motivated to frame the demonstration as genuine. Also, if an individual has recently suffered a bereavement, he or she may be exploited by a fake medium who promises some form of communication with deceased friends and relatives. Two additional points should be noted. First, the flexible pseudo-psychic may modify his claim to satisfy the needs of a particular person or set of individuals. Second, parapsychologists may not be immune from such forms of manipulation. For example, Delanoy (1987), after working with pseudo-psychic 'Tim', noted:

We are all familiar with the difficulties arising from the so-called 'elusive nature of psi'. In short, we cannot study a phenomenon unless we can first produce it. Thus, Tim's claims, that he could produce macro PK at will, suggested exciting possibilities. *I wanted his claims to be true and this desire may have influenced my evaluation of his performance* [Emphasis ours] (p. 256).

Hinder the Development of 'Normal' Explanations

Obviously, pseudo-psychics need to prevent an individual from developing the hypothesis that correctly accounts for the trickery involved in a demonstration. This can be achieved in several ways.

Do not state a specific claim in advance of the demonstration

The pseudo-psychic may not state the specific details of his or her psychic claim in advance of the demonstration. Without such information it is difficult for an individual to develop, and therefore counter,

normal explanations. This strategy may also help the pseudo-psychic, should a demonstration not go according to plan. This point was clearly noted by Robert-Houdin (1878):

However skilful the performer may be, and however complete his preparations for a given trick, it is still possible that some unforeseen accident may cause a failure. The only way to get out of such a difficulty is to finish the trick in another manner. But to be able to do this, the performer must have strictly complied with this important rule: *never announce beforehand the nature of the effect which you intend to produce* [Emphasis ours] (p. 33).

This strategy is also utilised by magicians. For example, Henri Decremps (1785), noting the first of his 'general principles' of conjuring, writes, 'Never acquaint the company before-hand with the particulars of the feat you are about to perform' (p.123).

To make this stratagem seem more believable, the pseudo-psychic may claim to have little control over his or her psychic ability, and therefore cannot predict the phenomena that might occur.

Exploit the individual's ideas concerning methods of trickery

An individual's notion of how fake psychics operate are often incomplete or inaccurate. A pseudo-psychic may be aware of, and thus be able to capitalise on them. For example, pseudo-psychics use 'gimmicks' or small pieces of apparatus of which observers are usually unaware. As Harold Kelley (1980) has noted:

...some of the gimmicks of the magic art are interesting because they are difficult to imagine. In a sense they are unthinkable. This property seems to derive from there being a sharp incongruity between the audience's conception of a particular object and a property it is constructed actually to have, as is the case with a folding coin or hollow dice (p.31).

Alternatively, the individual may be unaware of the esoteric means by which a PK target can be influenced. To exploit this, pseudo-psychics employ many esoteric scientific, medical, and mathematical principles during their demonstrations. For example, individuals may be unaware that pseudo-psychics can cause the pulse in their left wrist to cease by placing a small ball under their left armpit and pressing their left arm against the ball (Fisher, 1979).

In addition, to prevent people improving their knowledge of trickery, pseudo-psychics have many techniques for ensuring that the secrets of psychic fraud remain clandestine.

Manipulate an Individual into Incorrectly Believing Normal Explanations Implausible

Even if the individual develops the correct hypothesis, a pseudo-psychic may be able to manipulate that person into erroneously rejecting the hypothesis as implausible. This section will discuss how such a stratagem may be achieved.

Appear incapable of carrying out the trickery required by a normal explanation

An individual may assess a normal explanation in terms of whether the claimant is capable of carrying out the trickery required by that hypothesis. This may involve, for example, assessing the physical strength, dexterity or knowledge of conjuring that would be required to perform a certain type of trickery. The individual would then compare this 'required capability' with the actual capability of the claimant. An explanation would be seen as implausible if it entailed the claimant engaging in trickery of which he or she is incapable.

This being the case, a pseudo-psychic may deceive an individual in two ways. First, the individual may be deceived into underestimating the claimant's capability of engaging in deception. For example, the individual may correctly assume that a claimant would have to possess great man-

ual dexterity to fake a certain type of psi (e.g., the continual production of small objects). The pseudo-psychic may possess this expertise, but conceal it from the person. Second, the individual may overestimate the necessary skills, resources etc., needed to carry out the trick according to his or her explanation of it. For example, the individual may assume that a certain sleight of hand would take many years to perfect when, in reality, this is not the case.

Do not use the same method to fabricate the same phenomenon

An individual may reject a normal explanation as implausible if it does not entail the type of trickery that the claimant had used, or had been accused of using, during previous demonstrations.

A pseudo-psychic may exploit this assumption by developing a number of ways of fabricating a certain type of psi, and then switching methods both within and between demonstrations. For example, many texts on magic and pseudo-psychic trickery contain several different methods for achieving just one effect. Tamariz (1988) has described 18 methods for performing the 'oil and water' card effect, while Harris (1985) explains a whole range of methods that may be employed to fabricate PK metal bending. The pseudo-psychic may then be able to manipulate the individual into being suspicious of just one of these methods, thus rejecting as implausible the method that the pseudo-psychic intends to employ. This strategy can be very effective. As noted by Leech (1960):

Nothing can be more bewildering than the repetition of an effect three or four times, each repetition dependent upon a different principle. This is psychological misdirection of the highest order (p. 7).

Diaconis (1985), labels this approach the 'bundle of sticks phenomenon', noting:

An effect is produced several times under different circumstances with the use of a different technique each

time...the weak points of one performance are ruled out because they were clearly not present during other performances. The bundle of sticks is stronger than any single stick (p.572).

As noted by Tamariz (1988), the success of this strategy rests on the fact that some individuals erroneously assume that 'the same causes produce the same effects', and not that a single effect may be produced by many, quite different, methods.

A pseudo-psychic may use several stratagems to manipulate an individual into expecting a certain method. For example, when investigating an alleged psychic, the individual may watch the claimant perform during several informal pilot studies. On these occasions, the pseudo-psychic may fabricate phenomena using the same method (provided this repetition did not significantly increase the risk of being caught). In this way, should the individual become suspicious of this method (and thus guard against it during a formal experiment) the pseudo-psychic can switch to a novel type of trickery. Alternatively, the pseudo-psychic may discover the normal explanations that have been developed by the individual, and then select a method accordingly. For this strategy to be successful, the pseudo-psychic must have feedback from the individual as to the methodology that individual expects the claimant to employ. For example, Dingwall (1926), in his investigation of Mina Crandon, notes that certain conditions had to be agreed upon before the investigation could commence. One condition entailed that:

The investigator shall supply the doctor [Mina Crandon's husband] with a signed copy of his notes of each seance, before he attends the next seance (p. 88).

As noted by Dingwall, this meant that, if Mina Crandon was fraudulent, she would have access to the investigators' thoughts concerning possible trickery.

Alternatively, the pseudo-psychic may inspect the controls employed by an individual, figure out the methods that are being countered, and then select a different method. Several magicians have written about some of the techniques involved in this 'improvisational', or 'jazz' magic (see, e.g., Hopkins, 1940; Lang, 1981).

Exploit Ineffective Controls

One main pseudo-psychic stratagem involves deceiving the individual into believing that controls (i.e., measures designed to detect or prevent deception) will be effective safeguards against deception when, in reality, this is not the case. This section will outline the ways in which this stratagem may be implemented.

Exploit controls applied at inappropriate times

The individual may apply controls at an inappropriate moment in time. For example, an individual may not expect the pseudo-psychic to engage in deception before the start of the trick. Yet Fuller (1975) notes how it is usually possible to be able to gain access to target objects before the start of a demonstration, especially when pseudo-psychics work on television. These objects may be left lying around, although the individual watching the television show may not suspect that this is the case. Alternatively, an observer can be deceived by a fake claimant engaging in deception after a demonstration has apparently terminated. Fitzkee (1945) has referred to this as 'premature consummation', noting that, 'the critical thing is done after the attention has relaxed' (p. 165).

For example, after a pseudo-psychic has faked the materialisation of a small object, the individual may assume that the demonstration has finished, and relax his or her vigilance. This may then give the pseudo-psychic an opportunity to secretly obtain a larger object that can suddenly be produced moments later.

Exploit ineffective or removable controls

Morris (1986a) has outlined many ways in which experimental controls can be made ineffective by a competent pseudo-psychic. For example, the pseudo-psychic might be able to remove such counter measures. When describing some of the trickery involved in Project Alpha, Randi (1986) claims how:

During one type of telepathy test, a subject would be given a sealed envelope containing a picture drawn from a target pool. Left alone with the envelope, the subject would subsequently surrender the envelope to an experimenter, who would examine it for signs of tampering. The subject would then announce his selection from the target pool. This series of tests was quite successful...The method was easy. Since the envelopes were 'sealed' only with a few staples, they [the pseudo-psychics] removed them, peeked, then replaced the staples through the original holes (pp. 159-160).

Pseudo-psychics may also be able to remove or lessen the individual's attention. Pseudo-psychics employ a wide range of techniques to achieve this. For example, Fuller (1975) advises pseudo-psychics to take a long time before attempting any form of trickery. This large time lag is designed, in part, to lower an individual's overall vigilance. Fitzkee (1945) has labelled this strategy 'monotony'. Second, a pseudo-psychic may manipulate the direction of an individual's attention, steering it away from areas in which the individual is likely to detect trickery. Fitzkee (1945) has presented a good overview of some of the techniques used to misdirect an individual's attention. For example, Fitzkee notes the use of 'confusion', in which:

...so many varied individual interests are presented for the spectator's observation that it is impossible for him, in the limited time available, to select the significant from the insignificant (p. 166).

Fuller (1975) recommends the use of this technique in his manual of pseudo-psychic trickery, noting:

When you're working for a group, keep talking and moving fast. Create maximum chaos. Flit from one task to another. Fail on one thing, put it aside, try something else, then go back and try again, and so on (p.15).

In addition, pseudo-psychics may not perform any trickery until they are quite sure that they will not be caught doing so. For example, when discussing the magician Max Malini, Vernon (1975) noted:

One of Malini's greatest secrets is contained in a statement he made to Charlie Miller. Miller asked him,

'Suppose you have a card palmed and you see that a spectator is keeping his eye on the hand that holds the card. What do you do Max?'

'Wait' was the answer.

'How long do you wait?' Charles said.

'A week!' was the answer.

In other words, Malini would not make a move until he knew his misdirection was covering any secret action the mechanics of a trick forced him to make (p. 151).

Exploit the Conditions Apparently Needed to Elicit Psi

Psychic claimants often state that their ability only manifests itself under certain psychological and/or physical conditions. A pseudo-psychic can exploit this concept by insisting upon working under conditions that are favourable to fraud. For example, Randi (1986) describes how in Project Alpha, the two pseudo-psychics complained about electronic equipment putting out 'bad vibes', preventing the researchers from being able to videotape the demonstrations. In addition, Eugene Burger (1986) outlines how fake mediums insist that all of the sitters must link hands during a seance. The fake medium may state that this is necessary to bring forth spirit communication. In reality it is

designed to prevent curious sitters from reaching out into the seance room, and possibly discovering various forms of trickery (such as reaching-rods and accomplices).

Have 'Outs' Ready in Case Something Goes Wrong

Pseudo-psychics have developed many types of 'outs' to escape or minimise the damage caused by something not going according to plan during their performance. For example, should the planned method of trickery prove problematic, the skilled pseudo-psychic may be forced to switch methods during a demonstration. For this reason, pseudo-psychics often consider the ways in which a trick may go wrong, and develop various ways to switch the method of that trick to salvage the demonstration. These are referred to as 'outs' and, as noted by magician Jerry Mentzer, 'If the performer knows enough outs, he will never fail to bring a trick to successful conclusion' (Cited in Whaley, 1989, p.489).

During a demonstration a pseudo-psychic may find that he or she is unable to fabricate psi (e.g., the controls imposed may prevent the intended type of trickery). If this is the case, the pseudo-psychic may attempt to explain away such failure by stating that the conditions of the demonstration were not psi conducive. For example, Burger (1986) notes that, if a fake medium is unable to fabricate phenomena, he or she can state:

'Well, my friends, conditions sometimes are just not right for this sort of thing'. You see...there's always an 'out' — a non-humiliating, non-embarrassing, perfectly reasonable (given the folk-accepted assumptions about seances and how they 'work'), perfectly acceptable out for a failure (p. 107).

Alternatively, the individual may have discovered evidence of possible fraud. The competent pseudo-psychic may have anticipated such a problem, and created

excuses to 'explain away' such evidence. For example, Baggally, Johnson, Feilding, Taylor & Lobb (1906) report how, during a seance given by the pseudo-medium Christopher Chambers, a false moustache (used to fabricate materialisations of spirits) was discovered in the seance room. Chambers attempted to explain away such evidence by telling sitters that it was difficult to materialise whiskers and moustaches, so the 'guide' had made a false moustache, and left it as a souvenir! Indeed, the pseudo-psychic may make such excuses part of the 'lore' that governs his or her psychic ability. For example, Randi (1982) has reported that one researcher, Dr Lincoln (a specialist in blood group serology and forensic medicine at London Hospital Medical College) investigated the claims being made by Philippino psychic surgeons. Lincoln surreptitiously obtained some of the apparently 'bad tissue' removed from a patient, by an alleged psychic surgeon, and analyzed it. Lincoln discovered that the blood sample was from a cow, and that the 'tumour' was a piece of chicken intestine. However, the surgeons attempted to explain away this evidence stating that it was a well known fact that 'supernatural forces' convert the tumours into innocuous substances once they have left the patient's body.

Conclusion

This paper first noted that a further understanding of psychic fraud is essential for those who wish to assess psychic claimants. It then argued that one of the most productive ways to gain such understanding would be through the formation of a cognitive model of psychic fraud. This model would aim to describe the way in which an individual's observation and judgement is disrupted by the pseudo-psychic. The paper then outlined the beginnings of such a model, noting how a pseudo-psychic deceives an individual into misframing a fake demonstration as genuine, hinders the development of 'normal' explanations, deceives the individual into rejecting 'normal' explanations as implau-

sible, negotiates 'fraud conducive' conditions for a demonstration, exploits ineffective controls, and prepares 'outs' to explain away a failed demonstration or evidence of fraud.

The model presented in this paper represents only a starting point for this type of endeavour. A full and thorough modelling of psychic fraud would have advantages for both cognitive psychology and parapsychology.

For cognitive psychology, research into certain sections of the model may reveal novel types of bias and, as with the study of optical illusions (e.g. Coren & Girgus, 1978) provides important new insights into the weaknesses of human information processing. Also, the further analysis of psychic fraud may allow cognitive psychologists to undertake research into novel areas of inquiry that are recognised as important but, up to this point in time, have proved problematic to investigate. For example, Norman (1980), in his discussion of new directions that should be taken by cognitive psychologists, lists the investigation of belief systems as one of 'a core group of issues along which we must proceed if our field is to make substantive progress' (p. 323). Clearly, an examination of psychic fraud may prove helpful to such an enterprise, given that pseudo-psychics frequently manipulate and exploit an individual's belief system. Finally, various writers (e.g., Rumelhart, 1980; Thorndyke & Yekovich, 1980), have noted that cognitive models are often phrased in very general terms. This, in turn, makes the formulation and testing of specific hypotheses problematic. To help overcome this problem, Thorndyke (1984) has recommended that theorists apply the models to 'real world' problem areas involving cognition. The application of cognitive models to the study of psychic fraud may further help develop and sharpen those models for use within cognitive psychology.

For parapsychologists, a more detailed understanding of the stratagems of psychic fraud may help develop recommendations

for the assessment of psychic claimants² (see Wiseman & Morris, in press). By such development, the parapsychological testing of single claimants might make the type of methodological advances that dedicated and honest researchers and subjects, both past and present, fully deserve.

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² However, in this type of research it is especially true that a little knowledge is a dangerous thing. Some of the easiest individuals to fool are those who are very confident of their ability to detect deception.

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Ein Modell paranormalen Betrugsstrategien

Zusammenfassung: Dieser Artikel betont, daß für Parapsychologen, die 'paranormale Behauptungen' (vorgebracht von Personen, die angeben, über starke paranormale Fähigkeiten zu verfügen) beurteilen wollen, ein gründliches Verständnis des sog. paranormalen Betruges unentbehrlich ist. Er argumentiert des weiteren dafür, daß eine der ergiebigsten Arten zum Erwerb dieses Verständnisses die Konstruktion eines kognitiven Modells paranormalen Betruges sei. Ein solches Modell müßte darauf abzielen, die Täuschungsstrategien von Pseudo-Medien zu beschreiben. Der Artikel skizziert im folgenden mögliche Grundlegungen für ein solches Modell, indem er darlegt, wie ein Pseudo-Medium einen Beobachter dazu bringt, eine betrügerische Vorführung fälschlicherweise als echt einzustufen, wie es die Entwicklung 'normaler' Erklärungen durch den Beobachter behindert, wie es einen Beobachter dazu verleitet, 'normale' Erklärungen als unplausibel zu verwerfen, wie es 'täuschungsförderliche' Versuchsbedingungen aushandelt, unwirksame Kontrollmaßnahmen ausnutzt und sich 'Hintertüren' für fehlschlagende Demonstrationen oder Betrugsanzeichen öffnet. Der Artikel betont abschließend, daß das vorgestellte Modell zwar nur einen Ausgangspunkt für solch ein Vorhaben darstellt, daß die Konstruktion eines Modells paranormalen Betrugsstrategien aber sowohl für die Kognitive Psychologie als auch für die Parapsychologie greifbare Vorteile bietet.

Model voor strategieën van frauderende paranormale begaafden

Samenvatting: Als parapsychologen een oordeel willen vellen over personen die beweren sterk paranormaal begaafd te zijn, dan is een grondig inzicht in fraudetechnieken onmisbaar. Een van de productiefste methoden daarvoor is de ontwikkeling van een cognitief model van fraudetechnieken dat de bedrogstrategieën beschrijft. Dit artikel geeft een eerste aanzet. Het beschrijft hoe een pseudo-begaafde: een waarnemer laat geloven dat een nepverschijnsel echt is, verhindert dat die waarnemer "normale" verklaringen ontwikkelt, zorgt dat de waarnemer "normale" verklaringen als onwaarschijnlijk verwerpt, condities eist die fraude makkelijker maken, slechte controlemaatregelen uitbuit en uitvluchten voorbereidt om mislukkingen of bewijzen van fraude te kunnen verklaren. Ten slotte geven de auteurs aan dat hun model weliswaar slechts een vertrekpunt is, maar dat een cognitief model voor fraude zowel de cognitieve psychologie als de parapsychologie grote voordelen biedt.

Strutturare un modello degli espedienti di frode nella sensitività

Sommario: Questo articolo sottolinea che una profonda comprensione della frode nel campo della sensitività è essenziale per i parapsicologi che vogliono definire i "sedicenti sensitivi" (cioè gli individui che affermano di avere forti doti psichiche). Si sostiene che uno dei modi più produttivi per acquisire questa comprensione sarebbe attraverso la formazione di un modello cognitivo della frode nella sensitività. Questo modello avrebbe lo scopo di descrivere le strategie di inganno impiegate dagli pseudo-sensitivi. Il lavoro esprime poi la possibile formulazione iniziale di un tale modello, notando come uno pseudo-sensitivo: inganna un osservatore reinterpretando una falsa dimostrazione come genuina, contrasta la formulazione di spiegazioni "normali" da parte dell'osservatore, inganna l'osservatore rifiutando come implausibili le spiegazioni "normali", contratta per avere nelle sue prove condizioni "che consentono la frode", approfitta dei controlli inefficaci e si prepara "vie d'uscita" per accantonare una dimostrazione fallita o una dimostrazione di inganno. Infine, l'articolo sottolinea come il modello presentato in questo lavoro sia solo un punto di partenza per questo tipo di ricerca, ma che formare un modello della frode nel campo della sensitività ha vantaggi reali sia per la psicologia cognitiva che per la parapsicologia.

Modelando las Estratagemas del Fraude Psíquico

Resúmen: Este artículo nota que un entendimiento detallado del fraude psíquico es esencial para los parapsicólogos que quieren poner a prueba a los que alegan ser psíquicos (esto es, los individuos que alegan tener una gran habilidad psíquica). Se discute que una de las formas mas productivas para obtener este entendimiento es através de la formación de modelos cognoscitivos del fraude psíquico. Este modelo debe tratar de describir las estrategias de decepción empleadas por pseudo-psíquicos. El artículo presenta un posible comienzo de tal modelo, notando como un pseudo-psíquico: engaña a un observador haciéndolo conceptualizar erróneamente una demostración fraudulenta como genuina, impide el desarrollo de explicaciones "normales" de parte del observador, lleva al observador a rechazar explicaciones "normales" como improbables, negocia condiciones "propicias al fraude" para una demostración, explota controles poco efectivos y prepara "excusas" para justificar una demostración fallida o la evidencia de fraude. Finalmente, el artículo discute que el modelo presentado representa solo el comienzo de este trabajo, pero que el modelaje del fraude psíquico tiene ventajas reales tanto para la psicología cognoscitiva como para la parapsicología.

Modelando os Estratagemas da Fraude Psíquica

Resumo: Este trabalho registra que uma compreensão cuidadosa é essencial para parapsicólogos que querem avaliar os que 'se dizem paranormais' (isto é, pessoas que dizem ter uma forte habilidade psíquica). Argumenta-se que um dos mais produtivos modos de se obter tal compreensão seria através da formação de um modelo cognitivo de fraude psíquica. Esse modelo ajudaria a descrever as estratégias enganosas empregadas por pseudo-paranormais. O trabalho esboça os possíveis princípios de tal modelo, registrando como um pseudo-paranormal: engana um observador forjando uma demonstração fraudulenta como genuína, impediendo o desenvolvimento do observador de explicações 'normais'; engana o observador rejeitando explicações 'normais' como não plausíveis; negocia condições 'condutoras de fraude' para uma demonstração; explora controles ineficazes e prepara 'saídas' para invalidar por meio de explicações uma demonstração falha ou a evidência de fraude. Finalmente, o trabalho mostra que o modelo apresentado representa apenas um ponto de partida para esse tipo de esforço, mas que o reconhecimento de padrões da fraude psíquica tem vantagens reais tanto para a Psicologia Cognitiva quanto para a Parapsicologia.

Modéliser les stratagèmes de la fraude psychique

Résumé: Cet article fait remarquer qu'une compréhension minutieuse de la fraude psychique est essentielle pour les parapsychologues qui souhaitent évaluer les 'prétendants au psi' (c'est-à-dire les individus qui prétendent avoir une forte aptitude psi). On argumente alors qu'une des façons les plus productives pour gagner une telle compréhension serait la formation d'un modèle cognitif de la fraude psychique. Ce modèle se voudrait pouvoir décrire les stratégies pour tromper employées par les pseudo-sujets psi. L'article expose ensuite les prémisses d'un tel modèle, faisant remarquer comment un pseudo-sujet psi trompe un observateur pour faire passer une démonstration frauduleuse pour authentique; comment il empêche le développement chez l'observateur d'explications 'normales'; il pousse l'observateur à rejeter les explications 'normales' en les faisant passer pour implausibles; comment il négocie des conditions 'favorables à la fraude' pour faire une démonstration; il exploite des contrôles inefficaces et s'apprête à expliquer une démonstration qui a échoué ou l'évidence d'une fraude. Enfin, l'article fait remarquer que le modèle présenté ici ne représente seulement qu'un point de départ pour ce type d'effort, mais que la modélisation de la fraude psychique a de réels avantages pour à la fois la psychologie cognitive et la parapsychologie.

Analysing Verbal Accounts of Spontaneous Paranormal Phenomena: A Sociological Approach

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Abstract: In this paper I discuss an approach to the analysis of verbal accounts of paranormal experiences. This method draws from developments within sociology and philosophy. The central assumption is that language is a dynamic and pragmatic medium through which people carry out social actions. It is inappropriate, therefore, to treat accounts as simply 'corresponding to' a state of affairs outside language. This analytic method is illustrated through the examination of a descriptive device, 'I was just doing X... when Y', which occurs in accounts of paranormal experiences. I examine some of the properties of this device, and describe some of the ways it is used as an interactional or inferential resource, particularly to warrant the implicit claim that the reported experience actually happened, and was not, say, the result of misperception, hallucination or psychological aberration. To conclude, I discuss some of the implications of this approach to language use for parapsychological research on spontaneous cases.

Introduction

My intention in this paper is to illustrate an empirical approach to the study of spoken accounts of spontaneous paranormal phenomena. This approach draws primarily from sociological considerations on the nature of language-use, but it also embodies some important philosophical work on the relationship between language and action. The core of this paper is an empirical illustration of the method; an examination of some properties of a device or discursive strategy that occurs in accounts of anomalous phenomena.

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The kind of empirical work being reported here is conventionally taken to be sociological, or sociolinguistic. It is necessary, therefore, to establish the relevance of this form of analysis to a parapsychological audience. Consequently, I will address some remarks to two themes relevant to parapsychologists. First, I will make a contribution to what seems to be (to an outsider, at least) a lively area of debate or controversy in parapsychology: calls for a radical realignment of parapsychological research objectives. In the following section I examine Blackmore's (1985; 1988a; 1988b) arguments for a new parapsychology that places emphasis upon the study of accounts of parapsychological experiences. Later, in the concluding section, I shall discuss White's (1993) arguments that parapsychology should draw upon the social sciences and humanities; in particular, I shall examine her plea for the importance of interpretative (*'verstehen'*) sociological methods in the parapsychological research process. Second, I shall try to draw out the

implications of sociological analysis of language use for parapsychological research, particularly the investigation of spontaneous cases.

Accounts and Parapsychology

In a series of publications, Blackmore has argued that parapsychology has failed to establish the reality of its subject matter, and has made no significant contribution towards an understanding of human nature. To rectify this, she suggests that it must discard many of its fundamental assumptions. In particular, she focuses on the concept of 'psi' — the mental ability that is claimed to be present in all forms of psychic phenomena (Blackmore 1985; 1988a; 1988b). She argues instead for a new parapsychology that is not hide-bound to the concept of psi, but that takes as its starting point the fact that people consistently report and describe anomalous experiences. It is this observation that has led her to recommend that greater analytic attention be paid to the *accounts* of these occurrences. As Blackmore (1988b) has stated, 'the phenomena [of parapsychology] are essentially accounts of people's experiences' (p.56.)

I intend to take seriously Blackmore's appeal for the study of accounts of paranormal experiences. The first step, then, is to fashion an appropriate analytic method. The approach advocated in this paper draws from a range of philosophical and sociological sources. This approach takes language as the site of social action, and not as a representational medium. The conception of language use as a dynamic and pragmatic medium urges empirical investigation of the organisation and construction of accounts, and the interactional or inferential work addressed by those constructions. To flesh out these programmatic statements, it is necessary firstly to examine some more traditional approaches to the use of accounts in research. Let us examine, then, how Blackmore's concern with accounts is realised in her research on near-death experiences (Blackmore, 1988c).

Blackmore begins by focusing on recurrent descriptive features of the experience; 'travelling through a tunnel', for example, is a common feature of accounts of NDEs. Blackmore claims that we can explain these descriptions by tracing the neurological pathways through which electrical impulses are transmitted through the brain in times of physiological crisis, such as the initial stages of death. Thus people's reports of travelling through a tunnel are merely verbal representations of their experience of the 'winding down' of cortical function prior to the cessation of all activity. The dimensions of the reported experiences are thereby explained by reference to the organisation of neural pathways that conduct electrical impulses in the head. Blackmore's approach treats features of accounts of experiences of NDEs as simply the vocalised precipitation of cognitive processes that occur as the individual nears death. Thus Blackmore's interest in people's accounts is motivated by the assumption that the details of those accounts can be treated as 'stand ins' for an underlying cognitive reality. People's descriptions, reports and accounts are treated as a representation of, or a correspondence to, states of affairs that are taken to determine the form and structure of subsequent accounts. Accounts, then, and the descriptions, reports and stories of which they are composed, are accorded an epiphenomenal status.¹

Blackmore's study echoes many of the assumptions that inform traditional social

¹ It is important to stress that this discussion of Blackmore's work is not intended to be critical. Blackmore's work is being discussed simply because it represents a very traditional way of using accounts in research: a method which, incidentally, is still enshrined in the vast majority of social science research. Debates about the role of language and language use in research have emerged in, and largely remained confined to, the disciplines of sociology and philosophy (although they are now beginning to make an impact in sociolinguistics, some quarters of British social psychology, and human computer interaction and system design). It would, then, be unreasonable to expect parapsychologists to be familiar with this literature.

science studies that rely on people's accounts as research resources. Such projects are informed by the largely common-sense assumption that descriptions, and the language skills of which descriptive practices are a component, can be treated as a largely passive medium for the transmission of information about a world 'out there', or in the case of (para)psychological projects, about a domain of inner mental events.

In the last thirty years, however, there has been a sustained critical attack on the assumption that language somehow corresponds to, or can be taken as 'standing for' states of affairs in the world. In his later research, Wittgenstein rejected the theory that language is a medium that merely reflects or describes the world. Indeed, much of his later work was directed towards showing the fallacies of correspondence theories of language and reference. Instead, he emphasised the importance of language *use*. He urged that we consider language as a tool box, and focus on the ways that people use these tools. His primary contribution was to propose that language is a central feature of the social and cultural milieu in which it is used, and not merely a logical system of symbols with which we can represent the world 'out there' (Wittgenstein, 1953; see also Pitkin, 1972, and Waismann, 1965).

Austin's (1962) work also emphasised the social and dynamic character of language, but his work focused on instances of specific types of sentences. He began by distinguishing between two types of utterances: constative utterances, that report some aspect of the world, and performative utterances, that perform a specific action. An example of a performative is 'I suggest you do this', where saying these words is to perform the action of suggesting. Other examples are 'promises', 'warnings', 'declarations', and so on. He termed such utterances 'speech acts'. Austin subsequently rejected the distinction between performative and constative utterances; his investigations convinced him that all utterances could be treated as performative. He concluded that any use of language,

regardless of what else it might be doing, was a series of actions.

A renewed interest in language in the social sciences was stimulated by the sociological approach that came to be known as ethnomethodology. Pioneered by Harold Garfinkel (1967) the fundamental tenet of ethnomethodology is that the sense of social action is accomplished through the participants' use of tacit, practical reasoning skills and competencies. (These skills are referred to as 'tacit' and 'practical' because they are not the kinds of 'rules' or norms of behaviour that we could consciously articulate, or on which we would routinely reflect. Instead, they inhabit the very weave of social life, and have become invisible and unnoticeable.) As so much of social life is mediated through spoken and written communication, the study of language was placed at the very heart of ethnomethodology's sociological enterprise.

There are two contemporary approaches to the study of language use that share many ethnomethodological concerns. Conversation analysis, or CA, was initiated by the work of Harvey Sacks (Sacks, 1992). Sacks focused exclusively on the communicative competencies that inform ordinary, everyday conversation. The goal of CA is to describe the organisation of sequences of naturally occurring talk. It focuses on the actions that are accomplished through the design of utterances, and it examines how these actions are produced with respect to the sequences of exchanges in which those actions are performed. The study of the structure of conversational organisation is one of the pre-eminent contemporary approaches to the study of language use.²

2 Introductions to conversation analysis can be found in Atkinson and Drew, 1979; Drew, 1994; Heritage, 1984, 1989; Levinson, 1983; Nofsinger, 1991; Sacks, 1992; and Wooffitt, 1990. Collections of research papers can be found in Atkinson and Heritage, 1984; Button, Drew and Heritage, 1986; Button and Lee, 1987; Drew and Heritage, 1993; Psathas, 1979; Psathas and Frankel, 1991; Schenkein, 1978; and Sudnow, 1972.

Finally, discourse analysis³ is an analytic method that grew out of the sociological study of scientific knowledge (Gilbert & Mulkay, 1984), but that developed principally in social psychology (Edwards & Potter, 1992; Potter & Wetherell, 1987). Unlike conversation analysts, discourse analysts examine all forms of verbal and textual materials: spoken and written accounts, letters, scientific journals, newspaper reports and so on. The object of empirical study is to describe the way that such texts are constructed, and to explore the functions served by specific constructions at both the interpersonal and societal level.

This has been a brief and partial review of some of the most important intellectual ideas and research that have influenced the way in which we can conceptualise language use and its referential properties. We now understand ordinary language, both spoken and written, to have a dynamic and pragmatic character: that is, social actions are accomplished through discourse. 'Describing' is not a referential activity, but a social activity. Moreover, everyday language is seen as constitutive of social life, rather than a detached commentary upon it. As a consequence of these developments, it is now untenable to retain conceptions of language as a merely neutral medium for the transmission of information, values, and beliefs about a world 'out there'. Instead, it is more appropriate to regard language use as a form of social action, the systematic properties of which can be described and rigorously analysed⁴.

³ Within the social sciences there are a number of analytic methods which use the term 'discourse analysis'. I am referring here to the work exemplified by Gilbert and Mulkay (1984), and Potter and Wetherell (1987). Both these sources provide discussions of the varieties of discourse analysis.

⁴ In this paper I am not concerned to describe how to do conversation analysis or discourse analysis. Potter and Wetherell (1987) provide description of the stages in discourse analysis (and a frank admission of the difficulty of describing the 'craft skills' of qualitative analysis). Formal accounts of a conversation analytic

In the rest of this paper I want to illustrate some of these arguments by reference to data taken from a series of informal interviews with people who claimed to have had encounters with a range of paranormal, parapsychological and generally anomalous experiences. (see Appendix A for an account of the data collection.) There are three properties of these accounts that I wish to focus on. First, I want to introduce and describe some properties of a device that occurs regularly in these data. (A device is simply a set of descriptive utterances that exhibits stable underlying or structural features). This device can be characterised as 'I was just doing X... when Y'. Second, I want to demonstrate that the X then Y device is the product of pragmatic, discursive work by speakers; in short, that it is tacitly *designed* to have the properties it exhibits. Finally, I want to show one way in which the properties of this device may be exploited by speakers in their pursuit of a specific inferential task: warranting the validity of their claims to have experienced something truly extraordinary.

There is a powerful cultural scepticism about people who claim to have encountered paranormal phenomena. Not only do such experiences provide an implicit challenge to a common-sense understanding of the world, but they also undermine the pronouncements of the scientific orthodoxy. My interest in accounts of anomalous phenomena thus stems from the fact that people who claim such experiences place themselves in an inauspicious position. The mere act of claiming such an experience can lead to assumptions of, at best, crankiness, or worse, some form of psychological deficiency.⁵

methodology, and its rationale, can be found in Sacks et al's seminal paper on turn taking; Heritage and Atkinson (1984) and Wootton (1989) also provide useful discussions of the formal aspects of conversation analytic research.

⁵ As an illustration of this scepticism we need only consider the extent to which it permeates previous social scientific research on anomalous experiences. For example, Wuthnow's (1976) study of people who believed in the efficacy of

Research on everyday conversational interaction has shown that participants may design their utterances defensively in circumstances in which the co-participant(s) may be hostile to, sceptical or suspicious of, or simply unsympathetic to, what the speaker is saying. For example, Pomerantz (1986) shows how speakers may build formulations of their 'points of view' to guard against the likelihood of a recipient being able to undermine the basis of their claims or opinions. In courtroom interaction also, utterances produced by counsel, witness and defendant will be designed to influence the range of inferences that the overhearing jury will arrive at (Atkinson & Drew, 1979; Drew, 1978, 1990). Equally, young people who are members of youth subcultures may provide accounts in which descriptions of activities and events are designed to deflect the criticism that they attract trouble by virtue of their unusual appearance (Widdicombe & Wooffitt, in press). Thus, where speakers are in an inauspicious environment, their descriptions can be designed to circumscribe the range of negative or unsympathetic inferences that may be drawn by a recipient.

astrological prediction concluded that astrology acted as a 'coping mechanism' for the socially deprived. Similarly, Moody's (1974) participant observation study of the members of a coven led him to conclude that the resort to witchcraft was an individual response to 'low self esteem', 'general anxiety' and 'pathological traits'. Finally, we may note Warren's (1970) argument that the tendency to see unidentified flying objects is a consequence of psychological discomfort resulting from inconsistencies between an individual's varied social statuses. These and other studies display a commitment to what might be termed a 'sociology of error' approach (Bloor, 1976). That is, a person might believe that they had seen an unidentified flying object, or had first-hand experience of the efficacy of astrological predictions; however, the social scientist explains these purported events by referring to the overarching and presumably determinant causes, such as the individual's socially marginal status, low self-esteem or status inconsistency.

Consequently, in a later section of this paper, I will go on to discuss one way in which the X then Y device can be used to establish the *factual* status of the reported experiences.

'I was just doing X... when Y': A Device for Introducing Anomalous Experiences

In the following extracts the speakers reach the part of their account when they recall their first encounter with the anomaly they are reporting. (See Appendix B for an explanation of the transcription symbols.)

(1) ND 22:159 The speaker is describing one of a series of violent encounters with a poltergeist. This particular episode occurred while he was going to the kitchen to make some tea.

- 1 anyway I got to the kitchen
- door
- 2 an as ah 'hh
- 3 I had the teapot in my hand
- like this
- 4 and I walked through the
- kitchen door
- 5 (.5) 'hhh
- 6 as I was going through the
- doorway
- 7 (.7)
- 8 I was just (.) jammed
- against
- 9 the doorpost (.) like this
- 10 with the teapot sti(h)ll
- stu(h)ck
- 11 out in front of me

(2) EL 4:29 Prior to his death, the speaker's husband had been a pilot in the RAF. He had a military funeral service that was held in an aeroplane hangar.

- 1 an' I went in there (.) er:m
- 2 w- with my mother-in-law and
- uhm:(.4)
- 3 friends that were with me
- 4 (1.3)
- 5 'hhh (.)
- 6 and I was just looking at
- the coffin
- 7 and there was David standing
- there (.3)
- 8 he was in Blues

9 (1.0)
10 'hh he wasn't wearing his
hat
11 his hat was on the coffin
12 and he was there

In both cases the speakers formulate a recollection of what they were doing *just before* the onset of their first experience with the phenomenon. In extract (1) the speaker claims that he encountered an invisible presence that forcibly pressed him against a door frame. He describes this as happening 'as I was going through the doorway'. In extract (2) the speaker is reporting her first awareness of an apparition of her deceased husband; this is described as happening as she 'was just looking at the coffin'.

Both speakers employ the same two-part format by which to introduce into the account the first experience of their respective phenomenon. This format can be identified as 'I was just doing X... when Y', where the 'X' component is used to describe the speakers' activities at the time, and the 'Y' component reports the speaker's first awareness of the phenomenon. So, in (1) the speaker claims that 'as I was going through the doorway' (*I was just doing X...*) he was 'just (.) jammed against the doorpost' (*...when Y*).

Extracts (3) and (4) provide further examples of descriptions of mundane activities prior to a reference to the initial encounter with an anomalous phenomenon.

(3) REW 52 The speaker is reporting one in a series of apparitions.

1 so I I think I remember I ad
a dish
2 in hand I was out in the
kitchen
3 it was different like (.) y'
know (.)
4 to this sort've flat (.5)
5 an' it ws' like a (.) big
entrance hall (.7)
6 with one (.) door (.5) and
then it came
7 straight the way through
8 there was a door there and a
9 door there (.5) a door there
10 an (.5) it was a kitchen
11 (1.0)

12 and I was right by this unit
part
13 (1.5)
14 an'
15 (.)
16 **X** I were lookin' out that
way
17 **Y** an' it seemed to be like a
figure
18 (.)
19 coming through the ↑hall
(.7)
20 all I could see was the ah
(a-)
21 the top part

(4) EL 5:39 The speaker had her husband's funeral service video recorded for relatives who were unable to attend the ceremony.

1 I also wanted it video'd for
my
2 children: who were
3 (1.7)
4 two and four at the time
5 they didn't come to the
funeral
6 (2.4)
7 and so perhaps a week later
8 (1.3)
9 >must've bin about< a week
afterwards
10 'h I:: (.5) put the recording
on
11 and was watching it
12 I was obviously extremely
upset
13 (.8)
14 **X** and I was sat on a chair
15 (.)
16 uhnd
17 (.5)
18 **Y** when I looked down David
was (.)
19 kneeling at the side of me

Speakers use the first part of the 'X when Y' format to refer either to an activity or a place: for example, in extract (4) the speaker produces the description 'I was sat on a chair', thus reporting her activity (sitting) and her location (on a chair). Instead of trying to characterise these descriptions in terms of one overriding feature, then, it is more useful to refer to the 'X' part of the format as a *state formulation*.

The Design of State Formulations

In this section I want to argue that state formulations are not simply formulaic utterances that are ritually or conventionally produced in accounts. Rather, I want to suggest that they are designed to have the properties they exhibit: they are the product of pragmatic work. I will discuss three sources of evidence.

1. There is a relationship between the activity used in constructing a description of the circumstances of the experience, and the nature of the phenomenon or event being reported. In extract (1) the speaker's experience consisted of being pressed against the frame of a door by an invisible agency. His description of the mundane things he was doing prior to this is 'as I was going through the doorway' (line 6). There is, then, a 'fit' between the activity selected and the type of experience he had. This occurs also in extract (2), in which the speaker saw an apparition of her recently deceased husband standing next to his coffin at the funeral. Her formulation of what she was doing prior to seeing the apparition is 'I was just looking at the coffin' (line 6). There is, then, a contingent relevance between the activities indexed in the first part of the format and the paranormal or unusual event referred to in the second. The activities reported in the first part are not coincidentally related to the subsequent experience, as we might expect if they were recollections composed of events randomly recorded by cognitive processes at the time. That is, it is not that they are mentionable because they were happening, and then something extraordinary happened; rather, the descriptions of these activities are designed to elevate features of the speakers' experiences made relevant by the subsequent event. They attain a reportable status by virtue of what the event turned out to be.⁶

⁶ I am aware that state formulations are *recollections*, and in particular resemble a type of memory known as 'flashbulb memories' (Brown and Kulik, 1977). However, I have argued

2. Speakers design the 'X when Y' format to implicate the contingency of one event upon another. When constructing routine state formulations speakers have choice between verb tenses. They can employ an 'active' present tense, as in 'walking', 'looking' and 'standing', or they can use a 'passive' past tense, as in 'walked', 'looked' and 'stood'. The former tense preserves the active, on-going quality of the action being described, a character that is lost when a passive tense is used to refer to an activity. In the following data speakers display a preference for the use of one tense over another.

(5) ND 22:162

- 1 I had the teapot in my hand
like this
- 2 and I walked through the
kitchen door
- 3 (.)
- 4 **X** 'hhh as I was going through
the doorway
- 5 (..7)
- 6 **Y** I was just (..) jammed
- 7 against the doorpost

(6) EM A 10:86 The speaker is reporting an experience that happened while she was on a public demonstration.

- 1 but my experience was
- 2 I got to a certain point in
- 3 the (..) circle s:circle and
the chant
- 4 **X** we kept going round slowly
- 5 in a circle without stopping
- 6 **Y** 'hh all of a sudden
((goes on to report onset of ex-
perience))

In extract (5) the speaker formulates the activity 'walked through' which is then displaced by 'was going through'. In (6) the speaker replaces 'I got to a certain point in the s:circle' with 'we kept going round'. In both extracts the speakers provide two con-

elsewhere (Woolfitt, 1992) that the 'flashbulb' metaphor fails to account for the detailed design features of these utterances, and that the examination of their properties as interactional resources yields a more satisfactory analysis.

secutive utterances that address ostensibly with the same issue — their activity at the time — and in both instances the information in the first version is repackaged in the second. The reformulated versions, however, employ active past tenses, whereas the first versions are constructed through passive tenses.

The following extract comes from Hufford's (1982) investigation of 'Old Hag' phenomena.⁷ Note that the speaker produces two versions of his initial perceptions of the onset of the experience.

I'd come back from a lab of some sort, I had so many I'm not sure which one it was, and now I crashed... That was approximately four o'clock in the afternoon, I was really dead tired. I was really dead tired, I fell into a very deep sleep that day... I remember, you know, it was a really deep sleep. [1] But what woke me up was the door slamming. "OK." I thought, "It's my roommate," you know, my roommate came into the room... [2] I was laying on my back, just kind of looking up. And the door slammed and I kinda opened my eyes. I was awake. Everything was light in my room. (p.58; original emphasis.)

Here the speaker begins to describe his experience: 'But what woke me up...' to 'my roommate came into the room'. He then pauses (indicated by the consecutive full

⁷Occasionally in this paper I will use extracts from accounts published in Hufford's (1982) investigation of the 'Old Hag' experiences. There are a number of reasons for using materials from Hufford's book. First, Hufford states that he performed hardly any of the editing or 'cleaning-up' operations which often accompany the use of transcripts in studies of personal paranormal experiences. Thus, although transcriptions are not done to conversation analytic conventions, they are faithful to the naturally-occurring organisation and ungrammatical 'messiness' which inhere in spontaneously produced, everyday talk. Second, his interviews were collected during the 1970s from people in Canada and the United States. Therefore, we may be especially confident of analytic observations which are derived from data collected in North America and the United Kingdom.

stops), after which he repeats this information, but now presented in the 'X when Y' format: 'I was laying on my back, just kind of looking up. And the door slammed...' Note that the speaker uses active rather than passive tense selections: 'laying' and 'looking'.

Routinely, active past tenses are not employed unless the speaker wants to draw attention to some other event that occurred while the activity described by the verb was itself taking place. An active past tense clearly displays that the activity described in this way is contingent upon some other, as yet unstated occurrence.

3. The activities reported in state formulations seem on first inspection to be routine, bland or commonplace. These descriptions, however, do not merely reflect the state of affairs at the time: these formulations are designed to achieve this mundane or routine character. This can be demonstrated by examining cases in which speakers construct their state formulations to provide summaries, gists or upshots of material that they have furnished in previous stretches of their accounts.

(7) DM 7

- 1 un' I was thinkin' about religion
- 2 un' eh (.5) I was thinkin' well (.4)
- 3 () on the lines of it (.3)
- 4 I(t)- i- it must be very easy
- 5 to be Saint Paul because yuh get yer
- 6 blindin' light on the road to Damascus
- 7 sort u(v) thing un' eh 'hh (.6)
- 8 you've no problems (so you) you:: know
- 9 as far as you're concerned
- 10 you measure all things
- 11 according to that experience
- 12 the experience was exterior
- 13 to yourself an' so therefore
- 14 (1.3)
- 15 you viewed it (.7) as a star:t
- 16 (.5)
- 17 (>yu know<) >yeah<

- 18 **X** I were just thinkin'
 19 (.3) er:m
 20 **Y** and then suddenly I was
 aware of
 21 (.7)
 22 almost (.) the sensation was
 23 almost as if a veil was
 lifted

(8) EL 1:6 The speaker is describing the circumstances in which she first encountered the 'presence' or spirit of her recently deceased husband. She has just been informed of his death by two representatives from the RAF.

- 1 a::n:deh (.) they drove me
 (.)
 2 to (.) Angelsey
 3 (1.5)
 4 a:nd
 5 (.5)
 6 **X** we were all sat round (.)
 ehm in a room
 7 (.6)
 8 and I know >thut< (.3)
 9 I know it sounds silly but
 10 **Y** I knew that David was
 there
 11 he was behi:nd me 'hh

In extract (7) the speaker provides an account of a religious or mystical experience. In the first part of the extract he provides a lengthy description of some of the thoughts that were occupying him prior to the experience. These concerned his reflections on personal faith that results from a direct personal encounter with a mystical presence. Thus he explicitly draws attention to the character of some of his activities at the time, and insofar as these concern his thoughts about direct encounters with the numinous, they are hardly ordinary preoccupations. Yet in building a gist of this prior talk he deletes the more evocative aspects of his prior talk and constructs the more mundane state formulation 'I were just thinkin' (line 18).

Similarly, in extract (8), the speaker has been reporting how she was met by Air Force officials who informed her of her husband's accident, and then driven to a nearby RAF camp. In the light of the emotive events that she had just experienced,

and to which she had just referred, the state formulation 'we were all sat round (.) ehm in a room' (line 6) is conspicuously routine. In each case the speakers actively design their state formulations as upshots of materials they had provided earlier. In doing so they gloss over or discard those features of their prior talk that are non-ordinary, emotive or traumatic, to furnish only the routine character of their circumstances at the time.

Summary

We have so far examined some of the properties of a descriptive device that is produced spontaneously in accounts of paranormal experiences. These formulations are constructed as a two part device, here identified as 'I was just doing X... when Y'. Through this device speakers provide a description of the routine circumstances of the environment at the time of their experiences, and also a reference to their first awareness of the actual phenomenon. I have argued that the fine detail of these descriptions is not determined, for example, by a list of features that are stored within various cognitive processes, and thereby available to the speaker to be 'read off' at the appropriate place in the account. I have tried to show that the routine, mundane character of the speakers' environment is constructed through speakers' descriptions, and not merely reflected in them.

In the following section I want to describe how the two-partedness of the X then Y device may be exploited to allow speakers to warrant their (implicit) claims that the experiences being described actually happened, and were not, say, the product of misperception, wish-fulfilment or psychological aberration⁸.

⁸ It is important to stress that the X then Y device does provide other inferential resources. For example, the device is a contrast device, whereby the normality of the X component enhances the strangeness of the phenomenon reported in the Y component. See Woffitt, 1992, chapter six, for a more complete discussion of the properties of X then Y devices.

Insertions in the 'I was just doing X... when Y' Device

In this section we will consider data in which speakers begin the first part of the 'X when Y' device, but do not then move directly to the second part. Instead, either they extend their state formulation, or introduce new material, before completing the device with a reference to the paranormal phenomenon, or what turns out to be an anomalous event. So, these are occasions in which speakers disrupt the device by *inserting* material between the 'X' and 'Y' components. Analysis of these inserted materials revealed their design as items to defuse possible arguments that might have been adduced to undermine either the veracity of the account, or the reliability of the speaker.

In the following extract the speaker inserts material that deals with another person who was present at the time of the experience; this insertion permits her to constitute the 'paranormality' of the event.

(9) EM A 286 The speaker has been trying to differentiate between forms of mediumistic powers, drawing a distinction between 'mere' psychic abilities and 'true' clairvoyance. To illustrate her argument she is reporting her experience of a recurrent noise, which only she had been able to hear.

- 1 one night however a friend
was with me (.)
- 2 **X** and we're just sitting
watching the tele
- 3 (.3)
- 4 **ins.** and she was also very
psychic
- 5 a:nd urm
- 6 (1.3)
- 7 **Y** its (.) th-the s:ound
started
- 8 the litt(le)m musical (s)
tu-
- 9 s::ound started again (.3)
and uhm: (.)
- 10 >she said what's THaghT<
- 11 >I said OH (.) have you
heard it< (.)
- 12 ah(s) >oh that's wonderful
- 13 you're the first person
who's

14 heard it besides me<

In (9) the speaker inserts the information 'and she was also very psychic' (line 4). The identification of the friend as psychic provides an understanding of how she was able to hear the noise: a recipient can search this description to find that her perception was due to the friend's special abilities. After reporting the friend's reaction the speaker makes it explicit that she too can hear the sound. By aligning herself with her psychic friend, she makes available the inference that she could hear it by virtue of *her* clairvoyant powers.

The paranormal character of the episode hinges upon the friend's perception of the sound, and the implication that she was able to do so on account of psychic powers, the kind of which are also possessed by the speaker. Up until the time of the event, however, there would have been no warrant to describe the friend in terms of this one special characteristic. Indeed, it is a somewhat peculiar description to use when referring to someone who has been described immediately before as doing something as ordinary as 'watching the tele'. By introducing the friend's psychic powers into the account prior to any reference to the noise in the second part of the format, the speaker is able to provide materials from an analysis of which a recipient can come to the conclusion that the noise was paranormal.

A second set of inserted material attends to the possibility that the veracity of their accounts might be questioned by an inquiry as to whether they were adequately positioned to have obtained a clear view of the phenomenon.

(10) HS 17

- 1 ah came home from work at
lunchtime
- 2 (1)
- 3 an' I walked into the sit-
ting room door
- 4 (.)
- 5 **X** in through the sitting
room door
- 6 (1.5)
- 7 an::

8 **ins.** right in front of me
 (.)
 9 was a sort of alcove (.)
 10 and a chimney breast (.)
 11 like this (.7)
 12 **Y** and a photograph of our
 wedding
 13 (1.0)
 14 came off the top shelf (.2)
 15 floated down to the ground
 16 hh completely came apart
 17 But didn't break

(11) ND 7:49 The speakers are describing one in a series of poltergeist experiences that were centred in the attic in their house.

1 S1 and then the disturbances
 started
 2 (2.4)
 3 the first thing we
 4 (1.3)
 5 really noticed was: (.5)
 6 one night
 7 (1.3)
 8 in (.7)
 9 I would think September
 10 S2 yeah September - '76=
 11 S1 - September
 12 S2 =it would be
 13 S2 yeah that's right
 14 (1.5)
 15 **X** we were laid (.7) in
 the front bedroom
 16 **ins.** which was below the
 front attics
 17 (1.5)
 18 **Y** and we heard a noise
 (.5)
 19 like someone throwing
 gravel across
 20 a piece of (.) hollow
 hardboard

Through insertions the speakers are able to reveal that they were in optimum positions from which to see or hear the phenomenon. In extract (10) the speaker describes her position in relation to the site of the subsequent paranormal event. This information comes between the state formulation and the description of the anomalous behaviour of the photograph. In extract (11) the speaker inserts material to reveal that the bedroom was directly beneath the attic, the source of the disturbance he is about to report.

The following account comes from Hufford's (1982) research on the 'Old Hag' experience.

One night, everything was dark as usual and I heard footsteps on the stairs. This didn't surprise me at all--- I wasn't amazed at anything. The footsteps came up the stairs. I looked around the corner, my bed was more or less in the corner and I could look out and see the stairway, and I saw a figure coming up the stairs and turned [sic] at the top of the stairway (p. 33).

In this passage the speaker displays a self-interruption: after beginning to report on the sound of footsteps and his reaction to them, he then describes his location in relation to the physical layout of the house. Through this he is able to state that from his position at the time he had clear view of the area where the figure first became visible.⁹

Claiming to have had a paranormal experience ensures that the witness is in a sensitive position, not only because of the extraordinary nature of such events, but also because they are *rare*. Being in the right place at the right time to observe such a phenomenon is itself a remarkably fortunate coincidence. The simple fact of such coincidence, however, can be used as the warrant to doubt the veracity of accounts of supernatural experiences. For example, it may be argued that that the sheer coincidence that someone should happen to be in the same place as the manifestation of a supernatural agency may be more economically accounted for by assuming that the experient was mistaken, or even that the story was entirely fabricated.¹⁰ In the next two extracts the

⁹ As in the previous two cases of inserted materials, there would have been no warrant to make such an observation *at that time*; it is only by virtue of the occurrence of the figure that his position became significant. This in turn provides further support for the claim that these recollections are not determined by memories stored in psychological structures.

¹⁰ Collins and Pinch (1979: 245) note that this line of reasoning and argument - referred to as

speakers were alone in the early hours of the morning at the time of their experiences; these circumstances make them particularly susceptible to this suggestion. Their insertions, then, are designed to warrant their having observed the phenomenon.

(12) YA The speaker in this extract is a policeman. He is reporting an incident that occurred while he was on duty in the early hours of the morning, driving through a local village to check a local school.

1 it was:: (.) it was not a
stop check
2 on a night y'know
3 yuh jus' drove past it
4 we'd 'ad a lot of thieves
(.)
5 yu know a couple of years
ago
6 so (yus) (.) y' know (.)
7 look for any strange vehi-
cles really
8 (1.3)
9 X un' driving fairly slowly
10 ins. having checked the
school (.3)
11 on the other side of the
road
12 (1)
13 er:m:
14 (1)
15 Y un something caught me eye

(13) AV 1 100 The speaker has been providing the background for her experiences, which happened while she was working as a cleaner. She has just stated that she worked very early in the morning.

1 I got there very early
2 in the morning simply be-
cause
3 my mother was ill at the
time
4 with cancer 'h
5 and I used tuh have to
6 nurse her so I (.3) got
7 there early to do the work
(.5)

8 X 'hh as I went up (.) one
of the staircases
9 ins. with all my cleaning
equipment (.3) um::
10 (1.0)
11 Y a man (.) pushed passed me
12 (1) he was spirit it w-
13 or whatever you want to call
it

In both cases the speakers use an 'occasioned' social identity - their work identities - as a resource by which to account for being in a specific place at the time that the phenomenon occurred. In (12) the speaker occasions the relevance of his occupational identity as a police officer to warrant his presence in the area where he happened to come across what he believed to be an anomalous experience. So, he reports that he was 'driving fairly slowly' and that he had just checked a nearby school, thereby providing material that can be inspected to reveal *why* he was driving slowly just at the time that his attention was attracted by something that transpired to an anomalous phenomenon. Furthermore, checking a school late at night is the legitimate business of a policeman on a routine patrol. Thus he invokes responsibilities attached to his 'official', or occupational identity to sanction and warrant his activities at the time of witnessing an anomalous event. And, by invoking his occupational identity, the speaker indexes a range of conventionally-held attributes of police officers that can also be recruited as a warrant for his claims — that they are trained to notice irregularities, level-headed, and not given to wild flights of exaggeration, and so on.

In (13) the speaker's insertion embellishes her description of her state formulation by describing items that she was carrying immediately prior to the onset of the experience: 'with all my cleaning equipment'. The implements to which she refers in this description are the 'tools' of the cleaner's trade. By invoking her occupational identity as a cleaner she warrants being in the building at that time in the morning.

'Occam's Razor' - has often been used by sceptics to explain statistically significant experimental results in parapsychology.

Why is it that such defensive materials are being inserted between the two parts of this device? Some speculative remarks are in order. In extracts (9) to (13), the speakers insert materials that address issues relating to the veracity of the account, or the reliability of the witness. Overtly attempting to make the strongest and most plausible case for the truth of an account, however, could itself be taken to imply that the account is, in some ways, intrinsically weak or unreliable. There is, then, a 'sensitive' character to the business dealt with by the production of these insertions.

The 'X when Y' sequence is a single device, designed to be heard as a unit of two related utterances, and not, say, as two distinct utterances that happen to be serially adjacent. Consequently, the production of the first part, the state formulation, is *sequentially implicative*: the provision of an X component sets up the expectation of the forthcoming provision of the Y component. Furthermore, only certain types of information legitimately can occupy the second part of the device. In the extracts considered in this section the inserted material is recognisably not a conventional 'Y' component. The recipient can thus infer that the extraordinary event has yet to be reported: the expectation generated by the first part still obtains. This expectation ensures that directly after the provision of the 'X' component is an advantageous position in which to introduce sensitive material. Disrupting the format at this point ensures that material that is crucial to the account being produced acquires the character of 'parenthetical' or 'incidental' information, thereby minimising the possibility of its explicit — and possibly sceptical — assessment by the recipient.

Conclusions

The analytic method illustrated in this paper has three dimensions: the inductive search for recurrent descriptive practices and methods produced spontaneously in naturally occurring language use; the explanation of the organisation of these descrip-

tive devices; and the analysis of the interactional or inferential consequences of their use. To illustrate the application of this method, I have discussed some properties of a device in accounts of paranormal experiences. The structural features of this device furnish a range of resources, some of which we have examined in this paper. Through these resources the speakers attend to local interactional issues that are relevant to making reports of paranormal experiences. Furthermore, speakers exploited the two part structure by disrupting it. Analysis of these inserted materials revealed their design as items to defuse possible arguments that might have been adduced to undermine either the veracity of the account, or the reliability of the speaker. In short, the device is used for pragmatic work that is sensitive precisely to the culturally-based scepticism about claims to have encountered paranormal phenomena.¹¹

All the examples used so far come from informal interviews, conducted either by the author, or by Hufford in his research. Consequently, it is possible to claim that the device identified here is somehow a product of the 'interview situation', and that it has no currency outside that limited domain. This in turn raises questions about the wider relevance of the analytic remarks presented here. However, there is evidence that the observations derived from this data corpus may be relevant to other occasions of language use in which accounts of paranormal experiences are produced. The following extract comes from a corpus of naturally occurring telephone conversations recorded in England in the late 1980s. The participants, L and T, are having an ordinary chat about friends, relatives, and

¹¹I am not suggesting that the 'X when Y' device is peculiar to accounts of paranormal experiences. Indeed, the device occurs in accounts of extraordinary but not paranormal events (Wooffitt, 1992). Rather, I think this device is a culturally available resource for 'doing talk about incredible things'. My analytic interest, however, has been focused on the way the device is employed in the specific domain of accounts of paranormal experiences.

so on: the features of this conversation are quite spontaneous. Immediately prior to this extract, L has asked about T's 'haunting', a reference to mysterious events in a house belonging to one of T's friends. T replies that nothing untoward has occurred recently, but then goes on to say:

(14) Holt:J86:1:2:4.

- T: It's quite funny
actually cuz there's
someb'dy up the road I
wz talking to an' uh
(.2) sh'reckoned tha(.)t
uh: he ~~he~~ bought
th'house b't'er bought
it off his sister.
(.5)
- T: X A-n' iz sister wz: uh
gettin' ready one
night t'go out.
- L: -Yes.
- T: ins. She hadn't been
'drnhinking' 'hhh
Y an' the hairspray
apparently lifted itself
up 'n went t'the other
side a' the dressing
table.

This is a very neat conversational instance of the 'X when Y' device which exhibits many of the features discussed in this paper. There is, for example, an instance of the contingent relationship between the design of the state formulation and what the paranormal experience turned out to be. That is, presumably the experient's activity at the time could have been described in a variety of ways: 'sitting in the bedroom', 'getting dressed', and so on. But 'gettin' ready one night t'go out' neatly meshes with the phenomenon of the levitating hairspray, an item likely to be to hand when a young woman is preparing for an evening out. There is also an insertion between the two components of the device which is starkly designed to minimise the possibility of a sceptical response to the story.

The approach to language use advocated here has implications for many areas of parapsychological research. Consider laboratory practice. Language use impinges upon laboratory experiments in various

ways. For example, ordinary language use is the medium through which subjects are given instructions, through which subjects' queries about the experiment are addressed, through which mental impressions and sensations are reported, through which the experimenter develops rapport with subjects, and so on. Language permeates even the most tightly controlled experiment. This observation suggests that it might be appropriate for parapsychologists to be aware of the dynamic and interactional properties of language use.

The arguments about language presented here have more fundamental implications for parapsychological research. For example, White (1985, 1990) has advocated a fundamental shift in parapsychological research. She argues that parapsychologists should cease experimental research, and instead develop a more experience-centred approach. Recently (White, 1993) she has argued strongly that parapsychology should draw on methods in the social sciences and humanities. In particular, she claims that a *verstehen* sociological methodology, which emphasises understanding and interpreting subjective experiences, is more appropriate to psi phenomena than laboratory experiments. In keeping with her rejection of laboratory based methods of research, White does not confine her studies to explorations of psi, but rather focuses on psi in a range of everyday anomalous events, which she terms Exceptional Human Experiences (EHEs). Thus she states 'The only claim I am making at this point is that I am studying these experiences' (White, 1993, p.288).

However, the analyst has access to such experiences only through the experients' use of natural language abilities to report them. Any attempt to conduct *verstehen* interpretative research on the 'experience' means treating *accounts* of those experiences as a passive conduit for the transmission of information. But accounts of any kind have dynamic properties: they are the vehicle for, and the site of, specific interpersonal and social actions. The same is true of accounts of paranormal phenomena: as we have seen from the

analysis, descriptive sequences of paranormal phenomena can be designed with respect to specific kinds of inferential tasks. In short, the experiencers' *own* interpretative and inferential work is embodied in their accounts. Consequently, attempts to utilise the *verstehen* tradition, and perform interpretative work on the 'experience', may be premature in that it ensures that the analyst does not address the pragmatic, inferential work that is already built into the very fabric of the experiencers' account. White's recent papers call for an attempt to examine what might be termed, broadly, the 'human' dimension of paranormal experiences. This development is, to my mind, to be applauded. It is ironic, then, that one of the analytic methodologies she recommends begins by overlooking the most 'social' or 'cultural' component: the use of language in the production of the account of the experience.

There is a related methodological point. Experimental research can be characterised, roughly, as an attempt to understand a subject matter formally, and to make incremental gains in understanding based on rigorous and detailed empirical studies. White (1993) argues that it is necessary to study the human dimension of paranormal experiences. To do this, she advocates a wholesale rejection of experimental research in favour of analytic methods and perspectives from a range of social science disciplines: *verstehen* sociology, hermeneutics, psychoanalysis, feminism, postmodernism, and so on. Some of the disciplines and methods are directly antagonistic to the experimental, scientific methods traditionally pursued by parapsychology.

There are two implications of White's argument:¹² first, that the 'human' dimension of paranormal experiences resists formal analysis: that is, that the only way to study these is through more subjective or

interpretative methods; and second, that all methods from the social sciences necessarily pursue radically different research agenda to the scientific method favoured by parapsychologists.

Both implications are misleading. The analytic method illustrated in this paper addresses one component of the 'human' dimension of paranormal experiences — accounts of those phenomena. Admittedly, the data were not obtained from controlled experiments, and there is no attempt to employ statistical methods to validate the empirical claims. However, these methodological practices developed not out of a rejection of scientific attempts to produce formal and rigorous analysis. Rather, they developed as a response to theoretical concerns about the validity of linguistic data derived from laboratory settings, and difficulties associated with attempts to use coding schemes to categorise features of language use prior to statistical analysis (Heritage & Atkinson, 1984). The attempt to produce formal and rigorous analyses is pursued by other means. For example, the first step in analysis is careful observation: theorising about the data is rejected in favour of formal and detailed description of the properties of the data. Empirical investigation is painstaking in its detail; this is because analysis proceeds with the assumption (borne out by empirical studies) that no detail of the data can be ruled out as, *a priori*, random, insignificant or irrelevant. Research reports reproduce all the data that are relevant to the analysis. Although this makes empirical papers somewhat lengthy, there are important benefits: public display of the data provides a powerful check on weak or poorly substantiated empirical claims; it also allows other researchers to assess the validity of the arguments made on behalf of those data.

The sociological method outlined in this paper attempts to provide rigorous and formal descriptions and analyses of discursive patterns that occur in accounts of paranormal experiences. Although it can be identified as an inductive, interpretative method, it has much in common with tra-

¹² I am not here claiming that White subscribes to either position; I am merely using the argument in her (1993) paper as a platform from which to address broader issues concerning the potential overlap between scientific and social scientific goals in parapsychological research.

ditional scientific research. It is rigorously empirical: it sets out to identify and describe (discursive) phenomena before imbuing them with theoretical significance, and it seeks to establish a cumulative body of findings. The 'human' dimension of paranormal experiences, then, can be studied formally, and the sociological tools available to do so do not necessarily contradict the goals of traditional scientific research; indeed, they can be complementary.

There is one final point. The analytic method illustrated in this paper sets out to describe how components of accounts of paranormal experiences may be designed to address interpersonal or inferential tasks. But there is another feature of language use which I have not emphasised: its constitutive or constructive character.

One of the core assumptions of the approach advocated here is that:

members' accounts, of every sort, in all logical modes, with all their uses, and for every method for their assembly *are constituent features of the settings they make observable* (Garfinkel 1967, p.8; emphasis added.)

In its broadest sense, Garfinkel's argument attends to the relationship between language and the world, whether the world in question is one of social relationships, beliefs, patterns of normatively appropriate behaviour, attitudes, social institutions, social structures, and so on. What the world is — how it is conceived and the phenomena that populate it are — are the organised products of members' concerted practical activities to realise that world and those features. This realisation occurs in and through discourse.

The reflexive and constitutive features of language use, however, are not simply 'topics studied in sociology': they have a broader compass. While their *investigation* may be unique to areas of sociological practice, they are constituent aspects of all social activities — quite simply, occasions in which people employ natural language resources to produce descriptions.

This has profound implications for parapsychological research that employs people's accounts of their paranormal experiences as an investigative resource. For example, in the investigation of spontaneous cases, what the parapsychologist knows about the experience — what the actual phenomenon was, what the experience consisted of, and so on — can be investigated only as a consequence of experient's use of natural language abilities to describe the experience. In each and every case, then, the phenomenon — a ghost, an apparition, a mystical encounter, a precognition, an out-of-body experience, a near-death experience — is unavoidably the product of the communicative practices that are embodied in its description. The accounts themselves are constitutive of the phenomena to which they refer. So, what have hitherto been taken to be the proper phenomena for the parapsychological research sciences, then, are inextricably tied to the constitutive processes of language use, and are embedded in its products — accounts of paranormal experiences. This suggests that what are conventionally taken to be essentially *parapsychological* phenomena may yet yield to forms of investigation that emerge from the *sociological* study of everyday language use.

Appendix A: Data Collection

The data used in this paper are from three sources.

[a] Adverts placed on University of York college and departmental notice boards.

[b] Adverts placed in local daily evening newspapers in York and Bristol. This resulted in 21 interviews. The York interviews were conducted either in the Sociology Department or in the interviewees' homes. In Bristol, all the interviews were conducted in the interviewees' homes.

[c] Other sources, such as contacts in research groups, and spontaneous inter-

views with friends and chance acquaintances.

In total I conducted twenty-seven recorded interviews, and was sent three more, thus making a total of thirty separate interviews.

The interviews were informal, and I had no set questions or routines. My objective was to make the interview as 'conversational' as possible. Therefore, once the tape recorder was running my opening remark would merely provide the speaker with the floor to say whatever he or she wanted about their experience. The details of speaker's accounts, then, were spontaneously produced, and were not elicited. To preserve the speakers' anonymity, all names have been changed.

Appendix B: Transcription Symbols

The transcription symbols used here are common to conversation analytic research, and were developed by Gail Jefferson. The following symbols are used in the data.

(.5) The number in brackets indicates a time gap in seconds, to the nearest tent of a second.

(.) A dot enclosed in a bracket indicates pause in the talk less than two tenths of a second.

'hh A dot before an 'h' indicates speaker in-breath. The more h's, the longer the inbreath.

hh An 'h' indicates an out-breath. The more 'h's the longer the breath.

(()) A description enclosed in a double bracket indicates a non-verbal activity. For example ((banging sound))

- A dash indicates the sharp cut-off of the prior word or sound.

::: Colons indicate that the speaker has stretched the preceding sound or letter. The more colons the greater the extent of

the stretching.

() Empty parentheses indicate the presence of an unclear fragment on the tape.

(guess) The words within a single bracket indicate the transcriber's best guess at an unclear fragment.

. A full stop indicates a stopping fall in tone. It does not necessarily indicate the end of a sentence.

Under Underlined fragments indicate speaker emphasis.

↑ ↓ Pointed arrows indicate a marked falling or rising intonational shift. They are placed immediately before the onset of the shift.

CAPITALS With the exception of proper nouns, capital letters indicate a section of speech noticeably louder than that surrounding it.

° ° Degree signs are used to indicate that the talk they encompass is spoken noticeably quieter than the surrounding talk.

Thaght A 'gh' indicates that word in which it is placed had a guttural pronunciation.

> < 'More than' and 'less than' signs indicate that the talk they encompass was produced noticeably quicker than the surrounding talk.

= The 'equals' sign indicates contiguous utterances. For example:

S2 yeah September -'76=
S1 -September
S2 =it would be
S2 yeah that's right

[Square brackets between adjacent lines of concurrent speech indicate the onset and end of a spate of overlapping talk.

A more detailed description of these transcription symbols can be found in Atkinson & Heritage (1984: ix-xvi).

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Analyse sprachlicher Schilderungen paranormalen Spontanphänomene: Ein soziologischer Ansatz

Zusammenfassung: Ich diskutiere in diesem Beitrag eine Herangehensweise an die Analyse sprachlicher Schilderungen paranormalen Erfahrungen. Die verwendete Methode greift auf Entwicklungen in Soziologie und Philosophie zurück. Sie geht von der Grundannahme aus, daß Sprache ein dynamisches und pragmatisches Medium ist, mit dessen Hilfe Menschen soziale Handlungen ausführen. Es ist folglich unangemessen, sprachliche Schilderungen als "Korrespondenzen mit" außersprachlichen Gegebenheiten zu behandeln. Die Untersuchung einer Beschreibung der Form 'Ich war gerade mit X beschäftigt ..., als sich Y ereignete', wie sie in Schilderungen paranormalen Erfahrungen vorkommt, dient zur Veranschaulichung dieser analytischen Methode. Ich untersuche einige der Eigenheiten dieser sprachlichen Form und beschreibe manche ihrer Verwendungsweisen als Quellen für interaktive Handlungen oder Schlußfolgerungen, insbesondere ihre Verwendungsweisen zur Rechtfertigung der impliziten Behauptung, daß die berichtete Erfahrung tatsächlich stattgehabt hat und nicht etwa das Ergebnis von Wahrnehmungsfehlern, Halluzinationen oder geistiger Verwirrung war. Abschließend erörtere ich einige der Konsequenzen, die diese Herangehensweise an Sprachverwendung für die parapsychologische Erforschung von Spontanfällen hat.

Analyse van mondelinge verhalen over spontane verschijnselen: een sociologische benadering

Samenvatting: De hier behandelde analyse van mondeling gerapporteerde paranormale ervaringen is gebaseerd op ontwikkelingen in de sociologie en filosofie. Het belangrijkste uitgangspunt is dat taal een dynamisch en pragmatisch medium is waarmee mensen sociaal handelen. Het is daarom onjuist de verhalen te zien als "louter verwijzend naar" iets dat buiten de taal zelf staat. Deze analytische methode wordt geïllustreerd via het onderzoeken van een beschrijving als "Toen ik net met X bezig was ... gebeurde Y", die optreedt in verhalen over paranormale ervaringen. Ik bekijk eigenschappen van dergelijke constructen en beschrijf hoe die worden gebruikt als bron voor interacties of afgeleide conclusies, vooral om de impliciete claim te beschermen dat het voorval echt gebeurde, dus geen gevolg was van gebrekkig waarnemen, hallucinatie of psychologische afwijkingen. Ten slotte bespreek ik enkele implicaties van deze benadering voor het gebruik van taal in parapsychologisch onderzoek van spontane verschijnselen.

L'analisi dei resoconti verbali dei fenomeni paranormali spontanei: un approccio sociologico

Sommario: In questo lavoro discuto di un approccio particolare all'analisi delle descrizioni verbali delle esperienze paranormali: un metodo che deriva dagli ultimi sviluppi della sociologia e della filosofia. L'assunto fondamentale è che il linguaggio è uno strumento dinamico e pragmatico con il quale gli individui eseguono atti sociali. È inappropriato, perciò, considerare i resoconti come "corrispondenti a" situazioni estranee al linguaggio. Il metodo di analisi viene illustrato attraverso l'esame di un espediente descrittivo - "stavo facendo x... quando y" - che si ritrova nei resoconti delle esperienze paranormali. Qui esamino varie proprietà di tale espediente descrittivo e discuto alcuni modi secondo i quali è usato come strumento di interazione o di inferenza, specie per giustificare l'affermazione implicita che l'esperienza riferita è accaduta davvero e che non era, ad esempio, il risultato di un errore percettivo, di un'allucinazione o di un'anomalia psicologica. Nelle conclusioni discuto alcune conseguenze di questo approccio all'uso del linguaggio per la ricerca parapsicologica sui casi spontanei.

Analizando Relatos Verbales de Fenómenos Paranormales Espontáneos: Un Acercamiento Sociológico

Resumen: En este artículo se discute un acercamiento al análisis de relatos verbales de experiencias paranormales. Este método se basa en desarrollos en la sociología y la filosofía. La premisa central es que el lenguaje es un medio dinámico y pragmático a través del cual las personas ejecutan acciones sociales. No es apropiado el considerar los relatos como simples "correspondencias" con eventos que ocurren fuera del lenguaje. Este método analítico es ilustrado a través de un análisis de una descripción, "Yo estaba haciendo X... cuando Y", lo cual ocurre en relatos de experiencias paranormales. Se examinan algunas de las propiedades de esta descripción, y se describen algunas de las formas en la cual es usada como un recurso de interacción o de inferencia, particularmente para garantizar la premisa implícita de que la experiencia reportada ocurrió realmente y no fue, por ejemplo, el resultado de percepciones erróneas, alucinaciones o aberraciones psicológicas. Para concluir, se discuten algunas de las implicaciones de este acercamiento al uso del lenguaje para la investigación parapsicológica con casos espontáneos.

**Analisando Relatos Verbais de Fenômenos Paranormais Espontâneos:
Uma Abordagem Sociológica**

Resumo: Neste trabalho, discuto uma abordagem para a análise de relatos verbais de experiências paranormais. Este método foi projetado a partir de desenvolvimentos da Sociologia e da Filosofia. O pressuposto central é de que a linguagem é um meio dinâmico e pragmático pelo qual as pessoas realizam ações sociais. É inadequado, entretanto, tratar os relatos simplesmente como 'correspondentes a' algo fora da linguagem.

Este método analítico é ilustrado pelo exame de um mecanismo descritivo, 'eu estava fazendo X... quando aconteceu Y', o que ocorre em relatos de experiências paranormais. Examinamos algumas das propriedades desse mecanismo e descrevo alguns modos de usá-lo como uma fonte inferencial e interacional, particularmente para garantir asserção implícita de que a experiência relatada realmente ocorreu e não foi, como se diz, o resultado de má percepção, alucinação ou aberração psicológica. Para concluir, discuto algumas das implicações desta abordagem para a utilização da linguagem na pesquisa parapsicológica de casos espontâneos.

Analyser les comptes-rendus verbaux de phénomènes paranormaux spontanés: Une approche sociologique

Résumé: Dans cet article on discute une approche de l'analyse de comptes-rendus verbaux d'expériences paranormales. Cette méthode provient des développements en sociologie et philosophie. L'hypothèse centrale est que le langage est un véhicule dynamique et pragmatique par lequel les gens se livrent à des actions sociales. Il est inapproprié, de ce fait, de traiter les comptes-rendus comme 'correspondants' simplement à un état de fait hors du langage. On illustre cette méthode analytique par l'examen d'un outil descriptif, 'Je venais juste de faire X... quand Y', qui survient dans les comptes-rendus d'expériences paranormales. On examine certaines des propriétés de cet outil, et on décrit certaines des façons dont il est utilisé comme ressource interactionnelle ou inférentielle, en particulier pour garantir la revendication que l'expérience rapportée s'est vraiment produite, et n'était pas, disons, le résultat d'une erreur de perception, hallucination ou aberration psychologique. Pour conclure, on discute de certaines des implications de cette approche pour le langage utilisé dans la recherche parapsychologique sur les cas spontanés.

The Role of Mind in the Physical World: A Psychologist's View¹

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Abstract: Progress in understanding the nature of consciousness is reviewed. There is growing evidence that consciousness can have direct effects on physical systems. Consciousness can directly influence physical systems such as random number generators, biological systems such as cellular preparations, and psychological systems such as a person's cognitive processes. Procedures and conditions, such as the ganzfeld, that are conducive to direct knowing have been discovered. Less is known about the conditions under which direct influence operates, but relaxation and quietude, attention training, imagery and visualisation, intentionality, and motivation are five mental processes that appear to be particularly useful in bringing about effective direct consciousness influences upon remote physical and biological target systems. Three models of the influence of consciousness are described, and their implications for our understanding of consciousness are discussed. A consciousness that can directly influence physical systems implies a profound and extensive interconnectedness between mind and body, and between mankind and environment. Such an interconnectedness would require a re-examination of our existing scientific worldview.

'What is consciousness?' and 'How does consciousness bring about its effects?' are complex and difficult questions. More readily addressed are less intricate inquiries about the *range* of influences consciousness can bring about, the *conditions* that support these effects, and the *specific processes* that facilitate these influences. Indeed, it may be argued that if we knew, in a precise and detailed way, what consciousness can accomplish under conditions that are known, in a precise and detailed way, then we would have made great progress in our understanding of the nature of consciousness.

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Range of Effects

Indirect Influences

For purposes of completeness, it should be mentioned that consciousness has countless *indirect* influences upon the physical world that are obvious and not at all controversial. As the driver of an automobile or as the pilot of an aeroplane, the quality of my consciousness (i.e., fluctuations in my level of alertness and vigilance and in the focus of my attention) can have a dramatic influence upon my vehicle, my passengers, and the surrounding landscape. As a scientist, the content, tendencies, and characteristics of my individual consciousness may influence what I study, the manner in which I study it, and the types of observations and measurements that I decide to make; the outcomes of these studies could have important impacts upon our understanding of the physical world and may have dramatic impacts upon the physical world itself. As

a citizen of the planet, the quality of my consciousness will influence my interactions with other persons, other life forms, and the environment; thus, it will have important physical, psychological, and societal impacts. All of these influences, although they can be quite dramatic, are mediated by my bodily reactions and through persons and objects in my vicinity.

Direct Influences on Physical Systems

Of far greater interest to parapsychologists are possible influences of consciousness upon the physical world that are much more *direct*. Can consciousness have *direct, immediate impact* upon physical, biological, psychological, and social systems — effects that cannot be accounted for through conventional mechanisms? The empirical answer to this question appears to be 'yes'. Under certain special conditions (some of which we are beginning to specify and understand), human consciousness does indeed appear to be able to reach out through space and time and directly influence a variety of 'remote' systems. Some of these effects have been examined in three recently published, comprehensive meta-analyses.

Meta-analysis is a method for *quantitatively* reviewing a domain of published scientific literature and for quantitatively determining the degree to which a particular finding has been successfully replicated. Just as conventional statistical tests can be applied to subjects or to scores within a given experiment in order to determine whether the obtained results reliably differ from chance, so too can the same types of tests be applied to *experiments* themselves — i.e., to an *entire set* of experiments conducted in different laboratories by different investigators — in order to determine whether the overall replication record is other than what would be expected on the basis of chance variations. Meta-analyses are usually applied to the effect sizes obtained in each experiment. Effect sizes are measures of statistical significance that have been 'corrected' for differences in sample size; these are being used increas-

ingly in behavioural and biomedical research in addition to the mere reporting of statistical significance levels. A homogeneous distribution of effect sizes that depart consistently from zero (chance) indicates successful replication of an effect, and the magnitude of the deviation of the mean from zero provides an estimate of the magnitude of the investigated effect. A useful reference for the rationale and techniques of meta-analysis is the book, *Meta-Analytic Procedures for Social Research*, by Harvard University psychologist Robert Rosenthal (Rosenthal, 1984).

Of particular interest are three recent meta-analyses of direct mental influences upon remote physical and biological systems. The first of these meta-analyses was published by Dean Radin and Roger Nelson in a 1989 issue of *Foundations of Physics* (Radin & Nelson, 1989). Radin and Nelson analyzed the results of over 800 studies, conducted between 1959 and 1987, in which persons attempted direct mental influences, in pre-specified directions, of the statistical outputs of electronic random event generators. The 'targets' in these experiments are devices that operate on the basis of truly random radioactive decay, electronic noise (thermal noise in semiconductors), or pseudorandom number sequences seeded by true random sources. Sufficiently extensive control tests indicate that these devices do, in fact, exhibit the requisite randomness in their alternative outputs (typically, strings of ones and zeros that are indicated by different lights or sounds). If, however, a human participant directs differential intentionality and attention toward the two possible types of random outcomes — i.e., if one specific type of outcome is made momentarily more meaningful, significant, important, or desirable — then the random output of the generator shifts to a statistically significant degree in the intended direction. This careful meta-analysis indicated: (a) unequivocal non-chance effects in the experimental conditions (i.e., there was strong evidence for reliable replication of a direct mental influence effect), (b) random outcomes conforming to chance expectation in 235 con-

trol studies in which data were recorded without conscious intention to influence the generator, and (c) significantly larger effect sizes for the experimental condition than for the control condition. Radin and Nelson also concluded that contrary to assertions by critics, the effect size did not decrease with increases in study quality (which was objectively and quantitatively assessed), nor could a reasonable estimate of a 'file drawer' of unreported chance studies account for the effect.

A similar meta-analysis was performed on the results of 148 studies, published between 1935 and 1987, designed to examine possible influences of consciousness on a random mechanical system — the fall of tossed dice. These studies were reported by a total of 52 investigators and involved more than 2 million dice throws contributed by more than 2500 participants; over 150,000 dice-casts in 31 control studies were also examined. The authors (Radin & Ferrari, 1991) concluded that the experimental effect size was independently replicable, significantly positive, and not explainable as an artifact of selective reporting or differences in methodological quality; results for the control studies did not depart significantly from chance expectation. The full report of these analyses may be found in Volume 5, Number 1 of the *Journal of Scientific Exploration*.

Direct Influences on Biological Systems

We have recently published, in the journal *Subtle Energies*, a meta-analysis of our own work on direct mental influence (Braud & Schlitz, 1991). Whereas the two meta-analyses just mentioned dealt with influences upon inanimate physical systems, the targets in our experiments were living systems. We sought to determine, in a series of still ongoing laboratory experiments, whether persons are able to exert direct mental influences upon a variety of biological systems that are situated at a distance from the influencer and shielded from all conventional informational and energetic influences. In these experiments, the spontaneously fluctuating activity of a

biological target system is monitored objectively during randomly interspersed influence and non-influence (control) periods while, in a distant room, a person attempts to influence the system's activity in a prespecified manner (increasing or decreasing the system's ongoing activity) using mental processes of intentionality, focused attention, and imagery or visualization of desired outcomes. The experimental designs rule out subtle cues, recording errors, expectancy and suggestion (i.e., 'placebo') effects, artifactual reactions to external stimuli, confounding internal rhythms, and coincidental or chance correspondences. Overall, this research program has included 37 experiments, 655 sessions, 449 different human 'influencees', 153 different influencers, and 13 different experimenters; it has also included 154 sets of nonhuman biological target systems (namely, fish, small mammals, and cellular preparations). The distantly influenced systems include: another person's electrodermal activity (a peripheral indicator of degree of sympathetic nervous system activation or arousal which also reflects emotional or mental activity), another person's blood pressure, another person's muscular activity, the spatial orientation of fish, the locomotor activity of small mammals, and the rate of haemolysis (destruction by osmotic stress) of human red blood cells in test tubes in a distant room (monitored spectrophotometrically). The meta-analysis provided strong evidence for replicable direct mental influence effects within the specific target biosystems and across the entire set of experiments. Analysis for all systems combined yielded a Stouffer z score (a recommended method of combining multiple statistical results) of 7.72, which has an associated probability of 2.58×10^{-14} . Fifty-seven percent of the experiments were independently significant; this is to be compared with a five percent experiment success rate expected on the basis of chance alone. The mean obtained effect size was .33, which compares favorably with moderate effect sizes typically found in behavioural and biomedical research.

In addition to our own work, there exists a relatively large literature of experiments by other investigators (approximately 100 papers in the English language alone; see Benor, 1991 and Solfvin, 1984) in which persons have attempted to exert direct mental influences upon remote biological target systems including bacteria, yeast colonies, fungus colonies, motile algae, plants, protozoa, larvae, woodlice, ants, chicks, mice, rats, gerbils, cats, and dogs, as well as cellular preparations (blood cells, neurons, cancer cells) and enzyme activity. In human 'target persons', eye movements, gross motor movements, electrodermal activity, plethysmographic (blood volume) activity, respiration, and brain rhythms have been influenced. When my colleague Marilyn Schlitz and I (see Braud, 1985) surveyed this literature in 1985, we found reports of 149 such experiments, of which 79 experiments (53 percent) yielded evidence for significant direct mental influence effects. This was a non-evaluative summary of the conclusions of the original experimenters. A detailed evaluative meta-analysis of this entire literature is currently in progress.

Of special interest are indications that remote biological systems may be more susceptible to direct mental influence than are remote inanimate physical systems. These indications take the form of larger mean *z* scores, a greater proportion of significant experiments, and the ability to yield significant effects with much smaller sample sizes for the animate as opposed to the inanimate target systems. Direct comparative studies are needed to determine whether this apparent greater susceptibility is genuine and not merely an artifact of other indirect contributing factors. It is possible to design experiments in which direct mental influences could be measured simultaneously in animate and inanimate target systems selected so as to be as equivalent as possible in their other characteristics (such as their time-varying and statistical properties). The comparative tests would be designed so that the two systems would be influenced under identical physi-

cal, physiological, and psychological conditions.

The outcomes of these experiments would have important methodological, theoretical, and practical implications and applications. Methodologically, the use of target systems with greater susceptibility to direct mental influence could increase the frequency, magnitude, and stability of these effects and make them more amenable to laboratory study. Additionally, participant motivation is high in studies involving human targets or other biosystems, and optimal motivation has been found to be crucial to obtaining positive results. Theoretically, a differential susceptibility of animate and inanimate target systems could increase our understandings of life and of consciousness and could provide important additions to our models and theories about these processes. Practically, findings derived from studies of direct mental influences upon biological systems are relevant to our more complete understanding of clinically useful processes such as physiological and psychoimmunological self-regulation, medical psychology or behavioural medicine techniques, and mental healing (sometimes called absent healing, spiritual healing, or psychic healing). Indeed, experiments on direct mental influence of remote biological systems can be conceptualized as experimental models or analogs of remote mental healing. If the effects can be sufficiently strong and controllable, judicious selection of targeted organs, tissues, or cells would promote direct mental influence from the rank of a laboratory anomaly to a process that could be used for actual healing purposes.

Psychological Influences

If biological systems are indeed more susceptible or 'sensitive' to direct mental influence than are inanimate systems, might not *psychological* systems be still more sensitive? We have explored one of many possible methodologies that could be used to investigate this question. In that experiment (Braud & Jackson, 1983) one person attempted to directly influence the

'intensity' of mental imagery of another person who was situated in a distant room. Although a significant effect was observed in that study, no attempts were made to compare such a psychological effect with those of comparable biological effects. However, such comparisons could be made in future experiments, with suitable attention being devoted to equating the statistical and other relevant characteristics of the two systems as carefully as possible. It would also be possible to investigate possible direct mental influences upon additional psychological processes of distantly situated persons — effects upon, for example, emotion, various cognitive processes, susceptibility to perceptual illusions, and so on.

It is indeed possible to consider the variety of *anomalous cognition* effects typically referred to as extrasensory perception, telepathy, clairvoyance, and precognition as special instances of the influence of consciousness upon the physical world; in these cases, the physical 'targets' happen to be the neural activities, behaviours, thoughts, images, and feelings of another person. The databases for these *direct knowing* phenomena are much more extensive than those for the direct influence phenomena we have been considering. The experiences have been reported throughout history, and formal investigations have been carried out for more than a century. Perhaps the most concise and trenchant summaries of impressive laboratory investigations of these phenomena may be found in another set of recently published meta-analyses. Such meta-analyses are available for studies conducted under perceptual isolation (using a *ganzfeld* procedure), hypnotic induction, forced-choice precognition, and extraversion/introversion testing conditions (see, respectively, Honorton et al., 1990; Schechter, 1984; Honorton & Ferrari, 1990; and Honorton, Ferrari & Bem, 1990). Each of these meta-analyses provides strong evidence for replicable direct knowing effects in which human observers become accurately aware of events that are geographically or temporally remote and that are

beyond the reach of the conventional senses.

If we expand our definition of consciousness to include momentarily 'unconscious' personal activities such as 'unintentional', 'non-deliberate', or 'non-verbal' decisions and actions, still another class of interesting phenomena becomes available for our consideration. These are the events that psychologist Rex Stanford has termed 'psi mediated instrumental responses' (Stanford, 1974a, 1974b, 1990). Here, direct knowledge of important events that are not yet accessible to the senses need not be revealed only through verbal reports of what is 'fully conscious'. Stanford provides convincing rationales and empirical support for the notion that some direct knowledge may be revealed 'unintentionally' through adaptive, survival-enhancing, need-fulfilling changes in behaviour or behavioural tendencies. Subtle changes in memory, timing of actions, or decisions may result in being at the right place at the right time and thereby gaining access to important information, people, or objects or may result in the avoidance of accidents or other forms of distress. The point to be made is that persons exhibiting such psi (or direct knowing) mediated decisions or actions need not be aware of those actions or why they are happening at the moments those actions or decisions occur. Often, they are identified as possibly psi-mediated only after the fact — after their adaptive significance has been recognized. The tacit knowledge is dramatized through adaptive action. Important adaptive, physical world consequences may result from information available at certain 'levels' of consciousness but not yet at others. It is possible that direct mental influence *itself* (of the types described previously in connection with physical and biological targets) may provide a vehicle for encountering or accomplishing goals even in the absence of deliberate intention.

Social Influences?

We may extend our consideration even further by asking whether consciousness

might directly influence social systems and, if so, whether social systems (perhaps because of their greater complexity, their increased potential for change or reorganization, and their more numerous and more varied opportunities for synergistic interactions) might be more susceptible or sensitive to direct mental influence than physical, biological, or psychological systems. Empirical investigations of this question should not be intractable. At perhaps the simplest level, one might explore direct conscious influences of more 'primitive' social systems such as ant colonies or other animal groupings that appear to exhibit 'hive mentality' or various forms of group behaviour. One could explore possible influences upon decision-making in small groups of people, gradually increasing the size and complexity of the human group or of the process being influenced. Related projects have already been attempted within the context of possible social and economic influences of group meditation within the Transcendental Meditation tradition. It has been claimed that the practice of Transcendental Meditation by a group of individuals can lower the manifestations of social conflict, reduce crime rates and other social problems, and increase indications of positive social change in a much wider circle of individuals not in any contact with the meditators (e.g., Orme-Johnson et al., 1988). The interpretations of these empirical tests of these remarkable claims remain controversial and, not surprisingly, the research has been seriously criticized (e.g., Schrod, 1990). The domains in which these controversies are being played out indicate the potential power of direct influences of consciousness and of particular states of consciousness.

Procedures and Conditions

A number of psychological procedures or conditions have been found to be favourable to processes of *direct knowing* (telepathy, clairvoyance, and precognition). These include hypnosis, relaxation, sensory restriction (in the form of the ganzfeld

technique), and meditation. With the exception of meditation (see Braud, 1990), very few of these conditions have been explored in the context of *direct influence*. However, these conditions are rich in psychological processes that may provide keys to an understanding of how direct influences come about. The conditions share important features. They serve to reduce 'noise' or distractions to attention. They alter the quality of intentionality. They reduce external and internal constraints that ordinarily structure the mind in particular directions; freed from these constraints, the mind becomes less inert and more susceptible to change. The conditions and procedures allow attention to be focused more readily, directed more efficiently, and applied to more 'internal' content such as thoughts, images, and feelings that otherwise are ignored. All of these characteristics would be expected to increase the likelihood of *accessing* information that had already been 'acquired' through direct knowing. Through their de-structuring or de-constraining effects, these procedures and conditions would be expected to provide more favourable opportunities for the very *occurrence* of direct knowing.

Mental Processes

In our own work, we have found five mental processes to be especially useful in bringing about effective direct conscious influences of remote physical and biological target systems.

Relaxation and Quietude

We help our participants to self-produce conditions of relaxation and quietude at as many 'levels' as possible. They relax the muscles (using variations of progressive relaxation exercises), quiet the autonomic nervous system and the emotions (using autogenic training), and still the mind (using concentrative meditative techniques). All of this eliminates distractions, facilitates attentional control, and sets

the stage for the more effective use of the remaining techniques.

Attention Training

Focusing of attention upon any object (whether inside of the body or outside of it) establishes an efficient two-way communication channel with that object that allows us to learn about it directly and to influence it directly. Concentrative and opening up (full awareness) meditative techniques can be used to train attention. In several experiments, we have found that simply directing attention to a remote biological system, without a deliberate attempt to influence it in a particular direction, can change the activity of that system to a significant degree (Braud, Shafer & Andrews, 1990); other investigators have observed similar effects of 'pure attention' (e.g., Pleass & Dey, 1990).

Imagery and Visualization

Once attention has provided a communication and influence channel, nonverbal images provide vehicles for accessing information and for bringing about desired influences. Imagery appears to be a preferred 'language' for body-mind and mind-body communication, and perhaps its nonverbal nature facilitates interactions with nonverbal systems within or outside of the body. Filling one's mind with strong and realistic imagery of some desired outcome or goal event (even one involving a spatially or temporally remote system) somehow facilitates the desired outcome. Perhaps the goal imagery provides a kind of 'template' to which, under special conditions, a freely-changing remote system can come to conform.

Intentionality

For direct influence of remote systems, the most effective form of intentionality appears to be one that is goal-orientated and thorough, yet not excessively effortful or egocentric. Excessive striving seems to produce additional distraction or noise that

interfere with goal-accomplishment. The effectiveness of this form of intentionality points to the reality of a truly teleonomic, goal-directed process in Nature that complements the more familiar process-oriented, causal principles.

Motivation

Motivation provides the driving force behind direct mental influence, and also serves to direct or select the appropriate outcome. Factors of meaningfulness, importance, significance, salience, need-satisfaction, emotion, and novelty have all been implicated in the likelihood of occurrence and in the strength and accuracy of remote knowing and remote influence effects, and these are all motivational factors. High motivational levels are commonplace in everyday life situations. In the laboratory, however, appropriate motivation often does not occur naturally but must be artificially arranged. This difference could account for the typically small and undramatic effects observed in the laboratory, as compared with those occurring in more natural, everyday settings.

These five processes are interrelated and mutually supporting, and they can interact synergistically. The abilities to produce and to properly use them are skills that can be enhanced through practice. Once developed, they may be directed volitionally to learn about or to influence remote physical and biological systems. They appear to be the important processes through which consciousness brings about its effects in the physical world, and they are certainly factors that guide or direct consciousness/physical world interactions.

Models

In attempts to understand how consciousness can influence remote events, three classes of models have been proposed. In *transmission* models, it is suggested that remote influence or remote knowing is accomplished through some physical or quasi-physical force that carries information from one locus to another

through some channel or medium in a manner analogous to mental radio: there is transmission and reception of information, intelligence, or energy. Such models have many difficulties. The mediating force has not been identified, nor has the 'channel', nor do we know of mechanisms through which conscious content at the 'source' can be coded into or modulated onto the 'carrier' then decoded or demodulated from the carrier at the 'destination'. The process does not behave as other forms of transmission customarily behave with respect to physical factors such as distance, shields, screens, amplifiers, attenuators, the nature of the 'target' or of the conveyed information (message content), or (perhaps most problematically) time.

In *reorganization* models, nothing is posited to be transmitted from point to point. Rather, the 'noise', randomness, or disorder already present at the 'target' is reorganized in a manner that creates the desired goal outcome (and appears force-like) or that results in some intelligence or information at the 'target' that resembles or corresponds to that at the 'source'. The process is one that is analogous to resonance, but without the typical mediators of familiar forms of resonance. The challenges facing such models are determinations of what precisely 'feeds' the reorganization process at the target end and what precisely specifies the particular form the reorganization will take.

In the third class of models, which could be called 'holonomic' or 'correspondence' models, nothing is either transmitted or reorganized. All information is already present throughout all parts of all systems, in some implicate or potential form, in a manner not unlike the complex interference patterns in which information is represented in a hologram. The problem then becomes one of accessing or reading out information that is already available at all points, specifying the grounds or fields that make all of this possible, and accounting for creation of novelty within such a system. How do the *intended* read-outs or effects occur at some particular time, as

opposed to a vast number of alternative possibilities?

The second and third classes of models call to mind similar statements found in Jung's concept of synchronicity, in Leibnitz's monadology in which 'monads have no windows' but nonetheless perfectly mirror one another, and in the ancient Hermetic maxim, 'As it is above, so it is below.' Contemporary parallels are Bohm's implicate and explicate realities and Sheldrake's morphogenetic fields.

Implications

If we adjudge the transmission model inadequate in accounting for all of the empirical findings regarding direct conscious influence, and we gravitate instead toward the reorganization or holonomic models, it becomes impossible to escape certain major implications or conclusions regarding consciousness. One of these is that mind or consciousness can do things that the brain or other physical organ cannot do: it can have nonlocal effects. This at once implies that mind or consciousness is more than brain and more than an epiphenomenon of brain, and that consciousness or mind itself may be nonlocal, extending throughout space and time. This implies a profound and extensive *interconnectedness* between mind and body, among all people, and, indeed, among all of Nature's 'ten thousand things.' This, in turn, is rich in ethical and ecological implications for our relations with and treatment of one another and the environment. We are also forced to the conclusion that there is indeed a goal-directed or teleonomic principle in Nature that complements Nature's familiar deterministic principles, and that such a principle is of great importance in the functioning of consciousness.

Another implication is that the contents of consciousness (our thoughts) may not only reflect our bodily conditions but may importantly influence our bodies as well, and that these influences may extend to social processes and may result in either benefit or harm. Direct physical and biological influences of consciousness could

play important roles in guiding the course of evolution, and direct psychological and social influences have important implications for the issues of 'free will' and 'determinism.'

In the realm of science, if the consciousness of the investigator can interact, even more directly than we have heretofore recognized, with what is studied, it becomes unclear which findings and laws of Nature are merely 'discovered' and which are in some way 'created' by a single investigator or 'by consensus' by teams of investigators who share a particular focus of attention or intentionality. Further, we are reminded that it is impossible to study or to understand any 'thing' or process in isolation, but only in relation to a vast field of multiple interactions that include that 'thing' or process as merely one 'node' or aspect.

A scientific worldview that does not comprehend consciousness and the full range of its effects is incomplete. We do not yet know the extent to which additions or changes in that worldview will be necessary in order to encompass all consciousness phenomena. We do know that the conventional scientific method is adequate to 'capture' at least some of these phenomena; we know this because, at least some percentage of the time, experiments on direct conscious influence of remote systems do in fact succeed. However, the fact that often such experiments do not 'succeed', combined with the peculiar 'operating characteristics' of the effects we are studying, suggests that perhaps conventional scientific method alone can never grasp consciousness completely and that there are important limitations of that method itself. Our challenge is to find complementary methodologies that are perhaps more appropriate to the subject matter and thereby create a new and more adequate science of consciousness.

Scientific studies of consciousness are now exploring and confirming views and principles that were initially proposed in other areas such as religion, philosophy, spirituality, and certain meditative and mystical traditions. This is only to be

expected if these are alternative pathways to a single truth.

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Die Rolle des Geistes in der physischen Welt: Ansichten eines Psychologen

Zusammenfassung: Der Beitrag bietet eine Übersicht über Fortschritte im Verständnis von Bewußtsein. Zunehmend viele Hinweise sprechen dafür, daß Bewußtsein direkt auf physische Systeme einwirken kann. Bewußtsein kann unmittelbaren Einfluß auf physikalische Systeme wie Zufallsgeneratoren, auf biologische Systeme wie Zellkulturen und auf psychologische Systeme wie die kognitiven Prozesse einer Person ausüben. Inzwischen sind Verfahren und Bedingungen (etwa das Ganzfeld) entdeckt worden, die einem unvermittelten Kenntniserwerb förderlich sind. Weniger ist dagegen über die Bedingungen bekannt, unter denen unvermittelte Bewirkungen vorstatten gehen. Entspannung und Gemütsruhe, Aufmerksamkeitsübungen, Imagination und Visualisierungen, Intentionalität und Motivation sind indessen fünf mentale Vorgänge, die für das Hervorbringen unvermittelter Bewußtseinswirkungen auf räumlich entfernte physikalische und biologische Zielsysteme besonders hilfreich zu sein scheinen. Drei Modelle für Bewußtseinswirkungen werden beschrieben und hinsichtlich ihrer Konsequenzen für unser Bewußtseinsverständnis erörtert. Ein Bewußtsein, das physikalische Systeme unmittelbar beeinflussen kann, setzt eine grundlegende und weitreichende Wechselbeziehung zwischen Geist und Körper sowie zwischen Mensch und Umwelt voraus. Eine solche Wechselbeziehung würde ein Überdenken unserer gegenwärtigen wissenschaftlichen Weltanschauung verlangen.

Invloed van onze geest op de omgeving: standpunt van een psycholoog

Samenvatting: Het artikel behandelt de toenemende kennis over ons bewustzijn. Er is steeds meer bewijs voor een directe invloed van ons bewustzijn op fysieke systemen (b.v. toevalsgeneratoren) en biologische of psychologische processen (zoals resp. geprepareerde cellen en cognitieve activiteit).

Bovendien zijn procedures en condities ontdekt die buitenzintuiglijke waarneming bevorderen, zoals Ganzfeld. Veel minder is bekend over de voorwaarden waaronder die directe invloed functioneert. Voor een directe invloed van ons bewustzijn op fysieke en biologische doelsystemen lijken vijf mentale processen belangrijk te zijn: ontspannen en rustig voelen, aandachtstraining, voorstellingsvermogen en visualisering, wilskracht en motivatie. De auteur bespreekt drie modellen over directe beïnvloeding door het bewustzijn, plus hun betekenis voor onze kennis over dat bewustzijn. Die directe beïnvloeding impliceert een sterke en uitgebreide verbondenheid tussen geest en lichaam en tussen de mens en zijn omgeving. Die verbondenheid zou een herbezinning nodig maken op het huidige wereldbeeld in de wetenschap.

Il ruolo della mente nel mondo fisico. Una prospettiva psicologica

Sommario: Viene discusso il progresso nelle conoscenze sulla natura della coscienza. Ci sono indicazioni crescenti che la coscienza può avere effetti diretti sui sistemi fisici. La coscienza può influenzare direttamente i sistemi fisici, quali i generatori di numeri casuali, i sistemi biologici, come le colture cellulari, e i sistemi psicologici, come i processi cognitivi di un individuo. Sono state scoperte procedure e condizioni (per esempio il ganzfeld) favorevoli a una conoscenza diretta. Meno è noto sulle condizioni di svolgimento di questa influenza diretta, ma il rilassamento e la quiete, l'addestramento all'attenzione, l'*imagery* e la visualizzazione, l'intenzionalità, la motivazione sono cinque processi mentali che appaiono particolarmente utili per ottenere un'influenza diretta della coscienza sui sistemi-bersaglio remoti, fisici e biologici. Vengono descritti tre modelli di influenza della coscienza e se ne discutono le implicazioni per la comprensione della coscienza. Una coscienza che può influenzare direttamente i sistemi fisici implica interconnessioni profonde ed estese tra mente e corpo, e tra umanità e ambiente. Queste interconnessioni richiederebbero un riesame dell'attuale visione scientifica.

El Rol de la Mente en el Mundo Físico: La Perspectiva de un Psicólogo

Resumen: Se presenta una revisión del progreso en entender la naturaleza de la conciencia. La evidencia continua aumentando para sostener la idea que la conciencia puede tener un efecto directo sobre sistemas físicos. La conciencia puede influenciar directamente a sistemas físicos tales como generadores de numeros aleatorios, sistemas biológicos tales como preparaciones celulares, y sistemas psicológicos tales como los procesos cognoscitivos de una persona. Los procedimientos y las condiciones (por ejemplo, el ganzfeld) que llevan hacia el conocimiento directo han sido descubiertas. Se sabe menos sobre las condiciones bajo las cuales influencias directas operan, pero la relajación y quietud, entrenamiento de la atención, las imágenes mentales y la visualización, la intencionalidad, y la motivación son cinco procesos mentales que parecen ser particularmente útiles para obtener influencias directas de la conciencia sobre sistemas remotos físicos y biológicos. Se discuten tres modelos sobre la influencia de la conciencia y sus implicaciones para nuestro entendimiento de esta. Una conciencia que puede influenciar directamente a los sistemas físicos implica una profunda y extensa interconexión entre la mente y el cuerpo, y entre la humanidad y su medio ambiente. Tal interconexión requiere que reexaminemos nuestros modelos científicos prevalentes.

O Papel da Mente no Mundo Físico: A Visão de um Psicólogo

Resumo: O progresso na compreensão da natureza da consciência é revisado. Há uma crescente evidência de que a consciência possa ter efeitos diretos nos sistemas físicos. A consciência pode influenciar diretamente sistemas físicos tais como geradores de números aleatórios, sistemas biológicos tais como preparados celulares, além de sistemas psicológicos, tais como os processos cognitivos de uma pessoa. Procedimentos e condições (por exemplo, o ganzfeld), que são condutivos ao conhecimento direto foram descobertos. Sabe-se menos a respeito das condições sob as quais a influência direta opera, mas o relaxamento e o repouso, treinamento da atenção, imaginação e visualização, intencionalidade e motivação são cinco processos mentais que parecem ser particularmente úteis em trazer influências efetivas diretas da consciência sobre os sistemas de alvos biológicos e físicos distantes. Três modelos de influência da consciência são descritos e suas implicações para nossa compreensão para o conhecimento a consciência são discutidos. Uma consciência que possa influenciar diretamente sistemas físicos implica uma profunda e extensiva inter-conectividade entre mente e corpo e entre o ser humano e o meio ambiente. Tal inter-conectividade requereria um re-exame de nossa atual visão de mundo.

Le rôle de l'esprit dans le monde physique: Le point vue d'un psychologue

Résumé: On passe en revue le progrès dans la compréhension de la nature de la conscience. Il y a une évidence grandissante que la conscience peut avoir des effets directs sur des systèmes physiques. La conscience peut influencer directement des systèmes physiques tels que les générateurs de nombres aléatoires; des systèmes biologiques tels que des préparations cellulaires; et des systèmes psychologiques tels que les processus cognitifs d'une personne. Des procédures et conditions (par exemple, le ganzfeld) qui favorisent la connaissance directe ont été découvertes. On en sait moins sur les conditions sous lesquelles l'influence directe opère, mais la relaxation et la quiétude, l'entraînement de l'attention, l'imagerie et la visualisation, l'intentionnalité, et la motivation sont cinq processus qui semblent être particulièrement utiles pour provoquer des influences directes effectives de la conscience sur des systèmes cibles physiques et biologiques éloignés. Trois modèles de l'influence de la conscience sont décrits, et leurs implications pour notre compréhension de la conscience sont discutées. Une conscience qui peut influencer directement des systèmes physiques implique une interconnexion profonde et étendue entre l'esprit et le corps, et entre l'humanité et l'environnement. Une telle interconnexion requièrerait un ré-examen de notre vision scientifique du monde actuelle.

Can Our Intentions Interact Directly With The Physical World?¹

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Abstract: The paper reviews evidence from controlled laboratory studies that suggests that mental intentions may interact directly with the physical world. Such direct mental intentions have been demonstrated with mechanical random systems such as thrown dice and, more recently, with electronic random event generators that use radioactive decay or thermal noise as a source of randomness. Direct mental interaction with living systems (DMILS) has also been demonstrated. A wide variety of living target systems have been investigated, including bacteria, animals, and human nervous system and cognitive activity. While there is good evidence for direct mental interaction with animate and inanimate systems, much remains to be learned about how these effects interact with other physical, physiological, and psychological factors. At a theoretical level, such direct mental interactions do not appear to be directly mediated by conventional physical forces, but satisfactory theoretical models have yet to be fully developed. Finally, the implications and potential applications of direct mental interaction are discussed.

It is a truism that our mental processes can exert profound influences upon our own bodies, upon other people, and upon the physical world. I intend to wiggle my finger, and the finger obliges. I wish to move from one room to another, and the complex system of my musculature cooperates and takes me there. I intend to remember a particular event that occurred when I was five years old, and my memory recalls that scene for me and presents it to me in vivid detail. These interactions of mental processes such as intentions, volitions, purposes, aims, and wishes with our own physical bodies are familiar to all of us; we take them for granted and rarely give them a second thought.

Similarly commonplace are the many influences of our intentions upon the external physical world. I intend to build a

stone house, and after a while it appears in the landscape, where it may remain for centuries as a physical embodiment of my intention. I intend to save a continent of children from the ravages of a particular disease, develop an effective vaccine, inoculate thousands of children, and hundreds of lives are saved. As a scientist, my intentions and wishes lead me to conceive and carry out specific types of experiments, test specific hypotheses, and construct particular theories. My intentions influence what I choose to study, how I study it, the types of observations I make, and the interpretations I prefer. The outcomes of these studies can have important impacts upon our understanding of the physical world and may have dramatic impacts upon the physical world itself.

All of these influences, although they can be quite dramatic, are *indirect*. The influences of intention within my own body are typically understood as effects mediated by systems of anatomical, neurohormonal, and biochemical pathways. Intentional influences upon the

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external physical world are mediated by my bodily reactions and words and through persons and objects in my vicinity.

One can ask, however, whether there might be special instances in which our intentions can have more *direct, unmediated* influences upon the physical world. Throughout history, there have been beliefs that, under certain conditions, such influences are possible, and there is indeed a body of anecdotal and laboratory evidence that suggests that direct intentional influences upon the physical world can indeed occur. Such influences have been described as 'mind over matter' effects and are also known by their aliases, 'telekinesis' and 'psychokinesis'. More recently, they have been termed 'remote action' and 'anomalous perturbation' effects. I prefer to call them, simply, 'direct mental interactions'.

Direct Mental Interaction with Inanimate Systems

Although there is interesting suggestive evidence from other sources regarding the existence and nature of direct mental interactions with physical systems, I shall restrict my comments to cases in which these effects were studied under controlled laboratory conditions.

Mechanical Random Systems

The earliest formal tests of direct influences of intention upon physical systems were published by J. B. Rhine and his associates in the early 1940s. In these experiments, bouncing dice were used as the mechanical random physical system, and participants attempted to influence the fall of dice through mental processes of intention, imagery, and wishing. Many trials were conducted in which participants attempted to mentally influence which die face would be uppermost when a bouncing die finally came to rest. Results were analyzed statistically by comparing the number of obtained 'hits' (successful outcomes in which the uppermost die face matched the intended 'target' face) with the

number of hits theoretically expected on the basis of chance (since a die has six faces, one sixth of all trials would be expected to be successful by chance alone). Rhine and his co-workers claimed to be finding significantly more hits than expected and concluded that their participants were indeed mentally influencing the randomly bouncing dice. A thorough and readable account of these experiments may be found in Rhine (1970).

Critics were quick to point out that these early dice-throwing experiments may have contained a number of methodological defects or potential flaws. They pointed out that dice are not truly unbiased but rather, due to their physical construction, they have a slight tendency to favour certain faces. The markings on dice faces are frequently made by scooping out little bits of the surface; consequently, the 'six' face has more surface material removed and is in fact slightly lighter than the opposite 'one' face, which has less mass removed. This mass asymmetry will result in slightly more 'sixes' occurring if the dice are thrown many, many times. This physical bias criticism was met by choosing die face targets in a changing, balanced manner so that many trials were conducted with the 'one' face as the intended target, followed by many trials with the 'two' face as target, and so on until each face had served an equal number of times as intended target. This would assure that a physically biased die could not contribute systematically to a successful outcome. This methodological refinement did not eliminate the obtained positive results.

Critics also pointed out that hand-thrown dice might be subject to conscious or unconscious micro-manipulation by the person throwing the dice. This criticism of possible throwing bias was met by changing the dice throwing method from hand-thrown, to hand-thrown against a wall, to cup-thrown, to thrown by specially constructed mechanical devices. Despite these progressive methodological improvements, the investigators continued to find positive outcomes.

Critics suggested that perhaps there were observational or recording errors in noting which die faces actually were uppermost. This criticism was met by die face observations and recordings by multiple observers, by blind observers (persons who were unaware of the desired outcomes and who were therefore not biased in their outcome observations), and by objective recordings by photographic equipment (the individual die face outcomes were photographed automatically and the photographs were later evaluated by persons who were not aware of the desired outcomes for any particular trial). Despite these methodological improvements, positive results continued to be observed. Among the most impressive dice-throwing experiments that made use of these photographic data-recording refinements were two studies reported by McConnell, Snowden, & Powell (1955) and by McConnell & Clark (1987). The latter study included transcribing from photofilm the face number and the X- and Y-coordinates of 42,000 mechanically thrown dice, and the results indicated patterns of direct mental influence upon the thrown dice.

Recently, Radin & Ferrari (1991) published a meta-analysis of all of the dice-throwing experiments they were able to find in English language publications from 1935 to 1987. They statistically summarized the overall results of 148 studies reported by a total of 52 investigators, involving more than 2 million dice throws contributed by 2,569 participants. They concluded that this database provided weak cumulative evidence for a genuine relationship between mental intention and the fall of dice, and that the positive results could not be attributed to selective reporting of successful studies or to methodological flaws in the successful experiments.

In addition to these dice-fall experiments, additional studies have been conducted in which other random mechanical systems have served as targets. Many of these studies involve 'placement' tasks in which the participant's intention is to swerve or deflect small moving objects

(such as dice or small spheres) in space so that they come to rest in the prescribed one of two equally likely final positions. For example, balls rolling down an inclined plane are 'wished' to swerve slightly to the right or to the left. Descriptions of such experiments may be found in Rush (1986, 1987). An intriguing illustration of a modern placement experiment is one conducted at the Princeton Engineering Anomalies Research Laboratory at Princeton University. The experimental apparatus is a large one that covers an entire wall. Nine thousand small polystyrene balls cascade down the apparatus, bouncing from peg to peg, and finally distribute themselves randomly among several collecting bins at the bottom of the apparatus. The pattern of the balls describe an empirical Gaussian normal curve. Participants sit at some distance in front of the apparatus and mentally intend for the final distribution to shift one way or another, according to pre-specified instructions. A recent summary report of experiments conducted with this random mechanical cascade concludes that participants are indeed able to exert significant changes in the final spatial distribution of the falling balls, mentally and at a distance (Dunne, Nelson & Jahn, 1988).

Electronic Random Event Generators

With the discovery that human intention could influence the fall of dice and other mechanical systems, it seemed natural to ask whether such direct intention interactions could be observed in the case of other indeterministic systems. An obvious one that comes to mind is radioactive decay. This is one of the most random processes known to contemporary physics; there is no known conventional method of either predicting or influencing individual quantum emissions of particles from radioactive sources. Beloff & Evans (1961) were the first to look for a possible intentional interaction with radioactive decay; they did not find any evidence for such an effect. A few years later, however, Chauvin & Genthon (1965) did report a

successful experiment in which their participants (children tested in a game-like setting) were able to increase or decrease the counting rate of a Geiger tube radioactivity detector. Somewhat later, Schmidt (1970) used radioactive decay as the random process in an electronic random event generator that he invented for testing direct intentional influences. Random emissions from a radioactive source stop a rapidly moving switch in one of two possible positions; the switch is connected to a feedback indicator (colored lights, tones of different pitches, etc.) which lets the participant know which of the two equally likely outcomes has indeed occurred. If such a binary random event generator is tested over a large number of control or baseline trials, it does in fact behave randomly, producing each of the two possible outcomes almost exactly 50 percent of the time. When motivated participants, without any conventional connection with the device and often at a distance from the device, intend for the generator to produce more of one event than the other, the machine does indeed shift its activity to favour the desired outcome. The departure of obtained results from expected results can be used as a quantitative measure of the degree of direct intentional interaction. The obtained outcome (the 'hit rate' of wished-for events actually occurring) can be compared statistically with either a theoretically expected outcome or with an empirical baseline or control outcome (i.e., data collected in the absence of intentional influence).

As an alternative to radioactive decay, the randomly fluctuating thermal noise in certain semiconductors (e.g., Zener diodes) can be used as the random component of random event generators. Whether of the radioactive decay or the thermal noise variety, electronic random event generators have several advantages over mechanical systems for researching direct intentional interactions. They may be constructed and adjusted so as to be free of bias. They allow a large number of trials to be conducted automatically and efficiently. Scoring can be done objectively and automatically. The

devices may be interfaced with computers to permit a large variety of interesting experiments to be conducted. The very nature of their construction and operation makes them proof against various conventional influence methods that could be employed by participants.

In view of these many advantages, it is not surprising that a large number of experiments have been conducted using such devices. In a 1989 meta-analysis, Radin & Nelson (1989) analyzed 832 studies conducted between 1959 and 1987 by 68 different investigators and included 235 control studies that were conducted in the absence of intentional influence. The meta-analysis revealed that the control studies produced outcomes very close to the zero effect size expected on the basis of chance; however, during the intentional influence segments of the experiments, the random generators did indeed depart from chance operation in a highly significant manner and in the direction appropriate to a successful intentional influence. Further, careful analyses indicated that the obtained overall positive results could not be attributed to methodological inadequacies in the successful studies or to selective reporting practices (i.e., publishing successful experiments but not unsuccessful ones).

The use of adequate electronic random event generators and the use of meta-analytic techniques to quantitatively assess and evaluate a large body of these studies would appear to address all criticisms of this work with one exception: the possibility of experimenter fraud. But even this criticism of last resort has now been addressed in a clever series of experiments by Schmidt in which he, as experimenter, is actually able to be supervised by independent observers. These experiments are difficult to describe within a limited space. Therefore, I shall simply report that external observers play critical roles in selecting the intentional aims of the study and in analyzing the data. According to the experimental protocol, experimenter negligence, error, and even fraud may be

Table 1

Statistical summary of five externally supervised pre-recorded direct mental interaction experiments.

Reference	z	p
Schmidt, Morris & Rudolph (1986)	2.71	.0032
Schmidt & Schlitz (1988)	1.89	.029
Schmidt, Morris & Hardin (1991)	0.62	.27
Schmidt & Braud (1992)	1.98	.024
Schmidt (1993)	1.23	.11
Set of Five Studies	3.77 *	.000082

* Stouffer z

ruled out. To date, five such carefully monitored experiments have been conducted (Schmidt, Morris & Rudolph, 1986; Schmidt & Schlitz, 1988; Schmidt, Morris & Hardin, 1991; Schmidt & Braud, 1992; Schmidt, 1993). My own statistical summary of these experiments is presented in Table 1.

Each of the five experiments yielded results in the expected direction, three of the five experiments were independently significant, and the entire set yields a highly significant overall outcome (Stouffer $z = 3.77$, $p = .000082$). These are perhaps the most adequately controlled of all of the intentional influence experiments; as such, they deserve serious attention by both proponents and critics.

Direct Mental Interaction with Living Systems

In addition to the inanimate target work described above, there exists a relatively large literature of reports of experiments in which participants have attempted to influence a wide variety of remote cellular and other biological systems through direct intention. When my colleague Marilyn Schlitz and I surveyed this literature in 1985, we found reports of 149 such experiments, of which 79 experiments (53 percent) yielded significant evidence of a direct mental influence effect. The living target systems for these investigations have

included bacteria, yeast, fungi, mobile algae, plants, protozoa, larvae, insects, chicks, mice, rats, gerbils, cats, dogs, and dolphins, as well as cellular preparations (blood cells, neurons, cancer cells) and enzyme activities. In human 'target persons,' eye movements, muscular movements, electrodermal activity, plethysmographic activity, respiration, and brain rhythms have been affected through direct mental influence. Many of these experiments are reviewed in papers by Solvvin (1984) and by Benor (1991)

The Mind Science Foundation Research Program

In order to illustrate these experiments on direct intentional interactions with living systems, I shall briefly summarize our own research program which was carried out in the laboratories of the Mind Science Foundation in San Antonio, Texas. We sought to determine whether persons would be able to exert direct intentional influences upon a variety of biological systems that were situated at a distance and shielded from all conventional informational and energetic influences. In these experiments, the spontaneously fluctuating activity of a biological target system was monitored objectively during randomly interspersed influence and non-influence (control) periods while, in a distant room, a participant attempted to influence the system's activity in a

prespecified manner (increasing or decreasing the system's ongoing activity) using mental processes of intentionality, focused attention, and imagery or visualization of the desired outcomes. The experimental designs ruled out subtle cues, recording errors, expectancy and suggestion (i.e., 'placebo') effects, artifactual reactions to external stimuli, confounding internal rhythms, and coincidental or chance correspondences. Overall, this research program included 37 experiments, 655 sessions, 13 different experimenters, and hundreds of different human influencers, human 'influencees', and sets of nonhuman biological target systems (fish, small mammals, and cellular preparations). The distantly influenced systems included: another person's electrodermal activity (a peripheral indicator of degree of sympathetic nervous system activation or arousal which also

reflects emotional and mental activity), another person's blood pressure, another person's muscular activity, the spatial orientation of fish (a small electric knife fish in a distant tank of water), the locomotor activity of small mammals (gerbils running in an activity wheel), and the rate of haemolysis (destruction by osmotic stress) of human red blood cells in test tubes in a distant room (monitored spectrophotometrically). A meta-analysis of the entire body of these experiments provided strong evidence for replicable direct intentional influences within the specific target biosystems and across the entire set of experiments. Details of these experiments may be found in two recent publications (Braud & Schlitz, 1989, 1991). The results of these experiments are presented in Table 2 and in Figure 1.

Table 2

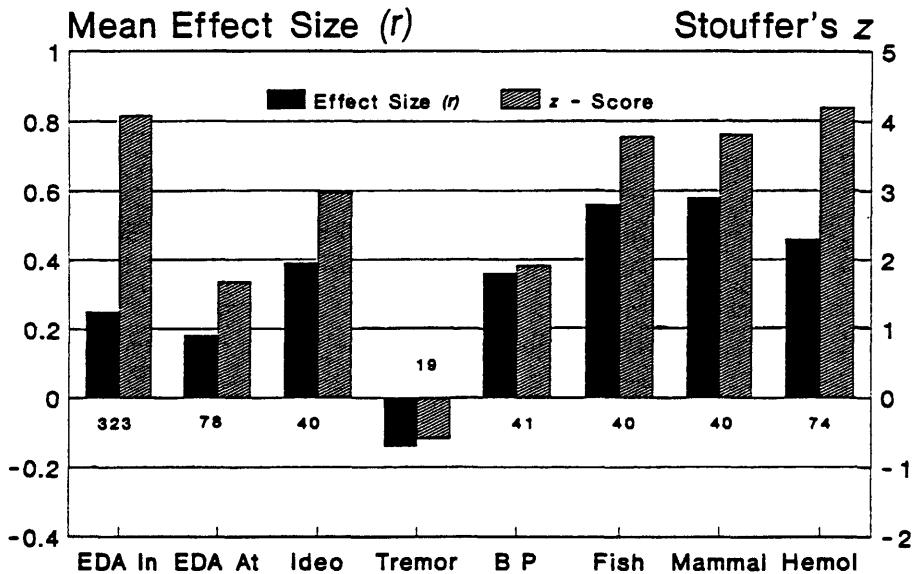
Overall statistical summary of Direct Mental Influence experiments.

Living Target System	Number of Sessions	Mean z	Stouffer z	Mean Effect Size	% of Experiments Significant
Electrodermal activity (influence)	323	1.05	4.08	.25	40
Electrodermal activity (attention)	78	0.84	1.68	.18	100
Ideomotor reactions	40	1.72	2.98	.39	67
Muscular tremor	19	-0.42	-0.59	-.14	0
Blood pressure	41	1.35	1.91	.36	50
Fish orientation	40	1.88	3.78	.56	75
Mammal locomotion	40	1.90	3.81	.58	75
Rate of haemolysis	74	2.43	4.20	.46	67
All systems combined	655	1.34	7.72*	.33	57

* $p = 2.58 \times 10^{-14}$ (one-tailed)

Figure 1

Mean effect sizes (r) and Stouffer z -scores for influences of all eight living target systems.



Included in these experiments is a subset of studies in which we sought to determine whether remote attention or intention could be detected physiologically in a 'staring detection' design. It had been reported that persons are able to know when they are being stared at or gazed at by someone beyond the reach of their regular senses. Would this awareness register more sensitively at a more 'unconscious' autonomic nervous system level? In four separate experiments, involving a total of 78 sessions, one person stared intently at the closed-circuit television monitor image of another person who was located in a distant room. The television arrangement ruled out the possibility of subtle sensory cues, and computer control allowed objective measurement of the 'staree's' electrodermal activity. Numerous staring periods were interspersed randomly among an equal number of non-staring, control periods. The staree, of course, was not informed about the timing and scheduling of the periods. The starees' electrodermal activity levels were significantly different for staring versus non-staring periods. Remote attention had

a measurable nonlocal influence upon a distant person's autonomic nervous system activity. In 'sham control' sessions in which the procedural and analysis details were exactly the same, but true staring did not occur, these electrodermal differences did not occur. Rationales, details, and discussions of these experiments may be found in Braud, Shafer & Andrews (1990, 1992).

In the latest addition to these experiments, we extended this work to determine whether one person's focused attention and intention to help a distant person concentrate and be less distracted by interfering thoughts could indeed influence the distant person's success in attending to a focusing object. Sixty persons, tested individually, simply attempted to attend fully to an attentional object and indicated whenever their mind wandered (i.e., whenever they experienced distractions) by pressing a hand-held button. In a distant room, a 'helper' engaged in two different activities according to a random schedule. During control periods, the helper did not think about the distant participant or about the experiment but rather thought about everyday matters. During 'help' periods, the

helper focused on her own identical focusing object and concurrently held a strong intention that the participant would be better able to focus attention and would be less influenced by distracting thoughts. A computer controlled the experiment and monitored the distraction-indicating button presses. The participants evidenced significantly fewer distractions (i.e., they attended better) during the 'help' periods than during the control periods. The details of this experiment may be found in Braud, Shafer, McNeill & Guerra (1993).

Nonstatistical Intentional Interactions

In all of the cases described thus far, remote intentional interactions have been observed upon randomly varying external physical processes and statistical methods have been used to assess the relatively small, albeit consistent and replicable, direct intentional influences. There are claims of intentional interactions occurring in relatively stable physical systems; in these cases, there have been reports of large scale influences which do not require statistical detection, since the observed effects are akin to large 'signals' occurring against backgrounds of little or no 'noise'. These findings are more controversial than those I have been summarizing and, due to time constraints, I shall not review these nonstatistical findings here. The interested reader is referred to various published summaries of these 'macro' and 'directly detectable' direct intentional effects (Isaacs, 1989; Gregory, 1982; Rush, 1986).

Interacting Factors

A thoughtful review of the entire body of experimental evidence for direct mental interaction with the physical world leads us to conclude with some confidence that such effects are real and replicable. We are much less confident, however, in our knowledge of how these effects interact with other physical, physiological, and psychological factors.

Interactions With Physical Factors

In the realm of physical variables, some useful 'negative' findings may be mentioned. The degree to which persons are able to interact mentally with remote physical or biological systems does not appear to interact importantly with the physical nature of the system or with the system's distance from the influencer in space or in time, nor have we found any physical substance or materials capable of either shielding or amplifying these direct mental effects (Stanford, 1977). However, several physical characteristics do seem important. It appears that systems characterized by randomness, indeterminacy, or free variability are more susceptible to direct mental influence than are systems lacking these qualities (Braud, 1981; Mattuck & Walker, 1979). It is not yet clear whether the critical facilitating aspect is this physical randomness *per se* or, rather, the psychological perception of randomness (which might encourage confidence in those attempting the influence that a system can indeed change). There are indications that biological systems may be more susceptible to direct mental influences than are inanimate ones (Braud, Schlitz, & Schmidt, 1989), but this possibility has yet to be evaluated adequately in the proper direct comparison experiments. Finally, there are some indications that these direct mental interactions may be related to the degree of 'storminess' of our geomagnetic environment (Braud & Dennis, 1989; Gissurarson, 1992).

Interactions With Physiological Factors

There are indications that heightened sympathetic nervous system arousal in the influencer may be favourable to the occurrence of the effects we have been discussing (Braud, 1985). More investigations of this relationship are needed, as are attempts to determine whether the key factor here is autonomic

arousal *per se* or, rather, the increase in focused attention that may accompany such arousal.

Interactions With Psychological Factors

It is in the psychological area that we have learned most about conditions that are favourable to these effects. Unfortunately, time constraints forbid anything other than a brief summary of these facilitating psychological conditions. Evidence suggests that attitudes of belief, confidence, trust, and positive expectation may facilitate the occurrence of direct mental interactions (Braud, 1991). In the case of biological systems, the presence of a *need* seems to facilitate the effect. Need may be defined in terms of a deviation from balance or from homeostasis, and the satisfaction of the need through direct mental interaction helps restore the biological system to a more balanced state (Braud & Schlitz, 1983; Braud, Shafer, McNeill, & Guerra, 1993). Other facilitating psychological factors include a thorough focus of attention upon the desired goal outcome (sometimes, but not necessarily, through the use of imagery or visualization of the desired goal outcome), and the absence of effortful striving to achieve the goal.

Theoretical Interpretations

The ultimate outcome of a direct mental interaction with a physical or biological system resembles what would be expected if a subtle force were applied to the system. Although the effect appears force-like, it does not seem that actual forces are involved in the carrying or 'transmission' of these direct mental interactions. In order to explain what we have learned about these effects, conventional forces would have to behave in quite unusual ways. In other words, it does not appear to be the case that these direct mental interactions are *directly mediated* by any of the four conventional physical forces (electromagnetic, strong nuclear, weak nuclear, or gravitational). The conventional forces do

not behave with respect to spatial distance, time, focusing of influence, nature of system material, or shielding/amplification in ways that would be necessary in order to account for the specific forms of the obtained effects.

A preferred set of alternative explanations suggests that nothing really 'travels' from one place to another in these direct mental interactions. Rather, it has been suggested that the observed effects involve a reorganization or restructuring of the noise, disorder, randomness, or chaos *already present* in the physical system that is being influenced. How such reorganization comes to occur in connection with some distant mental intention remains, of course, the major mystery of these effects. Informational exchange seems critical to the occurrence of these effects, rather than the provision of additional energy. Although some preliminary models have already been suggested along these noise-reorganization lines (e.g., Mattuck & Walker, 1979), much additional research and theorization are needed in these areas. Similar ideas may be found in von Lucadou's (1987) 'pragmatic information model' of psi.

Implications

There appear to be two major implications of the findings we have been discussing. The first is that any physical theory, explanatory scheme, or worldview that does not have a place for these effects is incomplete and should be expanded in order to encompass these findings. The second is that these direct mental interactions appear to require, for their very occurrence, a profound and extensive degree of interconnectedness between mental processes and all aspects of the physical world. These findings seem to be reminders of interconnections that we typically overlook or ignore.

Applications

A number of practical applications of direct mental interactions may be possible, provided these interactions can be suffi-

ciently strong, reliable, consistent, and properly applied. The two most obvious applications include the mind's possible interaction with delicate physical instruments (e.g., very sensitive electronic devices) and its interaction with other human bodies in the form of remote or mental healing. Indeed, the work of the Princeton Engineering Anomalies Research Laboratory has been devoted to the first possibility and our own work at the Mind Science Foundation was inspired by the second possibility. It is possible that direct mental interactions are already occurring in many conventional contexts, including the healing of others and of ourselves, but have not yet been recognized because such effects cannot be separated from more conventional physical, chemical, and biological processes. Under the special conditions of laboratory experiments, or under exceptional everyday life conditions, the effects may sometimes be made evident. It remains for future research and practice to determine the extent to which practical applications of these direct mental interactions may be realized.

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Können unsere Intentionen unmittelbar mit der physikalischen Welt interagieren?

Zusammenfassung: Der Artikel gewährt eine Übersicht über empirische Hinweise aus kontrollierten Laboruntersuchungen, die den Schluß nahe legen, daß mentale Intentionen unmittelbar mit der physikalischen Welt interagieren können. Solche direkten mentalen Interaktionen sind in Versuchen mit mechanischen Zufallssystemen wie etwa dem Würfelfall und, in jüngerer Zeit, mit elektronischen Zufallsgeneratoren, die durch radioaktiven Zerfall oder thermisches Rauschen erzeugte Zufallsereignisse verwenden, nachgewiesen worden. Daß direkte mentale Interaktion mit lebenden Systemen (DMILS) vorkommen, ließ sich ebenfalls zeigen. Eine große Vielfalt lebender Zielsysteme ist untersucht worden, unter ihnen Bakterien, Tiere und menschliche Nervensysteme und kognitive Vorgänge. Während die Beweislage für direkte mentale Interaktionen mit belebten und unbelebten Systemen recht gut ist, bleibt über das Zusammenspiel dieser Wirkungen mit anderen physikalischen, physiologischen und psychologischen Faktoren noch

vieles in Erfahrung zu bringen. Auf einer theoretischen Ebene scheinen solche direkten mentalen Interaktionen nicht durch herkömmliche physikalische Kräfte vermittelt zu werden. Freilich steht die Ausformulierung zufriedenstellender theoretischer Modelle noch aus. Abschließend werden Implikationen und mögliche Anwendungen direkter mentaler Interaktion erörtert.

Is er directe interactie tussen onze voornemens en de omgeving?

Samenvatting: De auteur bespreekt laboratoriumonderzoek dat een directe interactie tussen mentale voornemens en de fysieke wereld suggereert. Die rechtstreekse mentale interacties zijn aangetoond met mechanische toevalsprocessen als het gooien van dobbelstenen en later ook met elektronische toevalsgeneratoren die radioactief verval of thermische ruis als toevalsbron hanteren. Ook directe mentale interactie met levende systemen (DMILS) is aangetoond. Als doelsysteem fungeerden daarbij levende organismen, b.v. bacteriën, dieren, het menselijke zenuwstelsel en cognitieve activiteit. Er is weliswaar bewijs voor direct mentaal contact met levende en dode materie, maar we weten weinig over de rol die andere fysieke, fysiologische en psychologische factoren daarbij spelen. Theoretisch gezien lijken die interacties niet rechtstreeks te worden gestuurd door bekende fysieke krachten, maar bevredigende theoretische modellen zijn er nog niet. Het artikel behandelt ook de implicaties en mogelijke toepassingen van directe mentale interactie.

Le nostre intenzioni possono interagire direttamente con il mondo fisico?

Sommario: Il lavoro esamina le indicazioni scaturite dagli studi controllati di laboratorio che suggeriscono che le intenzioni mentali possono interagire direttamente con il mondo fisico. Queste interazioni mentali dirette sono state dimostrate con sistemi meccanici randomizzati quali il lancio dei dadi e, più recentemente, i generatori elettronici di eventi casuali che usano il decadimento radioattivo o un rumore termico come fonte di casualità. E' stata anche dimostrata l'interazione mentale diretta con i sistemi viventi (DMILS): è stata indagata un'ampia varietà di sistemi-bersaglio viventi, tra i quali i batteri, gli animali e il sistema nervoso e l'attività cognitiva dell'uomo. Sebbene ci siano buone indicazioni di un'interazione mentale diretta su sistemi animati e inanimati, molto rimane da capire su come questi effetti interagiscono con altri fattori fisici, fisiologici e psicologici. A livello teorico, le interazioni mentali dirette non sembrano mediate da forze fisiche convenzionali, ma devono ancora essere sviluppati modelli teorici soddisfacenti. Infine, si discutono le conseguenze e le potenziali applicazioni dell'interazione mentale diretta.

¿Pueden Nuestras Intenciones Interactuar Directamente con el Mundo Físico?

Resumen: Este artículo revisa la evidencia de estudios de laboratorio controlados la cual sugiere que las intenciones mentales pueden interactuar directamente con el mundo físico. Tales interacciones mentales indirectas han sido demostradas con sistemas aleatorios mecánicos tales como dados y, más recientemente, con generadores de números aleatorios electrónicos que usan fuentes radioactivas y termales para producir secuencias aleatorias. La interacción mental directa con sistemas vivos (IMDSV) también ha sido demostrada. Una amplia variedad de sistemas biológicos han sido investigados, incluyendo bacterias, animales, las actividades de los sistemas nerviosos y cognoscitivos de los seres humanos. Aunque hay buena evidencia para la interacción mental directa con sistemas animados e inanimados, todavía tenemos que aprender mucho más sobre como estos efectos interactúan con otros factores físicos, fisiológicos, y psicológicos. A nivel teórico, tales interacciones mentales directas no parecen ser mediadas directamente por fuerzas

físicas convencionales, pero todavía no se han desarrollado modelos teóricos satisfactorios. Finalmente, se discuten las implicaciones y aplicaciones potenciales de la interacción mental directa.

Nossas Intenções podem agir Diretamente com o Mundo Físico?

Resumo: O trabalho revisa a evidência de estudos controlados de laboratório que sugerem que as intenções mentais podem interagir diretamente com o mundo físico. Essas interações mentais diretas têm sido demonstradas com sistemas aleatórios mecânicos tais como atirar dados e, mais recentemente, com geradores de eventos aleatórios eletrônicos que utilizam decaimento radioativo ou ruído térmico como fonte de aleatorização. A interação mental direta com sistemas vivos (sigla, em inglês, DMILS), também foi demonstrada. Uma grande variedade de sistemas de alvos vivos foram investigadas, incluindo bactérias, animais além do sistema nervoso e da atividade cognitiva humanos. Embora haja boa evidência para a interação mental direta com sistemas animados e inanimados, ainda há muito que ser aprendido sobre como esses efeitos interagem com outros fatores físicos, fisiológicos e psicológicos. A um nível teórico, essas interações mentais não parecem ser diretamente mediadas por forças físicas convencionais, mas modelos teóricos satisfatórios ainda têm que ser completamente desenvolvidos. Finalmente, as implicações e aplicações potenciais de interação mental direta são discutidas.

Nos intentions peuvent-elles directement interagir avec le monde physique?

Résumé: L'article passe en revue l'évidence qui suggère, d'après des études contrôlées en laboratoire, que des intentions mentales peuvent interagir directement avec le monde physique. De telles interactions mentales directes ont été démontrées avec des systèmes mécaniques aléatoires tels que le lancé de dés et, plus récemment, avec les générateurs d'événements aléatoires électroniques qui utilisent la décroissance radioactive ou le bruit thermique comme source de hasard. L'interaction directe avec les systèmes vivants (DMILS) a aussi été démontrée. Une large variété de systèmes cibles vivants a été investiguée, y compris des bactéries, des animaux, ainsi que le système nerveux et l'activité cognitive de l'être humain. Alors qu'il y a une bonne évidence de l'interaction mentale directe avec des systèmes animés et inanimés, il reste beaucoup à apprendre sur comment ces effets interagissent avec d'autres facteurs physiques, physiologiques et psychologiques. Au niveau théorique, de telles interactions mentales directes ne semblent pas être médiatisées par des forces conventionnelles, mais des modèles théoriques satisfaisants sont encore à développer plus amplement. Enfin, on discute des implications et applications potentielles de cette interaction mentale directe.

Seeing Things: Visual Recognition and Belief in the Paranormal

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Abstract: Evidence is reviewed suggesting differences in cognitive style between sheep (believers in the paranormal) and goats (non-believers). It is suggested that belief in the paranormal can be increased when people misinterpret chance events as requiring an explanation, or think they see something in noisy stimuli. Accordingly believers would be expected to be more prone to identifying objects in noisy stimuli. Thirty participants completed a Paranormal Belief Scale, a False Identification Question (asking about misidentifications of people in everyday life) and a visual identification task. Stimuli were twelve sets of four pictures each, progressively degraded by the addition of computer generated noise. Belief in the paranormal was correlated with a greater tendency to make positive identifications or guesses and fewer correct identifications. Higher belief also correlated with claims of more frequent misidentifications of people. This confirms previous findings of differences in cognitive style between believers and non-believers.

Introduction

A recent poll of 1236 adult Americans (Gallup & Newport, 1991) reported that one in four people believed that they have had a telepathic experience, and one in six that they had been in touch with someone who had died. A quarter believed in ghosts and three quarters at least occasionally read their horoscopes. Personal experience is often cited as a reason for belief in the paranormal (Blackmore, 1984; Palmer, 1979). These high levels of paranormal belief contrast with the scientific evidence for paranormal phenomena which is at best controversial (Broughton, 1991) and at worst, non-existent (Kurtz, 1986). Why do so many people believe passionately in something which might not exist?

The answer may be that their belief is not the result of any scientific analysis of evidence, but is due to their personal experiences, possibly supported by the views of others and the general cultural acceptance

of the paranormal. The question then becomes how psychic experiences can occur if paranormal phenomena are non-existent or extremely weak.

We shall use the term 'psychic experience' to refer to any experience that is interpreted by the person concerned as psychic, and 'psychic (or paranormal) phenomena' to refer to genuinely psychic events. This allows us to discuss the experiences without having to decide whether they are or are not 'really' paranormal. Believers in the paranormal are referred to as 'sheep' and non-believers as 'goats'.

One possibility is that psychic experiences are comparable to visual illusions. For example, normal or chance events might be misinterpreted as paranormal. In this case the experience would be perfectly real to the person undergoing it, but its 'paranormality' would be derived from the individual's cognitive processes, not from the external world. Imagine that two individuals, one a sheep and one a goat, expe-

rience the same event. The sheep might perceive it as paranormal and try to explain it in terms of ESP or psychokinesis, while the goat will perceive the same event as due to pure chance or as having a normal explanation. Each would in this way be building up a collection of experiences apparently supporting prior beliefs, whether the actual event was paranormal or not.

We might therefore expect people with different cognitive styles to evaluate similar experiences in different ways (Alcock, 1981; Hines, 1988; Zusne & Jones, 1982). Some possibly relevant differences between sheep and goats have been documented. These include personality differences (see Thalbourne, 1981; Zusne & Jones, 1982, for reviews), greater fantasy proneness in sheep (Pekala, Kumar & Cummings, 1992) and a tendency for sheep to warp presented information so that it is supportive of the opinion they already hold (Russell & Jones, 1980). Alcock & Otis (1980) reported less critical thinking in sheep than goats and Wierzbicki (1985) found more errors in syllogistic reasoning, although Irwin (1991) has disputed this finding.

Believers have also been found to be more prone to response biases (Grimmer & White, 1986; Marks & Kammann, 1980; Rigby, 1989) although attempts to identify these biases have come up with conflicting results (Rigby, 1989; French, 1992).

The study reported here takes a different approach, based on the idea that sheep should be more prone to psychic illusions than goats. That is, they should have cognitive styles that lead them more often to misinterpret normal events as paranormal. Five types of psychic illusion have been distinguished (Blackmore, 1992; Blackmore, Galaud & Walker, in press).

Illusions of control

Langer & Roth (1975) demonstrated a tendency for random processes to be perceived as being under people's control. This might give rise to belief in psychokinesis (PK), or mind over matter. The illusion of control has been shown to be

greater in believers (Ayeroff & Abelson, 1976; Benassi, Sweeney & Drevno, 1979; Blum & Blum, 1974; Jahoda, 1969; Jones, Russell & Nickel, 1977), even in tasks not perceived as involving psi (Blackmore & Troscianko, 1985). If people believe they have greater control than they actually have, apparent evidence of the paranormal may be unintentionally provided.

Misjudgements of probability

Humans are notoriously bad at estimating probabilities (Kahneman, Slovic & Tversky, 1982). This seems to be even more pronounced in believers, who consistently underestimate the frequency of chance occurrences (Blackmore & Troscianko, 1985). This implies that when chance coincidences occur, believers are more likely to seek an explanation and, if no other explanation is available, to opt for a paranormal one. In this way, chance events would apparently provide further evidence for their prior beliefs.

Misjudgements of randomness

As well as being poor probability judges, people are poor at assessing randomness. This is often examined using a Subjective Random Generation (SRG) task, in which a subject has to generate a series of random numbers. Typically, repetitions are greatly underestimated (Budescu, 1987; Wagenaar, 1972) and sheep underestimate more than goats (Blackmore & Kahn, in press; Brugger, Landis & Regard, 1990). This might have implications for the generation or maintenance of belief. When patterns, such as repetition, are encountered within random events (as would be expected, statistically), believers would be more inclined to search for a cause for these ordinary occurrences, and to turn to a paranormal explanation when a normal one could not be found.

Illusions of Memory

Selective memory may exaggerate the apparent frequency of occurrence of coin-

cidences. Hintzman, Asher & Stern (1978) demonstrated selective remembering of meaningfully related events. Fischhoff & Beyth (1975) showed that people misremember their previous predictions to conform to what actually happened afterwards. Comparisons of believers and non-believers have not been made but we would predict more selective memory among believers.

Illusions of Form

Seeing ghosts or apparitions might also entail the misinterpretation of normal events, in this case object recognition when there is no object there, or detection of a pattern in a random display. In signal detection terms, believers and non-believers would differ in terms of their criterion and also, but not necessarily, in terms of accuracy. For example, believers might use a looser criterion for seeing pattern in noisy displays and so be more likely to 'see' something there.

Walker (1991; Blackmore *et al.*, in press) gave 50 subjects the Belief in the Paranormal Scale (BPS) (Jones *et al.*, 1977) and an object identification task consisting of four series of successively more easily identifiable shapes, tachistoscopically presented. BPS scores did not correlate with the number of pictures correctly identified but did correlate with the number of incorrect identifications. In other words, believers were more likely to make wrong guesses. They were also more likely to say that they saw an identifiable shape early in the series. This suggests a difference in criterion but not in accuracy.

There were a number of problems with this experiment. The BPS includes many questions that are not directly relevant to the paranormal (concerning UFOs and extraordinary life forms, for example) and dividing subjects into two groups about the mean wastes information, compared with correlating belief scores with other variables. However, the most important problem was that the stimuli were hand drawn. Their identifiability was not controlled and the differences between them

not measurable. It would be preferable to use stimuli to which a measurable amount of noise is added.

This was the aim of the present experiment. Pictures were photographs of everyday objects with graded amounts of computer generated noise added. A Paranormal Belief Scale was created, based on previous scales, to contain only questions directly relevant to the paranormal. An additional question about misidentifications in everyday life was also asked.

Hypotheses were (1) that stronger belief would correlate with greater willingness to make identifications, (2) that stronger belief would be positively correlated with the number of errors in identification and (3) that stronger belief would be positively correlated with more frequent misidentifications of people in everyday life.

Pilot Studies: Generation of Targets.

Twelve everyday objects were photographed. Ten undergraduates (five male, five female) were given each picture to examine in their own time, and asked to identify each object. All twelve were unambiguously and correctly named by all subjects as; Horse, Socks, Keys, Telephone, Pineapple, Flowers, Pegs, Fish, Sheep, Bicycle, Pencils and Butterfly.

For each picture, a series of four stimuli was produced with gradually increasing amounts of computer generated noise. Eight different undergraduates (four male, four female) were shown three sets in order from most to least noisy, tachistoscopically exposed for 15, 20, 25 or 30 milliseconds. Subjects described each stimulus as either an unidentifiable shape or a recognisable object. On this basis, 25 ms was chosen for the main study.

Method

Participants

Participants were 30 undergraduates at the University of Bristol who were not involved in the pilot studies. There were 20 males and 10 females.

Apparatus

Using a tachistoscope, the stimulus was exposed for 25ms. Otherwise - all the rest of the time - it was a distractor slide of computer-generated random noise in black and white.

Stimuli

Stimuli¹ were twelve sets of four black and white pictures each. Each set of four consisted of the original picture and three further pictures increasingly distorted with predetermined levels of computer-generated random noise. Each image consisted of a visual signal (the original, clear picture of the object) and additive, normally-distributed noise of specified standard deviations of 0%, 7.8%, 19.6% and 27.5% of the total dynamic range (0 to 32). These percentages corresponded to noise levels of 0, 20, 50 and 70, respectively. The dimensions of each image measured 183 by 122 pixels (see Appendix for examples of images).

Questionnaires

The Paranormal Belief Scale consisted of ten statements about the paranormal, such as 'ESP exists' or 'I have had at least one experience of telepathy between myself and another person' (see Appendix). Participants were asked to rate each item on a five point scale from 'Definitely True' to 'Definitely False'. A lower score indicated a greater belief in the paranormal.

The False Identification Question described a scene in which a person acknowledges someone on the street but then realises that they are a stranger. Participants were asked whether this happened to them (1) daily, (2) weekly, (3) monthly, (4) yearly or (5) never.

Procedure

Subjects were read a set of instructions requiring them to say, after each stimulus

was displayed, whether they could recognise and identify what they saw. They were shown the 48 slides, beginning with the 12 least distinguishable (noise level 70), and ending with the most clearly defined (noise level 0). The order of presentation of each picture in the group of 12 was randomised before each trial. The answers given by subjects were recorded immediately on their response.

Half of the subjects completed the Paranormal Belief Scale and the False Identification Question after the visual identification task, and the other half did so beforehand to control for order effects.

Results

Scores on the Paranormal Belief Scale (PBS) were normally distributed about a mean of 31.63 (SD=7.72).

(1) There was a positive, but non-significant, correlation between PBS scores and the number of non-identifications ($r = .308$, 28 d.f.), in other words a tendency for sheep to be more willing to say they could identify the object.

This can be broken down for the different noise levels as follows:

noise level	r (28 d.f.)
70	.339
50	.551
20	.089
0	.196

At noise level 50, r is significant ($p < .01$, two-tailed). This shows that at this intermediate noise level, believers were more willing to say they could see an identifiable object in the stimulus.

(2) There was a positive, though not significant, correlation between PBS score and the total number of correct responses in the visual identification task ($r = .331$, 28 d.f.), in other words, non-believers tended to be more accurate.

This can be broken down for the different noise levels as follows:

¹ We would like to thank Dr Gavin Brelstaff, University of Bristol, for preparing the stimuli.

noise level	<i>r</i> (28 d.f.)
70	.096
50	.321
20	.303
0	.268

(3) The False Identification Question was included as a possible measure of greater ecological validity. It correlated highly with PBS scores ($r = .606$, 28 d.f., $p < .001$, two-tailed). Those with stronger belief in the paranormal claimed more often to make false identifications of people in their everyday lives. There were only small correlations between the FIQ and the main task [$r = .117$ (correct responses) and $r = .142$ (non-guesses)].

Sex Differences

There was no significant difference between males and females in PBS score ($t = 0.21$) or the number of correct responses in the visual identification task ($t = -1.36$) but there was a difference in the mean number of non-guesses (males, 10.55; females, 15.50; $t(30) = -2.08$, $p < .05$, two-tailed), indicating that males were more willing than females to attempt to identify visual patterns, or females were more cautious. Since there is no sex difference in PBS scores, sex differences cannot account for the main findings presented here.

Discussion

The results suggest that those with a greater belief in the paranormal are more willing to say they can identify something in a noisy visual image, confirming the hypothesis of a laxer criterion among believers. It is not clear whether this is due to cognitive or social factors. For example, sheep might be less socially restrained and more willing to make a guess for that reason. Interestingly, this effect is larger for the more noisy stimuli, suggesting that believers would be most likely to make false identifications under the most uncertain conditions. Arguably these might be just those in which ghosts and apparitions

are typically seen, such as at night or in dim light.

Correlations with accuracy of perception were not significant, as was found in Walker's study. However, the correlations are positive and in the expected direction, suggesting that believers might more often misidentify objects, perhaps seeing paranormal events in normal ones.

The strong correlation between the FIQ and PBS suggests that believers in the paranormal are more likely to make false identifications of people, although this finding is of limited generalisability because only one question was asked. It is perhaps odd that the FIQ and visual identification task are not highly correlated since both purport to measure a similar tendency. However, responses to the FIQ would be affected by many other variables such as social confidence, number of friends, lifestyle and memory for distant events. Sheep might simply be more willing to speak to someone in the street. It would be interesting to explore differences between believers and non-believers in the way they recognise and respond to people and events in the course of their ordinary lives. This clearly requires further research before any firm conclusions can be drawn.

Some problems arose in the visual identification testing. For example, comments made by several subjects suggested they held unfounded expectations about psychological testing. Some assumed that a complete personality analysis would be made according to the responses they gave. This led to one (male) subject identifying an image of a sheep as 'a naked woman'. Some showed embarrassment in identifying the butterfly image as such, apparently as a result of their belief that all visual recognition tasks use butterfly-shaped stimuli. The high public profile of the Rorschach ink-blot test seems to be to blame for this.

Subjects frequently realised that each object was presented four times, which might mean that they would stick with a wrong identification once made. However, occasionally people made a correct identification and then later gave an incorrect identification of the clearer image.

Some pictures invited more guesses than others. Population stereotyping occurs with various number patterns and geometric forms (Grimmer & White, 1986; Marks & Kammann, 1980) and has been shown to be more prevalent in believers (Rigby, 1989), although this finding has been contradicted by French (1992). Bearing this in mind, population stereotypes might enhance or reduce the performance of believers relative to non-believers, depending upon the popularity of the 12 objects used as stimuli. To control for this, a set of images previously standardised for population stereotyping should be used.

To continue research along similar lines, it would be preferable to eliminate the problems encountered in the present study and to test the reliability and validity of the belief scale. A related approach would be to look at processing of different types of perceptual information, such as auditory information. A similar method could be used, involving subjects identifying verbal messages within varying degrees of white noise. Such a procedure is similar to that used by Bentall & Slade (1985) who, in investigating schizophrenic auditory hallucinations, tested subjects for their ability to distinguish a verbal message from white noise. They found that subjects who were more prone to hallucinating were more likely to extract a message from the white noise, even when no message was presented. It would be interesting to correlate belief scores with this variable. Would believers tend to score highly on the hallucinatory scale used by Bentall & Slade (1985) also? If so, this would add further to our understanding of the correlates of belief in the paranormal.

Conclusions

The results of the present study contribute further evidence of a difference in cognitive styles between believers and non-believers in the paranormal. They show that believers are more likely to identify objects in noisy stimuli, suggesting that they may do the same in other situations

and hence may think they have seen ghosts or experienced apparitions.

This should not be taken as evidence that there are no paranormal phenomena. There may or may not be 'real' ghosts, in the sense of actual communications with deceased people or veridical hallucinations. However, the results suggest at least one alternative explanation for some such experiences. If people are prone to identify shapes, forms or objects in noisy stimuli they will then want to know where those objects came from. If no reasonable explanation is forthcoming they may resort to a paranormal explanation, so increasing their belief in the paranormal.

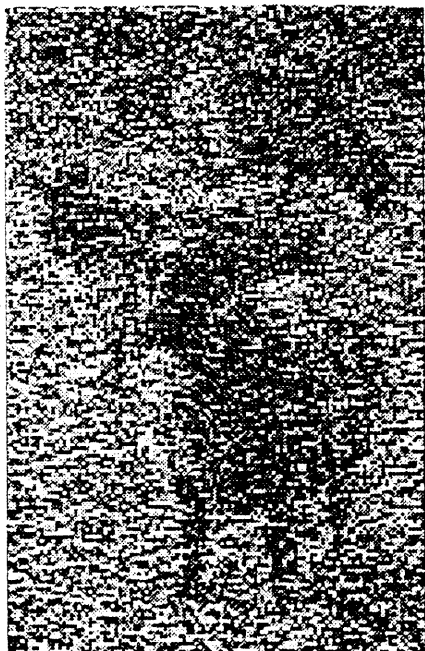
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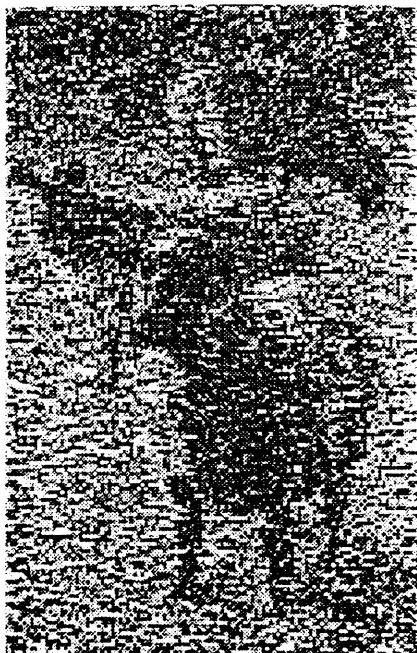
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Set 5: Sheep

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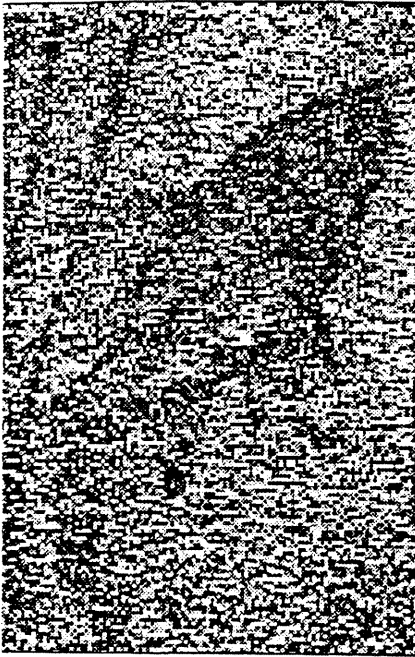
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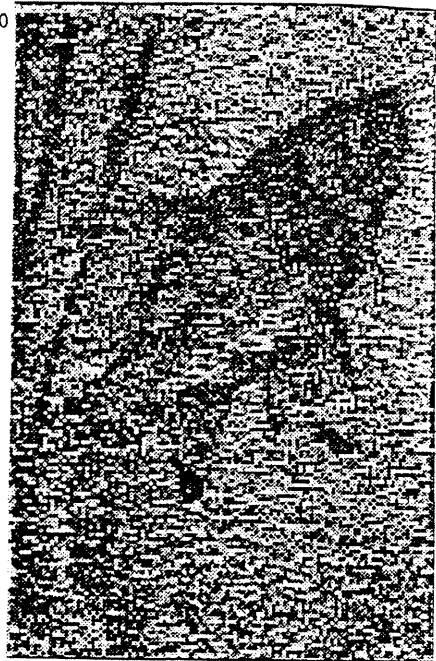
Appendix

Examples of two sets of stimuli (sheep and fish, with four levels of added noise).
Set 10: Fish

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VISUAL RECOGNITION AND BELIEF

PARANORMAL BELIEF SCALE

Name Age Sex Date

This questionnaire aims to discover your opinions about various paranormal phenomena. There are no right or wrong answers, we are just interested in your views. Therefore, please answer the questions as accurately as you can. Indicate your response by circling the relevant number on the scale following each statement, as illustrated below:

1. Definitely True
2. Probably True
3. Uncertain
4. Probably False
5. Definitely False

(a) ESP (Extrasensory Perception) exists.

Definitely True 1 2 3 4 5 Definitely False

(b) I have had personal experience of ESP.

Definitely True 1 2 3 4 5 Definitely False

(c) I am psychic.

Definitely True 1 2 3 4 5 Definitely False

(d) I have had at least one hunch that turned out to be correct, and which was not just a coincidence.

Definitely True 1 2 3 4 5 Definitely False

(e) I have had at least one premonition about the future that came true, and which was not just a coincidence.

Definitely True 1 2 3 4 5 Definitely False

(f) I have dreamt at least one dream that came true and which was not just a coincidence.

Definitely True 1 2 3 4 5 Definitely False

(g) I have had at least one vision that was not just an hallucination.

Definitely True 1 2 3 4 5 Definitely False

(h) There is life after death.

Definitely True 1 2 3 4 5 Definitely False

(i) Some people can contact spirits of the dead.

Definitely True 1 2 3 4 5 Definitely False

(j) I have had at least one experience of telepathy between myself and another person.

Definitely True 1 2 3 4 5 Definitely False

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Dinge sehen: Visuelle Wiedererkennung und Glaube an Paranormales

Zusammenfassung: Der Beitrag bietet eine Übersicht über Hinweise auf Unterschiede zwischen 'Sheep' (jenen, die an Paranormales glauben) und 'Goats' (den Nichtgläubigen) hinsichtlich ihrer jeweiligen kognitiven Verarbeitungsweisen. Es wird die Auffassung vertreten, daß der Glaube an Paranormales sich verstärken kann, wenn Menschen zufällige Ereignisse als erklärungsbedürftig fehlinterpretieren oder in diffusen, unstrukturierten Reizen etwas zu erkennen glauben. Wenn dies zutrifft, würde man erwarten, daß Gläubige stärker dazu neigen, Objekte in diffusen visuellen Stimuli zu identifizieren. Dreißig Versuchspersonen absolvierten eine 'Paranormal Belief Scale' (zur Ermittlung paranormalen Glaubensbereitschaften), eine Fehlidentifikationsfrage (über die Fehlerkennung von Personen im Alltagsleben) und einen visuellen Identifikationstest. Als Stimuli dienten zwölf Sätze von je vier Bildern, abgestuft nach ihrer Überlagerung durch computererzeugtes Rauschen. Glaube an Paranormales war korreliert mit einer größeren Neigung, positive Identifizierungen oder Rateversuche, dafür aber weniger zutreffende Identifizierungen vorzunehmen. Stärkerer Glaube korrelierte zudem auch mit der Behauptung häufigerer Fehlerkennung von Personen. Dies bestätigt frühere Ergebnisse über Unterschiede in den Kognitionen Gläubiger und Nichtgläubiger.

Ik zie wat jij niet ziet: visuele herkenning en geloof in het paranormale

Samenvatting: Er zijn aanwijzingen voor verschillen in cognitief functioneren tussen "sheep" en "goats" (resp. schapen of gelovers en bokken of niet-gelovers in het paranormale). De aanname is dat dat geloof kan worden versterkt als mensen een toevallige gebeurtenis fout interpreteren omdat ze denken dat die moet worden verklaard of als ze denken iets te herkennen in pure chaos. Op grond daarvan verwacht je dat de schapen in chaos eerder een voorwerp zullen herkennen. 30 proefpersonen vulden een test in over hun geloof in het paranormale, beantwoordden een vraag over het fout herkennen van mensen in het dagelijkse leven en deden een test over visuele herkenning. Daarbij werden 12 sets van elk 4 afbeeldingen gebruikt, die via een computer van maskerende stoorinformatie waren voorzien. Er was een positief verband tussen geloof in het paranormale en de neiging tot gokken of iets fout herkennen en een negatief verband met correct herkennen. Bovendien bleek een samenhang tussen geloof in het paranormale en vaker mensen ten onrechte herkennen. Deze resultaten bevestigen eerdere conclusies over verschillen in cognitief functioneren tussen schapen en bokken.

Vedere cose. Riconoscimento visivo e credenza nel paranormale

Sommario: Vengono presi in esame i dati che suggeriscono l'esistenza di una differenza di stile cognitivo tra 'pecore' (credenti nel paranormale) e 'capre' (scettici). Si ipotizza la possibilità che la fiducia nel paranormale aumenti in parallelo con l'opinione, erronea, che gli eventi casuali richiedano una spiegazione o con la convinzione di aver riconosciuto qualcosa di significativo negli stimoli confusi. Su questi presupposti, ci si può attendere che chi crede nel paranormale identifichi più facilmente qualcosa di significativo all'interno di stimoli indistinti. 30 soggetti

sperimentali hanno risposto alla Scala di Credenza nel Paranormale e al Questionario sull'Erronea Identificazione (riguardante le errate identificazioni di persona nella vita quotidiana), e hanno svolto un compito di identificazione visuale. Gli stimoli erano costituiti da dodici gruppi di quattro figure ciascuna; le figure erano state rese meno nette per mezzo di un disturbo generato con il computer. La credenza nel paranormale è risultata correlata a una maggior tendenza a dichiarare identificazioni o indovinamenti sicuri, ma a un numero minore di identificazioni corrette. La fiducia più ferma, inoltre, correleva con più frequenti identificazioni personali errate. Tutto ciò conferma i dati precedenti sulle differenze di stile cognitivo tra credenti e non credenti nel paranormale.

Viendo Cosas: Reconocimiento Visual y Creencia en lo Paranormal

Resumen: Se revisa evidencia que sugiere diferencias en estilos cognoscitivos entre ovejas (creyentes en lo paranormal) y cabras (los que no creen). Se sugiere que la creencia en lo paranormal puede aumentarse cuando las personas interpretan erróneamente eventos que ocurren al azar como eventos que requieren una explicación, o creen que ven algo en estímulos confusos. De acuerdo a esto los creyentes deben estar más propicios a identificar objetos en estímulos confusos. 30 participantes llenaron la Escala de Creencias Paranormales, una Pregunta de Identificación Falsa (sobre identificaciones erróneas de personas en la vida diaria) y una tarea de identificación visual. Los estímulos consistieron en doce grupos de cuatro ilustraciones cada uno, presentados con confusiones generadas por computadora. La creencia en lo paranormal correlacionó con alta frecuencia de errores en identificar personas. Esto confirma hallazgos anteriores de diferencias en estilos cognoscitivos entre los que creen y los que no creen en lo paranormal.

Vendo Coisas: Reconhecimento Visual e Crença no Paranormal

Resumo: A evidência é revisada sugerindo diferenças no estilo cognitivo entre ovelhas (pessoas que acreditam no paranormal) e cabras (pessoas que não acreditam no paranormal). Sugere-se que a crença no paranormal pode ser aumentada quando as pessoas interpretam mal a casualidade dos eventos quando necessitam de uma explicação, ou pensam ver algo em estímulos provenientes de ruídos. Assim, seria esperado que as pessoas que acreditam no paranormal fossem mais susceptíveis à identificação de objetos em estímulos provenientes de ruídos. 30 participantes preencheram uma Escala de Crença no Paranormal, uma Questão de Falsa Identificação (perguntando sobre más interpretações das pessoas na vida cotidiana) e uma tarefa de identificação visual. Os estímulos foram vinte conjuntos de quatro imagens cada, graduados pela adição de ruído gerado por computador. A crença no paranormal foi relacionada com uma maior tendência em produzir identificações ou palpites positivos e menos identificações corretas. Maior crença também está correlacionada com as alegações de freqüentes más identificações pelas pessoas. Isto confirma descobertas anteriores a respeito das diferenças do estilo cognitivo entre os que acreditam no paranormal e os que não acreditam no paranormal.

Voir des choses: La reconnaissance visuelle et la croyance au paranormal

Résumé: On passe en revue l'évidence suggérant des différences dans le style cognitif entre moutons (croyants au paranormal) et les chèvres (non-croyants). On suggère que la croyance au paranormal peut être augmentée quand les gens interprètent mal les événements du hasard comme requérant une explication, ou quand ils pensent voir quelque chose dans des stimuli bruités. Ainsi on s'attend que les croyants soient plus enclins à identifier des objets dans stimuli bruités. 30 participants ont rempli l'Echelle de Croyance au Paranormal, une Question de Fausse Identification (interrogeant sur les erreurs d'identification des gens dans la vie quotidienne) et une tâche d'identification visuelle. Les stimuli furent douze séries de quatre images chacune, auxquelles un bruit généré par ordinateur a été ajouté. La croyance au paranormal a corrélé avec une plus grande tendance à faire des identifications ou devinements positifs et de moindres identifications correctes. La plus haute croyance a corrélé aussi avec les revendications de plus fréquentes erreurs d'identification des gens. Ceci confirme des découvertes antérieures de différences dans le style cognitif entre croyants et non-croyants.

Parapsychological Publications in Non-Parapsychology Journals

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Abstract: I collected more than 700 parapsychological references taken from a large number of scientific journals of various disciplines, excluding the parapsychological ones. The publication of parapsychologists' research in non-parapsychological journals may, in the author's opinion, contribute to the diffusion and knowledge of the results obtained by the most qualified psi researchers. At the same time, some of the references represent articles by non-parapsychological scientists who frequently offer serious and constructive criticism. It may be that in the future this unacknowledged dialogue between these two opposing groups may lead to a better consideration of psi research, if not to a wider acceptance. From the list of references appearing in this paper many statistical data and interesting deductions can be derived.

Most parapsychologists' efforts are aimed at the acknowledgment of psi, psi research and its results by the academic community, which to date has generally regarded ESP and PK phenomena with disinterest and disbelief. On the other hand, it is no wonder that many scientists have such a negative attitude towards psi research: experimental psi results have often been demonstrated to be elusive and inconclusive. In this respect, the well known critic of parapsychology, Ray Hyman claims:

In particular, the available reports indicate that randomization is often inadequate, multiple statistical testing without adjustment for significance levels is prevalent, possibilities for sensory leakages are not uniformly prevented, and documentation is typically inadequate. (*Experientia*, April 1988, p. 315-321).

It is clear that without an appropriate response to this criticism, the future of parapsychology will remain within the boundaries of pseudoscience even if today some of the research has reached a very high level of sophistication thanks to the use of computers, to a more interdisciplinary approach and to enlightened criticism coming from both within and outside

parapsychology. Nevertheless, the resistance to the paranormal is still widespread and strong. The fact that the Parapsychological Association has been affiliated with AAAS for more than 20 years now appears very distant and almost unreal. Nevertheless, I have recently carried out a search through the literature and have found that there exist some comforting signs regarding the parapsychological scene.

Search Domain

I found a first encouraging exception to this sad situation while I was consulting the *Index Medicus* in the course of a research programme connected to my activity at the University of Bologna. To my great surprise, I discovered that almost all issues of this wide-rangin, monthly collection of biomedical references contained in the section 'Parapsychology'. Since then I have checked the reference sections of a great number of parapsychological books and journals and consulted some important scientific catalogues, as well as some national and international databases¹, discovering

¹Through the Almatel service of the University of Bologna (Italy), it is possible to be connected online to the main Italian and international scientific

numerous parapsychological or parapsychology-related articles appearing in a variety of scientific journals of various disciplines. It should be pointed out that this research was concentrated on ESP and PK as the core phenomena, even if some of the references do not truly deal with the paranormal or are of uncertain classification. They were taken into consideration either because they contain data relevant to parapsychology or because they deal with experiences in some way connected with psi phenomena (NDEs, OBEs, reincarnation, etc.). It is not always easy to make a clear distinction between psi and borderline phenomena.

From this work I obtained a weighty list of parapsychological references which were arranged in author-alphabetical order. These references were taken from those scientific journals mostly devoted to a specific discipline. This list includes papers from the early days of parapsychology to the present, although the majority of the references cover the last 27 years (most of the available catalogues and information resources, besides the greater part of collections of parapsychology journals accessible to me, start from this period).

Findings

Closer examination of these references can provide some interesting data and observations. Some representative examples are reported below:

- (a) the total number of references is 775;
- (b) these references are contained in 238 different scientific journals;

libraries and databases. I limited my bibliographical research to the following databases: *Current Contents* (ISI); *Medline* (of the National Library of Medicine of Bethesda); *ESA-IRS* (Frascati, Rome); *Excerpta Medica* (numerous sections). The catalogues of the CNR (Centro Nazionale delle Ricerche), such as the CIPS and ACPN, which contain abstracts from the world's most important scientific journals, were also useful, as was the international catalogue of ISDS. Many of these catalogues are associated with a database. Some of the above resources are also available on CD-ROM.

(c) for the most part these journals belong to the field of psychology, followed, at some distance, by the medical, physical and philosophical journals. This distribution largely reflects the authors' professions;

(d) as far as the country of origin of the journals cited is concerned, those from America are by far the most numerous (56%), followed by those from Great Britain (16%), Germany (11%), Italy (9%) and France (7%). Italian periodicals were to some extent privileged because of my easier access to the original sources. The prevalence of British and American journals certainly reflects the greater number of scientific journals that these countries produce. Also, it seems to reflect the preference of many foreign authors to publish in English to get worldwide attention due to the universality of this language;

(e) the most frequently referenced journals are: *Perceptual and Motor Skills* (43 references); *The Journal of the American Society of Psychosomatic Dentistry and Medicine*, and *Nature* (36); *Psychological Reports* (34); *The Journal of Mental and Nervous Disease* (31); and *Science* (19);

(f) the great majority of journals deal with a single discipline (specific fields of medicine, physics, psychology, psychoanalysis, philosophy, etc.); only a few periodicals, all with a very high scientific standard, have a more interdisciplinary approach (*Science*, *Nature*, *New Scientist*, etc.);

(g) the oldest article I found was by the French Nobel Prize winner Charles Richet in the *Revue Philosophique* (1884);

(h) only the journal *Experientia* (April 1988) published a special issue with ten articles critical of parapsychology. It should also be pointed out that this journal neither before, nor after this issue, has ever again dealt with the paranormal;

(i) it is difficult to establish with certainty how many articles are favourable to parapsychology, how many are not, and how many hold a neutral position, although it is apparent that the first group largely prevails;

(j) the vast majority of authors are American, followed by English, French and Italian contributors;

(k) the most prolific authors are: Tobacyk (20 papers), Persinger (18), Stevenson (13), Ehrenwald and Krippner (12), Servadio and Schwarz (11), Ferrari (10), and Eisenbud (8). These data concern only the first author appearing on each paper.

Discussion

The presence of a parapsychology section in the *Index Medicus* is a first encouraging datum of this bibliographical research. This journal is a widespread and renowned monthly collection of references consulted by almost every researcher in the field of biomedicine. From this finding, a more important second one results: for many years the paranormal has been dealt with by numerous scientifically reputable international journals. This meaningful fact led me to draw up a list of paranormal references.

More than 700 references distributed in 238 different scientific journals are the most significant result of this research. Other interesting considerations can be derived from this list, as described in the preceding section of this paper.

As already pointed out, the list I have obtained from this research appears somewhat heterogeneous. In fact, many of the references are on topics relevant to people's psychic experiences, and not restricted to the core parapsychological topics of ESP and PK. Moreover, I have also included some references about other phenomena, such as reincarnation, which should be dealt with by other scientific disciplines, but the presumed reincarnate often shows knowledge that seems to be derived by clairvoyance. For this reason, cases of the reincarnation type are often considered and analyzed by parapsychologists. On the other hand, some see these seemingly disparate phenomena as belonging to a continuum in which psi phenomena are also included.

This research is far from being complete. Certainly, other sources should be found to add further references to this list (for instance, *Zetetic Scholar* and *Psiline Database System*). The potential search area is very wide. Some current estimates put the total number of scientific journals at 100,000.

I would like to suggest that parapsychologists' efforts in publishing in renowned scientific journals of different disciplines seem to have opened a dialogue across the divide between them and some members of the scientific establishment. This dialogue is often carried out in a very serious and scientific manner. Some of the articles appearing in my list are in fact written by skeptical scientists from various disciplines who frequently offer constructive criticism. Others require additional facts and proof before changing their attitude towards psi research. On the other hand, many parapsychologists may find that their results, if more widely known, would meet with greater acceptance than they do now.

Accordingly, I maintain that this strategy carried out by parapsychologists who publish their results, methods and conclusions in journals of the scientific community with the aim of maintaining this dialogue, must be continued and improved. In this way they might succeed in spreading the knowledge of the problems, methods and achievements of psi research to an increasing number of qualified people.

It is also possible that in the near future this strategy may contribute to a better consideration of parapsychology, if not to its acceptance by the Citadel of Science.

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Parapsychologische Veröffentlichungen in nicht-parapsychologischen Fachzeitschriften

Zusammenfassung: Der Verfasser hat mehr als 700 parapsychologische Literaturangaben aus einer großen Anzahl wissenschaftlicher Fachzeitschriften verschiedenartiger Disziplinen, unter Ausschluß parapsychologischer Zeitschriften, zusammengetragen. Die Veröffentlichung der Forschungen von Parapsychologen in nicht-parapsychologischen Zeitschriften kann nach seiner Auffassung dazu beitragen, die Forschungsergebnisse der qualifiziertesten Psi-Forscher zu verbreiten und bekannt zu machen. Zugleich verweisen einige dieser Literaturangaben aber auf Beiträge nicht-parapsychologischer Wissenschaftler, die häufig ernstzunehmende und konstruktive Kritik vorbringen. Mag sein, daß dieser uneingestandene Dialog zwischen diesen beiden antagonistischen Gruppen in Zukunft zu einer verbesserten Berücksichtigung der Psi-

Forschung, wenn schon nicht zu einer breiteren Akzeptanz, führen kann. Aus dem hier abgedruckten Literaturverzeichnis lassen sich viele statistische Daten und interessante Folgerungen gewinnen.

Publikaties over parapsychologie in niet-parapsychologische tijdschriften

Samenvatting: Uit een groot aantal tijdschriften van diverse wetenschappelijke disciplines, behalve de parapsychologie, werden ruim 700 verwijzingen naar parapsychologische artikelen verzameld. De publikatie van parapsychologisch onderzoek in niet-parapsychologische tijdschriften kan de bekendheid met de resultaten van de best gekwalificeerde psi-onderzoekers in een bredere kring bevorderen. Sommige verwijzingen zijn artikelen van niet-parapsychologische wetenschappers, die vaak serieuze en opbouwende kritiek leveren. Deze dialoog tussen beide groepen zou tot een positievere mening over psi-onderzoek kunnen leiden en misschien tot een bredere aanvaarding. Uit de lijst met verwijzingen kunnen behalve veel statistische gegevens ook interessante gevolgtrekkingen worden afgeleid.

Publicazioni parapsicologiche in riviste non parapsicologiche

Sommario: Da un ampio gruppo di riviste scientifiche di varie discipline, con l'esclusione di quelle parapsicologiche, ho raccolto più di 700 citazioni di articoli parapsicologici. La pubblicazione di ricerche operate dai parapsicologi su riviste non parapsicologiche può, secondo me, contribuire alla diffusione e alla conoscenza dei risultati ottenuti dai più qualificati ricercatori della psi. Di contro, alcune delle citazioni riguardano articoli di scienziati non-parapsicologi che consistono spesso in critiche serie e costruttive. Può darsi che in futuro un tale misconosciuto dialogo tra questi due gruppi contrapposti possa portare a una migliore considerazione della ricerca psi, se non proprio a una sua maggiore accettazione. Dalla lista delle citazioni che viene apposta all'articolo si possono ricavare molti dati statistici e considerazioni interessanti.

Publicaciones Parapsicológicas en Revistas No-Parapsicológicas

Resúmen: Yo reuní más de 700 referencias parapsicológicas tomadas de un gran número de revistas científicas de varias disciplinas, con excepción de las revistas parapsicológicas. En la opinión del autor, la publicación de la investigación de los parapsicólogos en revistas no-parapsicológicas podría contribuir a la difusión de conocimientos de los resultados obtenidos por los investigadores de psi más cualificados. Al mismo tiempo, algunas de las referencias son de artículos de científicos fuera de la parapsicología que ofrecen frecuentemente crítica seria y constructiva. Posiblemente en el futuro este dialogo sin reconocimiento entre estos grupos opuestos nos pueda llevar a una mejor consideración de la investigación psi, si no a una mayor aceptación del tema. Se pueden derivar conclusiones estadísticas y deducciones interesantes de la lista de referencias presentadas en el artículo.

Publicações sobre Parapsicologia em Periódicos Não-Parapsicológicos

Resumo: Foram coletadas mais de 700 referências parapsicológicas de um grande número de periódicos científicos de várias disciplinas excluindo os periódicos de Parapsicologia. A publicação de pesquisa dos parapsicólogos em periódicos não-parapsicológicos pode, na opinião do autor, contribuir para a difusão e conhecimento dos resultados obtidos pelos mais qualificados pesquisadores de psi. Ao mesmo tempo, algumas das referências representam artigos de cientistas não-reconhecido entre esses dois grupos opostos possa levar a uma melhor consideração da pesquisa de psi, ou até mesmo a uma maior aceitação desta. Da lista de referências que aparecem neste trabalho, muitos dados estatísticos e deduções interessantes podem ser extraídos.

Les publications parapsychologiques dans des journaux non-parapsychologiques

Résumé: On a collecté plus de 700 références parapsychologiques extraites d'un grand nombre de journaux scientifiques de diverses disciplines, non-compris ceux parapsychologiques. La publication de la recherche des parapsychologues dans des journaux non-parapsychologiques pourrait, d'après l'auteur, contribuer à la diffusion et connaissance des résultats obtenus par les chercheurs psi les plus qualifiés. En même temps, certaines des références représentent des articles par les scientifiques non- parapsychologues qui offrent fréquemment des critiques sérieuses et constructives. Il se peut que dans le futur ce dialogue non-reconnu entre ces deux groupes opposés puisse conduire à une meilleure considération de la recherche psi, si ce n'est une acceptation plus vaste. On peut dériver nombre de données statistiques et d'intéressantes deductions de la liste des références apparaissant dans cet article.

Postscript to an Experiment with the *I Ching*: How Many Changing Lines?

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Abstract: At least two parapsychological experiments have been conducted using the Chinese book of divination, the *I Ching* (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-93). In both studies the principal dependent variable was the numerical difference between accuracy ratings assigned under blind conditions to an actual reading and a control. This dependent variable was significantly related to different aspects of belief in both experiments, suggesting that use of the *I Ching* can produce ostensible evidence of psi.

Such evidence may be produced in other ways. One of these ways — examination of the number of so-called 'changing lines' — was here applied to sections of a large private collection of readings gathered under real-life conditions. One relatively early segment of the data revealed significantly *more* changing lines than would be expected by chance; recently, however, this number has dropped and been *below* chance to a highly significant degree. It is suggested that experiments with the *I Ching* — whether using a single subject or many — should routinely analyse for the presence of extra-chance deviations in number of changing lines as an indicator that something paranormal may be occurring in the data.

One of the most popular methods of divination makes use of the Chinese book, the *I Ching*, or Book of Changes, which consists of 64 different sets of readings. Probably the first researchers to test the accuracy of this method were Rubin & Honorton (1971, 1972), who presented to subjects under blind conditions actual readings and control readings; although the overall results were non-significant, they found that disbelievers in ESP were significantly more likely to give low accuracy ratings to their actual reading. A similar method was adopted more recently in a replication attempt by Thalbourne, Delin, Barlow & Steen (1992-93): again, overall significance was not obtained, nor any

effect of belief in ESP, but my colleagues and I did find that believers in the efficacy of the *I Ching* were significantly better than disbelievers at distinguishing the reading that was actually meant for them from a control reading that was not. In addition, we obtained a number of interesting significant findings *post hoc*. Thus, both experiments have provided ostensible evidence of psi, even if those findings differed in detail from study to study.

In both of these experiments, the principal dependent variable was the numerical difference in accuracy ratings assigned to the actual and control readings. In this postscript I would like to discuss an additional dependent variable that is available, namely, the number of so-called 'changing lines'. To explain this concept we need to describe some of the mechanics of using the *I Ching*.

When a person consults the *I Ching*, the usual method in modern times is to throw

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three coins a total of six times, recording on each of the six occasions the number of heads and tails observed. These six outcomes are each converted to what is essentially a binary code: certain combinations of heads and tails are assigned so-called 'yin' lines, while the other combinations are assigned 'yang' lines. Given that there are six lines, this results in a binary coded 'hexagram'.

An additional rule is that, should a throw of the coins result in three of a kind, then the resulting line (whether yin or yang) is considered to be a 'changing line'. Changing lines can thus number from zero to 6; their occurrence is associated with their own special readings; and they lead (using a very simple, objective rule) to the construction of a second hexagram, which of course has its own associated reading. Such a two-hexagram outcome occurs in the majority of readings using the *I Ching*.

It can occur, however, that there are no changing lines (that is, that in the six throws, there is *never* a three-of-a-kind), and the six-line structures are then referred to as 'static' (or unchanging) hexagrams. Again, at least in some versions of the *I Ching* (e.g., Wing, 1979), there is a special reading devoted specifically to this static outcome.

The number of changing lines expected by chance is one in four ($P = .25$), or, when multiplied by six, 1.50 changing lines per reading. It is the purpose of this article to present some observations pertinent to this issue, relating to the number of changing lines observed. It is my suggestion that the number of changing lines obtained may deviate significantly from MCE, and that this may, under appropriate circumstances, be acceptable as evidence for a psychic effect.

We do not have available the changing-line data from the Rubin-Honorton experiment, and in the recent Thalbourne *et al.* (1992-93) study, the mean chance expected number of changing lines of 1.50 was approximated: mean = 1.44, $SD = 0.92$, $t = 0.51$, $p = \text{n.s.}$ However, another source of data was available to me. I myself have been using the *I Ching* for a number of

years, impressed by its apparently high yield of accuracy; though not always right or even clear, it appears, for whatever reason, to yield a number of hits well above chance expectation. But this is just a subjective evaluation. Is there any *objective* evidence that psi might have been going on in some way in the course of this series of readings? I have made a consistent practice of recording my question to the *I Ching* and the outcome hexagram(s) in a notebook kept specially for this purpose¹. I now have over 500 readings, gathered over a period of some five years, and am into my third notebook. On two occasions I have examined the number of changing lines obtained in particular sets of the readings, and on both occasions significant deviations from chance were found. In what follows, I shall describe these occasions in detail.

First Set of Observations

In July 1992, when I was halfway through my second personal notebook, I decided, somewhat arbitrarily it is true, to examine the mean number of changing lines for all the 180 readings contained thus far in my second notebook. The mean number of changing lines turned out to be 1.66 ($SD = 1.09$). At first I took this value to be the theoretical MCE, which I was seeking to determine. But having next used mathematical principles to calculate the MCE, and having found it to be 1.50, I could not help noticing from the computer printout that the empirical mean of 1.66 that I had obtained was nearly two standard errors above the true MCE. This positive deviation is in fact significant: $t = 1.98$, $df = 179$, $p = .049$, two-tailed. There was a very slight excess of the occurrence of three heads or three tails, and thus, because this means more changing lines, there was a

¹ A referee asked about my method of throwing the three coins. The answer is that I place them in a small cup, cover the opening with my hand, shake the cup at least a dozen times while bearing in mind the question asked, and I then empty the cup onto a table, so that the coins come out all at once. I doubt whether this method is open to the possibility of skilled coin-throwing.

slight tendency to have more two-hexagram outcomes than chance would predict. The effect was very small, and had not been formally predicted, so it was extremely weak evidence for psi. At the time, I merely made a mental note of it.

Second Set of Observations

A year and a half later, on January 21st, 1994, I obtained a reading (#521) that yielded a static hexagram. It seemed to me at the time that I had been receiving more than my fair share of such hexagrams lately. Accordingly, but again somewhat arbitrarily, I decided that I would re-examine the previous nine readings (that is, back to January 18th, 1994) to make a sample of ten, and obtain the average number of changing lines. Bearing in mind that MCE is 1.50, the mean I obtained was 0.70, and despite the small sample, it was significantly *below* MCE: $t = 3.075$, $df = 9$, $p = .013$, two-tailed.

If this was a real effect going on in the data, then we should probably see it continue in subsequent readings: eight more readings followed before the notebook was full: these, too, gave a mean below expectation (1.25), and though this was not significant in its own right, it *was* significant when pooled with the initial ten: mean = 0.94, $t = 2.701$, $df = 17$, $p = .015$, two-tailed.

Notebook #3 was started on February 20th, 1994, and as of yesterday, March 29th, contained the results of 31 readings. After yesterday's reading I — out of curiosity — made the retrodiction that the mean of these readings would likewise be significantly below chance. This retrodiction was confirmed: mean = 1.03, $t = 3.275$, $df = 30$, $p = .0027$, two-tailed — the most significant batch thus far. Pooling all 49 readings, consecutive from January 18th to March 29th, the mean number of changing lines was 1.00, $t = 4.287$, $df = 48$, $p < .0001$, two-tailed: an extremely significant result.

A frequency distribution for the number of changing lines expected by chance and obtained for the two sets of observations is displayed in Table 1.

In the first set of observations, where, it is to be remembered, the mean was significantly above chance, it can be seen that there were somewhat fewer static hexagrams and a somewhat greater percentage of changing lines in the categories of 2 changing lines and above. The opposite situation pertained in the second set of observations, where significantly below-chance scores were recorded, and where there is not a single case of 3 changing lines or more, but nearly double the expected number of static hexagrams.

Table 1

Frequency distributions for number of changing lines under three conditions.

No. of changing lines	MCE (%)	First set of Observations (%)	Second set of Observations (%)
0	17.8	13.3	32.7
1	35.6	33.9	34.7
2	29.7	32.2	32.7
3	13.2	15.6	0.0
4	3.3	4.4	0.0
5	0.4	0.0	0.0
6	0.02	0.56	0.0

Commentary

In two sets of observations using a large private collection, significant deviations were obtained from the number of changing lines expected by chance. How are we to account for these significant deviations? Some readers will be uncomfortable with the rather arbitrary method of selecting a beginning and an end to the sets of observations, especially given the switch from above-chance to below-chance scoring. According to one point of view, therefore, the results may be due to the luck of the draw, or to capitalising on runs of consistent data in a larger sequence that is actually random. In reply, I did not set up an *N* in advance using data that have not yet been observed because I believe that this would engender a psychological situation at variance with the spirit of the *I Ching*; one would perhaps feel pressured to consult the Book merely for the sake of adding another data-point rather than for the purpose of spontaneous and need-relevant consultation.

But if, on the other hand, it is the case that there have been real psi effects going on in relation to my private collection, then what plausible explanation could there be for the pattern of results found? When one consults the Book it is usually because of a need for information or clarification — often of a kind that cannot be obtained by normal means. One is, after all, information-hungry. More information can be provided by the occurrence of changing lines, each of which has its own mini-reading associated with it. Besides, this situation leads to a second hexagram. Thus, at the time of the first set of observations, I consciously looked forward to obtaining changing lines, to add to the information in the reading. In point of fact, somewhat more changing lines were produced. However, by the time of the second set of observations, I had obtained over 500 readings, and even the changing lines were becoming familiar. I was therefore more interested in the readings associated with the static

hexagrams. And, indeed, more hexagrams of this type occurred. (Persons unfamiliar with the intricacies of the *I Ching* would not be aware of these additional information possibilities, and therefore our 1992-93 experiment might have been expected to do what it did, namely, to turn in a number of changing lines that approximated chance.) If this motivational hypothesis were to be accepted, then we might expect the effect to appear in other carefully recorded private collections, depending on familiarity with the information in the readings. I strongly suggest such an examination, using some defensibly objective means of selecting consecutive readings that does not jeopardize ecological validity.

The *I Ching* seems, at least in the hands of certain users, to be a way to produce ostensibly psychic events of various sorts. This article has suggested a kind of analysis that should be added to the researcher's armamentarium.

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Nachtrag zu einem Experiment mit dem *I Ging*: Wieviele Wechselzeilen?

Zusammenfassung: Mindestens zwei parapsychologische Experimente haben das chinesische Weissagungsbuch, das *I Ging*, verwendet (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-1993). Abhängige Variable in beiden Untersuchungen war die zahlenmäßige Differenz zwischen den unter Blindbedingungen vorgenommenen Richtigskeitseinstufungen für tatsächlich gemachte Readings und Kontroll-Readings. In beiden Experimenten zeigte diese abhängige Variable einen signifikanten Zusammenhang mit verschiedenen Aspekten von Glaubensbereitschaften, was den Schluß nahelegt, daß die Verwendung des *I Ging* mutmaßliche Hinweise auf Psi zeitigen kann.

Derartige Hinweise könnten sich auch auf andere Weisen gewinnen lassen. Eine von ihnen - die Untersuchung der Anzahl sogenannter 'Wechselzeilen' - wurde hier auf Auszüge aus einer umfangreichen Privatsammlung von Readings angewandt, die unter nichtexperimentellen Alltagsbedingungen gewonnen wurden. Ein vergleichsweise früher Datenauszug zeigte eine signifikant *größere* Anzahl von Wechselzeilen als durch Zufall zu erwarten gewesen wäre; in jüngster Zeit ist diese Zahl jedoch rapide gesunken und lag hochsignifikant *unterhalb* der Zufallserwartung. Es wird vorgeschlagen, daß Experimente unter Verwendung des *I Ging* - ganz gleich, ob mit einzelnen oder vielen Versuchspersonen - routinemäßig prüfen, ob die Auftretenshäufigkeit von Wechselzeilen vom Erwartungswert abweicht. Dies könnte ein Indikator dafür sein, daß irgendetwas Paranormales in den Daten steckt.

Opmerkingen bij een experiment met de *I Ching*: hoeveel veranderende regels?

Samenvatting: Met de *I Ching* zijn minimaal twee parapsychologische experimenten uitgevoerd (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-93). In beide gevallen was de afhankelijke variabele het verschil in de nauwkeurigheidsscore die dubbel-blind werd toegekend aan een echte en aan een controle-reading. Dat verschil bleek in beide experimenten significant samen te hangen met diverse aspecten van geloof in het paranormale. Daarom lijkt het gebruik van de *I Ching* bewijs voor psi te kunnen opleveren.

Dergelijk bewijs kan ook anders worden verkregen. Een methode (het aantal zogenaamde "veranderende regels") is hier toegepast op delen van een grote privé-verzameling uitspraken, vergaard onder alledaagse omstandigheden. Een relatief oud deel van de gegevens bevatte een significant *groter* aantal veranderende regels dan volgens toeval wordt verwacht. Kort geleden is dat aantal echter tot sterk significant *onder* de toevalsverwachting gedaald. Het is nuttig in onderzoek met de *I Ching* (zowel bij één als bij veel proefpersonen) altijd na te gaan of het aantal veranderende regels groter is dan de kansverwachting. Dat kan namelijk een indicatie zijn voor iets paranormals in de data.

Poscritto a un esperimento con l'*I Ching*. Quante sono le linee mobili?

Sommario: Sono stati condotti finora almeno due esperimenti parapsicologici con il libro cinese di divinazione *I Ching* (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-93). In entrambi gli studi la principale variabile dipendente era la differenza numerica tra i punteggi di accuratezza attribuiti in doppio-cieco a un responso vero e ad uno di controllo. In entrambi gli esperimenti questa variabile dipendente correlava significativamente con diversi aspetti della credenza, indicando così che l'uso dell'*I Ching* può apparentemente produrre un'evidenza di psi.

Tale evidenza può venir ricavata anche in altri modi. Uno di questi - l'esame del numero delle cosiddette "linee mobili" - è stato applicato a parti di un'ampia raccolta privata di responsi acquisiti in condizioni di vita reale. Un segmento relativamente precoce dei dati ha rivelato significativamente *più* linee mobili di quanto ci si sarebbe atteso per caso; nel prosieguo però questo numero è diminuito ed è finito assai significativamente *sotto* il livello dell'attesa casuale. Si suggerisce che gli esperimenti con *l'I Ching*, sia su soggetti singoli che molteplici, dovrebbero regolarmente analizzare la presenza di deviazioni extracasuali nel numero delle linee mobili come indice di qualcosa di paranormale nei dati.

Posdata a un Experimento con el I Ching: ¿Cuántas Líneas de Cambios?

Resúmen: Al menos dos experimentos parapsicológicos se han llevado a cabo usando el libro chino de divinación *I Ching* (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-93). En ambos estudios la variable dependiente principal fue la diferencia numérica entre evaluaciones de precisión asignadas durante condiciones a ciegas en relación a una sesión verdadera y a una sesión control. Esta variable dependiente estuvo relacionada significativamente a diferentes aspectos de creencias en ambos experimentos, lo cual sugiere que el uso del *I Ching* puede producir aparente evidencia de psi.

Tal evidencia puede producirse de otras formas. Una de estas formas -- la observación de las llamadas "líneas de cambio" -- fue aplicada a secciones de una gran colección privada de sesiones psíquicas las cuales se obtuvieron en condiciones naturalísticas. Una sección de los datos reveló una frecuencia significativa *mayor* de líneas de cambio que lo esperado al azar. Sin embargo, recientemente esta proporción disminuyó *bajo* lo esperado al azar de forma significativa. Se sugiere que experimentos con el *I Ching* -- usando un sujeto o varios sujetos -- deben analizar de rutina por la presencia de desviaciones sobre lo esperado al azar en relación al número de líneas de cambio como un indicador de que algo paranormal puede estar ocurriendo en los datos.

Pós-escrito para um Experimento com o I Ching: Quantas Linhas de Mudança?

Resumo: Pelo menos dois experimentos parapsicológicos foram conduzidos utilizando-se o livro chinês de adivinhação, o *I Ching* (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-93). Em ambos os estudos, a principal variável dependente foi a diferença numérica entre as taxas de precisão apontadas sob condições encobertas para uma verdadeira leitura e um controle. Esta variável dependente foi significativamente relacionada a diferentes aspectos da crença em ambos os experimentos, sugerindo que o uso do *I Ching* pode produzir uma aparente evidência de psi. Tal evidência pode ser produzida de outros modos. Um desses modos é o exame das várias chamadas 'mudanças de linhas' que foi aqui aplicado a seções de uma grande coleção privada de leituras reunidas sob condições de vida real. Um segmento relativamente anterior dos dados revelou significativamente mais linhas mutantes do que seria esperado pelo acaso; recentemente, no entanto, esse número tem baixado e estado abaixo do acaso em um grau altamente significativo. Sugere-se que o experimento com o *I Ching* utilizando-se apenas um sujeito ou muitos poderia comumente analisar a presença de adivinhações além do acaso em várias das linhas de mudança como um indicativo de que algo paranormal pudesse estar ocorrendo nos dados.

Post-scriptum à une expérience avec le *I Ching*: Combien de lignes changeantes?

Résumé: Au moins deux expériences de parapsychologie ont été conduites en utilisant le livre chinois de la divination, le *I Ching* (Rubin & Honorton, 1971, 1972; Thalbourne, Delin, Barlow & Steen, 1992-93). Dans ces deux études la variable dépendante principale était la différence numérique entre des évaluations d'exactitude attribuées dans des conditions aveugles à une lecture véritable et une contrôle. Cette variable dépendante était significativement liée à différents aspects de la croyance dans les deux expériences, suggérant que l'utilisation du *I Ching* peut produire une évidence tangible du psi.

Une telle évidence peut être produite d'autres façons. Une d'elles -- l'examen du nombre des dites 'lignes changeantes' -- a été appliquée ici à des sections d'une vaste collection privée de lectures rassemblées dans des conditions de vie réelle. Un des relativement premiers segments de données a révélé significativement *plus* de lignes changeantes que ce qu'on attend par le hasard; récemment, toutefois, ce nombre a chuté et a été *inférieur* au hasard de façon très significative. On suggère que les expériences avec le *I Ching* -- qu'elles utilisent un ou plusieurs sujets -- devraient être analysées couramment afin de détecter la présence de déviations du hasard dans le nombre de lignes changeantes comme indicateur que quelque chose de paranormal a pu arriver dans les données.

Book Review: *Science, Paradox, and the Moebius Principle*

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A review of *Science, Paradox, and the Moebius Principle: The Evolution of a "Transcultural" Approach to Wholeness* by Steven M. Rosen. Albany, NY: State University of New York Press, 1994. Pp. xx + 317. Hbk: ISBN 0-7914-1769-7 Pbk: ISBN 0-7914-1770-0.

This is a compilation of the author's essays that deal, broadly speaking, with the nature of reality. Steven Rosen is unusually well versed in a variety of disciplines that could be regarded as relevant including mathematics, cosmology, theology and religion (of both the Western and Oriental traditions), Heideggerian philosophy and Jungian psychology. It is in Part II of this tripartite volume that the author brings his learning to bear on the problems posed by parapsychology. He does not discuss any particular cases of psi phenomena, however; what concerns him rather is the kind of world view in which parapsychology might feel at home which is manifestly not the case in our existing science-dominated culture.

The author does me the honour of citing my paper 'Parapsychology and Radical Dualism' as a jumping-off point for expounding his own metaphysic which he calls - with a straight face - 'Non-Dual Duality' or 'Dualistic Monism'! He cites the four possible positions that I listed concerning the relationship of mind to matter: materialism, idealism, physicalism and radical dualism but denies that these are exhaustive. There is, he urges, a *fifth* possibility, his Non-Dual Duality. Now, it is clear to me what evidence or considerations would impel me to forsake radical dualism in favour of one or other of the three alternatives that I discuss. But, alas, even after reading this book, it is far from clear to me what would convince me that this 'non-dual duality' was, indeed, the answer to an understanding of psi. Nor does the author

try to argue his case. Rather, he heaps paradox upon paradox hoping this will eventually wear us down and make us yield to his rhetoric. Teasing, paradoxical figures, such as the Necker Cube, the Moebius Strip, and the Klein Bottle are offered by way of illustration and the chapter includes two striking Figures by the Dutch graphic artist, M.S. Escher, always popular with lovers of paradox of all kinds.

From my reading of this book, it is clear to me that its author is a mystic. Mystics, notoriously, distrust distinctions and adore wholeness. Rosen cannot forgive Descartes for offering criteria for distinguishing between mind and matter (which, to this reviewer, represents perhaps the most important advance in the whole history of philosophy). He is avid to heal the breach that Descartes bequeathed us and restore us to a wholesome wholeness. Discussing Rhea White's invitation to parapsychologists "to *enter into* psi rather than pretend merely to be studying it from an external perspective" (p.181, Rosen's italics), he proposes "a style of doing philosophy in which the philosopher cannot be restricted to the axiomatic, discursive, logico-empirical method".

I am confident that his appeal will not go unheeded by those who share his sentiments.

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Book Review:

Healing Research: Holistic Energy, Medicine and Spirituality. Volume 1

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A review of Volume 1 of *Healing Research: Holistic Energy, Medicine and Spirituality*, by Daniel J. Benor. Deddington, Oxon and Munich: Helix Editions Ltd. Pp. 366. £29.60, hbk. ISBN 1-898271-21-6.

Every reader of this journal will be aware of the growing popular demand for a form of response to disease and human frailty that depends not on access to scientific medicine, but on inner and esoteric forces. This demand for an everyday explanatory model that takes into account such forces can be explained in a multitude of ways. But what is clear is that at some level in the Anglophone world, confidence in scientific medicine has been shaken during the past thirty years. The historical consequence of this has been the emergence of an expanding field of healing 'therapies' that lie outside of the orbit of conventional medicine, but which are often explained by their practitioners in scientific — if not scientific — terms that rely on a body of ideas about 'energy fields' and similar devices.

That anomalous events do occur is well established. But as Daniel Benor observes at the beginning of his account, the reality of 'healing' therapies that use apparently unexplained (and inexplicable) energies or other forces is contested vigorously by the wider medical and scientific establishment. Benor's project in this book is to review and present the evidence that relates to the deployment of these healing energies. This is the first volume of a series intended to explore this evidence across the whole gamut of 'healing' phenomena. Benor makes his allegiances clear at the outset, praising those 'modern day Galileos who

dare to question the credos of the established Newtonian scientific community' (p. 13), and contrasting their efforts with the myopic and narrow-minded tendencies of the medico-scientific establishment. It is apparent that the book is written for a general audience, and is not intended to contribute directly to academic debate.

The structure of this book reflects the diversity of both the phenomena under review and of individuals whose work involves such phenomena. Broadly speaking, the book falls into two parts. The first of these explores the experiences of healers themselves, attempting to grasp what healing is, and what it means to be a healer. The second part of the book refers directly to psi phenomena and to controlled and uncontrolled studies of these phenomena in action. However the structure and style of the book makes it quite difficult to grasp the evidence that Benor wishes to present in any kind of unitary way. This is because he summarises the work of individual healers, projects or studies rather than reviewing particular topics or controversies. In consequence, the presentation of material on healers' own explanatory models of their activities is fragmentary: Benor presents synopses of accounts of healers' descriptions of their work, often drawn from journalistic sources that are themselves fragmentary. For the reader, this means that we actually

come to know very little about what it means to be a healer or to do counselling.

If the structure of the book means that it is difficult to follow, the material that this structure frames also presents some problems. Individual healers' accounts of the practices and processes in which they are involved inevitably take an ambiguous form. These accounts are difficult to authenticate and the diagnoses suggested by healers and their clients are often doubtful. It is important to note that in the case of illnesses consequent on somatisation processes, there is no reason for a 'psi' healer to be any less effective than a conventional physician. Disease that manifests itself physiologically but is of psychological origin is relatively common and has been well described. What matters in such cases is the confidence that the patient has in the explanatory model and technique employed by the healer.

While in the first part of this book Benor is concerned with the experiences of individual healers, in the chapters that follow he reviews attempts to subject healing to rigorous experimental investigation. Once again, he summarises individual studies and projects rather than reviewing topics and problems. This means that the methodological and conceptual problems that are involved in such work emerge in a haphazard way, and sometimes not at all.

The conventional response to claims about healing is to assume that it relies on suggestion and that success reflects the client's anxiety to be healed of what may often be a disorder of psychological origin. This is not a criticism that can be levelled at research that explores the impact or otherwise of 'healers' on non-human subjects. Benor reviews work on enzymes, cell cultures, yeasts and fungi, bacteria, and complex plants and animals, as well as with human subjects.

Much of the work reviewed is unreplacated (or unreplicable) and Benor gives work of little scientific merit equal prominence with work that has been rigorously thought out and conducted. In discussing this material, however, Benor takes a line

that is really very confusing indeed. At the end of each summary he comments on the study in question from the perspective of (a) a Type I error and (b) a Type II error. What this means for the reader is that it is often difficult to draw a sensible conclusion from the summary. For example, after summarising the results of a paper by Haraldsson and Thorsteinsson¹, Benor comments:

A. Significant increases in yeast growth were demonstrated in healing. The finding that practitioners of healing achieve better results than non-practitioners is common.

B. This report is too brief to permit proper evaluation (...) Many questions can be asked: Were precautions taken to ensure similar temperature for control and experimental tubes? (p.147)

Commenting from the 'vantages of possible Type I and Type II errors' (p. 126) is an eccentric strategy. There must be other, more helpful, standpoints from which the reader can be guided to judge work of this kind.

My concern, as a reviewer, has been to point to the ways in which the structure of this book militates against the material it presents being understood and appreciated in any kind of systematic way by the reader. It is clear that there are also some substantial misunderstandings within Benor's presentation of this material itself. For example, his discussion of the nursing literature relating to 'therapeutic touch' neglects the extent to which debates about the value of this kind of work are not about the transmission of esoteric energies, but about the psychological benefits of patients holding nurses' hands or engaging in other kinds of physical contact that break down the sterile and dehumanising kinds of social interaction that take place in the surgical ward and intensive care unit.

¹ Haraldsson, E. and Thorsteinsson, T. (1973) Psychokinetic effects on yeast: An exploratory experiment. In W.G. Roll, R.L. Morris and J.D. Morris (Eds), *Research in Parapsychology 1972*, pp. 20-21. Metuchen, NJ: Scarecrow Press.

Equally, readers who take too seriously the assertion that healing has attained some degree of acceptance within the British hospital system (p. 92) might well experience a strong rebuff if they attempt it there.

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Book Review:
I Fantasmi dei Morenti: Inchiesta su una Credenza
[Phantasms of the Dying: A Survey of a Belief]

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A review of *I Fantasmi dei Morenti: Inchiesta su una Credenza [Phantasms of the Dying: A Survey of a Belief]* by Graziella Piccinini and Gian Marco Rinaldi. Editrice Il Cardo, Viareggio (LU), Italy, 1990. 141 pp. L 18500.

Death, and closeness to it, has traditionally been associated with accounts of apparitions, hauntings and general ESP experiences. This is clear in such classic studies as the well known *Phantasms of the Living* (Gurney, Myers & Podmore, 1886), as well as in the later case collections of Bozzano (1923), Flammarion (1920-1921/1922-1923), Rhine (1981), and Stevenson (1970). However, nowadays there are not many studies of this sort in the parapsychological literature. The study reviewed here, however, is a welcome exception to this current lack of interest on the subject.

In this book Italian parapsychologists Graziella Piccinini and Gian Marco Rinaldi present the results of a large scale study conducted in South Tyrol, Italy, to find cases of people reporting a variety of experiences that related to the death crisis of someone far from the experient, when the experient had not been informed of that person's death. The Italian researchers did door-to-door canvassing in the city of Bolzano, interviewing the available and willing adults of the household about the incidence of the above mentioned experiences. On occasion corroborating testimony was also sought and collected, but generally it was not considered 'important to supply corroboration to the main interview' (p. 9).

The authors accumulated a large collection of 960 cases, but this number includes

experiences that were not death-related. The death-related collection consists of 500 cases. Of this, 360 are first hand accounts, and it is these that are emphasised in the book. The examples printed in the book include only 264 experiences (including 22 that are counted twice because they consisted of two different phenomena). Out of the first hand cases the authors found about 100 that coincided with death ('coincidence' being defined as occurring within 24 hours before or after the death of the relevant target person) and 140 cases where the experience preceded death by more than 24 hours.

The book contains several chapters presenting the different claims associated with the death of someone far from the percipient at the time. Visual apparitions are the first topic discussed and described in detail. Piccinini and Rinaldi argue that the basic characteristics of their visual apparitions are: the figure is human, the figure is alone, it interacts in realistic ways with the environment, it appears only briefly, it is solid and life-like, has normal clothing, and rarely speaks. This 'apparitional profile' is very similar to those presented by previous authors such as Tyrrell (1942/1953).

The study also includes auditory manifestations such as voices and sounds (e.g., raps), in addition to impressions, dreams and physical phenomena such as clocks stopping, pictures that fall down, the movement of objects, and the opening of

doors and windows. Such death-related physical incidents have been discussed in the past by Bozzano (1923), Flammarion (1920-1921/1922-1923), and Rhine (1963), but studies of these phenomena have not been published in recent years.

Piccinini and Rinaldi's data is not always precisely reported in terms of percentages, and statistical tests are not used to assess the differences between reported proportions, or between proportions alluded to without presentation of values. Nonetheless, their findings are interesting and important.

They classified the experiences as those external to the percipient (visual apparitions, physical phenomena) and those that were internal (impressions, dreams). In their words:

There is a marked difference between both groups. First, the external experiences refer almost entirely to grave and important events (death and crises), whereas the internal tended to refer to banal events (with which we are not concerned here). Second, the external events occurred only in close temporal coincidence with the event, whereas the internal ones anticipated them by a relatively long period of time (p. 11).

Most of the 500 death-related experiences related to persons close to the experiencers. These included close family members (52%), extended family members (26%), friends (12%), and acquaintances (9%). Some type of action was taken by 76% of people as a result of their experience. Most of the cases showing strong action (32% of the total 500) involved dreams and intuitions related to 'real time' events rather than happening before or after the event in question. In addition, it was noted that 51% of the cases concerned a sudden, unforeseen death, whereas 48% were expected in some form (e.g., accidents, illness).

Other interesting findings include the observation that 'the content of the information varies according to the form of the experience; it is at its maximum in realistic

dreams, whereas it is completely null in sounds and in physical phenomena' (p. 126). This information includes such things as the identity of the dying person, the nature of the event happening to the dying person, and other, more peripheral information.

The authors also contrasted the features of first hand and second hand cases, as well as those of old and recent cases (no length of time specified). Overall, there were no differences regarding characteristics such as the content of the information, the time correspondence between experience and event, and the frequency of unexpected deaths. However, they report that the most impressive forms of experience, such as visual apparitions and physical effects, were more frequent in second hand cases than in first hand ones. Based on the general lack of differences in case features, the authors argue that the distortion expected from second hand sources is not present in the data. Nonetheless, the fact that the more dramatic manifestations were of the second hand class is consistent with the usual criticism of this type of testimony regarding selective reporting or memory distortions.

Piccinini and Rinaldi discuss different explanatory models of the reporting of the experiences at the end of their monograph. They do not favour explanations based on memory problems and distortions in the retelling of the experiences. Nonetheless, they do not commit to any particular explanation.

Unfortunately the results of the study are not compared to those recorded in the literature on the subject, but one of the authors informed me that they plan to discuss their results in a later publication in terms of how they compare to the findings of other studies. In general, it is clear that the cases collected in this work are very similar to those reported by the above mentioned researchers, both in terms of the death theme and in terms of the features of the phenomena. Previous studies also show that most experiences relate to close family members. It is also interesting to note that Piccinini and Rinaldi report almost the

same percentage of cases of sudden death (51%) as that reported by Stevenson (1982) in his analysis of those cases from *Phantasms of the Living* that were described in sufficient detail to be classified as sudden (52.8%).

The authors' finding to the effect that there were more dramatic manifestations in second hand cases seems to contradict previously published findings with apparitions reported in hauntings (Alvarado & Zingrone, 1990). In this report it was noticed that haunting cases with apparitions had *better* testimony than those without apparitions, a finding that may be interpreted as evidence that the more dramatic cases are not necessarily the weakest one in terms of evidence. However, these studies are not strictly comparable due to the different types of cases surveyed and the different methods used to assess evidential value.

Another important comparison is to Schouten's (1979, 1981, 1982) important reanalyses of previously published case collections. Whereas Piccinini and Rinaldi point out that the taking of strong action was associated with dreams and intuitions, Schouten found consistent evidence in his three studies that intuition cases were associated with a higher frequency of action than dreams and other forms of experience. From the way the authors report their work it is not clear whether intuitions had a higher frequency than dreams in terms of the taking of action. The issue also seems to be related to Rhine's (1951, 1962) studies of conviction and the forms of the experiences in question.

If the authors' claim that realistic dreams were better in terms of conveying the content of the event refers to the number of details of the cases, then their findings should also be seen in the context of Schouten's. In his studies, dreams had a larger number of details than other forms of experience. In addition, Schouten reported that non-serious events had more details than those events that related to death.

Piccinini and Rinaldi's study is not only a reminder that these death-related cases

are still reported and experienced by people around us in modern times, but also that there is much that we can do in terms of research in addition to showing that they are reported. At this point in parapsychology, we need to move beyond the reporting of cases without some sort of attempt to understand their occurrence (on this issue see the discussion by Watt, 1994). Piccinini and Rinaldi's book illustrates the study of features of experiences in terms of their interrelationship with other features of the experience and with outside variables. As such, their approach will be useful to learn more about the nature, function and manifestation of veridical death-related experiences. One hopes that the authors will publish a more technical report at a later date that includes precise information on the proportion of cases in question, with statistical analyses to assess the differences they found, in a way that follows up the work of previous researchers.

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Comment:

Tony Lawrence comments on the article 'A Further Attempt to Separate the Yins from the Yangs: A Replication of the Rubin-Honorton Experiment with the *I Ching*' by Thalbourne, Delin, Barlow & Steen (1992-1993).

Given the success of Michael Thalbourne's Australian Sheep-Goat Scale (see Lawrence, 1993) as a means for separating high psi-scoring sheep from low psi-scoring goats, and its latest development into an 18 item visual analogue scale (Thalbourne & Delin, 1993), I was most interested to find Thalbourne, Delin, Barlow & Steen extend the scale's use to a replication of the Rubin-Honorton (1971) paper on the *I Ching*. The general pattern of results found by Thalbourne *et al.* is most impressive, and certainly stands in need of replication. However, the results of this study may be viewed in an even more positive manner than was reported in the original paper.

Specifically, Thalbourne *et al.* report on p. 17 that while their analysis of the general sheep-goat effect and its correlation with mean difference score for reading relevance:

... was in the right direction, it failed to reach significance: $r = +.16$, $p = .13$. Thus, the results of the Rubin-Honorton study were not duplicated.

Now, if one wants to take a significance testing approach to things then yes, there is a failure to replicate the Rubin-Honorton study (where they found a significant t for the difference between mean difference scores for sheep and goats; $t[36] = 2.22$, $p = .016$). However, given that meta-analyses stressing *effect size estimation* have shown such glowing results I thought I would calculate the difference between effect sizes using the formula given by Rosenthal (1991; Formula 4.2, p. 63) for the comparison of two effect size estimates using the

Fisher z_r measure (calculated as $\log_e[(1+r)/(1-r)]$).

The first step then was to convert the Rubin-Honorton t ($= 2.22$) to a Pearson r . This gives $r = 0.347$. This is then converted to a Fisher z_r to give $z_r = 0.362$. Now Thalbourne *et al.* already have their Pearson r ($= 0.16$) which converts to a Fisher $z_r = 0.161$. So using Rosenthal's (1991) formula:

$$Z = \frac{z_{r1} - z_{r2}}{\sqrt{\frac{1}{N_1 - 3} + \frac{1}{N_2 - 3}}}$$

gives the result $Z = 0.911$, $p = 0.181$, which is not significant.

Thus, as far as effect size estimates go, the Thalbourne *et al.* study is not significantly different from the original Rubin-Honorton result!

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Comment:

Daniel Benor comments on the article 'Psychic Healing and Complementary Medicine', by Sybo Schouten

Sybo Schouten is to be complimented on his survey of studies on psychic healing and complementary medicine¹. It is clear that there is a growing population of clients for these treatments. In the US last year nearly as many dollars were spent on consultations with complementary therapists as were spent on visits to doctors and hospitals (Eisenberg *et al.* 1993). Schouten's confirmation that this is a world-wide phenomenon is most helpful.

Schouten wisely points out that subjective improvement ought to be given serious consideration in providing treatment and in assessing outcome. He again does an excellent job of summarising evidence from studies in many countries which show that subjective satisfaction with psi healing is very high, despite the fact that objective improvements might not be demonstrable.

I must say, however, that I perceive and interpret the evidence for psi healing and understand placebo effects very differently from Schouten.

1. If one wishes to explore whether psi healing can be more effective for illnesses than a placebo, the studies of healing effects on injured or diseased plants and animals seem relevant.

There are 18 well performed and well reported studies of plants (Barrington, 1982; Barros *et al.*, 1977; Grad, 1965, 1967; Scofield & Hodges, 1991; Lenington, 1979; Macdonald, Hickman & Dakin, 1976; Miller, 1977; Nicholas, 1977; Pauli, 1973; Saklani, 1988, 1990, 1992; Solfvin, 1982; Wallack, 1984). In many of these the plants were injured by immersion in saline solution and the healing demonstrated signifi-

cantly enhanced growth over control injured seeds which did not receive healing. In some cases healing was given directly to the plants, but more often it was given to the water with which the plants were watered. Significance of effect ranged from .05 to .0001 in the various studies.

There are 14 studies on anaesthetised mice studying how healing influences their waking from anaesthesia (Schlitz, 1982; Watkins & Watkins, 1971; Watkins, Watkins, & Wells, 1973; Wells & Klein, 1972; Wells & Watkins, 1975). All 14 studies demonstrated significant acceleration of waking times with healing (p values ranged from .05 to .0001).

There are seven well performed and reported studies of healing on animals (Grad, 1965; Grad, Cadoret, & Paul, 1961; Onetto & Elguin, 1966; Snel & Hol, 1983; Solfvin, 1983). Significant effects were achieved with healing (p from .05 to .0001).

2. One of the most impressive studies of healing in humans is that of Byrd (1988). Prayer healing was sent in a double blind study of patients hospitalised in a coronary care unit. Patients were randomly assigned to receive healing (192 patients) or not (201 patients). Those receiving healing had significantly less need for intubation/ventilation ($p < .002$), antibiotics ($p < .005$) or diuretics ($p < .05$); and had fewer cardiopulmonary arrests ($p < .02$) or instances of pneumonia ($p < .03$).

3. Schouten ignores well run and well reported studies of healing on enzymes, on cells in laboratory culture, on accelerating and retarding growth of bacteria and yeasts.

¹ Schouten, S.A. (1992-1993) Psychic healing and complementary medicine. *European Journal of Parapsychology*, 9, 35-91.

All of the above studies (with the exception of Saklani, 1992) are reviewed in detail in Benor (1993a).

These studies provide a body of evidence for a psi effect of healing that I find most convincing.

One must wonder why Schouten would choose to ignore this evidence, especially the study of Byrd which was certainly available to Schouten in the summary of research he cites (Benor 1990) if he was not able to obtain it from the prominent medical journal in which it was published.

4. In the abstract Schouten states: 'In the case of many complaints, it is also unclear how a possible paranormal effect could result in an improvement of health (p. 35).'

From the considerable body of healing research, most of which Schouten deliberately ignores, one may postulate a few of the following mechanisms whereby healing may be effective, considered in greater detail elsewhere (Benor, 1992, 1993d):

a. Healing may selectively enhance or retard growth of particular cells in the body, thereby assisting the body to retard growths of infecting organisms and cancers.

b. Increasing haemoglobin levels would improve oxygenation of tissues.

c. Reductions in blood pressure are health-promoting.

d. Reductions in pain and anxiety reduce production of stress hormones and reduce blood pressure.

5. Placebo effects are self-healings. There is an enormous body of research showing that people have abilities to heal themselves through affirmations, suggestion, hypnosis, relaxation, meditation, visualisation, and group support/therapy (Benor, 1993b).

Schouten clearly favours this mechanism to explain the effects of psi healing. He suggests that people who visit healers may visit several healers before they obtain positive results. This would allow them to find a person with whom they are compatible or to whose suggestions they are more

susceptible. This is an astute observation, with which I can fully agree.

Many people who seek complementary therapies do so because they feel that their doctors do not take (or have) sufficient time to speak with them. On this basis alone the complementary therapists may have an advantage in suggesting improvement that would lead to self-healing.

Self-healing alone, however, does not explain the effects noted in points 1 to 3 above, nor in the studies of psi healing cited by Schouten that showed significant effects.

See also (9).

6. Schouten cites collections of studies (Everson & Cole, 1966; Kent *et al.*, 1989) on 'spontaneous remissions'. These are second-hand reports for the most part of studies where a remission without conventional medical explanation was recorded. In most of the reports there was no attempt made to clarify whether any unconventional explanation might be proposed or supported. Ikemi and colleagues (1975, 1986) found that in 27 of 28 'spontaneous regressions' of cancer there were dramatic changes in outlook on life or existential shifts around the time of the remissions.

7. Schouten omits mention of the statistical significance of most of the psi healing studies he cites. This minimises the positive impression one would obtain of the effects of psi healing demonstrated in these studies.

8. Schouten feels that the model of Knowles (1954) for testing healing is a good one, despite the fact that Knowles could not demonstrate an effect with his method. Knowles produced two or four acid burn wounds on each volunteer and directed healing to accelerate the rate of healing of one wound over the rate of healing of the other wound or wounds.

It is my experience in researching and giving healing that healing works on the whole healee rather than on any particular part chosen by a healer or researcher. For instance, it is not uncommon for healees to

report that a problem they did not even mention to the healer improved, whereas the problem that brought them for the healing remained unchanged. To expect one of several wounds in one person to improve more than another is not the way healing usually works.

Having said this, I must report an exception to this observation. After having written this, I met an orthopaedic surgeon who gives Reiki healing who related the following: he was able to give healing selectively to one of the feet of each of three children on whom he had performed surgery for clubbed feet on both of their feet. There was dramatically faster healing in all three of the treated feet.

Schouten's assertion that the study of Wirth (1990) is similar to that of Knowles is in error. Wirth compared wound healing in one group of people to wound healing in another group, which allowed the psi healing to demonstrate its effects.

I find it interesting that (in contrast with the experience of psi healing) under hypnosis a person may influence one part of his body selectively over another part for self-healing, anaesthesia, etc.

9. I believe that Schouten's efforts at sorting out which effects might be attributable to suggestion and which to psi healing are worth pursuing further.

It is my impression from over ten years of practice of psychotherapy combined with spiritual healing, from researching the literature extensively, and from speaking with many others who combine psi healing with counselling/psychotherapy, that the combination of the two appears far more potent than either alone.

I believe that the same applies to the combination of suggestion and psi healing. This might explain why more marked experimental effects may sometimes be found when subjects are aware that healing is being given than when they are not aware of this.

One must acknowledge that there is also evidence (as in points 1 to 3 above) that at times healing may work independently of suggestion.

10. I feel that the beliefs and attitudes of practitioners and experimenters may influence their perceptions, their practices and outcomes of their research.

For instance, I believe that spirituality is a vital component of healing and have come to feel that I am practising spiritual rather than psi healing. The difference is more than semantic (Benor, 1993c). I believe that the inner knowing that is typical of psi perceptions is as valid as linear knowing. One must of course exercise linear reasoning and consensual comparisons to assure oneself one is not projecting or fantasising these inner realities.

It may be difficult for parapsychologists to carry on meaningful discussions when their various basic assumptions about the phenomena they are considering differ substantially.

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Style Rules for *EJP*

In order to make the production of *EJP* more efficient, we are clarifying our style rules for authors. Until recently, we have not described these rules in any detail; indeed, we have been evolving our style since *EJP* came to Edinburgh for its production. However, we have now adopted the style rules of the British Psychological Society, and we will be implementing this policy fully with our next issue.

The BPS rules are similar to American Psychological Association rules, and most people who have published in any journal will already probably be following the majority of the BPS rules without realising it. However, there are some aspects of authors' manuscripts that we very frequently have to edit in order to make them ready for publication, and so we ask authors who submit work to us in future to pay particular attention to those points listed below.

Statistics

When reporting statistics, the statistical variable is italicised, *p* (for probability) is italicised, and there is a space character on either side of any equality (=) or inequality (<, >) sign. Abbreviations are not used for the tails of the distribution being examined in the statistical test (e.g., 'one-tailed', not '1-t', etc.). A zero is used before a decimal point when the number is less than one, except when the number cannot be greater than one (as is the case with probability values and correlation coefficients, for example). If a number has five or more digits on either side of the decimal point, a space rather than a comma must be used to separate the digits, according to the European convention (i.e. 1432 but 23 456; 12.3265 but 43.567 890).

For example: 'The use of independent *t* tests indicated a superiority of condition A over condition B ($t(40) = 2.16, p < .025$, one-tailed)'.

References

The most common problem we have encountered with references is that references are missing from the reference section that are present in the text, and/or references are missing in the text that are present in the reference section. Dates of publication and spelling of authors' names are not infrequently inconsistent between the text and the reference section.

Concerning how to cite references in the text, most of our problems are encountered with multiple references, and papers with multiple authors. When citing more than one paper, the papers should be listed in chronological order if only one author's papers are involved (Smith, 1980, 1983, 1987), and in alphabetical order for multi-author lists (Abbot, 1994; Delgado, 1981; Zachariah, 1912). When a paper has more than one author, their names should be linked by an ampersand (Rao & Percival, 1987). If a paper has three or more authors, list all the authors when the reference is first cited, and thereafter use the *et al.* form (note the period for the abbreviation *al.*, and that *et al.* is italicised). The presentation format of references in the references section can be seen in any of the papers in the current issue; however, to save authors time by bringing ourselves into line with both BPS and APA guidelines, please note that in future issues, the date given in a reference will be followed by a period after the closing parenthesis ('Chang, J. (1982). The effects of...'). Finally, when giving references for edited books, it should be noted that the abbreviation 'Ed.' (for 'editor') is followed by a period: the contraction 'Eds' (for 'editors') is not.

Thank you in advance for your cooperation. If you would like a copy of the British Psychological Society's succinct (32 page) and inexpensive *Style Guide*, you can obtain it by sending £3.50 to the BPS at St Andrew's House, 48 Princess Road East, Leicester, LE1 7DR, England.

Call for Papers for the 38th Annual Parapsychological Association Convention

The 38th Annual Convention of the Parapsychological Association will be held from Friday, August 4th through Tuesday, August 8th, 1995, at the Omni Durham Hotel & Durham Civic Center in Durham, North Carolina, USA. For information regarding registration and hotel accommodations, contact Mrs. Laura Knipe at P.O. Box 797, Fairhaven, MA, 02719, USA.

Anyone may submit a paper for consideration by the Program Committee. Papers may be clinical, experimental, historical, methodological, philosophical or theoretical, or may report field work or case studies of any relevant kind. The Program Committee will not consider proposals for research which has not yet been carried out, nor will the Committee consider papers published elsewhere prior to the Convention. All submissions must be in English.

Papers should be the equivalent of full-length journal articles and should adhere to the style of the *Publication Manual of the American Psychological Association* (4th edition), or the format used by the *British Journal of Psychology*. If submitted on paper, the first sheet must contain a centred title, author(s) and affiliation(s) followed by an abstract of no more than 200 words. A running head that does NOT contain the name of the authors, but only a short title of the paper, should be printed at the top left hand corner of every page. The paper must be double-spaced, printed on one side only of 8.5 inch by 11 inch paper with minimal margins of one inch on all sides, or on A4 paper with one inch top, left and right margins, and a two inch bottom margin. The text may not exceed 13 single-spaced pages with no more than 4 additional pages for figures, tables, and references. Four copies of each submission are required.

If submitted on disk or by electronic mail, the first page must contain a centred title, author(s) and affiliation(s) followed by an abstract of no more than 200 words. Running heads should NOT contain author names but only a short title of the paper. The text of the paper, and the text included in figures, tables, and references, should not exceed 7000 words in total. All disk and/or electronically-submitted text must be in DOS-compatible formats, with preferred text formats being ASCII, Extended ASCII, Microsoft Word, Word Perfect, Wordstar or Xywrite. Preferred figures formats include pcx, cgm, tiff, or eps. (Inquire about the acceptability of all other formats before submission.) One paper copy of all electronic submissions must be supplied as a double-check on the electronic submission and for the use of Program Committee members who are not on-line. Notification that such a paper copy is on the way is acceptable if the electronic submission is received by the submission deadline.

After review and acceptance all author(s) will be strongly encouraged to submit the final version in electronic form. All submissions should contain information about any audio-visual aids that will be needed. If there are multiple authors, indicate which author will make the presentation. In absentia presentations will be allowed only in exceptional circumstances.

Posters are papers or other materials presented on poster board in an installation separate from the convention floor. Poster sessions are especially appropriate for short papers, that are particularly amenable to visual displays (e.g., demonstration of equipment or techniques) and highly technical papers that cannot be communicated effectively in a brief lecture format to a general scientific audience. Authors who want their papers presented in a poster session should indicate this at the time of submission, with particular attention paid to a description of the visual materials that will make up the content of the

presentation. In addition, The Program Committee may, at its discretion, designate other accepted papers for presentation in a poster session. Poster session papers will be included in the *Proceedings of Presented Papers* and in *Research in Parapsychology*, the published proceedings of the Convention. Proposals for posters should be prepared according to the instructions for full papers listed above. Photocopies of photographs to be included in visual presentations are acceptable with the submission.

Only Members and Associates of the Parapsychological Association may propose a symposium, panel discussion, or workshop.

Symposia are formal presentations by participants on related topics. Proposals for symposia must include a summary sheet indicating title, chairperson, participants, order of presentation, and proposed time allotments, up to a total of 90 minutes, including discussion periods. Symposia submissions must include full papers from each of the participants included in the symposia and prepared per the instructions listed above, with the stipulation that one method (either print or electronic) should be used for all papers included in a single symposium submission.

Panel discussions are informal roundtable discussions intended to maximise spontaneous interactions of panellists and the audience. A total of 90 minutes, including discussion period, is allocated for panel discussions. A minimum of four participants should be proposed, with time apportioned among them and a substantial discussion period. Proposals for panel discussions should include a summary sheet that lists the panel title, chairperson, panellists, order of presentation, and time allotments as well as abstracts of 500 words from each panellist. Panel discussion proposals may be submitted in print or by electronic means, prepared according to the instructions listed above, with the stipulation that one method should be used for all materials included in a single panel submission.

Workshops are informal discussions of specific topics. Proposals for workshops should include a summary sheet listing the title, chairperson, other presenting participants, type of activity, and a description of the intended content of the workshop, not exceeding 500 words. Workshop proposals may be submitted in print or by electronic means, prepared according to the instructions listed above.

The deadline for the receipt of all submissions is Monday, March 28th, 1995. The early deadline is necessary to allow for the preparation of the *Proceedings of Presented Papers*. Submissions received after March 28th, 1995 may be considered, but authors should be aware that their papers, even if accepted, may not be included in the printed *Proceedings*.

All submissions and other correspondence related to the program should be sent to: Nancy L. Zingrone, Department of Psychology, University of Edinburgh, 7 George Square, Edinburgh, Scotland, EH8 9JZ; or on Compuserve to 72240,3357; or via Internet to zingrone@afb1.ssc.ed.ac.uk.

Publication Policy and Instructions to Authors

The aim of the *European Journal of Parapsychology* (EJP) is to stimulate and enhance activity in parapsychology, especially in Europe, by communicating research results and issues related to parapsychology. To this end, EJP publishes original papers on a variety of topics including empirical, theoretical, historical and sociological issues. Translations of papers originally published in a language other than English are also welcome.

The EJP actively encourages the submission and evaluation of papers before the experimental data have been collected. The study's rationale, number of subjects and trials, hypotheses and planned statistical analyses should all be included in such submissions. Priority will be given to the publication of such studies.

Manuscripts, written in English, should be submitted preferably on computer disk in ASCII format. Otherwise, authors should submit three copies, typed double-spaced throughout. The organization of the paper must be clearly indicated by appropriate headings and subheadings. Include names of authors, positions and other affiliations, and mailing addresses. Each table should be given a descriptive title. Number tables consecutively with Arabic numbers in order of their mention in the text. Figures should be drawn on white paper in black lines: because they are normally reduced in reproduction, allowance should be made for the corresponding reduction in the thickness of lines and the space between them. References in the text should be indicated by dates in parentheses following the authors' names and should correspond to an alphabetical list at the end of the paper. References to books should include year of publication. References to journal articles should include volume number and year of publication. When quoting from a book or article, indicate the page(s) on which the quote appears. For statistical analyses,

report not only the inferential statistics (e.g., t values) but also the descriptive statistics for the data evaluated (e.g., group means and standard deviations). Report the number of subjects, trials or experiments on which the analysis was based, and where possible report effect sizes (e.g. actual values of correlation coefficients), and give exact probability values. Such information can be vital for later cumulative reviews, including meta-analyses. The EJP adheres to British Psychological Society style rules; please see volume 10, p. 151 for details. Each manuscript must include an abstract of not more than 200 words.

The EJP is published in the first quarter of each year. **The annual deadline for submissions is 31 August.** Subscription fees include shipping costs, and subscriptions may be taken out for one year (£12) or two years (£24). For members of the *Parapsychological Association*, a reduced rate is available of £10/£20. Please make payment in Pounds Sterling. Payment in any other currency must include an additional £8 for the cost of currency exchange to Sterling. Cheques should be made payable to 'The Koestler Chair of Parapsychology'. All submissions and subscriptions to and enquiries about the Journal should be sent to *European Journal of Parapsychology*, Koestler Chair of Parapsychology, Department of Psychology, University of Edinburgh, 7 George Square, Edinburgh EH8 9JZ, Scotland, UK.

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