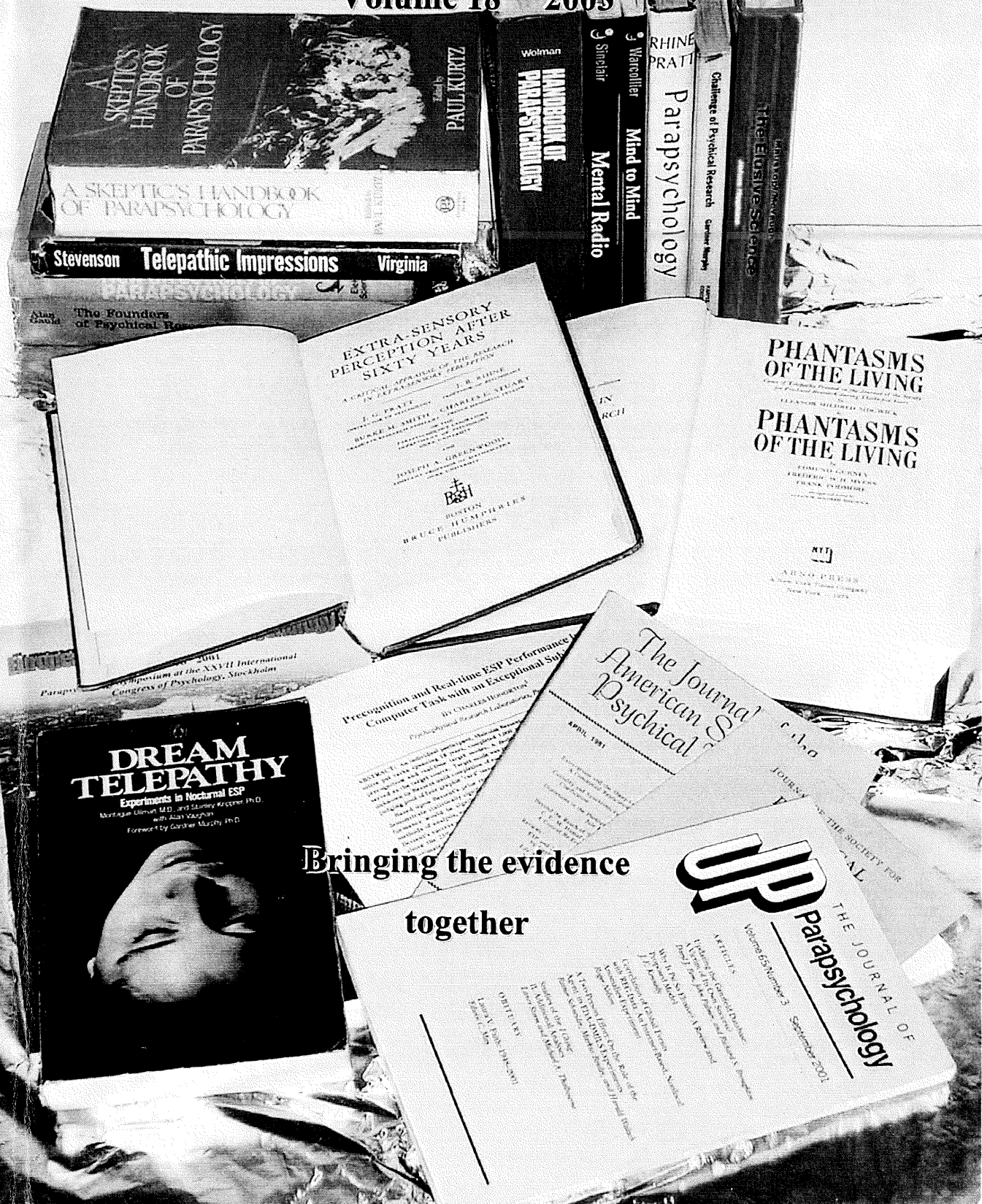


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Editorial

This is my fourth and final year as editor of the *European Journal of Parapsychology* and from 2004 onwards Dr Paul Stevens will take over and the journal will be issued from the Psychology Department of Edinburgh University. However the EJP website at Gothenburg University will continue to function. Indeed one of the achievements of the last year (and one of the many reasons for the delay in the current issue) has been the establishment of a new website where earlier papers are gradually being made available at: <http://www.psy.gu.se/EJP/EJP.htm>

Sadly during the year the world and the EJP lost Marcello Truzzi who was a friend and a resource I personally miss much. In this field of ambiguity, Marcello was a much-needed antidote to one-sided views. He told me it was not sitting on the fence that amused him but climbing over it back and forwards from one side to the other.

An uplifting addition to our editorial resources is Professor Gordon Claridge who is one of the world's acknowledged experts on abnormal psychology with a long-term interest in this field.

It will probably not have escaped many readers that the situation in Sweden for research in this field now looks very promising. The long awaited establishment at the Lund University of the Professorial Chair in Psychology including Parapsychology and Hypnology (Hypnology is being interpreted as Altered States of Consciousness research) should give the field a much-improved academic status and supply some of the financial support it has lacked. It should not be forgotten that in taking a favourable view of the field, the university authorities at Lund have based their views on the proven success of the careful and pioneering work of those researchers who have previously established parapsychology at universities in the US, the UK Australia, Iceland and places in Europe. Of course a receptive climate had to be first created by the long tradition of Swedish interest in these both fields as represented by the work of O. G. Wetterstrand, and Sidney Alritz (the founder of Swedish Psychology), Poul Bjerre, and John Björkhem. In contemporary times we have Martin Johnson, now emeritus professor at Lund, Jan Dalkvist and Joakim Westerlund at Stockholm, and Lars-Erik Uneståhl, internationally known for his work on hypnosis.

The present volume is largely a heterogeneous Australian-Scandinavian issue: Michael Thalbourne and James Houran report further work on the hot topic of transliminality as underlying the Sheep-Goat Scale. Harvey Irwin explores the theme of the relationship between belief in the paranormal and apparent psychotic-like symptoms and finds evidence to support reality-testing deficits in believers in the paranormal. This is also a theme of current interest at Gothenburg where Anneli Goulding has carried out studies supporting the notion of "healthy schizotypes" who have paranormal experiences and psychotic-like symptoms but who actually fall into their own group since they have a positive profile of self-reported health.¹

My own contribution together with Göran Brusewitz, President of the Swedish SPR, attempts to fulfil a need occasioned by media attention by providing a

¹ Goulding, A. (2004) Schizotypy models in relation to subjective health and paranormal beliefs and experiences. *Personality and Individual Differences*, in press.

convenient list of source material which is intended to counter the recurrent and time consuming claims that there is no evidence for psi.

The many anecdotal accounts of psi-experiences being induced by atmospheric changes, is the theme of an experimental study by Joop Houtkooper. A Ganzfeld study is co-authored by Thomas Wright, a graduate in clinical psychology at Gothenburg. The study used the facilities of real-time recordings and book markings in order to see if this could increase the scoring level.

The research briefs take up two very diverse topics: Lance Storm discusses theories relating to whether or not there is information transfer in psi, and Jan Fjellander and I find a normal explanation for an anomalous ghost photograph given publicity in Sweden.

James Houran carries out a positive and penetrating review of George Hansen's much-discussed book *The Trickster and the Paranormal*. There is a rare Norwegian contribution in the form of Nils Björn Kvastad's book reviewed by Annekatrin Puhle. Björn Sjöden, a graduate student at Gothenburg, provides with a concrete example of the value of making re-available the classic works for new researchers, by giving us a perspicacious review of Ullman, Krippner and Vaughan's *Dream Telepathy*. A similar appreciative review is provided by Annekatrin Puhle of the life-long work documented by Tony Cornell in his legacy of rich personal experience: *Investigating the Paranormal*.

Clearly the present volume is a reminder of not only how diverse this field is, but also how central it is to solving the basic enigmas of human experience.

Finally I would like to take the opportunity of thanking the Head of Department, Professor Philip Hwang, for his open-mindedness in supporting the publication of the EJP from Göteborg/Gothenburg University.

Adrian Parker

Transliminality as an Index of the Sheep-Goat Variable

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Abstract: Transliminality has been measured in various studies using the original 29-item Transliminality Scale. That scale contains four items pertaining to the sheep-goat variable. It therefore may not be surprising that the scale correlates with measures of the sheep-goat variable. However, we show in this report that item-overlap cannot explain the correlation, since a 17-item Revised Transliminality Scale (RTS) lacking those four sheep-goat items still nevertheless correlates moderately to highly with measures of the sheep-goat variable. These findings are attributed to the fact that the RTS contains items on such themes as Absorption, Fantasy-Proneness, Magical Ideation, Mystical Experience and Hyperæsthesia, which themselves correlate independently with the sheep-goat variable. Thus, the whole scale correlates with the sheep-goat variable. Moreover, a few recent studies indicate that, like the sheep-goat variable, scores on the RTS predict putative psi performance.

The Sheep-Goat Variable and Transliminality

The *Sheep-Goat* variable is a classic in parapsychology that derives from the work of Gertrude Schmeidler (1943, 1952, 1959; Schmeidler & McConnell, 1958). Schmeidler characterized believers in the possibility of ESP in the context of the experiment at hand as "sheep" and disbelievers in the possibility of ESP in the context of the experiment at hand as "goats." She reported that sheep demonstrated a tendency to score significantly above mean chance expectation on ESP tests and for goats to score significantly below chance level. This effect is one of the more successfully replicated relationships in experimental ESP research (Palmer, 1977), even though the overall effect size (.03) is very small (Lawrence, 1993). Used in a wider sense, the sheep-goat variable reflects the broad continuum of belief-disbelief in the paranormal and the attitudes and behaviors that coincide with this continuum (for an interesting typology of believers, see Irwin, 1997). This perspective, which goes beyond merely dichotomizing samples such as in the work of Schmeidler, generally assumes linear relationships between belief in the paranormal and its correlates.

In contrast to the sheep-goat variable, *Transliminality* is a relatively recent term. This concept refers to psychological material crossing thresholds into or out of awareness, and it was initially measured by a factor score (e.g., Thalbourne & Delin, 1994; Thalbourne, Bartemucci, Delin, Fox & Nofi, 1997), then by selected

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transliminality-relevant variables as a z-score (Thalbourne, 1996; Sanders, Thalbourne, & Delin, 2000), and later by Thalbourne's (1998) 29-item "true/false" *Transliminality Scale*. Much was made in this latter article about the fact that despite containing only 14% of items to do with the sheep-goat variable the Transliminality Scale nevertheless correlated strongly with other measures of the sheep-goat variable. It might, however, be proposed that these correlations are inflated due not so much to do with exact item-overlap but conceptually similar items. For example, Thalbourne and Houran (2000, p. 859) found correlations of high magnitude between the Transliminality Scale and scales deriving from the Mental Experience Inventory (MEI: Kumar & Pekala, 1992; more about these scales below) that contain items about belief in psi-related and unusual events and paranormal, unusual experiences (see below, Table 2). *Are these high correlations artefactual?*

One way to answer this question would be to remove the sheep-goat items (e.g., "I am convinced that I am psychic") from the 29-item Scale and correlate the residual 25-item scale with the MEI measures. However, that has in effect been done, because the 29-item Transliminality Scale has been 'top-down purified' (Lange, Thalbourne, Houran & Storm, 2000). Top-down purification is a set of advanced statistical Rasch (1960/1980) scaling procedures outlined by Lange, Irwin and Houran (2000) that address issues of scaling and differential item functioning (bias) related to respondents' ages and genders. Basically, the Rasch scaling techniques purge scales of biased items and then attempt to construct a unidimensional and interval-level Rasch (1960/1980) scale with the remaining (unbiased) items. Response biases are important to address, because they can elicit spurious factor structures of test items, as well as erroneous findings from statistical analyses (for discussions, see Lange, Irwin et al., 2000; Lange, Irwin, & Houran, 2001). Therefore, top-down purification techniques overcome the limitations of classical test theory and are considered the gold standard in scale construction.

Not all scales survive the rigorous top-down purification analyses, but Lange, Thalbourne, et al. (2000) published a purified version of Thalbourne's (1998) original Transliminality Scale. In particular, these authors demonstrated that there was a single Rasch (1960/1980) dimension underlying seven psychological domains: Hyperesthesia, (fleeting) Hypomanic or Manic Experience, Fantasy-Proneness, Absorption, Positive (and perhaps obsessional) Attitude Toward Dream Interpretation, Mystical Experience, and Magical Ideation. Thus, only 17 out of the original 29 items from Thalbourne (1998) remain to form the new *Revised Transliminality Scale* (RTS)¹.

The notion that the RTS Scale defines a probabilistic response hierarchy does not simply mean that its items differ with respect to their endorsement rates. Rather, the Rasch scaling requires that the RTS' intensities form a (latent) quantitative

¹The Rasch reliability of this new scale is .82 ($N = 318$, Lange et al., 2000b), and this translates to a *KR-20* reliability coefficient of .85. Thalbourne (2000) found the 29-item scale to have a test-retest reliability of .88 ($N = 51$, $p < .001$) over an average of 50 days, and further analysis (Houran, Thalbourne, & Lange, 2003) on this same data set showed that the 17-item RTS has a test-retest reliability of .82 ($p < .001$). Note: this latter paper also gives an important erratum concerning one of the items of the RTS.

dimension on which *each* respondent and *each* item of the RTS assume a position (see e.g., Bond & Fox, 2001). These positions reflect respondents' trait levels and the trait level implied by the item, respectively, and together they determine the likelihood of a given response on the scale. These item and person locations (also called, item and person *measures*) are expressed in a common *Logit* metric (Wright & Masters, 1982). Fit of the Rasch model implies that items form a hierarchy that reflects the structure of the variable, thus establishing construct validity (Bond & Fox, 2001) by defining the variable's semantics (for a recent discussion, see Lange et al., 2001). For instance, given the item and person locations described above, the Rasch model implies that higher response categories should have a greater probability of being selected for items with lower locations than for items with higher locations. (Note: It is assumed that higher response categories indicate higher trait levels). Also, respondents with higher trait levels should be more likely to give higher ratings than are respondents with lower trait levels. Finally, both properties should hold across *all* respondents, items, and response categories. It can be shown (see e.g., Wright & Masters, 1982) that when these requirements are fulfilled, the resulting variable has the property that the responses of those with lower trait levels are probabilistic subsets of those with higher trait levels. In this context, interested readers are referred to Table 2 (p. 600) of Lange, Thalbourne et al. (2000) for the hierarchical structure of the Revised Transliminality Scale—i.e., which test items define low, medium, and high levels of transliminality.

Interestingly, the four sheep-goat items that were part of the original Transliminality Scale (Thalbourne, 1998) were excluded due to age or gender biases. We note that this finding does not mean that the sheep-goat variable is not a constituent of the transliminality construct. To be sure, it is possible that unbiased versions of these original items might be constructed and re-factored into the Rasch dimension that defines the Revised Transliminality Scale. However, the question arises—does the current version of the Revised Transliminality Scale still correlate highly with measures of the sheep-goat variable?

Attitudinal Correlations with the RTS

Note that the demographic characteristics of all the samples examined in this paper are to be found in Table 1. The first sample we examined was a large group of Australian and American people from the general population, to whom was administered the 29-item Transliminality Scale and the 7-scale Mental Experience Inventory, two of which scales pertain to psi: the 10-item Belief in psi-related and unusual events scale, and the 35-item Paranormal and Unusual Experiences scale. The MEI was selected because we were interested in examining how scores on transliminality relate to different types of mental phenomena (including paranormal ideations), and this instrument afforded a convenient opportunity in this respect.

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Table 1. Demographic characteristics of the samples referred to in this paper.

Reference	N	Males	Range _{age}	M _{age}	SD _{age}	Population
Thalbourne & Houran (2000)						
Australia	138	46%	18-84 yrs	40	14	General
America	135	38%	17-69 yrs	38	12	General
Thalbourne (2001)	125	27%	17-61 yrs	22	8.3	Students
Storm (combined)	243	34%	17-64 yrs	25	8.7	Students
Houran, Wiseman & Thalbourne (2002)	134	38%	16-74 yrs	35	12.2	General
Houran (2002)	20	30%	18-67	35	13.4	General

We correlated the 17-item RTS with the two MEI measures and display the resultant coefficients alongside those obtained with the 29-item Scale in Table 2. It can be seen from Table 2 that there are decreases in the magnitudes of the coefficients with the 17-item versus the 29-item scale, and that tests of difference between these coefficients (Hinkle, Wiersma, & Jurs, 1988, p. 279) indicate that these decreases are statistically significant. However, the correlations between the 17-item RTS and the two MEI measures remain at least moderately high and statistically significant, demonstrating that conceptual overlap does not account for the correlation. Indeed, the correlations between transliminality and “Paranormal, unusual experiences” are so high ($r > .70$) that it could be said that the two scales are in this case measuring the same construct.

Table 2. Correlations † between measures of the sheep-goat variable and the 29-item and the 17-item Transliminality scales (Thalbourne & Houran, 2000).

Sheep-Goat Measure	Australia (N = 138)			United States (N = 135)		
	r (29-item)	r (17-item)	t (135)	r (29-item)	r (17-item)	t (132)
Belief in psi-related and unusual events	0.59	0.55	2.07*	0.66	0.57	4.59***
Paranormal, unusual experiences	0.79	0.75	2.72*	0.82	0.78	2.59*

†All correlations in this Table are significant at $p < .001$.

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

We repeated the procedure with an independent data-set from Thalbourne (2001)—a sample of first-year undergraduate psychology students at the University of Adelaide. This data-set contained responses to the 18-item Australian Sheep-Goat Scale (Lange & Thalbourne, 2002; Thalbourne & Delin, 1993), three subscales from the 70-item Anomalous Experience Inventory (AEI: Kumar, Pekala, & Gallagher, 1994), viz., the 29-item Paranormal Experience subscale, the 12-item Paranormal Belief subscale and the 16-item Paranormal Ability subscale, and the two Rasch scales *New Age Philosophy* (argued to measure perceived individual control over one’s destiny via internally-oriented paranormal forces) and *Traditional Paranormal Beliefs* (argued to measure beliefs in determinism and externally-oriented supernatural forces, see: Houran & Lange, 2001) from Lange, Irwin et al.’s (2000) top-down purified version of Tobacyk’s Revised Paranormal Belief Scale (Tobacyk, 1988). All these scales, and the Transliminality Scale, were administered in a single packet. Table 3 contains the correlations with original and purified versions of the Transliminality Scale.

Table 3. Correlations † between measures of the sheep-goat variable and the 29-item and the 17-item Transliminality Scales (Thalbourne, 2001: N = 125).

	<i>r</i> (29-item)	<i>r</i> (17-item)	<i>t</i> (122)
The Australian Sheep-Goat Scale	.64	.54	4.11***
AEI‡ Experience Scale	.71	.65	2.47*
AEI Belief Scale	.70	.58	5.83***
AEI Ability Scale	.65	.61	1.64
New Age Philosophy	.64	.47	8.27***
Traditional Paranormal Beliefs	.45	.37	2.90**

†All correlations in this Table are significant at $p < .001$

‡ AEI: the Anomalous Experience Inventory

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

The decreases in the magnitude of the correlations are in this case more variable, the largest being .17 for New Age Philosophy but the average being just .10. Again, tests of difference (Hinkle, et al., 1988, p. 279) indicate that in nearly every case the correlations between the various measures and the 17-item RTS are significantly lower than are the correlations between the various measures and the 29-item scale. However, the effect sizes with the 17-item RTS are still moderately strong and highly significant, despite a lack of sheep-goat items.

Our research program on the psychological correlates of self-reported haunt and “entity encounter experiences” further substantiates a link between scores on the Revised Transliminality Scale and the sheep-goat variable. For example, Houran and Thalbourne (2001) found moderate to strong positive associations between the RTS and the Poltergeist ($r = .51, p < .001$) and Encounter ($r = .61, p < .001$) subscales of the AEI. These findings have since been replicated (Houran, Ashe, & Thalbourne, in press; Houran, Kumar, Thalbourne, & Lavertue, 2002). Furthermore, Houran et al.

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(2002) reported significant rank-order correlations between the RTS and the AEI subscales of Paranormal Belief ($\rho = .54, p < .001$), Paranormal Ability ($\rho = .48, p < .001$), and Paranormal Experience ($\rho = .65, p < .001$). These results complement the findings from Tables 2 and 3 and indicate that conceptual overlap does not account for the consistent relationship between the 17-item RTS and various measures of self-reported paranormal belief and experience.

Why should this situation be so? Why are the corrected correlations with the sheep-goat measures still for the most part high? It could be argued that the RTS still taps a belief in the paranormal/anomalous, because to endorse anomalous experiences on the RTS is surely a concession that one believes such anomalous phenomena exist. This conceptual point was illustrated by Lange and Thalbourne's (2002) Rasch scaling analyses of the Australian Sheep-Goat Scale (ASGS: Thalbourne & Delin, 1993), in which the paranormal belief items showed a tendency to occur earlier in the Rasch-item hierarchy than the items referring to paranormal experiences.

However, we believe that the robust relationship between the RTS and the sheep-goat variable derives more from the fact that the RTS contains items on Absorption (which correlates with the sheep-goat variable), items on Fantasy-Proneness, which likewise correlates with the sheep-goat variable [for both of which see, e.g., Thalbourne et al., 1997]), and items on Mystical Experience, which correlates with the sheep-goat variable (Thalbourne, 1998-1999). And the same may be said for the other four remaining constituent variables, viz., Magical Ideation, Manic Experience, Hyperaesthesia, and Positive Attitude towards Dream Interpretation. Thus the whole scale is likely to correlate, as it indeed does, with measures of the sheep-goat variable. We are left with the suggestion that scores on the RTS can be considered as a moderate to strong predictor of the sheep-goat continuum.

Use of the RTS in Parapsychological Studies

If the above suggestions are valid, we might expect a correspondence between scores on the RTS and putative psi performance—similar to the trends observed between the sheep-goat variable and scores on ESP tests. We have already seen in Tables 2 and 3 that scores on the Revised Transliminality Scale consistently correlate with respondents' self-reported anomalous experiences. Fortunately, recent research allows us to examine the relationship between transliminality and *real-time* anomalous experiences as well. By real time, we mean apparent parapsychological experiences or outcomes that coincide closely to the time when individuals completed the Revised Transliminality Scale, such as administering the RTS during the course of a psi task or field investigation of a haunt.

Table 4 summarizes all of the parapsychological studies that we know of to date that have used the RTS to measure transliminality.

Table 4. Correlations between results from various parapsychological studies and the 17-item Revised Transliminality Scale

Reference	Study Result	<i>r</i>	<i>p</i>
Storm & Thalbourne (1998-99, <i>N</i> =93)	hitting on <i>I Ching</i> hexagrams	.26	.012
Storm & Thalbourne (2001, <i>N</i> = 107)	hitting on <i>I Ching</i> hexagrams	-.00	ns [†]
Storm (2002, <i>N</i> = 43)	hitting on <i>I Ching</i> hexagrams	-.01	ns [†]
Storm (combined: <i>N</i> = 243)	hitting on <i>I Ching</i> hexagrams	.11	.038 [†]
Houran, Wiseman, & Thalbourne (2002, <i>N</i> = 134)	Subject's total number of different modalities of reported haunt experience ^a	.21	.05 ^{††}
Houran, Wiseman, & Thalbourne (in press, <i>N</i> = 134)	Subject's total number of discrete haunt experiences ^a	.22	.01 ^{††}
Houran (2002, <i>N</i> = 20)	Subject's total number of different modalities of reported haunt experience ^b	.21	ns ^{††}
Houran (2002, <i>N</i> = 20)	Subject's total number of discrete haunt experiences ^b	.15	ns ^{††}

Note: [†] *p*-values are one-tailed as originally given in the articles
 ^{††} *p*-values are two-tailed as originally given in the articles

^a These effects concern participants' reports of anomalous experiences during a field investigation of Edinburgh's "South Bridge Vaults."

^b These effects concern participants' reports of anomalous experiences during a field investigation of the Edwards Place (Springfield, IL)

We describe these studies briefly. In each experiment with the Chinese book of divination the *I Ching*, participants had to prespecify 16 guesses as to which one of the 64 so-called hexagrams (6-line structures) would come up in response to the statement "Lately, or right now, I feel...". A guess that corresponded to the outcome hexagram was termed a hit (*P* = .25).

In addition, the second author used the RTS in two field studies of haunt-poltergeist cases. The first study (Houran, Wiseman, & Thalbourne, 2002) involved

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a large sample of participants who visited one test area of Edinburgh's "South Bridge Vaults" and subsequently documented in detail any anomalous phenomena they experienced. The second study by Houran (2002) replicated the basic procedure used in Edinburgh, but this time a small group of participants visited all of the test areas at a historic mansion in Illinois and documented their experiences via a standardized Haunt Experiences Checklist. In both studies by Houran (2002; Houran, Wiseman et al., 2002), the participants completed a number of psychological measures and the documentation of the anomalous experiences was such that both the number of discrete experiences and the number of different modalities of experiences could be correlated with these psychological measures.

Not unlike the variability of the sheep-goat effect in experimental ESP research, it can be seen that the RTS shows significant positive correlations in 50% of the analyses. The reasons for this less-than-perfect trend are not clear, as is also the case with the low effect size of the classic sheep-goat effect. Perhaps in addition to attitudinal and perceptual-personality variables such as transliminality and belief in psi, certain environmental or social milieu conditions must be present in studies in order to promote success rate. Experimenter effects are a good example of what we are speaking here (for a recent discussion see e.g., Schmeidler, 1997; Watt & Wiseman, 2002). Therefore, given that scores on the RTS consistently show positive correlations with attitudinal variables such as warmth, abstractedness, and openness to experience (Lange, Thalbourne, et al., 2000), it might be that success rates on certain tests of psi might be directly related to the *experimenter's* level of transliminality. On a related note, we acknowledged in the Introduction that the research reviewed here, as well as Schmeidler's sheep-goat studies, tends to assume a linear relationship between the sheep-goat variable and its correlates. However, recent work by Lange and Houran (2000-2001, 2001a, 2001b; Lange, Schredl, & Houran, 2001) demonstrates that nonlinear effects can occur with paranormal belief and experience. Applying these same considerations to the studies of the sheep-goat variable and transliminality reviewed here, it seems possible that the inconsistent effects might partly reflect nonlinear rather than strictly linear associations.

These qualifications aside, we still must ask why should transliminality correlate at all with the sheep-goat variable? Perhaps we should refer to an operation of transliminality: the passage of psychological material from the subliminal to conscious awareness. If the extrasensory signal is unconscious, as is often assumed (see, e.g., L. Rhine, 1975), then such material is more likely to express itself in the highly transliminal mind: that material crosses the threshold more readily, and becomes an idea, an image, an emotion or a percept. Similar processes may operate in the case of the sheep-goat variable since, as we have since, sheep are likely to be quite highly transliminal.

Translinality might causally underlie or at least mediate the sheep-goat effect in other ways, as well. For example, Crawley, French, and Yesson (2002) showed that high scores on translinality are associated with greater sensitivity to priming cues. This provides an alternative explanation for some ostensibly psychic perceptual experiences if subliminally acquired material is wrongly attributed to parapsychological sources. On the other hand, more recent work demonstrates that scores on translinality are related to actual changes in absolute sensitivity to

vibratory stimuli (Houran, Hughes, Thalbourne & Delin, submitted). If this finding is validated across different perceptual modalities, there will be strong evidence that transliminality facilitates the detection of subtle stimuli from various sources—which might include psi (Houran, 2000; Lange, Thalbourne et al., 2000). These ideas are consistent with the initial speculations of L. Rhine (1975), as well as later refinements such as Stevens' (2002) proposal that ESP is “imagination that relates to the target” (p. 239). In other words, ESP might be a symbolic unification of a stream of weak and indirect information from a variety of sources. Transliminality may therefore regulate the perception of such streams of stimuli, as well as mediate an individual's ability to extract information from these streams or perturbations. To summarize, psychometric, personality, behavioral, and psychophysical data support the idea that transliminality is a robust individual difference characteristic that integrates cognitive, affective, perceptual, and behavioral processes on a single dimension (Houran et al., submitted). Accordingly, transliminality is a perceptual-personality variable that we argue is both psi-conducive and supportive of paranormal beliefs.

Obviously, additional research with the Revised Transliminality Scale is needed to determine the exact nature of the relation between transliminality and success rate on tests of psi and reports of spontaneous experiences. Towards this end, we are encouraged that interest in the transliminality construct and the RTS has been worldwide—which has resulted in several translations of the scale. We know of German, Italian, and Greek versions. Interested readers may contact the authors for more information on how to obtain copies of these unpublished translations.

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Reality Testing and the Formation of Paranormal Beliefs

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Abstract: This study sought to explore the role of reality testing deficits in the formation of paranormal belief. Specifically, it examined relationships between facets of paranormal belief and types of reality testing deficit. A survey of 200 adults from the general Australian population revealed that paranormal beliefs were predicted by both a tendency toward psychotic symptoms (hallucinations and delusions) and a tendency to distort internal and external reality. The findings are discussed in relation to the cognitive bases of the formation of paranormal belief. Limitations of the study also are identified.

Although there is now a substantial empirical literature concerning the psychodynamic functions of paranormal belief (for a review see Irwin, 1993, 1999) the processes through which these beliefs are actually formed have received rather scant attention. Specifically, among researchers in this field there has been a relative neglect of the cognitive or information processing correlates of paranormal belief, and such data are necessary for an incisive appreciation of the formation and maintenance of paranormal beliefs. The current study was designed to address this issue specifically in terms of people's habitual inclination to critically test the logical plausibility of their beliefs.

An appropriate theoretical context for the study is provided by Langdon and Coltheart's (2000) account of the generation and evaluation of beliefs (see also Davies, Coltheart, Langdon, & Breen, 2001). Under this model sensory mechanisms are posited to provide information about the environment and the self for which the person needs to generate an explanation. Potential causal explanations of the information are produced by means of attributional processes (Weiner, 1986), but causal attributions can be biased both by universal human dispositions and by the person's own idiosyncrasies (see also Kahneman & Tversky, 1972). In what Langdon and Coltheart (2000) designate as a "normal" or nonpathological style of belief generation the person undertakes a critical evaluation and ranking of the plausibility of all the hypothetical explanations of the sensory information. That is, hypotheses may variously be examined in the light of prior personal experience, general knowledge, and the input of authoritative others and similar sociocultural sources. Optional hypotheses thus are logically "tested" or probed; in the psychodynamic literature this process is known as *reality testing* and entails "a set of perceptual, cognitive and sensorimotor acts that enables one to determine one's relationship with the external physical and social environments" (Reber, 1995, p. 640). The explanation that best survives reality testing may then be endorsed as a

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belief. Usually such a belief may be subject to ongoing critical revision as further relevant information comes to hand.

According to Langdon and Coltheart (2000) pathological beliefs or delusions arise in part through a failure of the person to subject a hypothetical explanation of sensory experience to critical testing. Several commentators (e.g., Alcock, 1981, 1995; Goode, 2000; Vyse, 1997; Zusne & Jones, 1982) have argued that this also is the case for paranormal beliefs. That is, when a person generates a paranormal explanation for an observed event this hypothesis might not then be subject to the usual processes of rigorous critical evaluation either at the time of its formulation or when further relevant information later becomes available. Under such an account people who endorse paranormal beliefs would therefore be predicted to show some deficit in reality testing.

Empirical evidence for this prediction nevertheless is not extensive and is confined largely to the context of skill in critical thinking. Indirect support may be provided by observations that paranormal belief is negatively related to a person's highest level of educational attainment (e.g., Lord, 1958), grade point average (e.g., Messer & Griggs, 1989; Tobacyk, 1984), and exposure to educational programs debunking the paranormal (e.g., Banziger, 1983). On the other hand there are also observations contradicting these reports either in whole or in part (e.g., Clarke, 1991; Tobacyk, Miller, & Jones, 1984), and in any event it is difficult here to disentangle the inferred contribution of training in critical thinking from that of indoctrination in academically desirable outlooks.

Other investigators have sought to index capacity for critical thinking in a more direct way. Using the *Critical Thinking Appraisal Scale*, Alcock and Otis (1980) reported believers in psi phenomena to have poorer critical thinking ability than did a group of nonbelievers. Gray and Mill (1990) devised fictitious abstracts of flawed scientific studies to assess critical abilities, and they found a negative correlation between performance on this measure and the level of paranormal belief. Tobacyk and Milford (1983) nevertheless caution that uncritical thinking might not be characteristic of all dimensions of paranormal belief. Only two of the seven dimensions of their *Paranormal Belief Scale* correlated significantly with a measure of uncritical inference, and in addition the direction of the relationship differed in the two cases; thus, traditional religious believers tended to be relatively critical in drawing inferences, and believers in spiritualism were uncritical. Similarly, Merla-Ramos (2000) found that an apparent deficit in critical ability among paranormal believers was specific to analysis of propositions about the paranormal and was not evident more generally. In addition, some of the above findings may have been biased by participants' knowledge that the researcher was a skeptic. Thus, studies conducted by researchers open to parapsychological views have failed to replicate any comprehensive relationship between paranormal belief and critical thinking ability (Irwin, 1991a; Roe, 1999).

In any event it may be argued that the foregoing studies are somewhat misdirected or at least insufficiently pertinent to the present issue. That is, in the context of understanding the formation of a paranormal belief, a person's *capacity* for critical thinking may not be as pivotal as the habitual *style* of applying (or neglecting to apply) critical analysis to hypothetical interpretations of sensory experience. The

latter aspect of cognitive style is encompassed specifically by the concept of reality testing.

Perhaps a more appropriate index of deficient reality testing is the variable of dogmatism which in part entails a habitual reluctance to subject a cherished belief to critical analysis in the light of contrary information (Davies, 1993). Thus, dogmatism has been reported to correlate positively with paranormal belief, particularly belief in witchcraft, traditional religious concepts, superstitions, and extrasensory perception (Alcock & Otis, 1980; Martin Davies, personal communication, 15 March 2002; Thalbourne, Dunbar, & Delin, 1995; Tobacyk & Milford, 1983). Although these findings are consistent with a relationship between paranormal belief and deficient reality testing, it must be acknowledged that the domain of reality testing deficits is much broader than dogmatism; for example, the latter pertains to a lack of critical evaluation *after* a belief has been established, whereas the former additionally encompasses a tendency not to apply critical processes during the *formation* of a belief. There is further scope, therefore, to study the links between paranormal belief and reality testing deficits as the latter is more broadly conceived.

The objective of the current project was to investigate relationships between factors of paranormal belief and facets of reality testing. The study's general hypothesis was that paranormal beliefs are associated with some type of deficit in reality testing. At the same time, in light of evidence that paranormal belief is a multivariate domain (e.g., Lawrence, Roe, & Williams, 1997; Tobacyk & Milford, 1983), the possibility was envisaged that the degree or type of reality testing deficit might well vary across the different aspects of paranormal belief.

Method

Participants

The study was conducted as a questionnaire survey of a convenience sample recruited through friendship networks within the general community of Australian adults. A particular effort was made to sample as widely as possible from this population, although a substantial majority of respondents were residents of the cities of Bundaberg and Brisbane in the state of Queensland. Data were solicited from 200 participants; this was the upper limit contracted under a reduced-cost "researcher's agreement" negotiated with the publisher of the measure of reality testing (Western Psychological Services). Thus, the sample comprised 200 adults (115 women and 85 men) ranging in age from 18 to 80 years ($M = 39.2$, $SD = 14.00$, $Median = 39.5$).

Materials

Participants completed a short demographic questionnaire that included items on age and gender, followed by questionnaire measures of paranormal belief and of reality testing. The last two measures will now be described more fully.

The index of paranormal belief was the *Revised Paranormal Belief Scale* (RPBS; Tobacyk, 1988), an amended form of the scale originally developed by Tobacyk and Milford (1983). In its various guises the RPBS has been the most widely used

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questionnaire measure of paranormal belief for almost two decades (Goulding & Parker, 2001) and it is especially notable for its extremely liberal view of the scope of "the paranormal". The full 26-item version of the RPBS was included in the survey inventory, but items found by Lange, Irwin, and Houran (2000) to exhibit differential item functioning were not scored; most of the excluded items relate to superstitions (e.g., "the number 13 is unlucky") or extraordinary life forms (e.g., the Loch Ness monster). Through a process of "top-down purification" followed by factor analysis Lange et al. identified two facets of paranormal belief that are indexed free of differential item functioning by selected items of the RPBS, that is, the actual measurement of these paranormal beliefs is not confounded by the extraneous factors of gender and age. These scales are labeled New Age Philosophy (NAP) and Traditional Paranormal Beliefs (TPB). The NAP scale comprises 11 items relating to belief in psi abilities, reincarnation, altered states, and astrology; the TPB scale has 5 items on belief in traditional paranormal concepts such as the devil, hell, and witchcraft. Responses to the RPBS are made on a 7-point scale (1 = strongly disagree, to 7 = strongly agree), but for the purpose of this study they were recoded under a Rasch scaling procedure (Andrich, 1988) specified by Lange et al. (2000). Thus, NAP scores potentially may range from 6.85 to 47.72, and TPB scores may range from 11.16 to 43.24.

The measure of reality testing was the *Bell Object Relations and Reality Testing Inventory* (BORRTI; Bell, 1995). The BORRTI is a self-administered questionnaire comprising 90 true/false items relating to two basic ego functions, object relations and reality testing. Only the subscales pertaining to reality testing were processed for the purposes of the current project. The 45 Reality Testing items of the BORRTI are distributed across three subscales, namely, Reality Distortion, Uncertainty of Perception, and Hallucinations and Delusions. Scoring of these subscales is achieved via computer software supplied by the test manufacturer; each of the generated values is a factor score transformed and expressed as a T score, that is, as a normalized standard score based on a scale with a mean of 50 and a standard deviation of 10, with higher scores signifying greater deficits in reality testing. Respondents with high Reality Distortion scores are prone to distort internal and external reality, and thus may often experience hallucinations and have paranoid, grandiose, or depressive beliefs (Bell, Greig, Bryson, & Kaplan, 2001). High scorers on this subscale nevertheless are not necessarily psychotic (particularly if they also do not rate highly on the Hallucinations and Delusions subscale), but they are likely to be schizotypal or genetically prone to psychosis (Bell, 1995). Respondents with high scores on the Uncertainty of Perception subscale have doubts about their perception of internal and external reality; thus, they may easily be confused by their feelings and by the behavior and feelings of others, and they tend to be ambivalent and to have poor social judgment (Bell, 1995; Bell et al., 2001). Respondents with elevated scores on Hallucinations and Delusions experience frank hallucinations and delusions of various kinds, and thus they may be said to present with psychotic symptomatology. The psychometric characteristics of the BORRTI subscales have been thoroughly documented (Bell, 1995; Bell, Billington, & Becker, 1985, 1986) and indeed, this questionnaire appears to be the most widely used objective index of reality testing deficits.

Procedure

Potential participants were approached individually or in small groups. A “plain language” statement was attached to the front of the inventory. This statement described the topic of the study, stressed that participation was voluntary and anonymous, and explained that the return of the completed form would in itself be taken to signify the respondent’s informed consent to participate in the project. Additionally, an appeal was made to participants to respond to all questionnaire items as spontaneously and openly as possible. Most participants returned their completed forms in person, although other means of return sometimes were used.

Results

Descriptive statistics for the survey measures are presented in Table 1.

Table 1. Means and standard deviations of survey variables (N = 200) and Spearman correlations between RPBS and BORRTI scales (N = 193)

	Mean	SD	Spearman Correlations		
			RD	UP	HD
RPBS scales					
New Age Philosophy (NAP)	26.48	6.77	.45***	.19**	.58***
Traditional Paranormal Beliefs (TPB)	26.10	7.55	.42***	.26***	.53***
Traditional religious belief	4.69	1.93	.34***	.14	.32***
Psi	4.17	1.73	.42***	.17*	.53***
Witchcraft	3.68	2.19	.35***	.31***	.51***
Superstition	2.04	1.44	.29***	.15*	.40***
Spiritualism	4.38	1.92	.42***	.17*	.56***
Extraordinary life forms	3.91	1.32	.34***	.18*	.40***
Precognition	4.21	1.80	.35***	.07	.48***
BORRTI subscales					
Reality Distortion (RD)	52.91	8.14			
Uncertainty of Perception (UP)	45.65	10.38			
Hallucinations and Delusions (HD)	51.96	11.92			

Significance levels: * $p < .05$; ** $p < .01$; *** $p < .001$

Of the 200 respondents 7 failed to meet the internal validity check (based on inconsistency of responses to repeated or equivalent items) incorporated in the BORRTI questionnaire. All subsequent analyses therefore were performed with a sample of 193 (111 women, 82 men). It is of some interest to note, however, that for the original sample of 200 participants there were weak but significant relationships between paranormal belief scores and inconsistency of responses to BORRTI items:

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the Spearman correlation coefficient was .20 for the NAP factor of paranormal belief ($p < .005$) and .26 for the TPB factor ($p < .001$).

Three of the survey variables (the two RPBS factors and the Uncertainty of Perception subscale of the BORRTI) were significantly skewed. Spearman correlations therefore were used to provide a basic indication of the strength of relationships between paranormal beliefs (RPBS factors) and reality testing deficits (BORRTI subscales). For the sake of completeness these correlation coefficients were computed also for the seven originally proposed factors of the RPBS (Tobacyk, 1988). These coefficients are given in Table 1. These data suggest that belief in New Age Philosophy (NAP) and Traditional Paranormal Beliefs (TPB) are each associated to some degree with reality testing deficits, particularly in the form of a tendency toward psychotic symptoms (Hallucinations and Delusions) and a tendency to distort internal and external reality (Reality Distortion). Indeed, the pattern of correlations across the range of paranormal belief factors is relatively uniform. The simple correlational analysis nevertheless does not take account of the possible role of the extraneous demographic variables, age and gender. To this end multivariate analyses were conducted.

Before parametric statistical analysis could proceed mathematical transformations of the data had to be applied in order to eliminate skewness from three of the survey variables. This objective was successfully achieved with square root transformations of the two paranormal belief measures (NAP and TPB) and of the BORRTI Uncertainty of Perception subscale. The subsequent analyses were undertaken with these transformed scores.

The project was designed to address the contribution of reality testing deficits to the intensity of each of the facets of paranormal belief indexed in the study. To this end it was appropriate to conduct a separate multiple regression analysis for each of the two beliefs, NAP and TPB (Tabachnick & Fidell, 1996). In the first such analysis the following independent variables were regressed on NAP: the three BORRTI reality testing subscales, together with age and (female) gender as extraneous variables. It should be noted that all tolerance statistics in the regression were well above zero, ranging from .60 to .96; multicollinearity of predictor variables therefore was of no practical concern (Darlington, 1990). A significant regression equation was generated [$R = .63$, $R^2 = .40$, $F(5, 187) = 25.06$, $p < .001$]. Table 2 presents the unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (β), and the squared semipartial correlation (sr^2). As this table shows, NAP was predicted by the set of independent variables and more specifically by two of the BORRTI subscales, Hallucinations and Delusions (HD) and Reality Distortion (RD). Note that the ostensible contribution of the Uncertainty of Perception (UP) subscale is merely a suppressor effect (as evidenced by the fact that the sign of its regression coefficients is contrary to that of the Spearman correlation shown in Table 1; Tabachnick & Fidell, 1996); that is, this factor served only to sharpen the predictive utility of the other two BORRTI reality testing subscales in the regression equation.

Table 2. Standard multiple regression of Reality Testing Subscales (BORRTI), Age, and Gender on New Age Philosophy (N = 193)

Variables (transformed)	<i>B</i>	β	<i>p</i>	s_r^2 (unique)
Reality Distortion (RD)	2.380×10^{-2}	.294	.000	.052
Uncertainty of Perception (UP)	-.112	-.133	.046	.013
Hallucinations and Delusions (HD)	2.554×10^{-6}	.469	.000	.155
Age	-5.748×10^{-4}	-.013	.829	.000
Gender (female)	.133	.103	.076	.010
Intercept =	3.220			

$R = .63, R^2 = .40, p < .001.$

According to the manual for interpreting BORRTI data (Bell, 1995, pp. 13-14) all (T) scores of 65 or more on the Hallucinations and Delusions subscale, and scores of 60 or more on either the Reality Distortion or Uncertainty of Perception subscales, are deemed to be "elevated", that is, they signify clinically meaningful deficits in reality testing. These criteria provide an additional means by which to index the level of reality testing deficits associated with paranormal belief. Thus, within the portion of the sample comprising the top quarter of NAP scorers ($N = 45$), 56% had elevated HD scores, 47% had elevated RD scores, and 9% had elevated UP scores. The corresponding relative frequencies for the bottom quarter of NAP scorers ($N = 49$) were 2%, 8%, and 6%. In short, not only do the HD and RD subscales predict the intensity of NAP belief, but a substantial proportion of high NAP believers present with clinically significant levels of reality testing deficits as indexed by the HD and RD subscales.

A similar multiple regression analysis was performed for TPB, and again the regression equation was significant [$R = .57, R^2 = .33, F(5, 187) = 17.97, p < .001$]. The results in Table 3 indicate that TPB was predicted by the set of independent variables and more specifically by two of the BORRTI subscales, Hallucinations and Delusions (HD) and Reality Distortion (RD). In addition, within the top quarter of TPB scorers ($N = 43$), 44% had elevated HD scores, 47% had elevated RD scores, and 12% had elevated UP scores; the corresponding relative frequencies for the bottom quarter of TPB scorers ($N = 45$) were 2%, 2%, and 4%. Thus, the HD and RD subscales predict the intensity of TPB, and a substantial proportion of strong endorsers of traditional paranormal beliefs present with clinically significant levels of reality testing deficits as indexed by these two BORRTI subscales.

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Table 3. Standard multiple regression of Reality Testing Subscales (BORRTI), Age, and Gender on Traditional Paranormal Beliefs (N = 193)

Variables (transformed)	<i>B</i>	β	<i>p</i>	sr^2 (unique)
Reality Distortion (RD)	1.976×10^{-2}	.213	.007	.027
Uncertainty of Perception (UP)	-4.858×10^{-2}	-.050	.476	.002
Hallucinations and Delusions (HD)	2.704×10^{-2}	.433	.000	.132
Age	-4.823×10^{-3}	-.092	.137	.008
Gender (female)	.101	.068	.268	.004
Intercept =	3.957			

$R = .57, R^2 = .33, p < .001.$

Discussion

In seeking to interpret the findings of the study mention may first be made of the small but significant correlations between paranormal beliefs and inconsistency of responses on the BORRTI questionnaire (Spearman's $\rho = .20$ for NAP and $.26$ for TPB). These statistics suggest that a (possibly small) number of people may obtain slightly higher paranormal belief scores by virtue of their test-taking style, or more specifically, by completing questionnaires in a rather lax or frivolous manner. Whether this test-taking behavior reflects an (enduring) personality characteristic or merely a (transient) mood variable is a matter for further research. In any event there are some grounds here for prompting future researchers to consider in their development of new measures of paranormal belief the inclusion of a "lie scale" or some such index of conscientiousness of responding.

The focus of this study nevertheless was not on psychometric issues but on the potential role of reality testing deficits in the formation of paranormal beliefs. However, before any attempt is made to educe major theoretical implications from the study's findings a more mundane possibility needs to be addressed. A correlational project that uses questionnaire measures must take some cognizance of the possibility that the observed relationships are at least in part an artefact of an overlap of the content of the questionnaires.

In the present context this concern bears on the potential for some items of the BORRTI indices of reality testing deficits to function also as items about paranormal belief. Close inspection of the 90-item BORRTI questionnaire suggests four instances in which this may have been the case. One item (Item 2) concerns respondents' belief that they have been possessed by the devil; another (Item 19) taps their conviction that they have mystical powers; and a further two (Items 56 and 63) concern the notion that the respondent's thoughts can be read by other people. Now, the scoring algorithm for the BORRTI subscales is inaccessibly encrypted in the manufacturer's software disk and in any event is reported to involve "over 800 arithmetic operations" (Bell, 1995, p. 7). For these reasons it was not feasible to test the validity of the study's findings by recomputing the BORRTI scores after

excluding the above items. The possibility therefore remains that the observed relationships between paranormal belief and reality testing indices were somewhat inflated by an overlap in questionnaire content. The author of the BORRTI nevertheless has advised that the above four items load most strongly on the RD scale (Morris Bell, personal communication, 9 September, 2002). Thus, the observed extent of the utility of the RD subscale as a predictor of paranormal belief might be considered suspect, but the fact remains that the HD subscale made the most substantial contribution to both regression equations and scores on this subscale evidently are little dependent on the four items concerning paranormal concepts. On this ground it is argued that the present findings do attest to a relationship between reality testing deficits and paranormal beliefs, but it is acknowledged that the findings warrant replication with an index of reality testing that is not compromised by possible content overlap with measures of belief in the paranormal.

To the extent that paranormal beliefs are associated with higher scores on the HD and RD subscales it is pertinent to record that this specific combination of reality testing deficits is identified by Bell (1995) as being characteristic of the formation of paranoid and other unsubstantiated psychotic beliefs. That is, the observed pattern of reality testing deficits is recognized in the clinical context as conducive to beliefs for which the adherent has inadequate grounds. This is not to assert that paranormal beliefs are "psychotic" but merely that the formation of paranormal beliefs and the formation of psychotic beliefs appear to have some characteristics in common that bear on reality testing processes. In this respect paranormal beliefs within the general population may be "pathological" in the liberal sense in which this term is used by Langdon and Coltheart (2000), but it is clear that paranormal beliefs are not found only among psychotics. A similar interpretation should be applied to the finding that many people in the top quarter of NAP and TPB scorers demonstrated clinically significant HD and RD scores. Nonetheless, in conjunction with the present findings Bell's observation provides a degree of support for an account of the formation of paranormal beliefs in the terms outlined at the beginning of this paper: a similar pattern of reality testing deficits is known to underlie the formation of other critically untested beliefs.

The association between paranormal beliefs and reality testing deficits may also illuminate some previously observed correlates of paranormal belief. There is now extensive evidence that the intensity of most facets of paranormal belief is related to each of the following personality variables: schizotypy or genetic proneness to psychosis (e.g., Irwin & Green, 1998; Thalbourne et al., 1995), fantasy proneness (e.g., Irwin, 1990, 1991b), and dissociativity (e.g., Irwin, 1994; Wolfradt, 1997). Now, these personality characteristics are known to be intercorrelated (Irwin, 2001; Lynn & Rhue, 1988; Merritt & Waldo, 2000). More importantly, each of the above dimensions might readily be reconstructed in terms of the concept of reality testing deficits (see Lenzenweger, Clarkin, Kernberg, & Foelsch, 2001). Further research should examine if these and cognate correlates of paranormal belief are reducible to the domain of reality testing deficits. This issue is fundamental to the objective of constructing a causal model of the development of paranormal beliefs.

At the same time it is not proposed that paranormal beliefs can be explained wholly in terms of a failure of reality testing. The development of such beliefs in an

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individual is undoubtedly a complex phenomenon, the effective explanation of which must be intrinsically multivariate. Thus, even if the study's findings are valid, it must be asked *why* reality testing may be suspended during the formation of a paranormal belief. Recent research (Irwin & Young, 2002) suggests that when an anomalous experience invites an attribution involving paranormal processes people with a habitual intuitive-experiential information processing style (Epstein, Pacini, Denes-Raj, & Heier, 1996) will be satisfied with the attribution's intuitive appeal and therefore will not subject it to reality testing. Thus, the endorsement of a paranormal belief may be due in part to a failure of reality testing and this in turn is an outcome of a broader cognitive style of the person. In this context account should also be taken of motivational factors such as a need for a sense of control over life events (Irwin, 2000).

Another finding that warrants some acknowledgment is that the two primary facets of paranormal belief (NAP and TPB) had the same pattern of predictors in terms of reality testing deficits. Houran (e.g., Houran, Irwin, & Lange, 2001; Houran, Thalbourne, & Ashe, 2000) has proposed that the two types of paranormal belief have fundamentally different modes of formation, with New Age Philosophy being dependent largely on personal experience and Traditional Paranormal Beliefs more dependent on social reinforcement. Whether or not this distinction is viable it would seem the formation of paranormal beliefs can not be differentiated at the stage of reality testing.

This study explored the possible role of reality testing deficits in the development of paranormal beliefs. Several authors (e.g., Alcock, 1981, 1995; Goode, 2000; Vyse, 1997; Zusne & Jones, 1982) had previously implied that such beliefs are essentially a consequence of a failure of the person to subject a hypothetical explanation of sensory experience to critical testing, but much of the argument to this effect had been polemical, simplistic, and insufficiently grounded on empirical evidence. Future investigation of this issue requires an index of reality testing that is not internally contaminated by items on paranormal belief. One anonymous reviewer of this paper suggested a performance (rather than questionnaire) measure of reality testing may be suitable for this purpose. A second anonymous reviewer noted some conceptual overlap between the notion of reality testing in this context and Marcia Johnson's (Johnson, 1988; Johnson & Raye, 1981) concept of reality monitoring or source monitoring whereby people make a judgment as to whether the source of a given memory is an actual event or an imagined event. Perhaps some of the standard experimental procedures for indexing reality monitoring could be adapted to test the present hypothesis, although it must be said that in the generation of a paranormal belief the reality testing of a causal attribution about an experience would be a rather broader process than the identification of the source of a memory for the experience. Another issue for future research is the role of reality testing deficits in protecting cherished paranormal beliefs from revision in the light of further information.

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A Compendium of the Evidence for Psi¹

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Abstract: The article has the purpose of making readily available for scrutiny primary sources relating to studies that give evidence of psi-phenomena. Although the list is not offered as providing compelling evidence or "proof" of psi, it is meant to provide a strong case for a recruitment of resources. The effects are not marginal or non-replicable ones although it is clear that in many cases they appear to be dependent on certain experimenters and participants. The presentation includes sources relating to classical studies, meta-analyses of replication studies, the testing of high scoring subjects, and proof-orientated experiments, as well as the critical appraisal of this work. Where possible, web site addresses are given where this material is available and accessible. Theory driven research is needed especially concerning the nature of the experimenter effect.

This compendium occurred as a result of what is perceived as a need to deal with the persistent claims concerning the lack of evidence for psi and thereby lack of justification for funding research and academic positions in parapsychology. It has been often asserted, sometimes with some measurable effect, that there is no evidence for psi, or if there is, it is so marginal and non-replicable and that resources should be instead allocated to the study of belief in the paranormal. The compendium presents evidence that appears to refute this assertion,

The standard works summarizing this field, Wolman's *Handbook of Parapsychology* and Kurtz's *The Skeptic's Handbook of Parapsychology*, are both long since out of date and out of print. It is true that there are several very readable and informative texts (Broughton, 1991; Edge, Morris, Palmer, & Rush, 1986; Irwin, 2000; Stokes, 1997) but these are not concise sources of works listing evidential publications. A controversial and for some even provocative source of material because of its declared advocacy, is Dean Radin's *A Conscious Universe* (1997).

In compiling this current compendium, it should be immediately said that the list is not intended to convince the reader that psi has been proven. Beside the principle impossibility of *proving* phenomena in empirical science, we believe that in even seeking the final compelling evidence of psi, no matter whether it be through any of the lists of proof orientated experiments, replications, or meta-analyses, is a futile enterprise. The Pratt-Woodruff-experiment is often cited as the classic example of how an experiment which at its time of conception was considered well designed but which later was found to be deficient from the fraud-proof aspect and we have no reason to believe that the best experiments designed today would be convincing for

¹ This paper was reviewed by Dr Joakim Westerlund.

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our successors. Indeed some critics such as David Marks and Ray Hyman uses this to discredit the whole field by claiming a ten year life span for experiments, implying that parapsychological findings invariably only last this period until a fatal flaw is discovered. In reality some findings such as the Maimonides Dream-ESP work have lasted a much longer period.

The replication studies and the meta-analyses, which are also listed below, are obviously part of a general pattern of evidence that we are dealing with real effects, but their greatest value is as sign posts for finding the most promising routes towards the goal of understanding the phenomena. In our opinion they again can never be proof or compelling evidence.

Since the phenomena are for most people so alien to everyday reality and an insult to our intellect, it is natural that skepticism should dominate and direct us to find alternative explanations for evidence that poses as being final and compelling. This is a standpoint that we, the authors, wish to share with critics but given the fallibility of our intellect and limitations our knowledge, we would not wish to assert that it is a particularly scientific standpoint. Yet the paradox is that humans – including scientists - seldom make decisions or take standpoints, which are purely, based on a dispassionate evaluation of evidence but rather on our need for creating a stable understandable world². One of England's best known spokesmen for science, Lois Wolpert (2004) expressed this neatly when on being confronted with the evidence for the paranormal, said "An open mind is a very bad thing - everything falls out." (But then a closed mind could be said to be an empty mind since nothing new comes in.) Clearly these phenomena will only become less provoking for the emotional needs of our intellect when some degree of understanding is reached as to the nature of psi.

Of course there is also the intuitive argument that these phenomena are themselves best understood in altered states and indeed it may well be that individuals who have thin boundaries, are "feeling" orientated in a Myers-Briggs sense, score high on openness to inner experiences and transliminality do show a greater belief or even receptivity to psi, simply because they are able to integrate and understand these psi-experiences in such states (Goulding & Parker, 2000). Indeed it can be said that this is part of the reasoning behind Charlie Tart's concept of state-specific sciences (Tart, 2000). Philosophically speaking this is actually not so new. Romantic scientists as well as poets valued altered states of consciousness for perceiving the true wholeness of the world and considered the world of reductionism as depriving Nature of its essence (Puhle & Parker, 2004).

However perhaps a generally more acceptable view is the argument put forward here, that the evidential studies would take on a completely new status when a theory of psi is developed which relates the phenomena to other areas of research and makes the phenomena in some measure more understandable. In the crude sense, psi will then be considered "proven". Consequently the purpose of this compendium is not to convince the skeptic but merely to collate research reports that justify a major

² A good example of an emotive view is David Marks new edition (2000) of *The Psychology of the Psychic*. Any possible validity of his critique is obscured by the emotionally toned personal attacks and vendettas which pervade the whole book.

scientific effort towards gaining an understanding of what the nature of the apparent phenomena. For this reason replication and meta-analysis studies are listed in this case, not because of their evidential value per se, but because of their importance in suggesting that progress is being made towards getting a grip on the phenomena. Indeed a positive sign is the ceasefire in the war over psi that the editors of the recent *Journal of Consciousness Studies* chose to depict the July 2003 volume on parapsychology with. The editors declared that the issue is no longer between opponents but about getting a grip on the nature of the phenomena. The argument that a hundred years of research has not achieved this and therefore the phenomena have to be false, is built on a misconception: the research resources of parapsychology are equivalent to a mere two months of research in American psychology and these resources have been nearly exclusively devoted to research aimed at the accumulation of evidence rather than process-orientated research (Schouten, 1998).

The collection compiled below is primarily concerned with laboratory studies and experimental evidence. However this is not meant to deny or downgrade the importance of case studies and some mention of these should be accorded. There would seem to be general agreement that the two most important classical works in the area of psychical research are *Human Personality* by Fredrick Myers (1901/2003) and *Phantasms of the Living* by Myers, Gurney, & Podmore (1918/62). Arguably some of Ian Stevenson's works such as *Telepathic Impressions* (1970) could be added to this list. Scholarly reviews of the field of psychical research have also been written by Donald West, Alan Gauld (1968) and Archie Roy (1996).

Psychologists and skeptics in general readily dismiss the validity of spontaneous cases believing that modern cognitive psychology can deal with these experiences on the basis of selective memory, hallucinations, and cognitive biases. While not denying these theories their validity, in reality there is no better reason for dismissing all the well documented cases of psychical research than there is for dismissing out of hand all human testimony, and indeed some good ones for not doing so. (For further discussion of the limitations of cognitive theory see Parker, 2000, Parker, 2002). Granted this, the greatest value of spontaneous cases is then in showing that psi phenomena are not mere empty statistical anomalies, at best belonging to quantum physics, but that they do have an important psychological content and meaning.

Before leaving classical psychical research, it is worth then mentioning that publications – a hundred years of documented case studies (as well as more cent experimental studies) - are now available on-line for down-loading through the *Society for Psychical Research* at: <http://moebius.psy.ed.ac.uk/~spr/>

One of the first attempts to make a selection of evidential experiments was a privately circulated list by R. A. McConnell in 1975 of 21 research reports. This list covered the work with at the time contemporary high scoring subjects (Stepanek, Muratti, Delmore, and Bessent) the Schmidt work with random number generators, the sheep-goat work (the effect of belief/disbelief in ESP on scoring), and psi-conducive states, all of which appear in the list below. John Beloff published a list of seven evidential experiments in the *Zetetic Scholar* in 1980. This included the classical Brugman experiment, the Stepanek work, the Schmidt work and the Delmore work. My esteemed colleague Nils Wiklund was inspired by this to attempt

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to set up crucial evidence in order to try to achieve some consensus amongst former PA presidents as to the best *seven* experiments offering evidence of psi. By reducing the issue to the absence or presence of flaws in these experiments, Wiklund proposed that further scrutiny would then resolve the issue as to whether there was genuine ESP or merely error some place. Wiklund refers in his report to an apparently unpublished list obtained by Diane Robinson in 1981 through contacting all the members of the Parapsychological Association. Her list confirmed Wiklund's but added the Maimonides Dream-ESP studies, the remote viewing experiments, and the sheep-goat studies. The seven studies composing the consensus list that Nils Wiklund arrived at, were as follows: Schmidt's experiments, the Delmore experiments, Stepanek experiments, the Ganzfeld studies, the Brugmans experiment, Pratt-Pierce experiments, and Pratt-Woodruff experiments.
(Wiklund, 1984, on-line at: <http://www.psy.gu.se/EJP/EJP.htm>).

What is of current interest from this is that most of these studies would still be quoted as providing strong evidence today and are consequently included in the compendium below but as part of a larger unitary series reflecting more accurately the function of the design. A possible exception might be the Delmore experiments but as we note below these have been defended by no less a critic than Richard Wiseman.

Since the time of Wiklund's survey, the use of meta-analysis has for better or for worse shifted the focus from final proof orientated experiments to the question of whether or not a replication effect has been obtained. The consensus would seem to be that replication has been achieved, but there is still disagreement as to the quality of the replication studies in excluding all sources of error. For this reason, the classical studies, the proof-orientated studies and the testing of high scoring subjects, all are part of the placard of evidential evidence.

Unavoidably the selection below is to some extent a personal one but by building on what has gone before and what is being currently discussed, we believe it has some consensus.

The Early Classical Experimental Studies

The Brugmans Experiments

Originally published in French, the Brugmans experiment on the whole survives still the ten-year rule. Carried out at the University of Gröningen, the selected subject, Van Dam, sat in a cubicle and make his selection of the target symbol, which the sender one floor above had randomly chosen, by reaching out and tapping at the appropriate symbol on a checker board.

Schouten, S. A. & Kelly, E. F. (1978) On the experiments of Brugmans, Heymans, and Weinberg. *European Journal of Parapsychology*, 2, 247-290

Pope, D.H. (1952) The Brugmans experiment. *Journal of Parapsychology*, 16, 1-3

Gardner Murphy provides also a translation and a critical review pointing out some, in his opinion, minor shortcomings in the report:

Murphy, G. (1961) *Challenge of Psychical Research*, New York, N.Y.: Harper & Row. Pp. 56-62

The Experiments of the Duke Parapsychology Laboratory:

The Rhine work done at the Parapsychology Laboratory of Duke University requires special comment since there are so many misconceptions surrounding it. When Rhine reached retirement age, he moved the laboratory to new premises; a move which allowed him to continue as its director and devote the work of the institute along with its recent private donations exclusively to full time research without teaching commitments of Duke. This may have been a major historical mistake: privatizing the laboratory meant not only loss of status; it was to halt the slow process of integrating parapsychology into mainstream psychology. It could also be argued that the publication of research papers more or less exclusively in the *Journal of Parapsychology* rather than in mainstream psychology journals may have further contributed to isolating researchers from their peers. These factors may even have repercussions today and explain why parapsychology has become more established in Europe where it has maintained its bases within universities.

These difficulties, successes, and setbacks have been recorded by two historians (Mauskopf and McVaugh, 1980) at Duke. They report (page 306) that some fifty universities and colleagues had experimented with the ESP-card testing technique developed by Rhine and his colleagues and while some had success with individual subjects, the results were never like the one in five subjects that Rhine had let them to expect. Many mainstream psychologists believed they had provided the right conditions but positive results were seldom forthcoming, and in the wake of this, they simply turned to other things. Open-mindedness may however not have lasted long and Louise Rhine described how many of the graduates and doctoral students belonging to the period when the Parapsychology Laboratory was located at Duke, subsequently left the field because of the prejudice against it meant that a continued association with the parapsychology would have a detrimental effect on their careers (L. Rhine, 1983).

The classical work detailing the experimental achievements of the Duke laboratory until 1940, is:

Rhine, J.B., Pratt, J. G., Smith, B. M., Stuart, C. E., Greenwood, J. A. (1940/1966) *ESP After Sixty Years* Boston: Bruce Humphries

And the two most cited experimental studies are:

Rhine, J. B. & Pratt, J. G. (1954) A review of the Pearce-Pratt distance series of ESP tests. *Journal of Parapsychology*, 18, 165-177.

Pratt, J. G. & Woodruff, J. L. (1939) Size of stimulus symbols in extrasensory perception. *Journal of Parapsychology*, 3, 121-158.

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The Rhine work was severely criticized by Mark Hansel (1980) in his book *ESP - A Scientific Evaluation* which speculated on various scenarios by which subjects and experimenters could have cheated (reviewed in Parker, 1991). However to explain all the results, would require four of Rhine's students and two of his main experimenters to have independently cheated. Moreover the scenario for cheating in the Pierce-Pratt appears to have been based on a disproportionate diagram of the layout of the testing room while the pattern of responses consistent with Hansel's cheating scenario for the Pratt-Woodruff experiment may well have to have a more innocent explanation:

Pratt, J. G. (1976) New evidence supporting the ESP interpretation of the Pratt-Woodruff experiment. *Journal of Parapsychology*, 40, 217-227

Other Classic Experiments:

Russell Targ has edited new editions of some of the classic books detailing the results of the classical ESP-drawing experiments. Most, if not all of these, of these would be deficient by modern standards, which require additional controls especially concerning the random selection of target. However, since they usually allow the reader to make an assessment of the complete series from which targets have been represented, it must be said some of the results are extremely impressive and the conditions for success described there may be instructive for process research.

Sinclair, U. (2001) *Mental Radio* Preface by Albert Einstein. Charlottesville, VA: Hampton Roads)

Warcollier, R. (2001) *Mind to Mind* Prefaced by Ingo Swann, Charlottesville, VA: Hampton Roads

Of the drawing experiments, those of Whatley Carington can be considered the most controlled and some of these do appear to fulfill the modern safeguards and requirements. See for example:

Carington, W. (1941) Experiments on the paranormal cognition of drawings. *Proceedings of the Society for Psychical Research*, 46. 34-151, 277-344
On-line at <http://moebius.psy.ed.ac.uk/~spr/>

Controlled Experimentation with High Scoring Subjects

Although the frequency of high scoring subjects was clearly much less than during the first years of the Rhine laboratory, it is a myth that they entirely disappeared from the scene as a result of the tightening of controls, as the following list of names of those tested and the associated publications testifies to. The list is not meant to be exhaustive but covers the most well known selected subjects:

Michael Bessent:

Honorton, C. (1971) Automated forced-choice precognition tests with a "sensitive". *Journal of the American Society for Psychical Research*, 65, 476-481.

Honorton, C. Precognition and real time ESP performance in a computer task with an exceptional subject. *Journal of Parapsychology*, 51, 291-320.

J. B. Muratti:

Musso, J. R. & Granero, M. (1973) An ESP drawing experiment with a high-scoring subject. *Journal of Parapsychology*, 37, 13-36.

Sean Harribance:

Palmer, J. (1998) ESP and RNG PK with Sean Harribance: Three New Studies", *Journal of Parapsychology*, 62, 112-113.

Alexander; C. (2000) Neurophysiological Research on an Individual Experiencing Anomalous Mental Phenomena: a Case Study. *International Journal of Psychophysiology* 35, (1), Feb 2000, pp 42-43

Joe McMoneagle:

Targ, R. (1994) Remote viewing replication evaluated by concept analysis. *Journal Parapsychology*, 58, 271-284.

Pavel Stepanek:

Pratt, G. (1973) A decade of research with a selected ESP subject: An overview of research and reappraisal of the work with Pavel Stepanek. *Proceedings of the American Society for Psychical Research*, 30, 1-78.

Martin Gardner (1989) wrote a monograph *How Not to Test a Psychic* where he speculated on the possible means by which Stepanek could have cheated. Pratt was now deceased but one of his closest co-experimenters, Jurgen Keil, wrote a rebuttal.

Gardner, M (1989) *How Not to Test a Psychic*, Buffalo, N.Y.: Prometheus

Keil, J. (1990) How a skeptic misrepresents the research with Stepanek, *Journal of Parapsychology*, 54, 151-168.

Bill Delmore:

Delmore belongs to the more controversial of high scoring subjects since he possessed some, albeit apparently elementary, card skills. Parapsychologist and illusionist George Hansen was of the opinion that Delmore's success could be explained in this way while parapsychologist and illusionist Richard Wiseman concluded after practical experimentation that the proposed method could not have been used:

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Kelly, E, F. Kanthamani, B. K. H., Child, I. L., & Young, F. W. (1975) On the relation between visual and ESP conditions in an exceptional ESP subject. *Journal of the American Society for Psychical Research*, 69, 185-197.

Hansen, G. (1992) Criticisms of the research with Bill Delmore. *Journal of Parapsychology*, 56, 307-333.

Wiseman, R. (1995) Testing the notion that a foot shiner could have been used during the Delmore experiments. *Journal of Parapsychology*, 59, 63-65.

Meta-analysis and Replication Reviews

It would be a misconception to present the results of meta-analysis without some form of *quality analysis*, as any kind of hard evidence for the existence of psi but if quality analysis is included then the meta-analysis can certainly become more persuasive as an indication of the degree to which the effect is replicable. The strength of the evidence for a real psi effect and for its replication will then depend on what the results of the **quality analysis** specifically say about a) the controls for the sources of artifact, and b) the use of a homogenous design. Obviously effect size of the psi measure should show either be non-significant or positive relationship to quality of design - it should *not* show a reversed or negative relationship.

Excluded from this selection are some areas (the defense mechanism test, presentiment, sidereal time, and possible environmental and geomagnetic effects), which have been, at least for a period, a focus for research efforts. The reason for this is that there is no consensus as yet as to what the findings mean and as to whether or not they are dependent on the experimenter).

ESP: Forced choice Experiments

A meta-analytic study of forced choice precognition experiment gave an astronomically significant result and there was a large effect size for the studies using specially selected participants. The findings were however found to show a dependence on the experimenter.

Honorton, C. & Ferrari, D. (1989) Future Telling: A meta-analysis of forced-choice precognition experiments. 1935-1987. *Journal of Parapsychology*, 53, 281-302.

Another database was used in order to compare the effect sizes of clairvoyance and precognition testing conditions. This consisted of 31 experiments that were selected for an equivalence of design No evidence was found for the superiority of either contingency, neither was an influence of quality on effect size found.

Steinkamp, F., Milton, J. & Morris, R.L. (1998). A meta-analysis of forced-choice experiments comparing clairvoyance and precognition. *Journal of Parapsychology*, 62, 193-218.

PK: Forced choice experiments

PK experiments with dice casting collected by Radin and Ferrari, produced initially 148 experimental studies and 31 control studies but only 68 studies had controlled for die bias. The group of 59 statistically homogeneous studies gave a very small effect size of $\pi = .5016$ significant at only $p = .02$.

Radin, D., & Ferrari, D. C. (1991) Effects of consciousness on the fall of dice. A meta-analysis. *Journal of Scientific Exploration*, 5, 61-84

The search for experiments with random number generators during the period 1969-1984 gave 332 a combined p-value of 10^{-43} . Significant differences were found between the experimenters involved:

Radin, D. I., May, E. C. & Thomson, M. J. (1986) Psi experiments with random number generators: Meta-analysis Part 1 In D. H. Weiner & D. I. Radin (Edit.s) *Research in Parapsychology*, 1985, (pp. 14-17). Metuchen, NJ. Scarecrow Press.

The combined results of 597 experimental studies using random number generators, taken from period 1959-1987, when analyzed for binary hits, gave a p-value of 10^{-12} . The control studies (235 studies) confirmed chance expectancy. Despite this confirmatory result, it should be noted that the overall effect was a weak one at 51% instead of 50%. There was no apparent effect of quality of design on outcome:

Nelson, R. & Radin, D. (1989), Statistically robust anomalous effects: Replication in random event generator experiments in *Research in Parapsychology*, edit. L. Henckle & R. E. Berger, 23-26 Metuchen, NJ: Scarecrow Press.

A further data search by Fiona Steinkamp and co-workers was made for experiments using a *concurrent output* of the RNG for the control series; this gave 357 experimental studies and 142 control studies. The Stouffer Z for the experimental studies was 13.09 but when weighted for *study size* became 2.70, $p = .004$, with a very small effect size of $\pi = .50003$. A significant negative curvilinear relationship was found between study size and effect size indicating the effect came from smaller studies. Moreover it was the selected participants who performed significantly better:

Steinkamp, F., Boller, E., & Bösch, H. (2002) Experiments examining the possibility of human intention interacting with random number generators: A preliminary meta-analysis. *Proceedings of the 45th Convention of the Parapsychological Association*, Paris. Pp. 256- 272.

In view of the small effect size, it is worth mentioning that there are some well documented case studies in area of psychokinesis where the large effects have been observed and in which normal explanations appear to be fully controlled for and

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found inapplicable (Bender, 1974; Gutierrez, G. (2002); Resch, 1968; Resch, 1969; Gregory, 1985; Roll and Persinger, 2002).

ESP: Free response experiments

The meta-analysis by Julie Milton of 78 free response studies from 1964-1993 gave a Stouffer $z = 5.72$, $p < 5.4 \times 10^{-9}$, one-tailed, and a small (Cohen) effect size of $d = .16$. This was calculated to be lower than that of the mean effect size of the **ganzfeld data base**, $d = .26$, although not significantly so. *Quality analysis* found only one flaw (absence of blind transcription or editing) with a relationship to the effect. Eliminating studies with this flaw, gave $z = 3.83$, $p < 7 \times 10^{-5}$, one tailed. Milton advises some caution in drawing conclusions because the exact outcome measure was rarely specified in advance.

Milton, J. (1997) Meta-analysis of free-response ESP studies without altered states of consciousness. *Journal of Parapsychology*, 61, 279-319.

Distance Mental Influence and Remote Staring

A current meta-analysis of the research design using Distance Influence on Living Systems or for short DMILS - found 36 studies which showed a small effect but significant Cohen effect size $d = 0.11$, $p = .001$. After eliminating some of the earlier studies for being faulted on inadequate randomization and weighing for the influence of study size, the relationship between effect size and *study quality* became non-significant. Nevertheless, the best seven studies did fail to give a significant effect size.

Schmidt, S., Schneider, R., Utts, J., & Walach, H. (2003) Distant intentionality and the feeling of being stared at - Two meta-analyses. *British Journal of Psychology in press*.

The same publication reported a current meta-analysis for the Remote Staring design found 15 studies with a mean Cohen effect size $d = 0.13$, $p = .01$. The collection was homogenous, and there was a non-significant positive relationship between study quality and effect size. Remote staring experiments were however generally rated as having a lower quality than those of DMILS:

Schmidt, S., Schneider, R., Utts, J., & Walach, H. (2003) Distant intentionality and the feeling of being stared at - Two meta-analyses. *British Journal of Psychology in press*.

Rupert Sheldrake provides a strong rebuttal of some of the alleged flaws in current experiments on remote staring:

Sheldrake, R. (2004) The need for open-minded skepticism; A reply to David Marks. *The Skeptic*, 16, 8-13.

Psi and Process Variables

Research efforts into process variables have been primarily at identifying a psi-conducive state and personality variables that might identify high scorers.

The first area has studied psi in relation to hypnosis, dream or REM periods, and the Ganzfeld. Even remote viewing appears to involve a focused, meditative state of consciousness. The altered states area has been recently reviewed by Alvarado (1998) and Parker (2004).

The latter area of personality has not given much in the way of replicable findings with the exception of belief in psi and extraversion as predictor variables. The experimenter effect has emerged as an important variable in its own right

1. Altered States: Dream-ESP

The classic collection of the studies carried out at the Maimonides Laboratory in New York from 1962 to 1979, has recently become re-available:

Ullman, M., Krippner, S., & Vaughan, A. (1974/2003) *Dream Telepathy*
Baltimore, Maryland: Penguin Books Republished Charlottesville, VA:
Hampton Roads. (See Sjödin 2003, in this issue.)

Irwin Child (1985) published an article in which he detailed the false and fictitious nature of many of criticisms leveled against the Maimonides work:

Child, I. L. (1985), Psychology and anomalous observations. The Question of ESP in dreams. *American Psychologist*, 40, 1219-1230.

The Maimonides work is often dismissed for replication difficulties but Simon Sherwood and Chris recently showed the replication attempts have been largely confirmatory. The effect size of the replications however did vary and they did differ from the original work. The Maimonides studies gave on average a medium effect size at $d = 0.33$. The post Maimonides studies had a small-medium effect size at $d = 0.14$. Sherwood and Roe concluded that this difference might be due to the difference in techniques and that the Maimonides studies obtained their highest successes with specially selected individuals. The post Maimonides studies obtained their best results with selected experimenters.

Sherwood, S. & Roe, C. (2003) A review of the Dream ESP studies since the Maimonides Dream ESP studies. *Journal of Consciousness studies*, 10, 85-110

2. Altered States – Hypnosis and Psi

Although significant psi effects are apparent, they are somewhat inconclusive as to whether or not the effect depends on hypnosis.

Honorton, C. and Krippner, S. (1969), Hypnosis and ESP performance: A review of the experimental literature, *Journal of the American Society for Psychical Research*, 63, 214-252.

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The above review found 22 studies where there was a waking control group and of these 9 showed significant differences between the two states but in some cases there was a significant negative or *psi missing effect*.

Stanford, R. G. & Stein, A. G. (1994) A meta-analysis of ESP studies contrasting hypnosis and a comparison condition. *Journal of Parapsychology*, 58, 235-269.

The studies with control series included in this review totaled 29, but it was noted that about a third of these had fewer than four participants and the superiority of hypnosis seemed to depend on the particular experimenters.

3. Altered States - Ganzfeld

The Ganzfeld achieved popularity as a design because of its relative convenience (compared to the equipment required for dream studies), its face validity in importing real-life contingencies, and foremost because it was hoped that it would provide a psi-conducive technique relatively free from the experimenter effect.

The current debate, which has threatened to become an “everlasting story”, concerns the question of whether or not a replicable effect has been obtained. The issue is whether it is sources of error or of psi that have been replicated (The debate is reviewed by Palmer, 2003, and by Parker, 2003). This leads onto the key question, highlighted by the findings of Bem, Palmer and Broughton (2001), which is whether or not some of the recent replications failed because they showed lack of quality and homogeneity in following the original design.

Bem, D. and Honorton, C. (1994), Does psi exist? Replicable evidence of an anomalous process of information transfer. *Psychological Bulletin*, 115, 4-18.

Milton, J. and Wiseman, R. (1999), Does psi exist? Lack of replication of an anomalous process of information transfer, *Psychological Bulletin*, 125. 387-391.

Storm L., and Ertel S. (2001), Does psi exist? Milton and Wiseman (1999) meta-analysis of ganzfeld research, *Psychological Bulletin*, 127, 424-433.

Milton, J. and Wiseman, R. (2001), Does psi exist? Reply to Storm and Ertel, *Psychological Bulletin*, 127, 434-438

Bem, D., Palmer, J., & Broughton, R. (2001) Updating the ganzfeld database: A victim of its own success? *Journal of Parapsychology*, 65, 207-218.

Some of the above articles can be loaded down, courtesy of Daryl Bem:
http://homepage.mac.com/dbem/online_pubs.html#psi

4. Remote viewing

The first series of remote viewing experiments by Russell Targ and Hal Puthoff produced a controversy in *Nature* as to whether references relating to the previous

targets, occasionally present in protocols from sessions, could give cues to the judges and thereby explain the successes. Removal of these references by their colleague Charles Tart apparently made little or no difference to scoring level but Marks and Scott (1986) insisted there were still be some cues.

Tart, C.T., Puthoff, H. E., & Targ, R. (1980) Information transfer under conditions of sensory shielding. *Nature*, 284, 191.

Marks, D.F, & Scott, C. (1986) Remote viewing exposed. *Nature*, 319, 444.

An excellent BBC recording of the controversy and some live sessions have been made available by Russell Targ and this material will shortly be made available on-line through the Swedish SPR website. <http://parapsykologi.se/>

Although there have been many successful experiments on remote viewing, few could be said to be high quality replications with a methodological stringency. However Russell Targ recently reported a study which apparently fulfilled the criteria of methodological stringency and which obtained a large effect size of $d = .63$, which is consistent with previous replications:

Targ, R. (1994) Remote viewing replication evaluated by concept analysis. *Journal of Parapsychology*, 58, 271-284.

It should however be noted that whatever its nature, the success of the remote viewing technique relies heavily on the availability of specifically selected participants and probably also specifically selected experimenters.

5. Extraversion

A clear difference was obtained between extraversion as related to performance in free response studies compared with forced choice studies, suggesting the effect of extraversion is limited to the free response series. The free response studies had a medium effect size at 0.20. The effect was remarkably homogeneous for the experimenters involved.

Honorton, C., Ferrari, D., & Bem, D. (1998) Extraversion and ESP performance: A meta-analysis and a new confirmation. *Journal of Parapsychology*, 62, 255-276.

A further analysis challenged the conclusion in the above article that the extraversion finding for the forced choice studies was an artifact of filling in questionnaires after the feedback of their ESP scores. When group testing was eliminated, the extraversion effect was found to be of comparable magnitude to the free response studies:

Palmer, J., & Carpenter, J. (1998) Comments on the Extraversion-ESP meta-analysis by Honorton, Ferrari, and Bem. *Journal of Parapsychology*, 62, 277-283.

6. The "Sheep-Goat" Effect

The hypothesis that the dichotomy of belief versus disbelief in psi as measured by the sheep-goat scale predicts the direction of scoring on ESP tests (but obviously can never explain it if all the controls are in place), is supported by the following reviews:

Palmer, J. (1971). Scoring in ESP tests as a function of belief in ESP. Part I. The sheep-goat effect. *Journal of the American Society for Psychical Research*, 65, 373-408.

Palmer, J. (1972). Scoring in ESP tests as a function of belief in ESP. Part II. Beyond the sheep-goat effect. *Journal of the American Society for Psychical Research*, 66, 1-26.

Palmer, J. (1977). Attitudes and personality traits in experimental ESP research. In B. B. Wolman (Ed.), *Handbook of Parapsychology* (pp. 175-201). New York: Van Nostrand Reinhold.

Lawrence, T. R. (1993), Gathering in the sheep and goats. A meta-analysis of forced choice sheep-goat ESP studies 1947-1993. Presented Paper. *Proceedings of the 36th Annual Convention of the Parapsychological Association*, 75-86.

7. The Experimenter Effect

Perhaps the most reliable and replicable finding in parapsychology is that of the experimenter effect (Parker, 1978). It should be emphasized for the reader new to the subject that the effect cannot explain the psi-effect if all the controls are in place. The reviews listed below collate that evidence and the limited efforts that have been made to determine its nature:

White, R. A. (1976b) The limits of experimenter influence on psi test results: Can any be set? *Journal of the American Society for Psychical Research*, 70, 335-369.

The effect also appears to occur with other participants involved in the outcome of the experiment:

White, R. A. (1976a) The influence of persons other than the experimenter on the subject's scores in psi experiments. *Journal of the American Society for Psychical Research*, 69, 133-166.

These papers are available on-line at <http://www.aspr.com/jaspr.htm>

White, R. A. (1977), The influence of the experimenter motivation, attitudes and methods of handling subjects in psi test results. In *Handbook of Parapsychology*, 273-301, edit. B. Wolman, New York: Van Nostrand Reinhold.

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Bem, D. (2003) Precognitive habituation. Paper presented at *46th Convention of Parapsychological Association, Vancouver.*

Evidence of Psi as Having Communicative Content

Relevant to the debate over whether or not psi is some form of error some place, an anomaly or an unknown form of communication, are the cases where psi appears to be functioning at a level or close to complete information transfer. Rhine reported 3 such cases using ESP cards (where chance expectancy was 5): Linzmayer scored 21 of 25, Pearce made 25 hits in a row correctly, (Rhine, 1950, p. 62, 75); a child subject Lillian obtained a perfect score (Rhine, 1954, p.126), and in the Reiss series the subject averaged 18 hits during 74 runs of ESP cards (Rhine, 1954, p.116). There have been also later cases in the literature (e. g. Parker, 1974) and some collation of these might be informative.

Although most of these were under informal conditions (the scores occurring during spontaneously challenging or playful conditions), whatever the explanation for such scores, it cannot be any minor error, artifact, or aberration in random sequences.

Lower levels of success have also been utilized to show that there is information transfer. For instance by applying the majority vote technique in order to arrive at a consensus target (taking into accounts psi hitting and psi missing), James Carpenter apparently succeeded in transmitting the target word "PEACE."

Carpenter, J. (1975) Toward the effective utilization of enhanced weak signal ESP effects. Paper presented at the meeting of the *American Association for the Advancement of Science*, New York, N.Y: January 1975.

Conclusion

It appears quite clear from the above review that irrespective what interpretation is given to specific research reports, the overall results of parapsychological experimentation are indicative of an anomalous process of information transfer, and they are not marginal and neither are they impossible to replicate. In the face of this, the critic who merely goes on asserting there is no evidence for psi is using a tactic reminiscent of Mohammed Saeed al-Sahaf, Iraq's former information Minister, in blindly asserting there are no American troops in Baghdad.

While the conditions for precise replication and for producing the phenomena to hand, still elude researchers, the psi-effect is replicable to the extent that it permits meaningful and productive research. This fits well with the conclusion reached by Jessica Utts (1996) in her report on government-sponsored research into remote viewing (the so-called stargate project) concerning the existence of a small to medium effect. Both Utts and the other expert involved, Ray Hyman (1996), while disagreeing as to how far research had come, agreed that that future research should be continued and supported by the universities, which has not happened. An argument could be made for psi-research being no more difficult than many other difficult but important fields of human research such as hypnosis, creativity, sexual behaviour, and psychotherapy.

Smith, M. (2003) The psychology of the psi-conducive experimenter: personality, attitudes towards psi, and personal experience. *Journal of Parapsychology*, 67, 117-128.

Some Well Controlled Proof Oriented Experiments

The RNG experiments by Helmut Schmidt have retained their status and were replicated by him many times.

Schmidt, H. (1969) Quantum processes predicted? *New Scientist*, 16 October, 114-115.

Schmidt, H. (1969) Precognition of a quantum process. *Journal of Parapsychology*, 33, 99-108.

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

Mark Hansel and later James Alcock in a more specific form proposed that Schmidt's results might have been due to his participants capitalizing on local biases in the target sequences. A study by John Palmer analyzed these sequences and rejected this hypothesis:

Palmer, J. (1996) Evaluation of a conventional interpretation of Helmut Schmidt's automated precognitive experiments. *Journal of Parapsychology*, 60, 149-170.

The other main criticism that Hansel (1980) made concerning that Schmidt worked alone, was answered by Schmidt (1993, below) in which his highly successful results were independently observed and replicated.

Schmidt, H. (1993) Observation of a psychokinetic effect under highly controlled conditions. *Journal of Parapsychology*, 57, 357-372.

The carefully controlled success of the experiment together with Morris and Rudolph was initially impressive but it should be mentioned that a later attempt by the authors to replicate this study was unsuccessful.

Schmidt, H., Morris, R. L., Rudolph, L. (1986), Channeling evidence for PK effects to independent observers, *Journal of Parapsychology*, 50, 1-16.

Recently Daryl Bem has presented the results of precognition experiment using the "Mere Exposure" technique under highly controlled conditions. The task was to identify precognitively the preferences that would be later shown for subliminal targets. The results gave the predicted effect and were independently replicated by a sceptical observer.

To return to the issue of compelling evidence, the friendly critic James Alcock (2003, p. 48) has vividly argued that if compelling evidence were ever forthcoming "parapsychologists would be knocked over in the stampede by experimental psychologists to explore this new and exciting area of research". But is this so? During the days of the early Rhine work there was clearly ripple of interest amongst psychologists but hardly a stampede. The Bem and Honorton paper (even before the Milton and Wiseman critique) never produced more than a faint stir amongst experimental psychologists, with not a single replication attempt forthcoming. Compelling evidence would clearly have to be of such a nature that it leads to control over the phenomena in order to produce them on demand - and such control would normally require some theoretical understanding of the phenomena in question.

What may complicate the situation in parapsychology is the dominance of experimenter effects. This is sometimes dismissed as merely a post-hoc explanation for failures but even in successful experiments it is rampant as evident in the above reviews). Then there is also the often muted possibility of that some of the effects may be due to experimenter psi (see White, 1976). Since this is a relatively unresearched area, it does not form part of this review. The upside of all this is that sometimes with the right experimenter, the right participant, and the right technique, the effects are large and demonstrable, and it is under these conditions we should be able to learn something about the process.

In recent correspondence between James Alcock and Adrian Parker, it became apparent that different views of the experimenter effect underlie their different evaluations of the psi-data base: Alcock regards the experimenter effects as an indication of failure to reach objectivity and therefore of an error some place while Parker regards the experimenter effects as occurring as a result of the influence of the experimenter as a catalyst or facilitator. Alcock writes "Parapsychology seems doomed to looking in the rear-view mirror - arguing about the empirical goodness of one study or another - rather than being able to declare: 'this is what we know - see for yourself'." Parker also would endorse this need but points out there are windows and maps for driving forward (e, g, Honorton, Ramsey, & Cabibbo, 1975; Parker, Frederiksen, & Johansson, 1997).

In Sweden, communication of research findings to the public is considered to be the universities' third task. Despite the subtleties involved in presenting the above, dealing with the press media often demands clear and concise replies to such questions as: "Is psi proven?" A reply that could be justified on the basis of the above, would be: "Evidently not - otherwise the question would not be asked - but science has succeeded in lifting the phenomena that the public commonly reports, into the laboratory and imposing checks and controls, and yet the phenomena do appear to persist. Science needs then to move on and answer Yes to the question: Should we now be looking at new and better explanations."

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An ESP Experiment with Natural and Simulated Sferics: Displacement Scores and Psychological Variables

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Abstract: In a previous study a significant negative correlation had been found between ESP scores and the natural sferics (magnetic impulses due to lightening discharges) during the 24-hour period prior to the ESP test. In the present study, an application of simulated atmospheric activity preceded the ESP task. Participants were randomly assigned to a "sferics-group" and a control group under double-blind conditions. The application of simulated sferics was associated with non-significantly higher ESP scores whereas the influence of the natural sferics was non-significantly negative in line with previous studies.

Scores were analyzed with respect to previous findings of a relationship between childhood trauma and ESP displacement scores. A highly significant positive correlation was found between ESP scores on the first task and ESP displacement scores on the second task. The correlation between Neuroticism and the ESP scores in the second task was highly significant negative but significantly positive with the ESP displacement scores in the second task.

An explanation for these findings might lie in the circumstances under which the experiment was carried out. Differences between the present experiment and earlier findings are discussed.

Introduction

The present study was designed to study the influence of sferics on ESP. Sferics are electromagnetic disturbances that are naturally generated during thunderstorms but which can also be artificially generated in the laboratory. Although this is an integral part of the present study, here we will also look at the relationships between ESP-scores, ESP displacement scores and personality variables.

The VLF-sferics, as generated by lightning discharges, travel through the atmosphere over distances up to 1000 km. VLF-sferics constitute brief (0.5 m s) oscillations with a frequency spectrum peaking at about 10 kHz in the far field. Sferics have attracted attention as a possible trigger of weather sensitivity characterized typically by discomfort or somatic complaints occurring one or a few days before a change of weather. Schienle, Stark and Vaitl (1998) reviewed biological effects (ranging from reaction times to incidence of myocardial infarctions) of sferics in humans.

As regards influences on ESP (extrasensory perception), from electromagnetic disturbances, a number of studies have been carried out on the relationship between variations in the geomagnetic field and spontaneous or experimental occurring ESP (reviewed by Stokes, 1987). These studies generally indicated a higher incidence of events ascribed to ostensible ESP in periods with a low level of geomagnetic variations.

The first study on the relationship between natural sferics and ESP (Houtkooper, et al., 1998, 1999a) found indeed lower ESP scores with higher sferics and this correlation was stronger for persons who scored low on the Neuroticism scale of the NEO-FFI (Borkenau & Ostendorf, 1993) and for those with high scores on the Openness scale. In the findings from three further studies, carried out between 1997-1999, the size of the ESP-sferics correlation was lower, although a meta-analysis of all four studies revealed a significant relationship (Houtkooper, et al., 2001).

As well as continuing this work, the present study involved the application of artificial sferics by way of analogy with studies of the influence of sferics on the EEG (Schienle et al., 1996, 1997).

In analyzing the data of the previous experiment, attention given to the indications that our findings were confirmatory of those of De Graaf, Houtkooper and Palmer (2001). This study had found a very sizeable correlation between trauma-scores, as determined by the Childhood Trauma Odds Inventory (ChTOI), and ESP displacement scores. It should however be noted that there are several aspects of the study which different from the present study. In the De Graaf et al. study, ESP targets were associated with potentially traumatic stimuli, which is not the case in the present study. Although the present study did not use the ChTOI, a detailed study was made of items in the NEO-FFI questionnaire. Since the neuroticism items proved to be prominent in this respect, earlier studies on the correlation between neuroticism and ESP, reviewed by Palmer (1977), are relevant.

Another aspect of the De Graaf et al. study concerns ESP displacement scores. These were studied extensively in early experiments with Zener cards. When the call (guess) corresponded with the preceding card instead of the actual card in the deck, it was termed *backward displacement*, and when it corresponded with the card following the intended card, it was termed *forward displacement*. Most studies were limited to displacement by one or two positions backward or forward. A definite advance in the study of displacement scores has been the analysis conducted by Burdick and Broughton (1987), which allowed forward and backward displacement, to be combined and also corrected for guessing behavior characteristics such as *repetition avoidance*. As the backward displacement is not applicable in experiments with trial-by-trial feedback, the analysis was adapted to a combined score of +1 and +2 forward displacements. According to the null hypothesis this 'combined displacement score' should be uncorrelated with the ESP score proper, independent of the guessing behavior characteristics of repetition avoidance and one-skipping repetition avoidance (Houtkooper and Haraldsson, 1997). The advantage of this combined displacement score is that, if it correlates with the ESP score proper, it would appear to be a characteristic of the ESP process itself rather than an artifact due to the non-random guessing behavior by the subjects.

Displacement scores have been reviewed by Carpenter (1977), Palmer (1978) and Milton (1987, 1988). The work of Crandall (1987) deserves to be mentioned. From this, it appears that displacement effects are most often the result of post hoc analyses and their significances have therefore to be corrected for selection. In her conclusions, Milton on the one hand doubts the reality of displacement effects per se and their relationship with psychological variables. However, on the other hand, her review mentions a number of factors:

"most promising as predictors for displacement ... those which reflect some aspect of the percipient's attitude which could make him or her wish to avoid the target or displace. Suitable candidates for future research would therefore be the sheep-goat variable; patience versus impatience; tension versus relaxation; and variables which might, in an experimental setting, be expected to give rise to some sort of approach-avoidance conflict."

In her 1988 article Milton inserts one sentence between the above two:

"Because the review offers no strong indicators of which would be the most promising variables, logical means might provide the best criteria for selection of suitable variables."

Logical means suggests the need to use a model, perhaps representing the tacit knowledge of some generations of experimenters. It seems that the displacement effect has an implicit psychological interpretation: psi occurs, but not out in the open, it remains hidden. It is with these rather vague suggestions in mind the results of in the present study were explored.

Method

Participants

Participants were recruited by a notice in one of the main buildings of the University of Giessen. Of the $N = 57$ participants, 90% were students, two thirds of which were studying psychology. The mean age was 24.7 yrs ($SD = 5.3$ yrs). Twelve were males, 45 females.

The ESP task

The ESP task administered to the subjects was similar to the computerized task in the ten Icelandic DMT-ESP experiments, described by Haraldsson and Houtkooper (1992), with one difference: Hitherto subjects took the test in pairs, alternately performing 10 trials, for a total of 40 trials each. In the present experiment, the subject took the test alone, doing 40 trials in a row. After a short pause, the same subject did another 40 trials, so that more data of each subject was obtained. Each trial consisted of guessing one out of four possibilities. The ESP score was the number of hits achieved, with a chance expectancy of 10. For each of the two tasks there was an incentive to score high: Obtaining 17 hits or more in a task meant taking part in a lottery with a prize of 50 DM (about 26 Euro's or 23 US dollars).

Simulated sferics

The experiment started by giving the instructions for the ESP experiment, which included a few practice trials. After that started a 25 min. period in which the

subjects sat down in the sferics simulation chamber, a space 2m long and 80cm wide, open at the front, which had coils on its sides by which simulated sferics signals were applied. The 6x3m room in which this took place was electromagnetically well-shielded for electrical fields (Faraday cage), but less so for the low frequency magnetic fields of the natural sferics. Intensity and frequency of the simulated sferics signals were at the same level as in earlier research by Schienle and her co-workers (Schienle et al., 1996, 1997), which is comparable to the highest hourly activity encountered during the year. As the computer equipment for the ESP experiment could interfere with the electromagnetic field of the sferics signals, the ESP task was administered after the period of sferics application.

In the experiment the subjects were assigned to one of two groups: the sferics group (N = 28), which received the sferics application as described above, or the control group (N = 29), which was treated in the same way, but for which no simulated sferics signals were turned on. The experimenters were blind to this condition.

Natural sferics

Throughout the course of the year, VLF-sferics are monitored continuously and counted per hour in Giessen, Germany. Due to a very skewed distribution the data were transformed by a logarithmic transformation. The log-transformed counts, henceforth called "*log-counts*", varied with a diurnal as well as an annual rhythm, characterised by a maximum around midnight for most of the year. In addition, during the summer months there was an intense activity around the mid-afternoon, which was then the daily maximum activity.

Sferics activity can be characterized by different variables. In the first sferics study, a range of variables that represent actual and preceding activity and changes in activity were chosen. The most prominent correlation was found for the variable AV24H, defined as the sferics log-counts averaged over the 24 h preceding the hour in which the ESP task started. Therefore, the variable AV24H will also be referred to as '*sferics activity*' for short.

Questionnaires

The questionnaires administered are the same as those in the 1996 study (Houtkooper, et al., 1999a). A 'Participant Information Form', the translated Australian Sheep-Goat scale (ASG) as a psi-belief questionnaire, a 9-item religiosity scale were given and the 60-item NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992) was used to obtain measures of Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. In addition, a questionnaire on self-regulation, the SSI-K (Kuhl & Fuhrmann, 1998) was administered. The results of this questionnaire, as well as the intercorrelations between various variables from the psychological instruments will be reported elsewhere, combining the data of the present study with other data to study a larger sample.

Trauma and personality variables

Because of the correlations found in an earlier experiment (De Graaf, Houtkooper and Palmer, 2001) the question occurred of whether a relationship

between trauma and ESP scoring, especially ESP displacement scores, could be found. The first author of the De Graaf et al. study, TKdG, who is a psychiatrist with a wide experience with traumatised patients (De Graaf, 1998), rated the items of the NEO-FFI for indications of possible traumatising. Most items with the highest trauma rating were items rated positive for neuroticism (N+), the trauma ratings having been made blind to the coding of the NEO-FFI. Amongst the 14 items with the highest two trauma ratings, there were all eight N+ items, four items rated negative for agreeableness (A-), one rated negative for openness (O-) and one positive for conscientiousness (C+). The trauma-score derived from these ratings showed good internal consistency, but as the trauma-scores were correlated with the NEO-FFI scales, the correlations were: with N: 0.95, with E: -0.32, with O: -0.11, with A: -0.26 and with C: -0.43. It is clear from this that the correlation of the trauma-score with neuroticism is so high, that it simplifies things to consider the N-scale as a good indicator of traumatising. Excluding the N-items from the trauma-score still gave a correlation with N of .48, hinting at a secondary structure in the NEO-FFI.

ESP displacement scores

Following the method of Burdick and Broughton (1987) each trial is considered together with the two preceding calls. Each possible combination of equal or different calls, together with the result of the actual call, leads to a mean chance expectancy and a variance for the contribution of that trial to the combined +1 and +2 forward displacement score. This is shown in Table 1:

Table 1: Single trial Variance and MCE contributions for combined +1 and +2 forward displacement for an open deck with k equiprobable targets.

Pattern	Result	MCE	Variance
zzz	Hit	2	0
	Miss	0	0
xxz	Hit	0	0
	Miss	$2/(k-1)$	$4(k-2)/(k-1)^2$
xyz	Hit	0	0
	Miss	$2/(k-1)$	$2(k-3)/(k-1)^2$
xzz or zxz	Hit	1	0
	Miss	$1/(k-1)$	$(k-2)/(k-1)^2$

In table 1, each target is compared with its call (z) and the two preceding calls. These three calls form different patterns depending on calls being the same (z) or different (x or y) from each other. Whether the target is equal to one or both of the two preceding calls, determines the MCE for displacement for that target and its variance.

The single trial contributions are added up for all trials in a task, in this case consisting of 40 trials. The total MCE is compared with the total number of +1 and +2

displacement hits, and divided by the standard deviation, i.e. the square root of the total variance. The result is the combined displacement z-score. Note that for the first trial there are no +1 or +2 displacement hits and for the second trial of the task there are no +2 displacement hits. This is taken into account accordingly, for the details see Burdick and Broughton (1987). When mentioning 'displacement score' in the following, the combined displacement z-score is meant.

Results

Simulated sferics and ESP

The hypothesized difference between the sferics and control groups resulted in slightly below chance scoring for the control group as their ESP-score, the mean number of hits in both tasks, was 19.83, whereas the sferics group scored above chance with an average of 20.89 hits, while the mean chance expectancy was 20. The t-test on the difference in the ESP-scores between the two groups resulted in $t = 1.023$, $df = 55$, n.s. Comparing the combined displacement z-scores for both tasks resulted in $t = 0.457$, $df = 55$, n.s.

Natural sferics and ESP

The relationship between natural sferics and ESP was tested by calculating Kendall's tau nonparametric correlation coefficient between the ESP-scores and the level of sferics activity AV24H. This resulted in $\tau = -0.10075$, $N = 57$, $p = .14$, n.s. The correlation was in fact in the same direction as in the previous four experiments, carried out in the years 1996-1999, combined. An overview of the previous experiments, together with the present, 2001 experiment is given in Table 2:

Table 2: Kendall's tau correlations of ESP performance of subjects and co-subjects with Sferics activity in all five studies and effect sizes for correlation in combined studies.

EXPERIMENT:	N	Subject	Co-subject	Combined
1996 (Feb.-July)	100	-.119*	-.113*	
1997 (July-Oct.)	37	-.085		
1998 (July-Dec.)	100	-.084	-.056	
1999 (Jan.-Oct.)	68	+.087	-.007	
2001 (May-July)	57	-.101		
Combined:				
1996-7-8-9	305/268	-.084	-.095	-.089**
1996-2001	362/268	-.093*	-.095	-.094**

*: $p < .10$, **: $p < .05$, two-tailed.

From this it is seen that the overall effect size of the sferics-ESP correlation has slightly improved from the result of the previous four experiments ($ES = -.089$, $N = 573$, $z = 2.13$, $p = .03$, two-tailed) by the contribution of the present experiment

to the sferics-ESP meta-analysis. The result for all five experiments is: $ES = -.094$, $N = 630$, $z = 2.36$, $p = .02$, two-tailed.

ESP- and ESP displacement scores

The ESP-scores on the ESP tasks revealed no overall extrachance scoring: The 57 subjects obtained an average of 20.351 hits ($SD = 3.930$, $t = 0.67$, n.s.), where 20 hits were expected by chance. The ESP z-scores and the displacement z-scores for both tasks are displayed in Table 3:

Table 3: ESP z-scores and combined displacement scores for the first and second ESP tasks and for both tasks combined.

	ESP z-score Mean (Std.error)	Displacement z-score Mean (Std.error)
First task	0.173 (0.133)	-0.015 (0.133)
Second task	-0.045 (0.124)	0.280 ¹ (0.130)
Both tasks	0.091 (0.134)	0.187 (0.119)

¹: $p = .04$, 2-tailed

The combined displacement scores in the second tasks are significantly above chance: A single-sample t-test results in: $t = 2.16$, $df = 56$, $p = .04$, two-tailed. Whereas the ESP-scores tend to decline from the first to the second task ($t = 1.26$, $df = 56$, n.s.), the displacement scores reveal a nonsignificant incline ($t = 1.41$, $df = 56$, n.s.).

Relationships between ESP tasks

As was already mentioned, the advantage of the combined displacement scores is that these are "H0-independent" from the ESP-scores proper. This means that according to the null-hypothesis the expected correlation between the direct hits on the ESP-task and the combined displacement scores is zero, irrespective of the - generally non-random - guessing behavior of the subjects. The actual correlations between these variables are therefore an aspect of ESP-scoring behavior, free of artifacts. The correlations between ESP-scores and combined displacement scores in both tasks are given in Table 4:

Table 4: Pearson correlations between ESP-scores and displacement scores in both ESP tasks.

Score	Task	ESP/1	Displ/1	ESP/2
ESP-score	1			
Displacement	1	-.047		
ESP-score	2	.095	-.104	
Displacement	2	.447 ¹	-.180	-.036

¹: $p = .0005$, 2-tailed

The relationship between the ESP-scores on the first task and the displacement scores on the second task is very significant: $r = .447$, $N = 57$, $p = .0005$, two-tailed. The correlation between the ESP-scores on both tasks is $r = .095$, $N = 57$, n.s. It may be worth noting that there was one subject who scored lowest of all (4 hits) on the first task, but highest of all (17 hits) on the second task. This was the one subject who won the prize of 50 DM, and also it was the eldest subject (49 years old) of the sample. There are no grounds to exclude this subject from the sample, but the weight of this data point is diminished if a nonparametric correlation is used. The test-retest correlation between both ESP-scores by Kendall's tau resulted in $\tau = .120$, $N = 57$, $ES = 0.17$, $p = .09$, one-tailed.

ESP and personality

The two tasks appear to have a relationship, more complex than simply a replication, as the correlation between ESP-scores of the first task and displacement scores of the second task shows. Therefore, the relationships with personality variables were analyzed separately for both tasks, as is displayed in Table 5:

Table 5: Pearson correlations between the personality variables of the NEO-FFI and ESP- and displacement scores in both ESP tasks.

Score/Task:	ESP/1	Displ/1	ESP/2	Displ/2
Neuroticism	.161	-.040	-.449 ¹	.285 ²
Extraversion	.120	.001	.214	-.006
Openness	-.076	-.010	-.149	-.256
Agreeableness	-.035	-.204	.035	.049
Conscientiousness	.072	-.013	.153	.041

¹: $p = .0005$, 2-tailed ²: $p = .03$, 2-tailed

The quite striking correlations with neuroticism in the second task display opposite signs. The correlation with the ESP-score is negative and highly significant, whereas the correlation of neuroticism with the ESP displacement score is positive in the second task.

The correlations of ESP- and displacement scores with religiosity and psi belief (ASG) are given in Table 6:

Table 6: Pearson correlations between religiosity and psi belief and ESP- and displacement scores in both ESP tasks.

Score/Task:	ESP/1	Displ/1	ESP/2	Displ/2
Religiosity	.102	.061	-.277 ¹	-.054
Psi belief	.036	-.102	.001	-.048

¹: $p = .04$, 2-tailed

With regard to the significant correlation between religiosity and ESP-score in the second task, it is interesting to note that the correlation between religiosity and neuroticism was $r = .259$, $p = .052$. The intercorrelation between religiosity and psi belief was $r = .424$, highly significant ($p = .001$, two-tailed).

Discussion

The primary purpose of this study, to investigate the relationship between simulated sferics and ESP-scoring, although giving a non-significant finding, is in the reverse direction from that of the correlation between natural sferics and ESP. The latter correlation has also proven to be nonsignificant in this study, but in the same direction and with a similar effect size as those found in four previous studies. The, slight but significant ($p = .02$, two-tailed), negative correlation between natural sferics and ESP scoring has thereby been confirmed.

All other analyses are explorative and have to be interpreted with regard to, first, the meaningfulness of the relationships (as a post hoc and therefore weaker version of pre-stated hypotheses) and, second, where meaningfulness cannot be invoked, a strict correction for multiple analyses. This is to say that some post hoc analyses are more meaningful than others and the pessimism implied by the multiple analysis correction should be spread accordingly. A nonsensical but significant correlation should be of less interest than an almost significant but meaningful correlation. Moreover, the best known correction (Bonferroni) for multiple analysis is unnecessarily conservative in the case of intercorrelated independent variables with which a dependent variable, i.e. ESP scoring is correlated. An example of such intercorrelated variables is psi-belief and religiosity (Thalbourne and Houtkooper, 2002; Thalbourne and O'Brien, 1999).

Displacement scores:

In the present study, the combined displacement scores were evaluated because of the interesting relationship with trauma scores found by De Graaf, Houtkooper and Palmer (2001). The combined displacement score according to Burdick and Broughton (1987), modified for +1 and +2 forward displacement instead of -1 and +1 displacement, offers an evaluation of displacement independent of guessing characteristics such as repetition avoidance.

Surprisingly, the two ESP tasks revealed a correlation ($r = .447$, $p = .0005$, two-tailed) between ESP scoring in the first and displacement scoring in the second task. Based upon the Milton's (1988) review, our first impression might be "ESP going into hiding". The overall scoring supported this idea, since the overall ESP score in the first task was positive ($z = 1.299$, $p = .20$), while the displacement scores in the second task were positive and significant ($z = 2.156$, $p = .04$ two-tailed).

Traumatisation:

This raised the question, how to get a traumatisation score, in order to see if conceptually the same relation between ESP displacement and traumatisation would be found here as in in de De Graaf et al. study. In an attempt to resolve this lack of a direct measure, TKdG examined the questionnaires. It appeared to him that in the NEO-FFI there were several items pertaining to possible traumatisation. In a blind assessment of the 60 items, there were 4 items strongly indicative of traumatisation (e.g. "I often feel completely worthless"), 10 moderately indicative of traumatisation (e.g. "Many people hold me for cold and calculating") and 19 items for weakly indicative of traumatisation. Interestingly, 3 out of the 4 strong items and 5 of the 10 moderate trauma items were loading positively on the Neuroticism scale of the NEO-FFI. A trauma scale was constructed by weighting the sums of the strong, moderate and weak trauma items according to a maximum variance criterion. The trauma scores thus obtained correlated very high ($r = .944$) with Neuroticism. Even if the trauma-scores were stripped of the N-items was the residual score significantly correlated with the N-scores ($r = .480$). Because of the large overlap between the synthetic trauma-score and the psychometrically well-established N-score, it was hardly warranted to analyze the data separately for the trauma-scores. However, it may be emphasized here that the relationship between traumatisation and neuroticism is an interesting subject for further research.

Neuroticism:

The correlations between ESP-scoring and Neuroticism proved to be pronounced in the second task: The correlation between N-score and ESP-score proved to be negative and highly significant ($r = -.449$, $p = .0005$, two-tailed), lending support to Palmer's (1977) conclusion that "there is evidence for a consistent negative relationship between neuroticism and scoring on ESP tests when Ss are not tested in groups". Moreover, the correlation between N-score and displacement score in the second task was positive and significant ($r = .285$, $p = .03$, two-tailed). The corresponding correlations in the first task were nonsignificant and .16 and -.04 respectively. The $r = .16$ between N and ESP even disappears almost completely if

the correlation between ESP in the first and displacement in the second task ($r = .447$) is taken into account.

This pattern of correlations calls for an explanation: First, the conditions in the present experiment may be compared with previous experiments, such as the previous experiments with natural sferics (Houtkooper et al., 1999a, 1999b, 2001) and the Icelandic DMT-ESP experiments (Haraldsson and Houtkooper, 1992; Houtkooper and Haraldsson, 1997). Secondly, we may try to find differences between the two tasks, since a test-retest paradigm obviously fails as an explanation for the observed correlations.

First, the set up of present experiment differed from previous experiments in a number of ways:

1. The subject (S) carried out the ESP task on his/her own, whereas in previous experiments he/she alternated every 10 trials with a co-subject. The atmosphere previously was one of friendly competition, which was lacking in the present experiment.
2. The same 40-trial task had to be performed twice after each other for no apparent reason.
3. The ESP task had to be performed within the narrow confinement of the sferics chamber.
4. According to the instructions, the sferics application involved the possible, but uncertain application of weak and imperceptible electromagnetic waves. Nevertheless, this might be associated with an anxiety-provoking concept like "electro-smog".
5. The experimenter was sitting in a room next to the sferics chamber where he/she could observe the subject through a window.
6. The experimenters in this study were rather skeptical with regard to the existence of psi.
7. There was a time limit to the filling out of the questionnaire, that is, after 25 min. a tone sounded and the S had to interrupt the filling out and perform on the ESP tasks, about which he/she had been given the instruction before.

From these differences in setting, we conclude that some elements in the present experiment may have caused a higher state of anxiety than in previous experiments.

As to the difference between the two tasks, it may be noted that for each of the two tasks there was a potential financial reward. This may have caused self-evaluative behaviour after the first task, with possible consequences for the relation between ESP- and displacement scores on both tasks. Ownership inhibition (Batchelder, 1979) may therefore have played a role, especially in the second task, and this might have been the cause of the overall significant positive score of displacement in the second task and of the correlations with neuroticism in the second task.

Test-retest correlations:

However, within the framework of classical psychological test theory, the two ESP tasks would be regarded as test and retest under - assumed - the same

circumstances. The test-retest correlations of ESP- and displacement-scores, .095 and -.180 respectively, reveal no indication of the fruitfulness of this approach. In an orthodox view, the conclusion might even be that, as ESP scores reveal such low test-retest correlations, the correlations with these scores must be spurious. Yet, to declare two correlations, both significant at less than .001, to be spurious would seem to be stretching this argument too far. We conclude then is that since these correlations are not to be regarded as spurious, the assumption that the circumstances of test and retest are similar, cannot have been fulfilled.

Therefore, we have to assume that for the subjects in general, the test-scores on the first task had an influence on their performance on the second task. This might be called "task interaction", analogous to the differential effect between juxtaposed tasks (Rao, 1966). The reliability of the ESP scores, as discussed for instance by Palmer (1977), had better be estimated by the correlation with extraneous variables such as neuroticism and displacement scores than by the correlation between test and retest.

Task interaction:

To explore the phenomenon of task interaction in the present experiment, we may point to the fact that the one subject who had the lowest ESP-score on a task, namely 4 hits, also obtained the highest score in this experiment: On the second task she scored 17 hits. In contrast, the next highest scorer obtained 16 hits twice. With these two examples, we may divide the present data into four subsamples, according to hitting (H) or missing (M) on the two tasks and explore the differences between the groups with regard to several variables. The subjects who score exactly at chance on any task are rejected. The results of this exploration are given in Table 7:

Table 7: Subjects divided into groups who scored below 10 hits (M) or above 10 hits (H) on both tasks. Means for personality and attitude variables per group and standard deviations for all subjects.

Scoring task	1/2:	MM	MH	HM	HH	Std.Dev.
N		10	6	13	12	
N(females)		8	2	12	2	
N(males)		2	4	1	2	
Neuroticism		1.8	1.7	2.5*	1.6	0.75
Extraversion		2.4	2.3	2.2*	2.6	0.41
Openness		2.7	2.4	2.8	2.7	0.59
Agreeableness	2.7	2.6	2.6	2.5	0.47	
Conscientiousness		2.3	2.6	2.4	2.7	0.60
Psi belief		2.9	2.9	3.9	3.7	1.77
Religiosity		1.7	0.6	1.3	1.4	0.74

*) $p < .02$, two-tailed

In Table 7 there are two variables which reveal some contrast between the HM participants ("decliners") and the other subjects. The decliners are high on neuroticism ($t=3.54$, $p=.002$) and low on extraversion ($t=2.59$, $p=.014$). When groups are combined to form the groups of consistent (MM and HH) versus inconsistent (MH and HM) scorers, the same variables differ significantly: Consistent scorers are lower on neuroticism ($p=.02$) and higher on Extraversion ($p=.05$).

Conclusion:

Obviously further research is necessary to shed light on the factors which caused the relationships between ESP-scores, displacement scores and neuroticism found in the present experiment. As suggested by previous research, the relationships between neuroticism, traumatisation and state anxiety in the experimental setting need to be explored. Furthermore, since we are persuaded that the correlations found here are manifestly due to psi, we might further analyze the ESP data for some other characteristics:

1. Bunching of hits in each session,
2. Characteristics of guessing behaviour, and
3. The anxiety-related factor of how many misses occurred before the subject achieved his or her first hit.

These features will be reported on in a following article.

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SPHERICS

An Attempt to Improve ESP Scores using the Real Time Digital Ganzfeld Technique

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Abstract: The aim of real-time recordings is to use the qualitative correspondences between ganzfeld experiences and the content of film clips in order to make better quantitative judgements.

The study used this system of book-marking correspondences in order to see if ESP performance in the ganzfeld could be improved amongst a group of 8 volunteers who were scheduled to each complete six double ganzfeld sessions. Another hypothesis concerned the possibility that impressions which were thought by the participant to have an "external origin", would be more target related. Because of a computer crash the study had to be terminated with 74 ganzfeld trials. Although no improvement in performance could be demonstrated, and no differences were found with respect to the source to which imagery was attributed or to state of consciousness variables, participants scored at the expected rate of 32-33% for the Ganzfeld (effect size $d = 0.17$, $z = 1.48$, $p = .09$).

The 38 trials that had one session per day gave a direct hit frequency of 45% while those 36 trials with two sessions per day obtained a 19% hit frequency ($p < .05$) which replicated earlier findings related to the hypothesised negative effect of more than one session per day on scoring.

Introduction

The development of the real time digital ganzfeld (RTDG) enables in principle the realization of new possibilities concerning feedback through the identification of specific cues in the mentation report and states of mind associated with the production of psi rich material. The detailed features of the RTDG have been fully described elsewhere (Parker, 2001, 2003; Westerlund, 2002; Goulding, Westerlund, Parker, & Wackermann, 2004¹) but the basic innovation concerns the digital recording of the mentation report in synchrony or real time with the target film clip. This means that through replaying the session and listening to the mentation report and observing the film clip in real time with it, then correspondences in content between the two can be assessed. Such correspondences should provide a means of distinguishing the actual target from the decoy clips.

Certain further technical finesses have been added as features of the RTDG through the expertise of Joakim Westerlund. For instance a wave display allows for the rapid movement through the whole mentation report skipping periods of silence. The use of a book marking system incorporated in the ganzfeld judgment program

¹ The first RTDG was carried out by Anneli Goulding during 2002, and is to be reported as Goulding, Westerlund, Parker, & Wackermann, 2004

enables every singular correspondence between film clip and report to be logged as an item, coded with respect to the film clip, and even rated for degree of likeness (see figure 1). These sequences along with the film imagery can be later recalled when needed.

It is reasoned that a systematic use of these book marked sequences along with later feedback as regards the outcome, might enable some improvement in performance to occur by virtue of recognizing the psi markers or subtleties in the imagery and mental states which seem to be a hallmark of success. This would in effect be using the RTDG as a psi-training technique. Another important feature of the current design is that it allows the use of two film clips per session, with two sending periods lasting 14 minutes each. This increases the efficiency of the procedure in allowing statistical significance to be achieved.

One of the few Ganzfeld studies, which have been designed specifically in order to see if improved performance could be reached through participation in several sessions, was carried out by Deborah Delaney (1981). Six participants with above the mean scores on extraversion and on the Australian Sheep-Goat Scale of belief in psi, each took part in 12 ganzfeld sessions. After their judgments as to which film clip had been the target film had been made, participants then received feedback about whether the judgment was correct or not. This was followed by a systematical review of the mentation report pointing out correspondences with the target film clip. A review was also made of the different types of imagery and feelings associated with the imagery. Despite this effort, there was nothing to indicate that any individual or the group as a whole achieved any improvement or learning effect.

Nancy Sondow (1979) carried out a ganzfeld study in which twenty subjects were randomly assigned to one of two groups: one group received feedback after every session while the other group the association group free associated to all four film clips (target and three decoys) before making their choice of the target and received only feedback on completion of all of their sessions. A hundred ganzfeld sessions, with five sessions per participant and 50 sessions per group, were completed giving a 41% direct hit frequency and highly significant results (binomial $p < .0004$). However it was the association group alone that was responsible for the high scoring level and this group scored significantly higher than the feedback group. The use of external judges produced scores however at chance level for both groups. Nevertheless when judges had access to the participants' association material, both their scores dramatically improved so as to reach statistical significance. Sondow's results were also confounded by another important variable: the number of sessions per day. The association group had a much higher success rate when there was only session per day with the difference reaching significance when the psi-scores from 1 versus 3 sessions per day were compared. The feedback group showed the same trend but the difference was not significant. Since the association group had twice as many sessions in the unfavourable condition, their success could not be attributed to the sessions-per-day effect.

One way of making sense of the findings in above studies is that feedback per se does not appear to be efficacious but associations carried out before judgment process might be effective in promoting the learning of cues (in the Delaney study these were made after judgment and after feedback).

Although there were no formal instructions to free-associate were used in the present study, it is possible that the decisive function may be present in the RTDG procedure which involves systematically reviewing each mentation image or utterance together with the corresponding film image and then book marking those utterances and images that were deemed to be significant interest. During the book marking procedure the participants are of course free to relate their own associations.

Another important aspect concerns possible psi-markers is the state of consciousness. Although the work of Carl Sargent has a contentious and controversial status (Parker and Wiklund, 1987), there are some findings relating to state of consciousness and the perceived origin of the imagery that may deserve further investigation (Sargent, 1980). At the time of the planning of the project some support was being given to Sargent's findings by the findings of Christine Simmonds although the later re-analysis of this work failed to confirm these initial results (2003). These aspects which related positively to psi performance concern: 1) the degree of loss of bodily awareness, 2) the lack of control over thoughts and impressions, and 3) the experience that the impressions have an external rather than internal origin. Accordingly a short post ganzfeld session questionnaire was composed using the successful items taken from the Sargent scale concerning the degree to which the above three aspects were reported by the receivers in the experiment.

Hypotheses:

So-called direct hits, that is first place rankings of the target film clip to the mentation report, were to be used as the primary analysis. Because of the relatively small number of participants and the small number of trials, it was not hypothesized that the overall results would achieve statistical significance.

It was hypothesized on the basis of the above:

1. That there would be an increase in the number of hits over time so that a comparison would show a significantly greater number of these during the last three sessions compared with the first three sessions. It was also expected that a secondary analysis using ranking rather than direct hits would confirm this.¹
2. That a higher number of hits and rankings would be associated with
 - a) a lower degree of bodily awareness
 - b) a lower degree of control over thoughts and impressions
 - c) a higher degree of impressions seeming to have an external origin rather than an internal origin.

A secondary – and explorative hypothesis – concerned the use of bookmarks: It was hypothesized that higher ratings of bookmarks would be associated with direct hits.

¹ In reality because of loss of data the rankings could not be used,

Method

Participants:

Although previous work with the manual ganzfeld had arrived at a clear recipe for selection of participants and experimenters (Parker, Frederiksen, Johansson, 1997), regrettably, for practical reasons this could not be applied in the present design. Contrary to this recommended practice, scheduling and financial restrictions meant that the main source of recruitment was from psychology students. (Five of the pairs of participants taking part, studied the programme of professional education in psychology, and one or more of the members in the remaining pairs studied a course in psychology). Recruitment was primarily through the personal contacts of the first author but also through an advertisement on the departmental notice board. Eight pairs of receivers and senders were selected in this way. The major entry criterion was their interest in the study and an agreement to complete the required six sessions within the allocated time schedule of six weeks. The reporting of own subjective paranormal experiences was not an entry requirement. Six of the eight pairs were women and the remaining two were men. The age of the participants was approximately between 19 and 35 years. As a motivational incentive, both participants in the pairs received a cinema ticket for every hit that was obtained in the session.

Design and Equipment:

The pairs of participants were required to keep to the same roles as sender and receivers throughout all the sessions. Six sessions each of two trials were to be completed by eight pairs of participants giving a planned total of 96 ganzfeld trials. The book marking system was used to give systematic feedback as to the correct use of cues in the mentation report. A post ganzfeld questionnaire was used to access specific internal state factors.

The standard testing procedure for RTDG was used. This allows the sender to receive auditory feedback of the receiver's mentation report, which is recorded in digital form in real time with the target film. The set up uses sets of four film clips (one target and three decoys) per session, which are chosen by the computer's random number programme. The digitalised video library accessed by the computer is composed of 120 films arranged in 30 sets. The clip films are exactly two minutes in length and are shown seven times on a large 19-thumb screen. Two film clips are each shown for 14 minutes of the 30-minute ganzfeld session. A second computer, placed in the receiver room, enables the judging procedure to be carried out in this room. This computer is used in order to log into the files of the main computer and retrieve the decoys plus target film along with the mentation report. The judgment procedure can then be carried out and completed in the receiver room.

Two rooms with approximately 30 meters distance separate sender and receivers. The receiver room is sound attenuated for blocking normal conversation and sounds (>48 decibels).

Procedure:

The first author, TW, tested the receiver-sender pairs and was the experimenter throughout. TW explained the set up and purpose of the experiment to both participants and then the sender was left to follow the instructions for film selection and viewing that appeared on the computer screen. The experimenter accompanied the receiver to the relaxation room and fitted the receiver with the ganzfeld goggles and earphones. Since there exists a one way auditory link between the receiver room and the sender room, a start-the-session signal was given to the sender. The sender activated at this point the first film-clip chosen by the computer.

Following the ten minutes of taped relaxation music, the thirty minutes of ganzfeld stimulation began. White noise was used as the source of ganzfeld sound. Since the judgment procedure was lengthy, the sender on completion of the session was allowed to leave (but without making contact with the receiver-experimenter team). On completion of the session the receiver filled in the post ganzfeld questionnaire concerning body image, loss of control of thought processes, and the perceived source of the imagery.

The judgment procedure was centered on the book marking system. Film clips were viewed and compared two at a time with the mentation report using the acoustic graph to locate segments of mentation. Every relevant segment of the mentation was book-marked (see figure 1) and rated on 10-point scale of *quality of correspondence*. In order to be assessed as a potential high quality hit, three criteria were required to be fulfilled:

1. A temporal closeness between the corresponding mentation and film imagery. In other words the window of correspondence should be narrow (about 5 seconds).
2. The correspondence should be specific rather than general: water is general, a marsh is specific.
3. The occurrence of unexpected details or sequences. A gorilla and a jungle is expected but "a fight" and "in a field seen from above" is unexpected detail (see figure 1)²

The receiver was also required to assess every segment as to whether the imagery appeared to derive externally versus internally. The book-marking system was used to arrive at a final overall rating for each film clip, which then would provide a basis for ranking for their closeness to the mentation report.

² A fourth criterion could have added concerning the presence of *repeated themes*, which appear to a result of the repeated showing of the film clip.



Film clip series: the 3 decoys and target clip

Bookmark for the current utterance “a large ape” in real time with the above image. The three bookmarks before read “a hunt: many animals”, “a fight”, “a large area, a large animal who is angry” and the three afterwards read “a gorilla”, “jungle”, “an animal in a field seen from above”. Jungle received a quality rating of 4, ape 7, and gorilla 10.

Figure 1: The Method of Book Marking with the RTDG:

An example of a real time hit: The picture is from the real life film of a boy who has fallen over the top of the perimeter wall of an area containing gorillas. The film taken from above shows him lying prone (middle right) while a gorilla (center) approaches him. A keeper descends and chases the gorilla away.

Results

An unfortunate incident, which had a dire effect on the schedule for the latter part of the experiment, was a computer crash involving the breakdown of the hard disc of the computer in the sender room. Although most the information (real time recordings of mentation reports and choice of target series) was recorded on the server³ the data file containing the identification of the targets was lost. TW's records of hits and misses did however compensate for some of this loss so the outcome of the sessions could be determined although ranking data was lost.

³ This has now been changed so that all data is recorded on the server.

The loss did mean that the study had to be re-scheduled and only five of the original eight participant pairs were able to complete their six double sessions.

A total of 74 trials were carried out giving 24 direct hits if data is included from those who were unable to complete their scheduled 5 sessions. The direct hit rate for these sessions was 32.43%. This gives a small to medium effect size at $d = .17$ ($z = 1.48$, $p = .09$). The five pairs who completed their sessions obtained a similar hit rate (33.33%) for their 60 trials. These twenty hits were distributed exactly equally between the first three and the last three sessions with ten hits in each period, thereby disconfirming the first hypothesis. Using the post-session questionnaire, it was found that the reported "loss of bodily awareness" failed to predict success (Spearman $r = .06$, $p = .60$), and the same was true for "loss of control over thought processes" (Spearman $r = .01$, $p = .091$) and for "external versus internal attribution of imagery source" (Spearman $r = -.12$, $p = .33$). The use of book-marking to give a more precise evaluation of the latter also failed to predict hits: $\chi^2 = 1.32$, $d.f. = 1$, $p > .05$.

An explorative analysis (see discussion) of the use of book marking in predicting success was made. Bookmarks indicating a high degree of likeness of the mentation utterance to film clip (6 to 10 on the 10 point scale) failed to give significantly more hits than those indicating a lower degree or dissimilarity (1 to 5 on the scale): $\chi^2 = 2.45$, $d.f. = 1$, $p > .05$. Six of the 69 films (book marks were absent for five of the 74 sessions) that had been ranked first, were selected as potential good hits for having two or more bookmarks with a rating above five. Three of the six were actual hits. The data were very heterogeneous: the five pairs of participants completing the scheduled number of sessions gave between 35 and 150 bookmarks which is a highly significant difference $\chi^2 = 125.47$, $d.f. = 4$, $p < .01$.

A post-hoc analysis was made concerning the earlier mentioned "sessions-per-day effect": The 38 of the 74 sessions which were carried out with one ganzfeld session per day, gave a 44.73% hit rate while the remaining 36 session which were carried out with two sessions per day gave a hit rate of 19.44%. The differences is statistically significant: $\chi^2 = 5.40$, $d.f. = 1$, $p < .05$.

Discussion

Although the study especially given its premature termination must be considered exploratory, it is clear there was no easy route to improving scoring level through a potential learning situation. The same seems to be true with the use of potential internal markers of psi. An obvious caveat concerns the small number of participants and the use of double sessions to improve efficiency, which naturally reduces the variance and thereby the generalisability of the findings.

The most significant finding concerned the effect of the number of session per day, which replicated the previous finding by Sondow (1979).

Also on the positive side, the direct hit frequency was in line with previous results. This was in spite of the deviation from the criteria in "the formula for success" by for instance using psychology students, rather than using individuals reporting subjective paranormal experiences. Both the direct hit frequency and effect size were at a level expected from our manual ganzfeld studies and from other successful ganzfeld studies. It is of course possible that the use of book marking helped attain this level

in a less-than receptive group. On the other hand there was little evidence that mentation reports giving a highly rated booked marked correspondences actually gave more hits. The only indication is found in that three of the six sessions with two or more highly rated book marks gave hits. A caveat here is the extreme heterogeneity in the use of bookmarks. Nevertheless the weakness of any book mark effect is a rather enigmatic finding given the scoring rate and that impressive hits (such as figure 1) do occur. It may be that these high quality hits are just too few (they are estimated to occur with about one in six of ordinary hits) to make a difference to the heterogeneous pile of bookmarks. Clearly more work is needed to determine if book marking provides a royal road to psi or if it is a misleading path.

Acknowledgement

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Research Note: When the Ghost was the Host

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Probably most authorities would agree that there is no persuasive evidence for the objectivity of ghosts existing in the sense of authentic photographic documentation that survives normal probable explanations.¹ The so-called classical ghost photographs only number about 5 or 6 and for nearly all, if not all of these, there would appear to be normal explanations (Puhle and Parker, 2004).

For this reason a photographic anomaly suggestive of an apparitional figure, which was published in the Swedish newspaper *Aftonbladet* on April 12th 2000, attracted interest from us. This is reproduced here as figure 1. The interest was further highlighted because it occurred in the context of visit to Engstö Manor House (located in the county of Westermanland) two days earlier by the psychical researchers William Roll and Andrew Nichols who had previously reported anomalous experiences at this locality. On this particular occasion we were present during their visit and that of the accompanying press photographer. It should be immediately said that although *Aftonbladet* is as an evening Swedish newspaper considered in Sweden to be light reading material, they made no claim of the picture being an authentic ghost picture but merely posed the question: "Who was standing before the fire?" Nevertheless the article related the puzzlement of the photographer who was unable to explain the content of the picture he took and noted there was a folklore tradition of the Manor House was being haunted by dwarf figure. This figure was said to be Anders Luxemborg (1697-1744) who was dwarfed and hunchbacked, and is buried in the graveyard at Engstö Manor House. Luxemborg was employed at the manor house and became a personal friend of the then King, Charles XII who often visited the manor house. The article also noted that Roll and Nichols had found abnormal geomagnetic readings in the neighborhood of the fireplace where the photograph was taken.

We took contact with the photographer, Jonas Bilberg, who was helpful and cooperative, and gave a trustworthy impression. The photograph was said by him to be only one taken on the occasion, it had not been manipulated in any way, it was taken without a flash, and with a shutter speed of either 1/8th or 1/15th of a second. He did not recall anyone being present in the viewfinder. The negative had been kept and could be made available.

The hostess was Countess Catharina Piper who had invited us all to the Manor House during that weekend. She had invited the members of the group on an evening tour of the manor house and the photograph had been taken during this tour.

¹ A collection of recent non-digital anomalous photographs, has recently been compiled by Maurice Grosse (2002).

HOST AS GHOST



Figure 1. Camera picture



Figure 2. Frame from a video film within 2-3 seconds of the above.

The manor house was used as a museum and was not wired with electricity on the upper floor, so it was necessary to light candles.

Adrian Parker discussed the content of the photograph with Countess Piper and the possibility that it might depict her but she did not remember being present at the time the photograph was taken and did not recognise any the more identifiable features of the picture such as the shoes. Countess Piper was of normal build, so although she was considered to be the most likely figure in the picture, it seemed difficult to account for the distorted body image depicted there and its diminutive appearance relative to the size of the fireplace, which was one meter in height.

Fortunately a complete record of the tour of the building was documented on video film by Jan Fjellander and a comparison with it leads us to some instructive conclusions. It was true, as the newspaper noted, that Roll and Nichols had remarked on high and somewhat fluctuating geomagnetic readings around the fireplace. It is however difficult to know what significance, if any, to attach to this. Roll and Nichols were unable to replicate the deviations they had observed the previous year and were looking for further deviations. It is perhaps natural in a room that the fireplace should become a place of focus and there no objectively determined control comparison measures were made. The fireplace evidently became a focus of interest so much so that Countess Piper decided to light a couple of candles in the open fireplace, and it was during this time that the photographer took the photo. By matching the content of the video (including sounds and movements) with the photograph, we were able to obtain a still image which closely corresponded in time with the newspaper photographer's photo although the recordings were taken from adjacent perspectives. (The two photographers stood within 1 ½ meter from each other.) From this it was evident that the person in figure is Countess Piper and figure beside her to the right is William Roll. The distortion is partly accounted for by the different perspectives and discussion with experienced photographers confirmed that curious distortions can arise when pictures are taken without the use of a flash.

Clearly this episode reinforces the need for caution in interpreting photographic anomalies. Here the content of the photograph happened to coincide with the folklore concerning a particular ghost while the place of its occurrence happened to coincide with fluctuating geomagnetic measurements and but for the documentation, totally ill-founded conclusions could have been drawn.

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Research Note: Is the I Ching Process Cybernetic or Non-Cybernetic?

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Abstract: The so-called '*I Ching* experiment' has been conducted twice under controlled laboratory conditions (see Storm & Thalbourne, 1998-1999, 2001a). While most of the results of those two studies have supported key aspects of M. A. Thalbourne's (in press) theory of psychopraxia, the theory suggests that psi may be a cybernetic or mediational process (i.e., that psi may involve some kind of mechanical transference, or processing of information, for an effect to take place). Thus far, this claim has not been tested. This report compares two samples—each in a relatively different condition (viz., procedurally complex and procedurally non-complex)—to determine whether the *I Ching* process is cybernetic. No evidence was found either way that the *I Ching* process involved information transfer or was a goal-oriented process. As a psychopractic effect, there was no evidence that the *I Ching* process is a paranormal effect that can be compared to synchronicity (see Jung, 1960) or *conformance behavior* (see Stanford, 1978).

Psychopraxia and Goal-Orientation

An initial study (Storm & Thalbourne, 1998-1999) and a replication study (Storm & Thalbourne, 2001a) have been conducted using the *I Ching* (an ancient Chinese system of divination).⁴ Thus far, most of the results from the two studies have supported key aspects of Thalbourne's (in press) theory of psychopraxia, namely, that (i) ESP and PK may be the same process (referred to as psychopraxia), (ii) that psi may be better described as the fulfillment of a 'pro attitude' (a pro attitude is an orientation towards a favored outcome), and (iii) paranormal effects occur only if 'sufficient and necessary conditions' are present.

However, Thalbourne's theory also suggests the possibility that psi may be a cybernetic or mediational process (i.e., that psi involves some kind of mechanical transference, or processing of information, that is necessary for an effect to take place). The theory allows for information processing to the extent that such processing fulfills the obligation of being a necessary condition in a given situation.

³ This article was adapted from a chapter in the author's Ph.D. thesis.

⁴ A recent classroom study (Storm, 2002) carried out for didactic purposes gave a non-significant hit-rate ($P = 26\%$, $p = .535$), almost certainly because it was deficient in the number of participants ($N = 43$), which were tested as a group rather than independently, and also because of the pressure to succeed at demonstrating a parapsychological phenomenon in a less-than-desirable environment. Data from that study are therefore not used in the present study due to the possibility that the outcome was the result of artifacts caused by less than ideal conditions.

Some paranormal phenomena may present in such a way as to suggest 'goal-orientation' (explained shortly), leaving open the possibility that subtle information processes may well occur in psychopractic action, but these may go undetected. Thalbourne's hypothesis that information processing may be involved in the *I Ching* process has not been tested.

While Thalbourne (in press, p. 55) states that psi is a goal-oriented process, he later prefers that psychopraxia be termed a 'pro attitude serving' process (p. 66). Storm and Thalbourne (2000) state that "a person may be said to have a pro-attitude towards state S when they would prefer S rather than -S [not S] if those two alternatives were to be brought to their attention" (p. 280). Since Irwin (1999, p. 160) describes goal-orientation as *non-mediational* (i.e., not requiring a flow of information by various means such as is posited in the "cybernetic" theories), exopsychopraxia (otherwise known as psi) may be a *mediational* process.

The term goal-orientation is usually used to describe psi as a teleological process—a process that involves an end or goal that is achieved. For Kennedy (1995), the "basic goal-oriented psi hypothesis assumes that psi phenomena (a) depend on a person's motivation for or benefit from the outcome of a random event, and (b) do not depend on the complexity or information-processing aspects of the random process" (p. 47). Theories that fulfill these criteria are described by Irwin (1999) as "noncybernetic"—that is, they "abandon the notion of information flow" (pp. 168-170). Irwin has classified only two theories as having psi as a goal-oriented process in this sense. These are Jung's (1960) synchronicity theory and Stanford's (1978) *conformance behavior* model.

Stanford (1977) has observed that the results of many PK experiments indicate that psi might not work by means of information transfer or processing, as do normal cognitive processes. Kennedy (1978, 1995) also found that ESP and PK do not necessarily involve information processing. There appears, then, to be some justification for models of paranormal 'process' that can be described as *non-mediational*. That is, psi may not necessarily take the form of information flow between 'object' and 'subject'—environment and individual—which may, for example, depend on wave-forms, particles, or so-far undiscovered forces (see Stokes, 1987, pp. 111-135, for a review of some of these theories). In fact, using theories or models that suggest information processing in one form or another to explain paranormal knowledge acquisition or action may simply be a prejudice of conventional parapsychological thinking.

However, Thalbourne (in press) reports that the term goal-oriented can be used in two ways: (a) "psi is goal-oriented in the sense that it tends to bring about a 'goal', that is, the particular *outcome* of a system *regardless of the complexity of the mechanism that must be influenced to produce that outcome*" (p. 55), and (b) "*psi effects constitute the fulfillment or satisfaction of an intention, goal, need, or 'disposition' of the organism*" (p. 55). The former refers to the actual outcome or "specific state of a target-system," while the latter refers only to a "mental representation" or "design," but not the achieved or manifested state. Thalbourne uses goal-orientation in this latter sense.

In the theory of psychopraxia, therefore, the goal *per se* is something akin to an image of a goal or need, etc., that is yet to be achieved, but is not the final

manifestation of that goal or need. Given the examples presented by Stanford (1974a, pp. 35-38) of psi goals achieved, it becomes apparent that many goals *per se* cannot be visualized in explicit detail. In some cases, the time and place of their occurrence cannot be imagined. Hence, in conceptualizing psi, Thalbourne (in press) shows a preference for “pro attitude serving” and marginalizes the term “goal-oriented” due to its occasionally misleading connotation (p. 66). In many cases, we can go on to say that we can regard manifested psi as an achievement that is beyond the ken and acumen of the humble ego. Its capacity to plan and execute the goal, may be limited, yet psi manifests in, literally, the most *unimaginable* ways, which may nonetheless be attributable to the Self theorized as incorporating the unconscious component of the personality.

Thus, the poverty of the term goal-orientation becomes apparent when we try to characterize psi as something that can be planned in consciousness and executed in accordance with that plan. If goals can be set, they may exist in consciousness only as a sketchy idea (e.g., as a pro attitude), but it belongs to the machinations of a higher, undoubtedly unconscious, process for its ultimate conceptualization and subsequent execution. The hypothesis that this unconscious process describes the workings of the *potentially* empirical self is made with good reason once the limits of the conscious ego are realized.

It is perhaps not surprising that Stanford (1990, pp. 58–59) ultimately became critical of the term goal orientation, and even though Thalbourne dropped the term goal-oriented altogether, it is reasonable to use the term ‘goal’ if we limit it to a representation. There is a sense that the basic features of the typical psi target can be visualized in most experiments (notwithstanding the complexity that may entail in its representation), and that goal would therefore be a goal clear and proper, but in other cases, symbolic, meaning-oriented, and/or verbal representations of one’s goals may have to suffice. Goals as mental representations may often be mere symbols only of more complex, inexpressible, contingencies that underlie the psi process. Thus, terminologically, the word ‘goal’ can and should be referred to in a figurative, metaphorical, and/or implicit sense, as opposed to a (not altogether inaccurate) literal, analogical, and/or explicit sense.

The *I Ching* System

As a divinatory system the *I Ching* consists of a book of 64 hexagrams (six-line symbols) and their corresponding ‘readings’. The user poses a question, throws three coins six times (the modern technique), which generates a hexagram reading depicting a scenario (with commentary) that allegedly describes the past, present, and future life situations of the user in the context of the question (the *I Ching* procedure has been described elsewhere—see Storm & Thalbourne, 1998-1999, 2001a).

The fundamental premise of the *I Ching* is that an anomalous (ostensibly paranormal) process underscores its function, with the implication that the structure of the system is somehow attuned to certain individuals. Jung (1989, p. *xxii*) argued that chance is given a free rein in the process and that an acausal principle underlies the outcome, but his claims are driven by certain assumptions made under the rubric of synchronicity theory (see Storm, 1999).

It is equally valid to argue the case that the rules of chance can actually be subverted by intention (conscious or unconscious) so that the effects of chance are reduced. The outcome (i.e., the hexagram reading) may then be ‘veridical’ in nature. That is, the pre-disposed participant introduces his or her own influence into the system, so that human involvement—the crucial part of the *I Ching* process—may anomalously generate an *appropriate* reading. Thus, the system may be dependent on other than normal processes (i.e., a paranormal process).

Testing Psychopraxia as a Mediation Process

It may be possible to test the hypothesis that psychopraxia is a mediational process in the *I Ching* experiment if the so-called ‘hexagram-hit-rate’ in Storm and Thalbourne’s (2001a) follow-up study (Sample₉₉) is *lower* than it was in Storm and Thalbourne’s (1998-1999) initial study (Sample₉₈). This hypothesis is plausible because, unlike the old Hexagram Descriptor Form (Form A; see APPENDIX A) used in 1998, the new Hexagram Descriptor Form (Form B; see APPENDIX B) used in 1999 does not contain the 64 hexagram symbols. If paranormal mediation is based on information processing then the new descriptor form (viz., Form B), being harder to use (since it has no symbols), would mean an additional, *anomalous* step must be taken by the participants to reach their goals of successfully achieving a hexagram hit.

If there is a significant directional difference in hitting between the two samples, then exo-psychopraxia might be a process involving information processing. The significantly lower hit-rate of Sample₉₉ would be the direct result of a processing delay for a sufficient number of participants in which the psi function was slowed down, so much so that the *I Ching* process would be inhibited for those cases.

While a *slowed* effect does not necessarily mean *no* effect, it is theoretically possible that the additional complexity of Form B could have adverse effects in consciousness on confidence, and self esteem, and so on, thus eliciting performance anxiety or related effects, especially in those participants who are familiar with the *I Ching*, but not familiar enough to know all the symbols by heart. Unconscious adverse effects may be the direct result of these conscious effects. These may include physiological and psycho-physiological interference that disrupt muscle coordination during the coin-throwing and/or psychological disturbances that misdirect or misinform the pertinent mental processes involved in the psi component of the *I Ching* process.

It is therefore hypothesized that the hexagram hit-rate using Form B is lower than the hexagram hit-rate using Form A. Given that the directional hypothesis is supported, Rosenthal and Rubin’s (1989, p. 334) procedure for testing the statistical significance of the “heterogeneity” of the obtained π values will be used.

The Analysis

Planned Analysis: In relation to paranormal performance in the *I Ching* experiment, Storm and Thalbourne’s (1998-1999) initial sample (Sample₉₈) produced an overall hit-rate of 32% on hexagram-hitting ($P_{MCE} = 25\%$), which was described as

“marginally significant” (p. 109; $p = .067$). In a follow-up research note (Storm & Thalbourne, 2001b), a direct test of the corresponding effect size was found to be significant ($\pi = .59$, $p = .048$; where $\pi_{MCE} = 0.50$).

In the second study ($N = 107$; Storm & Thalbourne, 2001a), the observed proportion of hits for Sample₉₉ was 0.35 ($P = 35\%$, $p = .015$) and π was 0.61 ($p = .012$).

As can be seen, Sample₉₉ actually scored higher on average (35%) than Sample₉₈ (32%), which is not in the direction hypothesized. The results do not suggest that the *I Ching* process (and therefore psychopraxia) is mediational. However, without further testing, we have no evidence that it is a goal-oriented process either. Therefore, Rosenthal and Rubin’s (1989, pp. 334-335) diffuse-testing procedure was used to test the difference between hit-rates: “Diffuse tests assess the statistical significance of the heterogeneity of the π ’s by means of the following chi-square test on $m - 1$ *df*, where m is the number of independent studies” (Rosenthal & Rubin, 1989, p. 334):

$$\chi^2(m - 1) = \Sigma[(\pi_i - \pi) / SE_{(\pi_i)}]^2 \quad (1)$$

where

$$\text{Mean } \pi = \Sigma w_i \pi_i / \Sigma w_i \quad (2)$$

and

$$w_i = 1 / (SE_{(\pi_i)})^2 \quad (3)$$

and

$$SE_{(\pi)} = N^{-1/2} [\pi(1 - \pi) / [P(1 - P)]]^{1/2} \quad (4)$$

The proportion of hits for Sample₉₈ is $P_1 = .323$, and for Sample₉₉ is $P_2 = .346$. Using the formula for calculating π , $\pi = P(k - 1) / [1 + P(k - 2)]$, $\pi_1 = .589$ and $\pi_2 = .613$. Formula (4) is used to find $SE_{(\pi_1)} = .054$ and $SE_{(\pi_2)} = .048$. Formula (3) is used to find $w_1 = 342.94$ and $w_2 = 434.03$.

Formula (2) is used to find:

$$\text{Mean } \pi = [(342.94 \times .589) + (434.03 \times .613)] \div [342.94 + 434.03] = .602$$

To test the heterogeneity of the two samples, we use Formula (1):

$$\chi^2(2 - 1) = [(.589 - .602)^2 \div .054^2] + [(.613 - .602)^2 \div .048^2] = .110 \quad (p = .740)$$

The difference between the two hit-rates is not significant. There is no compelling evidence that the *I Ching* process is goal-oriented.

Post Hoc Analysis: Recalling the data from the first study ($N = 93$; Storm & Thalbourne, 1998-1999), the observed proportion of hits for Sample₉₈ was 0.32 ($z = 1.50$, $p = .067$). In the second study ($N = 107$; Storm & Thalbourne, 2001a), the observed proportion of hits for Sample₉₉ was 0.35 ($z = 2.17$, $p = .015$) and π was 0.61 ($p = .012$). Using an alternative method, which considers only the z scores, (see

Solfvin, Kelly, & Burdick, 1978, p. 105), the Z_{diff} formula was applied, where $Z_{\text{diff}} = [(Z_1 - Z_2)/\sqrt{2}]$. It was found that $Z_{\text{diff}} = 0.47$ ($p = .319$), which again indicates a non-significant difference.

Conclusion

The *I Ching* is an ancient Chinese form of divination based on the principle of duality, the yin and the yang. From a simple yin/yang polarity are derived the 64 hexagrams. Hexagram symbols carry with them certain meanings, which come in the form of readings. The traditional view is that in the uncertain flux of world events is the possibility of knowing that in the present are the seeds for solutions in the future, and that these solutions can be derived through divination.

Replicated evidence was found in two studies suggesting that an anomalous process underlies the *I Ching* process. Thus there might be some validity in the traditional view concerning the *I Ching* system of divination, but we have no evidence that the process is cybernetic or non-cybernetic. Like conventional non-cybernetic theories of goal-oriented psi (e.g., synchronicity and *conformance behavior*), which dispense with the idea that information is needed to assist the psi process, Thalbourne claims that the theory of psychopraxia makes allowances for the fact that information processing may still take place. It was proposed that this process could be tested by comparing psi performances in two independent *I Ching* studies, using two different Hexagram Descriptor Forms—Form A and Form B, respectively—the latter form being more complex.

In the present study the paranormal *I Ching* effect was not shown to be a mediational process, but it was not shown to be a goal-oriented process either. It was suggested above that some paranormal phenomena merely present in such a way as to suggest 'goal-orientation' leaving open the possibility that subtle information processes may well occur in the psi process, but these may go undetected. It is possible therefore that the above analyses failed to detect a mediational step because the information processing component was too subtle and therefore did not inhibit the *I Ching* process in any detectable way (i.e., detectable through the 'blunt instrument' of statistical testing). Be that as it may, testing so far has not allowed us to conclude that psychopraxia may be a cybernetic process (as hypothesized). As it happened, the larger effect in Sample₉₉ is faintly suggestive of a goal-oriented process (though not proved in the post hoc analysis above). Furthermore, since Jung's (1960) synchronicity theory and Stanford's (1978) *conformance behavior* model have not conclusively been found to be goal-oriented theories either, we cannot yet say what the real nature of the psi process is—whether it is cybernetic or non-cybernetic.

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Lately, or right now, I feel:

- | | | | |
|--|---|--|---|
|  [] Creative, Motivated |  [] Adaptable, Helpful |  [] Retroactive, Concerned |  [] Changeable, Transformed |
|  [] Receptive, Accepting |  [] Negligent, Habituated |  [] Empowered, Tested |  [] Spiritual, Fulfilled |
|  [] Troubled, Disorganised |  [] Rejuvenated, Generous |  [] Progressed, Open |  [] Shocked, Aware |
|  [] Inexperienced, Uneducated |  [] Contemplative, Cautious |  [] Censored, Compromised |  [] Meditative, Peaceful |
|  [] Expectant, Apprehensive |  [] Hindered, Provoked |  [] Loyal, Dedicated |  [] Developed, Awakened |
|  [] Conflicted, Tense |  [] Gracious, Idealistic |  [] Opposed, Contradicted |  [] Subordinate, Disadvantaged |
|  [] United, Organised |  [] Crest-fallen, Disabled |  [] Obstructed, Threatened |  [] Abundant, Accomplished |
|  [] Sociable, Cooperative |  [] Renewed, Optimistic |  [] Liberated, Delivered |  [] Mobile, Seeking |
|  [] Restrained, Disappointed |  [] Innocent, Truthful |  [] Reduced, Impoverished |  [] Gentle, Influential |
|  [] Behaviour-oriented, Self-aware |  [] Strong, Vital |  [] Advantaged, Beneficent |  [] Joyous, Generous |
|  [] Prosperous, Fruitful |  [] Nurturant, Reappraising |  [] Resolute, Intentional |  [] Fragmented, Ego-aware |
|  [] Stagnant, Unassisted |  [] Stressed, Challenged |  [] Tempted, Seduced |  [] Limited, Thrifty |
|  [] Unselfish, Caring |  [] Endangered, Unlucky |  [] Community-oriented |  [] Insightful, Unbiased |
|  [] Supreme, Successful |  [] Obligated, Dependent |  [] Advanced, Fortunate |  [] Conscientious, Conservative |
|  [] Modest, Inhibited |  [] Attractive, Liked |  [] Oppressed, Exhausted |  [] Balanced, Prospective |
|  [] Enthusiastic, Harmonious |  [] Steadfast, Matured |  [] Wise, Hospitable |  [] Hopeful, Reserved |

FORM A

STORM

“Lately, or right now, I feel . . .” (Form B)

Lately, or right now I feel:

- | | | |
|--|---|---|
| <input type="checkbox"/> Creative, Motivated | <input type="checkbox"/> Adaptable, Helpful | <input type="checkbox"/> Retroactive, Concerned |
| <input type="checkbox"/> Receptive, Accepting | <input type="checkbox"/> Negligent, Habituated | <input type="checkbox"/> Empowered, Tested |
| <input type="checkbox"/> Troubled, Disorganised | <input type="checkbox"/> Rejuvenated, Generous | <input type="checkbox"/> Progressed, Open |
| <input type="checkbox"/> Inexperienced, Uneducated | <input type="checkbox"/> Contemplative, Cautious | <input type="checkbox"/> Censored, Compromised |
| <input type="checkbox"/> Expectant, Apprehensive | <input type="checkbox"/> Hindered, Provoked | <input type="checkbox"/> Loyal, Dedicated |
| <input type="checkbox"/> Conflicted, Tense | <input type="checkbox"/> Gracious, Idealistic | <input type="checkbox"/> Opposed, Contradicted |
| <input type="checkbox"/> United, Organised | <input type="checkbox"/> Crest-fallen, Disabled | <input type="checkbox"/> Obstructed, Threatened |
| <input type="checkbox"/> Sociable, Cooperative | <input type="checkbox"/> Renewed, Optimistic | <input type="checkbox"/> Liberated, Delivered |
| <input type="checkbox"/> Restrained, Disappointed | <input type="checkbox"/> Innocent, Truthful | <input type="checkbox"/> Reduced, Impoverished |
| <input type="checkbox"/> Behavior-oriented, Self-aware | <input type="checkbox"/> Strong, Vital | <input type="checkbox"/> Advantaged, Beneficent |
| <input type="checkbox"/> Prosperous, Fruitful | <input type="checkbox"/> Nurturant, Re-appraising | <input type="checkbox"/> Resolute, Intentional |
| <input type="checkbox"/> Stagnant, Unassisted | <input type="checkbox"/> Stressed, Challenged | <input type="checkbox"/> Tempted, Seduced |
| <input type="checkbox"/> Unselfish, Caring | <input type="checkbox"/> Endangered, Unlucky | <input type="checkbox"/> Community-oriented |
| <input type="checkbox"/> Supreme, Successful | <input type="checkbox"/> Obligated, Dependent | <input type="checkbox"/> Advanced, Fortunate |

Book Review: The Trickster and the Paranormal

James Houran
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The Trickster and the Paranormal by George P. Hansen. Xlibris Corp., USA, 2001, 564 pp.

I am a student, researcher, clinician, semi-professional magician, and sympathetic skeptic of ostensible psi phenomena. And, this book spoke to every one of my facets. I had raised eyebrows and a smile on my face while reading this text. I did not agree with all of the observations and arguments therein, but it was easy to tell that writing this book was a passionate effort by the author. By this time, many journals have already published reviews of the *Trickster and the Paranormal*, and there are several in-depths reviews also available on Amazon.com. Most of the reviews I have seen praise the author's examination and integration of the concepts of the trickster, liminality, and antistructure, and their relationship to the "paranormal." I certainly concur in this respect, as Hansen is a gifted and lucid writer.

Hansen's book can be interpreted as a psychosociological treatise on the "paranormal"—how the underlying psychological and social environments that facilitate apparent psi functioning are the same elements that keep psi elusive and its study ever on the fringe of established academia. As a result, the author asserts that there are professional and personal dangers inherent in trying to engage directly in, as well as denying the validity of, the "paranormal." Hansen's writing is characteristically crisp and forceful throughout, and he strives to support his basic ideas by reviewing and synthesizing a broad range of material. Sometimes these "object lessons" are provocative but other times they are far-reaching. The scope of his studies is wonderful—for example he nicely shows how parapsychology shares related social and academic problems with other topics within the rubric of anomalous phenomena. However, I found the depth of his reviews and arguments lacking in places. I was not swayed, therefore, by some of his conclusions. For example, the author seems to implicitly assume the ontological existence of the "paranormal." At the risk of sounding like a person who hails from a rationalist and structuralist milieu and is thereby vulnerable to the wrath of the trickster figure, I do not see this as a logically defensible position.

There are many phenomena that are unexplained (both in and out of the purview of parapsychology), but this does mean that any such phenomena are paranormal. It simply means that these phenomena are currently unexplained. From my experience discussing parapsychology with many academicians and scientists outside the field, I have come to believe that the real danger to researchers comes when they make that huge leap from "unexplained" to "paranormal" in front of a mainstream academic audience. Nevertheless, I cannot imagine any academic disagreeing with the notion

that the paranormal exists as a *shibboleth*—i.e., a psychological and social truth on which people act. Accordingly, the psychological and sociological correlates of paranormal ideations continue to be a rich area for research, and indeed many academics have chosen to focus on these issues. I strongly disagree with Hansen's suggestion that this approach is necessarily akin to studying psi "indirectly" so as to allow researchers to gain and maintain academic respectability. Rather, I see this as studying the phenomena in question directly in the first place; after all, we know the paranormal exists as a social fact but it has yet to be established as an ontological reality.

I also did not find it a revolutionary observation that "paranormal beliefs and experiences" flourish within "liminal" (i.e., ambiguous) environments—be they on the individual or social level. For instance, it is well known that many ESP-type experiences occur within dream and reverie states, and poltergeist (seemingly psychokinetic) episodes predictably focus around adolescents (a transitional state itself) and often during periods of psychological tensions. And, there is a myriad of empirical studies that demonstrate a positive relationship between paranormal ideations and ambiguous stimuli (for recent reviews see e.g., Brugger, 2001; Lange & Houran, 2001a). Some structural equation models even suggest that paranormal beliefs and experiences derive from and are reinforced by ambiguity.

Furthermore, the definition of liminal conditions conducive for the paranormal are never really specified to any convincing degree in this book. That may be an unfair expectation from a work such as this, but as such, I did not come away from the book with confidence in the predictive validity of Hansen's ideas. This is an important issue, because liminality itself may not be a sufficient catalyst for genuine psi (assuming there is genuine psi). Michael Thalbourne and Lance Storm, for instance, have obtained mixed results in their investigations of transliminality (a construct similar to Ernest Hartmann's notion of mental boundaries) and success rate on a test of psi (for a review, see: Thalbourne & Houran, in press). Incidentally, transliminality is not broached in the book. I find this surprising given that the Revised Transliminality Scale is arguably a more psychometrically-sound measure than Hartmann's Boundary Questionnaire, and the transliminality construct derived from a deconstruction of the boundaries among psychological domains previously conceptualized as distinct.

Hansen's review of the literature on "liminality" is weakened further by the complete omission of Per Bak's work, which is extremely pertinent to the proposed insight that psi is inherently a liminal process. Per Bak (1996; Bak, Tang, & Wiesenfeld, 1987) formulated the notion of self-organized criticality in physical applications, and the literature increasingly shows important applications of criticality approaches in medicine, biology, meteorology, economics, and psychology (for an introductory overview see: West & Deering, 1995, and an up-to-date list of related publications can be found at <http://linkage.rockefeller.edu/wli/1fnoise>). Self-organized criticality views nature as perpetually out of balance, although temporarily organized in a stable state where change is possible according to well-defined statistical laws. In other words, the basic notion implied by most theories that equilibria are the norm throughout nature is rejected. Instead, Bak proposes that systems with many components (including, we assume, humans and

parapsychological phenomena) are actually in a disequilibrium such that relatively minor disturbances may lead to avalanches of events. Such events occur in time “at all scales,” i.e., what occurs over the span of one minute replicates itself over the span of months or years. Thus, I do not see anything meaningful in suggesting that the paranormal is an inherently liminal phenomenon. According to Bak, nature itself is inherently liminal. Interestingly, Bak’s ideas have been successfully applied to a number of parapsychological contexts (Lange & Houran, 2000, 2001a, 2001b; Lange, Schredl, & Houran, 2000-2001).

Despite these and other misgivings, Hansen has produced an entertaining and stimulating theoretical book. It is also a welcome addition to the literature on the sociology of the paranormal. I have no doubt that the book will appeal to some facet of every person reading this review. With reference to the paranormal, the book is at once an optimistic view (psi does exist) and a pessimistic one (the social forces surrounding psi make it an extremely elusive quarry fraught with danger). Hansen asks cogent questions and does not fail to give the reader exceptional food for thought. That is not to say his conclusions are above debate, because I see what appear to be contrary examples everywhere. I have seen various academic journals publish pro-parapsychology papers, well-established academic book publishers take on parapsychological texts, researchers flourish at mainstream institutions, respected colleges and universities successfully incorporate parapsychology into their curriculum, and I have personally experienced wonderful cooperation and collaboration from academics outside studies of anomalous phenomena. I agree that the field has in the past and continues now to face a low status and non-acceptance by the wider academic community. Brand me naive, but I have to wonder how much of the deficits facing parapsychology are in large part self-inflicted.

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Book Review: The Paranormal in the Bible and Old Norse Literature – Superstition?

Annekatrin Puhle

The Paranormal in the Bible and Old Norse Literature – Superstition? by Nils Björn Kvastad. New Delhi, India: Rishi Publications. ISBN 81-85193-26-6. Hardback price \$30.

The area of folklore seldom treats its own content seriously but merely regards experiences as a curiosum to be catalogued and placed in a historical social context. As the author notes in his introduction, folklore is legitimate so long as you do not believe in the claims being made. This book, written by a philosopher, is a courageous attempt to make a difference. Superstition is often deplored today but the author quotes from Goethe "Superstition is the poetry of life"¹ and the recurrent theme in the book is to find examples of where superstition as form of intuitive thinking sometimes is dismissed only to later gain support from science. The book's purpose is to show how paranormal experiences are documented throughout history in particular in the biblical literature and in Norse sagas. It is a fascinating book: fascinating because of the diverse range of anecdotes from different periods of history, but sometimes one wishes that more of the precise sources are given, at least for those who are not so familiar with the topic.

The author reviews the survey of beliefs in the paranormal carried out by Erlendur Haraldsson and Joop Houtkooper in 1991 in which they found Iceland to report many of these experiences more frequently than other countries. This is in contrast to Norway where belief in the ESP was the lowest amongst the countries surveyed by and where scientific parapsychology has gained no acceptance within the universities. Norwegian Vikings settled Iceland in the 9th century and the cultures are still close so why should this be so? No real explanation is offered except that modern Norwegians are not religious: "Norwegians are in church three times in their lives and two of these they have to carried in". Certainly the Norwegian SPR is one of the oldest in Europe founded in 1917 and today is still an active society. It did however lose half its membership in 1935 due to a scandal known as the Judge Dahl case. Judge Dahl's daughter was a medium favourably tested by Theodore Besterman, the SPR Research Officer. While in trance, apparently unbeknownst to her, she had predicted the date of the death of her father. This proved correct but since he died in a swimming accident alone with her, accusations were made. This resulted in a court case and although she was found innocent, the rumours were enough to discourage the interest in psychical phenomena. This is not mentioned in the book but given the complexity of the case and its long-term repercussions in Norway. The basis to the book is to re-examine old

¹ I would like to add the reference: Goethe, *Maximen und Reflexionen, Eigenes und Angeeignetes in Sprüchen*. Vol. 4, 2, 1823. In: Münchener edition by Karl Richter and G. Göpfert, 1997, vol.17, p.747.

Norse accounts and some biblical sources in the light of findings form modern parapsychology. One of the strengths of the book is that it adds some of the cultural background from Viking period: Vikings were not just empty-headed warmongers and ransackers who ran amok but had sophisticated religious rituals and shamanic practices. Although the Sagas themselves tend to be concerned mostly with violent conflicts they do give us some occasional information about beliefs and practices. Nevertheless the author warns us that the Sagas were originally an oral tradition, which was not written down until 1200 AD when they were often interpreted by priests influenced by the Christian tradition. Interestingly he notes (page 40): "The first parapsychologists was possibly Pope Benedict XIV (1675-1758), even though both Augustine and Thomas Aquinas discussed paranormal subjects. Benedict tried to liberate them from his eras stamp of the devil; he distinguished between God's miracles and other paranormal phenomena".

The book reviews Old Norse magical rituals called *seid*. These include *galdring* a Norse shamanic form of chanting, the use of runes for divining – stones engraved with magical properties – and gives examples of premonitory dreams, amulets, and *synkverving*: the production of hallucinations by suggestion and deception.

The book is very systematically divided up into appropriate chapters and sub headings such as sorcery, psi in Old Norse literature and the bible, shamanism, apparitions etc, which makes it easy for the reader to find the topics of interest. However the content of these sections is very free-associative – if not creative – in trying to link Norse sagas, the bible, modern anecdotal cases and experimental parapsychology. This is not an easy task and would need a very strong red thread. It might have been helpful for the reader to follow his diverse links if he had confined his treatise to Norse literature especially in view of the several already existing reviews of paranormal events related in the bible such as Perry, 1986; Bretherton & Haddow, 1988.

Shamanistic OBEs with apparent psi are reported in the sagas such as the *Vatnsdøla* Saga where the Norwegian name is *hugfred* or soul travel (p. 193. NDEs are rare but occur in *Draumkvedet*, which is an ancient Norse journey into the after life (p. 239). The tunnel is apparently part of the shamanic OBE.

The characteristic Scandinavian form of psychic phenomena is *Vardøger*. This is the premonitory sound (or sight) of a person shortly before that person arrives. Nils-Olof Jacobson (2003) has observed that it also occurs in Sweden as well as Norway and I would like to add it occurs also in Westphalia in Germany, called *Vorgehör* (but most often in the context of fore-hearing death). One would love to read more about it than the one page (p. 224), which is devoted to this fascinating occurrence.

There is also much to learn from the interesting differences from modern conceptions. A ghost in the Norse tradition was not a spiritual disembodied being but a corpse with consciousness, usually said to belong to individuals who had not been buried properly: "A ghost was a physical entity, vulnerable to weapons, but strong.... For many people dying was primarily 'a change of address'." (p. 286). The author notes that nowadays according to the surveys of Haraldsson, Icelandic apparitions are often of those who committed suicide.

In relating the historic accounts to modern day parapsychology, the material demands sometimes a more penetrating treatment concerning controversial cases. For

instance Serios, Kulagina, and Geller are all too easily accepted. He does mention that Kulagina was formally acquitted of fraud (but gives no reference). Another example is an account of a rampant poltergeist case (Lars Olafsson) investigated by Nils-Olof Jacobson, described by the investigator as "A Night to Remember" (p. 149). Although he mentions the investigation carried out by Örjan Björkhem, mention should have been made that Björkhem found fraudulent methods were being used at least on some occasions.

Some interesting questions are raised such as: Can psi abilities have a genetic or familial pattern? The author cites that the work indicating this apparently has been carried out by the well-known Swedish psychologist Jan Agrell and sponsored by the Swedish Defence Research Institute (p. 138). Here a reference is needed.

The book is full of lively expressions and has a valuable glossary. It is rounded off with a discussion of shamanic and historical experiences, which have been validated by modern research but he notes science is sometimes a partial route to knowledge. The book is recommended as enrichment to those who are open to this view.

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NORSE LITERATURE

Book Review: 30 Years in Mind - Comments on the Reissuing of Ullman, Krippner and Vaughan's *Dream Telepathy*

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Dream Telepathy, by Montague Ullman, Stanley Krippner, with Alan Vaughan, third edition. 2003. Charlottesville, VA: Hampton Roads. ISBN: 1-57174-321-9.

It is not the regular thing that a scientific publication is reissued thirty years after it has first come out. An exception to the rule is *Dream Telepathy* by Ullman, Krippner and Vaughan (1973/2003), as Hampton Roads publishes a third edition of this well-known work in their "Studies in consciousness" series. Being described as "groundbreaking" and "classic", this book has not only positioned itself as a milestone in the history of parapsychological literature – presenting apparently solid evidence for telepathic dreaming – but is also a frequently recurring meeting point in the present parapsychological discourse (as has been seen, most recently, in the omnibus *Psi Wars*, 2003).

As stated by the publishers, an objective with the reissuing of the book is to introduce texts of science and consciousness studies "to a new generation of readers". In my case, being a graduate student of psychology, just beginning to reconnoitre the field in question, I felt appropriately targeted by this appeal. So looking in the rear-view mirror, my starting point in writing this review was to try to outline some aspects of what makes *Dream Telepathy* a pertinent work still today and what it potentially has to offer in moving research forward. Considering that the studies themselves, carried out at the Maimonides Medical Centre in Brooklyn, New York, during the late 1960's and early 1970's, have been thoroughly reviewed already through decades (e.g. by Child, 1985; Radin, 1997; Sherwood & Roe, 2003), scrutinizing the scientific results and methodology is not the primary focus of my commentary here. Needless to say, since the Maimonides Centre closed in 1978, there is no additional empirical data from this research programme to account for.

The immediate question is of course what specifically has been brought new to the third edition. There are two new introductions, written by Ullman and Krippner respectively, in which the authors give brief personal accounts of how their work and careers have developed since the Maimonides programme first started, and how their findings relate to more recent scientific discoveries. Ullman reflects upon his continuous search for a theory that could help to explain the intriguing laboratory results and incorporate them in an intelligible framework. Not until he began to acquaint himself with the principles of quantum physics did he seem to find such prospects. The analogies Ullman draws between the nature of dreaming consciousness and the ambiguous manifestations of subatomic particles – the 'wavelike' characteristics of dreaming in contrast to waking life's 'particle' view of

reality – are captivating and well worth some consideration, however speculative they are. The same could be said about Krippner’s attempts to relate telepathic ability to fluctuations in earth’s geomagnetic activity. Although there is experimental data to nourish this “food for thought”, it becomes apparent that parapsychology is still in need of more specific explicatory principles to bring about a true understanding of the anomalous phenomena. These factors are obviously hard or impossible to empirically control for, and theory testing remains a problem. At the same time, these ideas reflect the ongoing (or at least, wished-for) approach of modern parapsychology to other fields of science, and possibly towards a unified theory of what both Ullman and Krippner regard as the underlying “interconnectedness” of the universe.

Next to the contemporary introductions, there is the late Gardner Murphy’s original foreword to the book. Seen in retrospect, one can only speculate about how Murphy would comment the progress made in psi and dream research since the 1970’s – especially pertaining to his statement that “Dream telepathy ... is likely to be among the sparks which will be made into a science within the next century” (p. xxvi). I will cautiously claim that we are not there quite yet; however it may be argued that a greater impediment to Murphy’s vision today, than technology or other resources, is the controversy of general academic acceptance for the research field.

In view of the role *Dream Telepathy* has played for reaching out with scientific facts about dream ESP to the general public the last thirty years, one has to consider not only the contents, but also the quite distinctive, almost narrative, tone and form of the text. It has been noted, by Child (1985), that the original Maimonides studies, summarized in the book, were not all published in conventional journals of psychology. As a result, many psychologists instead learned of the source studies from subsequent reviews, in which the results were in many cases distorted or misinterpreted, thereby casting a deceptive shadow on the quality of the work. (This may seem somewhat ironic, since the book had been written to be widely readable, presenting the scientific material as easily comprehensible as possible.) Hopefully, as far as misconceptions still remain, the reissuing of the book will help to clear up those past mistakes and bring back into the light the true, and indeed highly significant, findings. There is, just like in previous editions, also the opportunity for the interested reader to obtain more detailed scientific reports in the appendices.

Apart from the indisputable value of having these historical parapsychological studies back into print, I would suggest for future editions that Appendix A, “What the Experts Say”, be revised. This section, mainly containing abstracts of letters from different parapsychologists discussing the implications of the experimental results, now seems very dated; the latest work mentioned is from 1972. It would have been fruitful with an update on this, relating the current status of dream ESP research, at the same time showing what concrete influence the Maimonides studies have had in present times.

To partly answer this last question, it seems fair to conclude, that despite decades of scrutiny, the results from the Maimonides laboratories stand remarkably strong still today. Besides, the studies have served as an inspirational source for many other, successful ESP experiments, such as those applying the ganzfeld technique for similar tasks. It is noteworthy that, in a recent review by Alcock (2003), the most cogent critique that was levelled against the Maimonides studies and some

replications of them, was “the extreme messiness of the data adduced” (p. 36). It might be added that the replications in fact were successful, however less so than the original studies. This fact, Alcock takes to mean that “lack of replication is rampant” – this would be a somewhat difficult standpoint for me to maintain without falling over.

The alleged difficulty with replication is probably the most common critique against the Maimonides studies. However, it should be kept in mind, that when Ullman and Krippner started their studies, the work was pioneering, and for a long time they were trying out different procedures and experimental conditions. Many of the single experiments are therefore to be considered pilot studies, rather than controlled experiments with established procedures that are suitable for replication. Today the situation is different, and dream telepathy, however still a controversial subject, can be studied in a number of ways with sophisticated methods. Experience says that attention should be given to, for example, the personal qualities of everybody involved in the experiment, creating an encouraging atmosphere and selecting specific types of stimuli material. Taking this and previous methodological shortcomings into account, dream ESP appears as a promising area for further research.

Finally, the importance of technological development to research during the last thirty years must not go unnoticed. As within all areas of science, computers offer enormous potentials for parapsychology, not the least when it comes to controlling for human error. The digital ganzfeld technique is one example, electronic sleeping masks used in lucid dreaming research is another. Lucid dreaming is a prime example of an “anomalous” phenomenon that has been psychophysically verified thanks to new technology. Reporting such evidence, LaBerge (2000) concluded: “Theories of dreaming that do not account for lucidity are incomplete, and theories that do not allow for lucidity are incorrect”. ESP might be just a step behind lucidity. The Maimonides studies allowed for ESP phenomena to show up in the laboratory. The next big challenge for parapsychology is, to establish their place in theory.

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30 YEARS IN MIND

Book Review: Tony Cornell's Investigating the Paranormal

Annekatriin Puhle

Investigating the Paranormal by Tony Cornell. New York: Helix Press, 2002, 424 pp.

If the serious and scientific investigation of ghosts and spirits can be made refreshing at all, then Tony Cornell has succeeded in doing so with this book, the record of his 55 years of psychical research that he has given to this not very lively subject. Why do I write 'refreshing' and why 'not very lively'? To begin with, ghosts, poltergeists and spirits traditionally raise more questions touching death than life or, to be exact, touching life after death, but are nowadays often interpreted as more or less non-existing products of the human mind. What is "refreshing" is Tony's straight approach to go to the places where things really happen, to study the real life phenomena by going through all the bother, which the proper investigation of sudden and spontaneous cases demands. And from this he gives us mainly first hand cases, and some of them are not only investigated, but also spontaneously experienced by the author himself. The book *Investigating the Paranormal* offers mainly unpublished cases, which are only a few of the many hundreds cases in Tony's collection, since 8 of 10 cases are not spectacular anyway, he comforts us.

With his background as a Cambridge graduate, President of the Cambridge University Society for Psychical Research, Vice President and Council Member of the Society for Psychical Research (he joined the S.P.R. in 1952) and also lifelong friend of Alan Gauld, with whom he investigated a great number of cases and published the main and classic book about *Poltergeists* (1979), Tony Cornell introduces himself as a sceptic. However, this is not in the fanatical scepticism of CSICOP, since as he says not all of the cases are told by "muddled, befuddled and deluded" people. The sceptical attitude is enrooted in his family background - his father was a down-to-earth businessman, not interested in ghosts - and the positive fascination by the paranormal is from his mother and (maternal) grandmother who have been psychics. The direct confrontation with paranormal phenomena in his family might have opened or sharpened his eyes for the enormous potential and value of spontaneous cases in the form of hauntings and poltergeists. Tony reasons. "Perhaps the parapsychologist should return to the examination of the circumstances in which the paranormal naturally occurs" (p.7). This preference for real life has led to the attempt "to take the laboratory to the event, rather than the other way around" (p.7). This became embodied in the form of the electronic equipment kit called SPIDER (Spontaneous Psychophysical Incident Data Electronic Recorder), consisting of video cameras and other sensors, which was developed by himself and Howard Wilkinson. What results might then we expect from this?

Hauntings (chapter 1-11), Poltergeists (chapter 12-20), Mediums and Mediumship (chapter 21-27) are the three big sections of Tony's book - the topics that could not be more classical psychical research. These are followed by a fourth section with the

discussion and conclusions (chapter 28-30). The first two sections deal with spontaneous cases, the third is about provoked phenomena, while the last section describes, how to handle the phenomena and what one possibly can conclude from all the investigation.

By keeping the door to real life open, despite the progress in experimental parapsychology (see Parker & Bruswitz this issue), we gain not only into rich historical context of that the phenomena occur in, but evidence for the stereotypic and reoccurring patterns in spontaneous cases. The fact of the matter is that the 'raw material' has essentially continued unchanged over the past thousands of years (p.7). The author leads us back several times into history (p.3, pp.155-157), referring to the unique and invaluable 500 cases collection which covers as far back as the year 530 up to 1975 (Gauld & Cornell, 1979). He introduces to us "Some Cambridge College Ghosts" (pp.23-37), amongst them the first Cambridge Poltergeist (pp.23-25) in the year 1694, which illustrated many representative characteristics of such cases, namely unaccountable noises, stone throwings, breaking of windows and – not quite as common - a strong *smell* of brimstone. The case happened in Volantine Austin's house opposite the main gate of St. John's College and was reported in the diary of Abraham de la Pryme (ed. 1870). The case is associated with an anecdotal account concerning Isaac Newton who, on passing the haunted place, happened to see five young fellows of St. John's intent on challenging the ghostly intruder by firing their pistols. He said to them: "O ye fools, will ye never have any wit? Know ye not that all such things are mere cheats and impostures? Fy! Fy! Go home, for shame" (p.23). Interestingly, Newton, while staying at Trinity's, kept for four years an Alchemy laboratory and was suspected of struggling with the black arts (pp.23-24; Owen, 1964, pp.46-47).

The case collection of *Investigating the Paranormal* offers us the full range of the puzzling features we can expect of ghosts and spirits throughout the centuries. The chapter headings such as "The Honeymoon Hotel Ghost" (pp.107-121) and "The Secret High-Frequency Poltergeist" (pp.225-242), while catchy, often stand in contrast to the altogether very accurate, minutely analysed ghost reports in the book, mostly followed by a paragraph with conclusions. The content is spiced with a portion of humour. So let's go into detail:

The case of "The Silver Street Ghost" (pp.39-43), earlier reported by Alan Gauld (1955, pp.89-91), is well documented being recorded only a few minutes after it had happened. The ghost, an old man, very bent, walked along the Silver Street in Cambridge, near to the public house, The Anchor, and was seen for one or one-and-a-half minute by an undergraduate of Queen's College and then vanished quite suddenly in front of the student's eyes. In seeking natural explanations it is noted that the undergraduate was an extremely good hypnotic subject, but even so, Tony keeps the door a little open as to the final interpretation: "[...] perhaps the student [who late at night wanted to remain unseen and to sneak back into the College] did see the ghost of some long departed Cambridge Don; if so he remains unknown and has never been seen before or since" (p.43).

The "Little Boy in Grey" (pp.83-86) is another interesting case, this time because it does not fulfil the ordinary expectation of a ghost, who traditionally has to appear in an old and spooky house. The grey boy was seen three times during the years 1957-58 by

a non-superstitious and non-ghost-believing family in a modern house in Cambridge, and therefore the mysterious and suggestive atmosphere of an older building cannot have been the source of stimulation for an inventive human mind. The search for an explanation must go elsewhere. Indeed it was concluded there was “no apparent reason why both Mr. and Mrs. S. should have seen what appears to have been the same apparition” (p.85). It was rumoured that in the 1930s, a seven years old boy had drowned in some of the sand pits, which existed at the same place before the house was built.

The chapter titled “The Seen and Unseen Ghost” (pp.79-82) is an amusing first hand experience or “non-experience”, as Tony would call it. The apparition of a green man was seen and unseen in the summer 1967, in the village S., 15 miles away from Cambridge. The ghost was a friendly and not bothersome man, 60 years old, with reddish hair and dressed in a green corduroy smoking jacket, grey flannel trousers and slippers, with a large pipe in one hand, which he never smoked, and a preference of a certain chair in front of the fireplace, giving the impression of a ghost, who really feels home. Nevertheless the owner, a Mrs M., thought, it was time for her unwanted guest to leave the early Victorian house where he used to appear. Mrs M. lived alone in the house for several years since her husband had died, but had no clue as to whom the ghostly man could be, although her maid had identified it, from Mrs M.’s description (rather than from seeing it) as the previous owner of the house who died in hospital in 1963. Since it was a quite current case, Tony payed a visit to the house and on awaiting the ghost’s performance, witnessed absolutely nothing – that is until his college assistant investigator P.D. arrived. Knowing nothing about the case other than it concerned a ghost, P.D. looked a little perplexed and asked Tony: “I wondered where the husband had got to.” What husband? Tony asked back, and P.D. answered: “The bloke, the one with the green jacket who beckoned me into the room.” (p.81). What was remarkable here, is that the description of the “husband” coincided exactly with that of the reported ghost.

The ghost cases presented are not all anthropocentric: A chapter about “Ghosts and animals” (pp.123-137) includes the charming and touching report about Boozer (pp.127-129), Tony Cornell’s Boxer-Labrador. The dog appeared for about 30 seconds to Tony’s mother, who was staying at home, while Boozer was put down by a Vet. But Boozer did not only appear, she went through the open kitchen door to where Tony’s mother was at that moment, looked up at her and then repeatedly turned her head around and downwards to her rear leg and looked up to Tony’s mother again. The fact was, that the Vet had had some difficulties to hold the dog down, so that he could inject the lethal dose to her left rear leg. The apparition of Boozer happened at least 25-30 minutes after the Vet’s fight with the dog’s leg, and – the remarkable aspect of this case is that – none of them, not the mother nor Tony had known before, what difficulties would arise with the injection.

The case of “A Fisherman’s Tale” (pp.209-224) dated December 1987, is a poltergeist. As with such cases, we become confronted with the ambiguity over what is real and what could be faked. The fisherman’s poltergeist concerned not only an unseen aggressive dog, but also a real dog, the family dog, who behaved very strangely and was claimed to have “one evening been thrown against the lounge wall by unseen hands (or paws)”, (p.210). Many other phenomena were reported, such as objects

disappearing and the light going on and off by itself. So what did the intensive investigation by Tony Cornell and Alan Gauld reveal? There was a good deal of evidence that it was a razor blade - which happened to drop out of Mr H.'s tracksuit just at the wrong (or right) moment - and not a mysterious dog which caused the 200 bloody cuts from which Mr H. suffered. After being confronted with the idea that he was himself responsible for the cuts, there was no further talk about a black dog. It had taken eight-hours of video recording of the events for some of the "black dog's activities" to be caught and for Mr H.'s "melodramatic piece of acting" to be exposed, but there was more to the case. Since fires were being set, Mr H. came naturally under suspicion but nothing could be proven until the final outcome of the case when Mr. H "over did it" and as a result of after setting fire to a barn, he was finally sentenced to prison for two-and-a-half years. The tragic psychological background of the case seems to have been that Mr. H was seeking attention in order to compensate for what he may well have perceived as an intellectual inferiority to his wife (p.220).

But assuming there are genuine cases, what are we to say of the claim that not every poltergeist is a terrorising human, and to use Ian Stevenson's words "Some Poltergeists are living and others are dead"(1972, p.251). The definitions of poltergeists and hauntings do not lead to very precise categories (Sexauer, 1958/59, p.115 et al., Roll, 1977, pp.399 et al). Some apparitional phenomena are overlapping or combined with poltergeist cases (Stevenson, 1972, p.246). Yet in contrast to many poltergeist cases there is no convincing evidence, that hauntings are mere products of living human beings. The route towards an understanding of hauntings points in various directions, and one of them is the idea of a "place memory" (Roy, 1996) while there is also an extant literature consisting of the more challenging cases which seems to point to some form of survival (Gauld, 1983; Haraldsson, 1981, Osis and Haraldsson, 1977).

If one wants to find a case, which is superior as to the quantity and not just quality of witnesses, then it would be the case with *15 witnesses* having the amusing title "The Smell" (pp.167-175). The case does not fit into the usual poltergeist category (although smell have been reported with hauntings), since there were no violent movements of objects or noises involved. The rationale for including the case in this latter section was that it showed "all the hallmarks of a strong repetitive paranormal physical effect" (p.167). So what happened? The strange and irritating smell - reminiscent of a dead rat - began occurring in March of 1954, at Tony Cornell's flat in a Victorian house, "Brookside", in Histon, at which time he and some friends used to have regularly sittings with the Ouija board. The smell "appeared to be in the form of a column from the floor to the ceiling, wherever it chose to be" (p.167). It plagued the whole group more and more until they gave the order to the Ouija board for it to disperse - which it did in a dramatic and alarming manner (p.169). The smell now took on a persecutory form following them into the car, awakening Tony Cornell at the night, and even resulting in a form of night terror in which he was convinced that he was being pushed deep down into the mattress (p.170). The author is very candid about this, his personal case, and openly describes the panic it caused and his successful call for inner help (p.170). Whatever the explanation, the case has features that obviously reminiscent of "The Hag" of folklore and of sleep paralysis (p.171). It is of course easy for the outsider to dismiss such experiences as hallucinatory due to suggestion and sleep disturbance but having studied and collected ghost reports myself (Puhle, 2004),

knowing Tony Cornell personally and knowing that his co-investigators were Alan Gauld and the esteemed Erik Dingwall (one of the most sceptical investigators ever) then I have to say to readily dismiss this case this way, is a shade on the facile side.

On more than one occasion the Cornell-Gauld team showed their indefatigable critical ability as for example in the case "The Hillhaven Medium" (pp.339-345), a claimed trance medium, Mrs. P.D., who pretended to be the wife of a Count and to have no Polish connections nor ability to speak Polish, but indeed had been married to a Polish man. The case is instructive and it is worth quoting the author here:

"There are other, less frequent occasions when mediums produce information which is not so easily explained away and warrants serious study. The kind of claims made by such mediums as P.D. can be tested and found correct or incorrect, if one takes the trouble to do so. Unfortunately, most people do not take the trouble but accept the claims on the basis that if some of the information seems plausible or fits an individual's circumstances, then all of it must be true. A psychical researcher cannot adopt such an attitude." (p.345)

In his last chapter Tony Cornell touches the topic of Exorcisms, remarking the noticeable increase in the failure of religious exorcisms (p.365). Five cases are quoted by him, all which demonstrate clearly how the disturbances can be made to disappear by exorcising the minds of the living rather than any discarnate entity (p.366).

Turning now to the use of the instrumentation that was developed for the objective investigation, the SPIDER Mark I and II, the author lists twelve reputedly haunted sites (including some places that seem more than tourist traps such as Chillingham, Northumberland). Despite this effort no phenomena could have been caught in the 1200 hours of work using SPIDER or similar equipment (p.380). The only possible exceptions, which could not be explained away normally, amounted to only six or seven 5- to 15-second movements of small objects, (p.381).

Finally we come to the three most common conclusions, explanations, how to understand ghosts:

- The Natural Cause Theory, which finds the explanation in already known and therefore "natural" causes, including fraud.
- The Spirit Hypothesis, which allows the existence and activity of (body-) independent spirits.
- The Human Responsibility Theory, which sees the causes of the phenomena in the human mind.

And then in the course of the book Tony Cornell reaches his own conclusion and in doing so demonstrates for me the final proof of the open mind. His sympathy for finding natural causes and for uncovering the biggest claims is great. His appreciation of the human mind as a plausible and likely cause is no less. But he never reduces phenomena away, or denies possibilities, which are not disproved. The door stays open.

Crisis apparitions can easily be seen as the most compelling evidence for a post-mortem activity, but Tony stresses quite rightly, that the exact point in time of the apparition makes an important difference, since crisis apparitions centre *around* death. They can occur any time near to the hour or minute of death as well even before. And

at the point of death – if there is such point at all – spiritism and animism go apart: While the first accepts the physical independence of the mind or soul, the “spirit”, the latter would not admit the existence of any spirit after bodily death. We have to get very precise with the documentation reports. And if the apparition appears after death, the animist has more trouble to find an explanation than the spiritist.

What becomes very enigmatic and a challenge for science, are cases involving an apparition of a human figure, appearing to an individual who, without any prior knowledge of the haunting, reports perceiving a figure identical to that witnessed by many other persons and at the same place. One has to agree with the author “such phenomena cannot be dismissed as mere hallucinations in the ordinary sense of the word nor as being due to telepathic infection” (p.413). What makes the subject more complicated are that there are some cases (see chapter 10) suggestive of that these psychic abilities also occur in animals.

Recruitment of new investigators is vital in order for psychical research should continue its field investigations rather than being limited to the confines of the laboratory. The importance of real life investigation cannot be emphasised enough and I can only fully endorse some of the last sentences of Tony Cornell’s remarkable book: “It is essential ... to recognize, that the raw material happens in the field, not in the laboratory, and such phenomena should be more rigorously and scientifically researched, no matter how difficult a task that has proved to be in the past” (p.415).

After more than half a century of field studies Tony Cornell has kept an open mind and not become dogmatic in one or the other direction. He shows us unpretentiously where the normal explanations reach their limits, and this indeed brings fresh life into hauntings and poltergeists, whatever their nature. Tony keeps the balance between the sceptical and the believing side, and I wonder what possibly could push him towards the claims of the one or the other side. Would it be a stronger smell or a successful SPIDER? Whatever direction Tony might go into, his standpoint will probably never be due to a sceptic or a believing mind but to mere, solid knowledge.

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