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## The Transliminal Connection Between Paranormal Effects and Personality in an Experiment with the *I Ching*

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Abstract: Transliminality is currently defined as “the hypothesised tendency for psychological material to cross thresholds into or out of consciousness” (Thalbourne & Houran, 1999). It was hypothesised that transliminality represented a psychological process that might function as a connecting principle between paranormal effects and other personality variables. Ninety-three participants (mostly University of Adelaide psychology students) undertook a paranormal task with the *I Ching* — an ancient Chinese form of divination — involving the attempt to achieve a designated hexagram (six-line symbol) outcome. Each participant threw three coins, six times, to generate six lines, which were converted to a hexagram. The hexagram was then compared with 16 hexagram/descriptor-pairs pre-selected by the participant from a total of 64 hexagrams/descriptor-pairs, in accordance with the statement: “Lately, or right now, I feel . . .” If the outcome hexagram matched one of the 16 designated hexagram/descriptor-pairs it was deemed a ‘Hit’. Participants then completed the Transliminality Scale (Form B), and Cattell’s Sixteen Personality Factor (16PF) Questionnaire. Hitting rates for the whole sample and previous users of the *I Ching*, were both marginally significant. Hitting correlated significantly with Transliminality, and a number of 16PF factors, such as social boldness and extraversion. Transliminality correlated significantly with a number of personality factors and sheep-goat questions. Multiple regression analysis and path analysis were applied. Number of changing lines (generated by coin throws of three-of-a-kind) was another measure of psi-performance, and correlated significantly with a number of 16PF factors. It was suggested that two ‘psi-able’ types (persons with ostensible paranormal ability) were present in the sample — one was socially bold (with a 50% hitting rate), the other was highly transliminal (with a 40% hitting rate), where MCE = 25%.

### The Concept of Transliminality

Since Thalbourne (1991, pp. 181-182) first suggested the concept of transliminality the definition has evolved through three versions as research progressed (Sanders, 1997; Thalbourne, 1996, Thalbourne, in press; Thalbourne, Bartemucci, Delin, Fox & Nofi, 1997; Thalbourne & Delin, 1994; Thalbourne & Delin, 1995;

Thalbourne & Delin, in press; Thalbourne & Houran, 1999). Transliminality is currently defined as “a hypothesised tendency for psychological material to cross (*trans*) thresholds (*limines*) into or out of consciousness” (Thalbourne & Houran, 1999, p. 1). Material from the subliminal mind, from the supraliminal mind and from the external environment is seen as passing “across thresholds” to bring about experiences in consciousness. Using factor analysis, Thalbourne (in press) found nine constituents of this new variable, namely, belief in (and alleged experience of) the paranormal (ESP, PK and life after death), creative personality, mystical experience, magical ideation, history of manic-like

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experience, attitude to dream-interpretation, fantasy-proneness, absorption, and hyperaesthesia (hypersensitivity to environmental stimulation). In this study Thalbourne also devised what turned out to be a 29-item true-false scale to measure transliminality, its items derived from the variables listed above.

### *Transliminality and Paranormal Performance*

Thalbourne and Delin (1994) suggested that highly transliminal individuals may be prone to paranormal experience: for example, extrasensory perceptions may originate in subliminal regions and, under appropriate conditions, be transmitted across the threshold into consciousness.

Thalbourne (1996) tested 99 participants to see if scores on a 10-trial precognition task would correlate with transliminality, but no significant correlation was found.

A second study was more successful. Sanders, Thalbourne and Delin (1998), based on Sanders (1997), found scores in a task involving telepathic transmission of emotional states correlated significantly with transliminality: The senders' transliminality scores correlated significantly with the hit-rate of the receivers.

Apart from a paranormal experiment underway in Sweden, no other parapsychological experiments have used transliminality to predict psi functioning. The present study was an attempt to explore this area further.

### *Personality and Paranormal Performance*

Since the early 1930s, variability in performance on ESP tests has been thought to involve differences in personality and attitude (Rhine, 1937/1950, pp. 65, 84-85; Rhine, 1948/1954, pp. 54, 119). Often, early research in this area examined just one or two psychological variables at a time (e.g., Humphrey's [1949] research with expansion-compression, Schmeidler's [1950, 1960] work with the sheep-goat effect, and the various studies on the influence of extraversion, such as Åström [1965],

Eysenck [1967], Green [1966a, 1966b], and Irwin [1986]).

More sophisticated measuring instruments and techniques were being developed during those early years. In the 1940s, Raymond Cattell factor analysed all English-language adjectives that describe human behaviour. He identified the 16 primary personality factors now used in the personality questionnaire the 16PF (five global factors are derived from various primary factors) (Russell & Karol, 1994). The latest version of the 16PF has a total of 21 factors, covering a range of personality traits. The 16 Primary Factors are (A) Warmth, (B) Reasoning, (C) Emotional Stability, (E) Dominance, (F) Liveliness, (G) Rule-Consciousness, (H) Social Boldness, (I) Sensitivity, (L) Vigilance, (M) Abstractedness, (N) Privatness, (O) Apprehension, (Q1) Openness to Change, (Q2) Self-Reliance, (Q3) Perfectionism, and (Q4) Tension. The five Global Factors are (EX) Extraversion, (AX) Anxiety, (TM) Tough-Mindedness, (IN) Independence, and (SC) Self-Control.

Various parapsychologists have used the 16PF (or the version for adolescents, the High School Personality Questionnaire), often obtaining significant correlations between the factors and ESP scoring (Nicol & Humphrey [1953, 1955], Kanthamani & Rao [1971, 1972, 1973], Rao [1974], Scopp [1974]). Given their results, we expected that global factors such as extraversion and anxiety (and some primary components) might correlate significantly with ESP scoring.

### *The I Ching*

The paranormal component of the present experiment involved the use of a divinatory system — the *I Ching*. The *I Ching* consists of 64 hexagrams (six-line diagrams), each with its own unique reading, and it is the 64 readings that form the basic text. The *I Ching* was first introduced into the English-speaking world through Legge's (1899, cited in Jung, 1989, p. xxi) translation of the original Chinese text. The "emblematic representations" (the

Figure 1

T'ai-chi t'u (*'diagram of the supreme ultimate'*): The yin/yang symbol of opposites

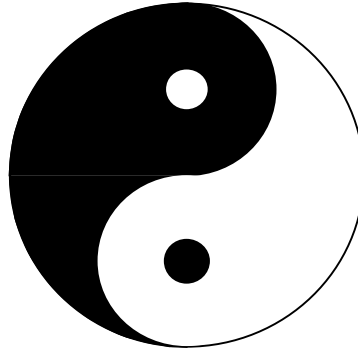


Figure 2

The yang and yin lines

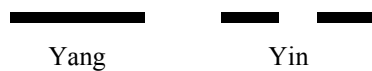
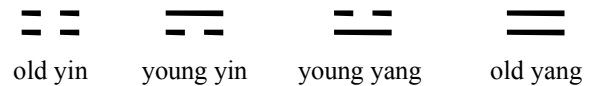


Figure 3

The four duograms



hexagrams) were a puzzle to Legge, and his scepticism is evident throughout the text. The Wilhelm-Baynes (1989) translation is the most in depth work to date. This work, and Hazel's (1990) 'new age' interpretation, form the basis of a so-called *I Ching* Hexagram Descriptor Form used in this study, and which will be described later.

Capra (1988, pp. 308-309) describes the dynamic interplay of the "archetypal" opposites of yin and yang, traditionally represented in the East as the *T'ai Chi T'u* (see Figure 1).

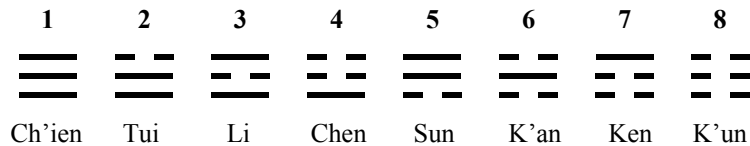
The yin is traditionally said to represent the principles of Earth, passivity, the 'feminine', the negative and darkness, while the yang is said to represent the principles of Heaven, activity, the 'masculine', the positive, and light. The two elements of the yin/yang binary system are represented as

as broken' and 'unbroken' 'lines in the *I Ching* (see Figure 2).

By various combinations of yin and yang interacting with one another (yin/yin, yin/yang, yang/yin, and yang/yang) the four "duograms" are formed (see Figure 3). The duograms represent a four-step continuum, moving from old yin to old yang — a gradual shift from one polar opposite to the other.

By the addition of a yin or a yang line to each of the duograms, eight trigrams are formed (see Figure 4). The trigrams also represent a continuum, but in eight steps, from "Heaven" through to "Earth". The individual trigrams ostensibly carry more meaning than the duograms or individual yin or yang lines. The 64 hexagrams represent all possible combinations of any two of the eight trigrams, each of which can

Figure 4  
The eight trigrams



be used twice. The trigrams, therefore, are at the core of all 64 hexagram interpretations, and supposedly symbolise all the factors of existence — changes in the environment (the seasons), location in space (direction), the constructed, social world, and the natural world (Capra, 1988). As a form of divination, it is claimed that the *I Ching* gives a description of past and present life situations and a forecast of likely events or outcomes.

Covello (1977) found that the yin/yang substructure underlying the hexagrams was meaningfully operative in the hexagram symbols and their corresponding readings. That is, the derivation of the hexagram symbols was not arbitrary, but was arrived at rationally and systematically over many centuries.

In 1949, C. G. Jung (1989, p. xxviii) claimed:

The method of the *I Ching* does indeed take into account the hidden individual quality in things and men [*sic*], and in one's own unconscious as well.

Jung made this claim from the standpoint of an ancient Chinese philosophical way of thinking, rather than a Western causal approach, where “natural laws are merely statistical truths and must necessarily allow for exceptions” (Jung, 1989, p. xxii). Jung, therefore, and others (Barrett, 1992; Hazel, 1990; Wilhelm, 1989; Wing, 1982) see the processes of the *I Ching* as one such exception to natural law as “statistical truth,” in the sense that the random element (chance) is essential to the functioning of the *I Ching*.

The *I Ching* has survived for over 5000 years, and Brier (1974) offers three reasons which might help explain the survival of the *I Ching*:

- (i) it is conducive to psi performance in individuals who may be psychic.
- (ii) there is ample opportunity for ESP/PK to have effects in the *I Ching* process.
- (iii) results are difficult to disprove.

However, it must be conceded that these points may be true of other divinatory systems as well.

The history of the *I Ching* suggests a worthy and compelling subject of psychological investigation, because its ‘wisdom’ has been derived from empirical experience and repeated observation over many thousands of years. Its continued use over these millenia has imbued the *I Ching* with a mystique that may spur the interest of the participant and the experimenter alike, somewhat more so than the apparatus used in traditional paranormal experimentation (for example, dice, Zener cards, etc.).

#### *Previous Experiments with the I Ching*

Rubin and Honorton (1971, 1972) conducted an experiment to test the efficacy of the *I Ching*. Hexagrams were generated in answer to a participant's question, and the cast hexagram reading and a control reading were presented to the participant, who rated the two readings from 1 to 10 (the difference score between the two ratings being the dependent variable). There was no significant difference between the mean rating for the correct passage and the mean rating for the control passage. However, in a planned analysis,

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### The *I Ching* Experiment

those who believed in ESP scored significantly higher than did those who did not believe.

Thalbourne, Delin, Barlow, and Steen (1992-1993) replicated the experiment by Rubin and Honorton (1971, 1972), where participants were required to cast a hexagram and read two readings (the correct one, and a control). Again in a planned analysis (one of three), it was found that believers in the *I Ching* obtained difference-scores that were significantly higher than non-believers' difference-scores.

There was also post hoc evidence that novices with a positive attitude did significantly better than those subjects who had used the *I Ching* before the experiment. However, Thalbourne et al. (1992-1993) did not significantly confirm the Rubin and Honorton result (that scores on the sheep-goat measure would correlate with difference-scores). However, Lawrence (1994) showed statistically (using the criterion of effect size estimates) that the result of Thalbourne et al. was not significantly different from that of Rubin and Honorton.

Thalbourne (1994) examined, in a large personal collection of hexagrams, the number of changing lines (lines formed from a coin throw of three-of-a-kind, where yin lines change to yang lines and yang lines change to yin lines). Using an approach that can probably best be described as post hoc, he found that there was, firstly, in an initial set of observations, a number of changing lines that was significantly higher than mean chance expectation (MCE = 1.5 changing lines out of six coin-throws). But then the score rate dropped to below MCE in a second set of observations. The conclusion was that a 'need-to-know' basis (i.e., "information hunger") might be influencing the *I Ching* process positively, through an increased number of changing lines, while later, interest in only 'static' hexagrams (no changing lines) reduced the output of changing lines.

The experimental component of this study involved the use of the *I Ching* to determine the ability of participants to achieve a designated outcome hexagram. Participants selected sixteen hexagrams (as targets) according to their feelings or thoughts, and then threw three coins, six times, to generate the outcome hexagram. Participants were also required to complete the Transliminality Scale (Form B), and Cattell's 16PF, in order to determine correlates, if any, between paranormal ability, transliminality scores, and 16PF personality factors.

### *Hypotheses*

The following hypotheses were proposed:

1. There is a significant relationship between transliminality and hexagram scores.
2. The number of times that the outcome hexagram arises, which is one of the set of 16 chosen descriptors, will be significantly greater than MCE ( $P_{test} = .25$ ). That is, there is a significant achievement of a designated hexagram outcome.
3. The number of changing lines deviates significantly from chance (MCE = 1.50 changing lines out of six coin-throws).
4. Transliminality is related to the number of changing lines.
5. Answers to Question 1 on the *I Ching* Hexagram Descriptor Form ("Have you ever used the *I Ching*?") are significantly related to hexagram scores.
6. Answers to Question 2 on the *I Ching* Hexagram Descriptor Form ("Do you believe in the possibility, in general, of casting coins for a hexagram, which matches one of your sixteen choices?") are significantly related to hexagram scores.
7. Answers to Question 3 on the *I Ching*

- Hexagram Descriptor Form (“Do you believe *in your own abilities* to cast coins for a hexagram, which matches one of your sixteen choices?”) are significantly related to hexagram scores.
8. Hexagram scores are related to Primary and Global Factors of the 16PF.
  9. Transliminality is related to Primary and Global Factors of the 16PF.
  10. The number of changing lines is related to Primary and Global Factors of the 16PF.
  11. There is a significant difference in the achievement of a desired outcome (Hitting) between Group A (‘naïve’ participants, who have never used the *I Ching*) and Group B (‘sophisticated’ participants, who have used the *I Ching*, or know how to score the coin throws).

All tests were two-tailed, except for Binomial tests, which were conducted to test Hypothesis 2 and Hypothesis 11. Since  $P_{test} = .25$  in this component of the experiment, the distribution of scores was not symmetrical, and therefore, a one-tailed test was necessary.

## Method

### Participants

A total of 93 people participated in the experiment from a variety of sources. The sample included 54 University of Adelaide Psychology students from all levels (undergraduate and Honours). Twenty-five were students from other departments, including Asian Studies and Computer Science. Fourteen were found through friends and colleagues by word-of-mouth. The total sample consisted of 67 females and 26 males. Age ranged from 17 to 64, the mean being 26 years ( $SD = 9.50$ ).

### Measures

Three measures were used in the experiment:

1. The Transliminality Scale (Form B: Thalbourne, in press), which measures transliminality. It contains 29 items taken from various scales (14% of items refer to the paranormal).
2. The *I Ching* Hexagram Descriptor Form, which asks three questions of the participant concerning previous use, and belief in the *I Ching* process, and contains 64 two-word descriptors for each of the hexagrams and the corresponding hexagram (see Appendix A).
3. Cattell’s 16PF Personality Factor Questionnaire, designed to measure and “identify the primary components of personality,” including five global factors (Russell & Karol, 1994, p. 7).

### Apparatus

Ten sets of material were used in the experiment:

1. Invitation to Volunteers
2. Information Sheet
3. Consent Form
4. Hexagram File, containing an introductory page, a how-to-score page, and the 64 *I Ching* hexagram readings (one reading per page, totalling 64 pages, with the changing line readings on the back of each page) all pages from Wing (1982)
5. Three coins (10 cent pieces), a coin cup (for shaking the coins), and a felt-lined box (as a receptacle for the falling coins)
6. Score Record Sheet for recording coin throws
7. “How to Score” Sheet
8. Eight by eight (8 x 8) Trigram Matrix for calculating hexagrams
9. Debriefing Sheet (for participants who got a ‘Hit’)
10. Debriefing Sheet (for participants who got a ‘Miss’)

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### *Procedure*

Approval for the experiment was sought from the Departmental Ethics Committee. Once ethics approval was granted, students were approached to participate through written invitations, which were lodged in students' pigeon-holes.

At the experimental sessions, participants first read the Information Sheet, then signed the Consent Form. The Information Sheet outlined the general nature of the experiment, describing it in three stages. Participants were instructed to take their time, and start when they felt ready, since there was no time limit.<sup>2</sup>

The three stages were as follows:

### *Stage 1*

The first stage of the experiment involved the completion of an *I Ching* Hexagram Descriptor Form. The first page of this Form gives three yes/no introductory questions, as follows:

1. Have you ever used the *I Ching*?
2. Do you believe in the *possibility*, in general, of casting coins for a hexagram, which matches one of your sixteen choices?
3. Do you believe *in your own abilities* to cast coins for a hexagram, which matches one of your sixteen choices?

Question 1 separates the naïve from the sophisticated participants. Question 2 and Question 3 were intended to measure the participants' belief about the ostensible paranormal process involved in the *I Ching*. (However, it should be pointed out that it was later realised that Question 2 is ambiguous: only a 'yes' answer makes any sense, since a 'no' answer precludes the statistical reality of a positive outcome by chance alone.)

Participants were then required to peruse the second page of the Descriptor Form and choose 16 two-word descriptors

(as depicted in Appendix A where the Descriptor-pairs were given, along with the corresponding hexagram), which they felt to be relevant to their feelings "lately, or right now." These choices were not ranked. The experimenter was blind to the choices made on the Descriptor Form. The participant then threw three coins six times, recording the number of heads and tails of each throw on the Score Record Sheet, from the bottom up, according to the conventions of the *I Ching*. Participants knew that they were casting coins for one of the 16 hexagrams, which they had selected. It was emphasized that three coins of the same kind were especially significant (this situation producing a so-called "changing line," which has an additional reading, and generates a second hexagram). Throughout this entire process the participant was observed at close quarters by the experimenter, and the participant was not allowed to discard any throws. No attempt at cheating was detected.

As stated, the selection process of the 16 descriptor-pairs was operationalised by a single statement: "Lately, or right now, I feel. . ." Traditionally, the *I Ching* process requires a "general question" (Hazel, 1990, p. 7), or a question "preferably of great personal relevance" (Thalbourne et al., 1992-1993, p. 13). The approach adopted in this study is, therefore, somewhat unorthodox, but is based on the following assumption.

Questions create a state of apprehension and anticipation, in that they urge a response. Some degree of emotional involvement, therefore, is inevitable, or highly likely, in such a situation. Researchers in parapsychology have noted that the participant's emotional input (usually positive), such as enthusiasm, and personal involvement, facilitates a good psi result (Broughton, 1991, p. 135; Palmer, 1978, pp. 83-84; Rhine, 1937/1950, p. 84).

The underlying assumption, then, in using a feeling-toned statement, rather than a question, is that it essentially produces the same thing — an emotional response. Whereas the one is anticipatory of a solution, the other speaks of a condition

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<sup>2</sup> Palmer (1978, pp. 80-90) points out the suggestive evidence that rushing a response inhibits psi-hitting.

that might beg clarification. Although the difference is qualitative, for the purposes of this study, the mental state of the participant (activated by the prompt “lately, or right now, I feel . . .”) would be quantitatively (i.e., in magnitude) similar, but still aligned with the essential ingredient (emotional commitment) considered necessary for a ‘good’ psi-result. The single statement, however, serves two functions, which have an advantage over the more formal technique of posing a question:

- (i) The statement unifies participants’ preoccupations with the same single factor — their mental/emotional states.
- (ii) The statement thereby relieves participants of the task of ‘dreaming up’ questions, which may, likely as not, lack the necessary emotional input that is alleged to be conducive to psi.

It was anticipated that this approach would prompt the participant into a mental state where an accurate ‘answer’ (response) from the *I Ching* would be more than merely “somewhat important” (Thalbourne et al., 1992-1993, p. 16).

“How to Score” sheets were issued to 10 participants only, who constituted Group B. The original intention of issuing this sheet was to augment the small number of participants who had used the *I Ching* prior to the experiment so that a sizable ‘sophisticated’ group (that is, a group that had knowledge of the scoring procedure) could be contrasted with a ‘naïve’ group (Group A). Group B included 11 other participants who had previously used the *I Ching*, taking the Group B total to 21. The remaining 72 participants constituted Group A.

The size of Group B was originally meant to approximate that of Group A, but, during the experiment, it was decided that it was *theoretically possible* for participants to cheat (in some way that we admittedly cannot specify) and, despite being observed, thereby ‘cast’ a hexagram that matched one of their 16 pre-selected hexagram/descriptor-pairs. Though in fact we considered this possibility unlikely in the extreme, as a safeguard the “How to Score” sheet was not issued to later

participants. As it happened, and to anticipate somewhat, the results are, in general, not consistent with the hypothesis of cheating.

Each of the six ‘heads-and-tails’ counts was then converted by the experimenter to its respective hexagram lines, as instructed on the how-to-score page of the Hexagram File. (A second hexagram was also generated if changing lines were produced from throws of three-of-a-kind, since changing lines change from broken to unbroken, or unbroken to broken, so that the second hexagram is constructed with different lines).

Hexagrams were decoded by the experimenter, using the 8 x 8 Trigram Matrix. The bottom three lines, and the top three lines, each form trigrams, which are collated with each other with the aid of the Matrix. When the participant was satisfied that the hexagram(s) had been calculated correctly, he or she signed and dated the bottom of the score sheet. A ‘hit’ was a match of the participant’s outcome hexagram with one of his or her sixteen selections, as marked on the Hexagram Descriptor Form (a ‘miss’ meant there was no such match). Approximately 40-50% of participants did not ask for, or receive feedback as to whether they achieved a hit or a miss, until they had completed the remaining two components of the experiment (see below).

### Stage 2

After the *I Ching* component of the experiment, participants completed the Transliminality Scale (Form B). There are 29 statements in the Scale, and participants answered ‘true’ or ‘false’ to each. The total number of ‘true’ answers out of 29 is the Transliminality score.

### Stage 3

The 16PF component was the last stage of the experiment. Participants completed Cattell’s 16PF Personality Factor Questionnaire, and their tasks were thus completed.

Some time after testing, once scores were calculated on both the Transliminality

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Scale, and the 16PF, Debriefing Sheets (stating 'Hit' or 'Miss', transliminality score, and instructions on how to interpret the 16PF results) were issued to all participants. Also included with the Debriefing Sheet were copies of the participants' Consent Forms, copies of the hexagram readings, and changing line readings (if any, and, therefore, the second hexagram readings).

### Results

#### *Initial Findings*

The average time taken to complete the three components of the experiment was 50 minutes (although a few participants took as long as 2 1/2 hours).

Neither Group, nor age, nor sex correlated with Hitting. Of the three, only age correlated with Transliminality ( $r = .24$ ,  $p = .02$ ). None of these demographic variables were involved in the hypotheses of this study.

A reliability test of the Transliminality Scale gave a Cronbach's alpha of .86. The theoretical range for Transliminality is 0 to 29. The range of scores for the sample was 3 to 28 ( $N = 93$ ). The mean for Transliminality was 16.38 ( $SD = 6.08$ ).

Standardised scores of the 16PF (STEN scores) have a theoretical range of 1 to 10. The STEN-score means of nineteen of the twenty-one 16PF factors were on or between, the norm-range of 4 to 7 (Russell & Karol, 1994, p. 19). Factor G (Rule-Consciousness) had a sample mean of 3.71, and Factor B (Reasoning) had a sample mean of 7.24, both of which were not significantly outside their ranges.

#### Planned Analyses

Hypothesis 1. *There is a significant relationship between Transliminality and hexagram scores (Hitting).*

This hypothesis was tested using Pearson's  $r$ . Table 1 shows that there was a significant positive correlation between

Transliminality and Hitting ( $r = .27$ ,  $p = .010$ ). The hypothesis was thus confirmed. It appears that there was a tendency in the sample to achieve designated hexagrams as transliminality scores increased. The highly transliminal participant seems to have an advantage when it comes to achieving a designated outcome.

However, a referee suggested that if participants had received immediate feedback about Hitting (before answering the Transliminality Scale and the 16PF) the correspondence between Transliminality and Hitting may simply be due to participants feeling more optimistic about the paranormal after having achieved good results, and more pessimistic after bad ones. For example, one of the Transliminality Scale items is "I am convinced that I am psychic." A person who achieved a hit might be more inclined to say 'true' to this item, and a person who failed to achieve a hit might be more inclined to say 'false', producing an artifactual correlation.

Our first response to this suggestion is to point out that 40-50% of participants did not receive feedback until *after* filling in the questionnaires. Our second response is that we tested the suggestion by removing the four sheep-goat items from the Transliminality Scale and recomputing its correlation with Hitting. Far from disappearing, the correlation with the 25 item Transliminality Scale actually *increased* to  $r = .28$  ( $p = .007$ ). There thus appears to be no artifact (or "knock-on" effects), at least with the sheep-goat items. Nevertheless, we concede that it is advisable to have withheld feedback about the paranormal task in the case of *all* participants. (However, withholding feedback may create motivational problems, as would conducting the *I Ching* component *after* the questionnaires.)

Hypothesis 2. *The number of times that the outcome hexagram arises, which is one of the set of 16 chosen descriptor-pairs, will be significantly greater than MCE ( $P_{test} = .25$ ).*

Table 1  
Correlations between hitting, and transliminality, and 16PF factors

Variable	<i>r</i>	<i>p</i>
Transliminality	.27	.010
Factor F (Liveliness)	.26	.013
Factor H (Social Boldness)	.41	< .001
Factor Q <sub>2</sub> (Self-Reliance)	-.22	.031
Factor Q <sub>4</sub> (Tension)	-.23	.029
Factor EX (Extraversion)	.28	.007
Factor IN (Independence)	.23	.030

Note: *N* = 93; *p* values are two-tailed.

That is, there is a significant achievement of a designated hexagram outcome.

This hypothesis was tested using the binomial test. Choosing 16 out of 64 hexagrams gives a one-in-four chance of getting a hit ( $P_{test} = .25$ , which is the test proportion). The observed proportion was  $P_{obs.} = .32$  (32% hitting rate: 30 hits out of 93 trials). The binomial test gives  $p = .067$ , which might be interpreted as marginally significant. In support of this interpretation, the observed proportion for 'second-hexagram-hitters' (those 24 out of 79 participants who got a hit on their second hexagram) was  $P_{obs.} = .30$  (30% 'hitting rate'), where  $P_{MCE} = .254$  (that is,  $P_{MCE}$  is 16 out of 63 possible hexagrams, since the first hexagram cannot be re-generated). The binomial test on this statistic gave  $p = .187$  (n.s.).

The second hexagram is not a default of the first hexagram, nor were the participants instructed to regard it as a target. All first hexagram lines are potentially free to change, so that any one of the remaining 63 hexagrams can be generated from the changing lines of the first hexagram, if the appropriate number of changing lines is present in the first hexagram. Up until the time the coins are thrown, generation of a second hexagram is an independent process in itself, not dependent upon the first hexagram. There is no restriction in variability of outcome, except in so far as the first hexagram cannot be re-generated. Consequently, the 30% so-called 'hitting rate' on the second hexagram cannot be considered an artifact produced

by the processes involved in generating the first hexagram.

The effect size of the first hexagram Hitting rate was calculated from the Rosenthal and Rubin (1989) formula.<sup>3</sup> The effect size,  $\pi_{obs.}$  (for  $P_{obs.} = .32$ , and  $k = 4$ ) was .59 — a fair to medium effect size ( $\pi_{MCE} = .50$ , i.e., no effect). Bem and Honorton (1994) note the "straightforward intuitive interpretation" that  $\pi$  offers when ascertaining a descriptive measure of effect size (p. 8).

Hypothesis 3. *The number of changing lines deviates significantly from chance (MCE = 1.50 changing lines out of six coin-throws).*

A majority of participants (79 subjects, or 85%) threw three-of-a-kind at least once, and, therefore, generated changing lines. No participant scored higher than four changing lines, out of a theoretical maximum of six (formed from six throws). It was hypothesised that there would be a deviation from chance because participants were informed that throwing three-of-a-kind was particularly informative, in the sense that extra readings were generated both from the changing lines and through a second hexagram.

Hypothesis 3 was tested using a *t*-test for a single sample (MCE = 1.5, which is the test value). With a mean for changing lines of 1.51 changing lines, we could intuit that the outcome of

<sup>3</sup> Rosenthal & Rubin (1989, p. 333): "The value of  $\pi$  . . . depends simply on  $k$ , the number of alternative choices available, and  $P$ , the raw proportion of hits":  $\pi = P(k - 1)/1 + P(k - 2)$ .

## EXPERIMENT WITH THE I-CHING

the test would not be significant, and this intuition was confirmed by the *t*-test, which gave  $p = .96$  (n.s.). The hypothesis was not confirmed. It may be that the “need for knowledge” put forward by Thalbourne (1994) was not sufficiently present in this sample (generally speaking) to yield a significant result. On the positive side, the lack of significant results is consistent with the notion that participants did not cheat, at least in respect to their attempts at throwing three-of-a-kind.

Hypothesis 4. *Transliminality is related to the number of changing lines.*

This hypothesis was tested using Pearson’s *r*. There was a weak correlation between Transliminality and Changing Lines, and it was only marginally significant ( $r = .19$ ,  $p = .062$ ). Therefore, the hypothesis was not significantly confirmed, but the possibility that highly transliminal participants might have been “information hungry” is suggested by this finding.

Hypothesis 5. *Answers to Question 1 on the I Ching Hexagram Descriptor Form (“Have you ever used the I Ching?”) are significantly related to hexagram scores.*

This hypothesis was tested using Pearson’s *r*. There was no significant correlation ( $r = .15$ ,  $p = .162$ ). The hypothesis was not confirmed. (But see Hypothesis 11 for a discussion concerning Group B, the ‘sophisticated’ group.)

Hypothesis 6. *Answers to Question 2 on the I Ching Hexagram Descriptor Form (“Do you believe in the possibility, in general, of casting coins for a hexagram, which matches one of your sixteen choices?”) are significantly related to hexagram scores.*

Pearson’s *r* was used. There was no significant correlation ( $r = .14$ ,  $p = .189$ ). The hypothesis was not confirmed.

Hypothesis 7. *Answers to Question 3 on the I Ching Hexagram Descriptor Form (“Do you believe in your own abilities to cast coins for a hexagram, which matches one of your sixteen*

*choices?”) are significantly related to hexagram scores.*

Pearson’s *r* did not show a significant correlation ( $r = .07$ ,  $p = .506$ ), so the hypothesis was not confirmed (but see the sub-section *Path Analysis*, below, for an alternative interpretation).

Hypothesis 8. *Hexagram scores (Hitting) are related to Primary and Global Factors of the 16PF.*

This hypothesis was tested using Pearson’s *r*. Table 2 gives the significant correlations of Hitting with various 16PF factors. There were a total of six correlations of Hitting with 16PF factors — Factor F (Liveliness), Factor H (Social Boldness), Factor Q<sub>2</sub> (Self-Reliance) (a negative correlation), Factor Q<sub>4</sub> (Tension) (also a negative correlation), Factor EX (Extraversion), and Factor IN (Independence). The hypothesis was considered confirmed.

As a control test, and parallel with this hypothesis, the corresponding correlations were computed for the *second* hexagram. There was only one significant correlate: Factor G (Rule-Consciousness) ( $r = -.28$ ,  $p = .006$ ). One correlation could be the result of chance due to multiple analysis (5% of 21 correlations relevant to the hypothesis is just over one correlation).

Hypothesis 9. *Transliminality is related to Primary and Global Factors of the 16PF.*

Pearson’s *r* was used, and Transliminality was shown to correlate significantly with various 16PF factors. Table 2 shows that there were a total of five such correlations — Factor A (Warmth), Factor G (Rule-Consciousness) (a negative correlation), Factor M (Abstractedness), Factor TM (Tough-Mindedness) (a negative correlation), and Factor SC (Self-Control) (a negative correlation).

The hypothesis was considered confirmed. Transliminality also correlated with Question 2 (“Possibility”) and Question 3 (“Ability”) of the Descriptor Form, which might be expected, since the Transliminality

Table 2

*Correlations between transliminality, and question 2, question 3, and 16PF factors*

Variable	<i>r</i>	<i>p</i>
Question 2 ("Possibility")	.32	.002
Question 3 ("Ability")	.29	.005
Factor A (Warmth)	.21	.040
Factor G (Rule-Consciousness)	-.26	.013
Factor M (Abstractedness)	.41	<.001
Factor TM (Tough-Mindedness)	-.33	.001
Factor SC (Self-Control)	-.29	.005

Note: *N* = 93; *p* values are two-tailed.

Table 3

*Correlations between changing lines, question 2 ("Possibility") and 16PF factors*

Variable	<i>r</i>	<i>p</i>
Question 2 ("Possibility")	.21	.047
Factor A (Warmth)	-.21	.040
Factor C (Emotional Stability)	-.25	.014
Factor M (Abstractedness)	.31	.003
Factor Q <sub>2</sub> (Self-Reliance)	.30	.004
Factor EX (Extraversion)	-.23	.028

Note: *N* = 93; *p* values are two-tailed.

Scale measures, amongst other things, belief in paranormal processes.

Hypothesis 10. *The number of changing lines is related to Primary and Global Factors of the 16PF.*

Pearson's *r* was used, and Table 3 shows the significant correlations of Changing Lines with 16PF factors. There were five significant correlations: Factor A (Warmth) (a negative correlation), Factor C (Emotional Stability) (a negative correlation), Factor M (Abstractedness), Factor Q<sub>2</sub> (Self-Reliance), and Factor EX (Extraversion) (a negative correlation). The hypothesis was considered confirmed.

Hypothesis 11. *There will be a significant difference in the achievement of a desired outcome (Hitting) between Group A ('naïve' subjects) and Group B ('sophisticated' subjects).*

Pearson's *r* was used, and there was no significant correlation between Group-

membership and Hitting ( $r = .12, p = .242$ ). However, separate binomial tests on the two groups revealed some interesting results. Group A ('naïve' subjects) obtained 21 hits ( $n = 72; P_{obs.} = .29$ , effect size  $\pi_{obs.} = .55$ ), which was not significant ( $p = .248$ ) (Note:  $P_{test} = .25$ , chance effect size  $\pi_{MCE} = .50$ ), yet Group B ('sophisticated' subjects) got 9 hits ( $n = 21; P_{obs.} = .43, \pi_{obs.} = .69$ ), which was marginally significant ( $p = .056$ ). In fact, the level of significance was better for Group B than for the whole sample ( $P_{obs.} = .067$ ).

It would appear that those participants with prior experience of the *I Ching* (or knew how to score the coin throws) did better than the naïve participants. This finding raises doubt about any claim that superior psi-performance is more likely in the 'naïve' subject. We should mention that it is this 'sophisticated' group which is most open to the charge of cheating (see Method section, p. 15). However, we note that if

any such behaviour occurred it did not lead to significant results.

### Post Hoc Analyses

#### *Multiple Regression Analysis (MRA1) — Hitting*

A multiple regression (forward selection method) was performed with the correlates of Hitting: Transliminality, Factor F (Liveliness), Factor H (Social Boldness), Factor Q<sub>2</sub> (Self-Reliance), Factor Q<sub>4</sub> (Tension), Factor EX (Extraversion), and Factor IN (Independence).

Only Factor H and Transliminality appeared in the model summary. The other five did not appear, although Factor Q<sub>4</sub> was almost significant ( $p = .051$ ). Factor H (Social Boldness) made a moderate contribution as a predictor ( $R = .41$ ,  $R^2 = .17$ ), followed by Transliminality, which raised the  $R$  to  $.47$  ( $R^2 = .22$ ). The value of  $R^2$  in the second model indicates that 22% of the variance of the dependent variable (Hitting) was accounted for by the two predictor variables. The ANOVA was significant:  $F(2, 90) = 12.69$ ,  $p < .001$ . The Beta coefficients provide an indication of the importance of these two variables in the regression equation, given the six variables tested: Factor H (Beta =  $.39$ ), and Transliminality (Beta =  $.23$ ). Of the two independent variables, Factor H made the greater contribution (almost twice that of Transliminality).

#### *Multiple Regression Analysis (MRA2) — Transliminality*

An MRA (forward selection) was performed on Transliminality, with its correlates Factor A (Warmth), Factor G (Rule-Consciousness), Factor M (Abstractedness), Factor TM (Tough-Mindedness), Factor SC (Self-Control), "Possibility," and "Ability."

Factor M, Factor A, and "Ability" all entered the model summary. The other four variables did not appear. Factor M (Abstractedness) made a moderate con-

tribution as a predictor ( $R = .41$ ,  $R^2 = .17$ ), followed by Factor A ( $R$  to  $.48$ ,  $R^2 = .23$ ), and finally, "Ability," which raised the  $R$  value to  $.52$  ( $R^2 = .27$ ). The value of  $R^2$  indicates 27% of the variance of the dependent variable (Transliminality) was accounted for by the three predictor variables. The ANOVA was significant:  $F(3, 89) = 10.97$ ,  $p < .001$ . The Beta coefficients were: Factor M, Beta =  $.38$ ; Factor A, Beta =  $.25$ ; and "Ability," Beta =  $.21$ . Of the three independent variables, Factor M made the greatest contribution, but only a little more than Factor A, and "Ability."

#### *Multiple Regression Analysis (MRA3) — Changing Lines*

An MRA (forward selection) was performed on Changing Lines, with its correlates "Possibility," Factor A (Warmth), Factor C (Emotional Stability), Factor M (Abstractedness), Factor Q<sub>2</sub> (Self-Reliance), and Factor EX (Extraversion).

Factor M and Factor Q<sub>2</sub> entered the model summary. The other four variables were excluded. Factor M (Abstractedness) made a small-to-moderate contribution as a predictor ( $R = .31$ ,  $R^2 = .10$ ), as did Factor Q<sub>2</sub> ( $R$  to  $.38$ ,  $R^2 = .15$ ). The value of  $R^2$  indicates 15% of the variance of the dependent variable (Changing Lines) was accounted for by the two predictor variables. The ANOVA was significant:  $F(2, 90) = 7.74$ ,  $p = .001$ . The Beta coefficients were: Factor M, Beta =  $.25$ ; Factor Q<sub>2</sub>, Beta =  $.23$ . Of the two independent variables, Factor M made the greatest contribution, but only a little more than Factor Q<sub>2</sub>.

#### *Path Analysis*

One advantage of path analysis is that direct and indirect effects of the predictor variables can be shown in one model. A path analysis was deemed possible because both regression models included Transliminality (in MRA1, Transliminality was a predictor variable, but in MRA2, Transliminality was the dependent variable).

A Path Analysis using AMOS (Analysis of Moment Structures) was performed, by

combining the predictor variables of Hitting, and the predictor variables of Transliminality. Figure 5 shows the path coefficients. Transliminality and Hitting are both endogenous variables. On the top-right corners of the Transliminality variable ('transcor') and the Hitting variable ('hitmiss1') is shown the proportion of the variance accounted for (which is the same as the  $R^2$  value) for each of these dependent variables;  $e_1$  and  $e_2$  are unobserved variables, not accounted for in the study, which contribute unexplained error variance to the model. Curved paths in the figure are covariances between the four exogenous variables. (The variance-covariance matrix is given in Appendix B.)

The chi-square test, used to assess the efficiency of the model, gave  $\chi^2 = 2.24$ ,  $df = 4$ ,  $p = .693$  (n.s.), meaning that the model is a plausible one. A 'good fitting' relationship exists if the  $\chi^2/df$  ratio is less than 2 (the AMOS output gave a  $\chi^2/df$  ratio of .56). The

RMSEA (root-mean-square-error-of-approximation), which indicates the closeness of fit of the model in relation to the degrees of freedom, was  $< .001$ , and since  $\leq .05$  is preferred, the model is deemed to be accurate, given the variables presented (Arbuckle, 1997, pp. 557-558).

Figure 5 shows that Factor H — Social Boldness ('perfach') and Transliminality have direct effects on Hitting. Figure 6 shows that Factor M ('perfachm'), Factor A ('perfaca'), and "Ability" ('ichingq3') have virtually no direct effect on Hitting — they function as predictors of Transliminality only. It can be seen that Transliminality has a mediatory role in the path analysis, which confirms the underlying theme of the present study, that there is a transliminal connection between personality and paranormal effects.

Figure 5  
Path analysis showing indirect effects (standardised) of correlates of transliminality ('transcor') on hitting ('hitmiss1'), and the direct effect (standardised) of social boldness ('perfach') on hitting

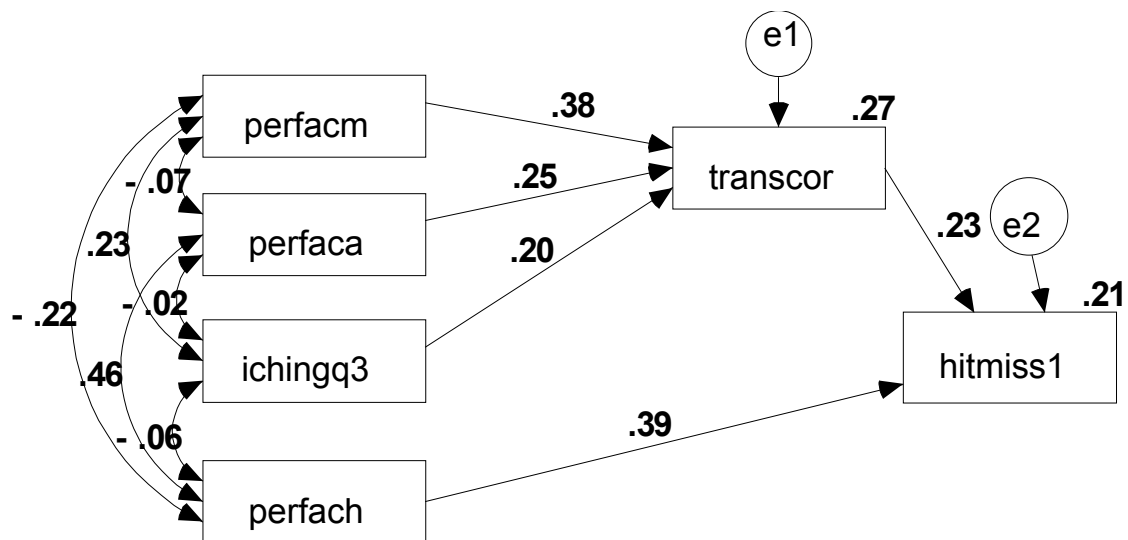
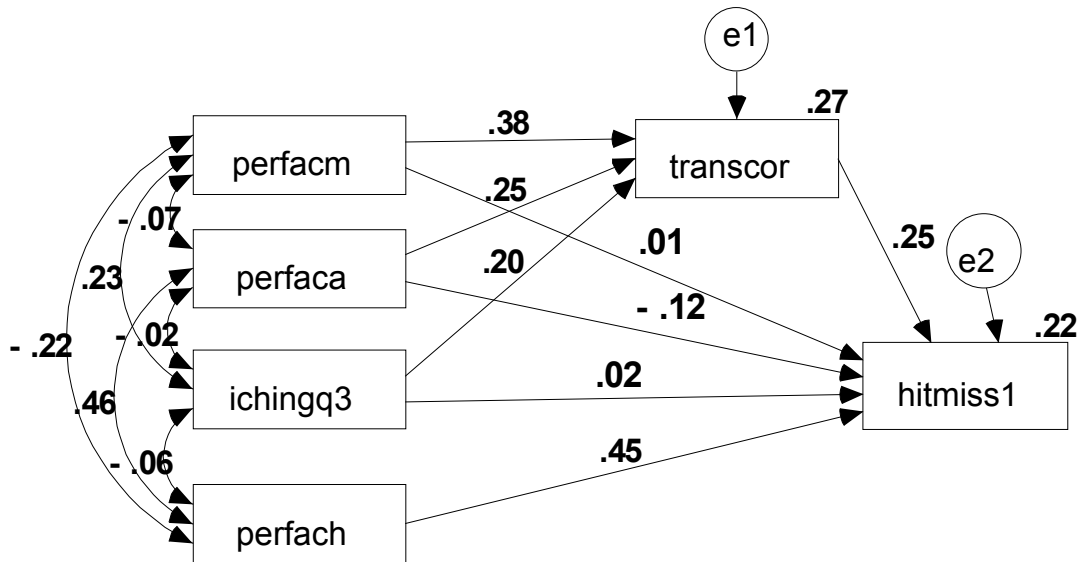


Figure 6

Path analysis showing direct and indirect effects (standardised) of correlates of transliminality on hitting, and the direct effect (standardised) of social boldness ('perfact') on hitting



Median Split Analyses

In order to ascertain the locus and form of the psi effect (psi-hitting or psi-missing) a ‘median split’ on transliminality scores was performed, followed by a binomial test to determine the hitting rates of low and high scorers. Since the median was 16, low scorers were those participants who scored  $\leq 15$ , and high scorers were those participants who scored  $\geq 17$ . For low scorers ( $n = 43$ ),  $P_{obs.} = .23$ ,  $p = .47$ ,  $\pi_{obs.} = .47$ , and for high scorers ( $n = 45$ ),  $P_{obs.} = .40$ ,  $p = .016$ ,  $\pi_{obs.} = .67$ . Highly transliminal participants scored significantly above MCE, which suggests that they psi-hit during the *I Ching* task.

Scores on the second predictor variable Factor H (Social Boldness) were also split into low and high scorers (since the median was 5.5, low scorers scored  $\leq 5$ , and high scorers scored  $\geq 6$ ). For the ‘low’ scorers ( $n = 49$ ),  $P_{obs.} = .16$ ,  $p = .108$ ,  $\pi_{obs.} = .36$ , and for high scorers ( $n = 44$ ),  $P_{obs.} = .50$ ,  $p < .001$ ,  $\pi_{obs.} = .75$ . Participants high on Social Boldness

scored significantly above MCE. High Factor H was a good predictor of psi-hitting.

Decline Effect

It is worth mentioning that a decline effect in the correlation of Transliminality with Hitting was suggested throughout the running of the experiment. Pearson correlation analysis was performed on five sub-samples (for  $N = 93$ , four sub-samples of  $n = 20$  consecutive subjects, and a fifth of  $n = 13$ ). Ranks were assigned to each of the five Pearson correlations, 1 to 5, from the first to the fifth sub-sample. The correlation was not significant ( $r = -.75$ ,  $p = .142$ , two-tailed). There appeared not to be a statistically significant decline effect after all.

The ‘Possibility’ of Psi and Psi ‘Ability’

Question 2 (“Possibility”) and Question 3 (“Ability”) of the Hexagram Descriptor Form concern belief — whether or not each participant attributed the achievement of a

designated hexagram outcome to external 'forces', or to his or her innate predisposition (basic character, personality, or other mental, or physiological constituents), or both.

These two questions correlated positively and significantly with each other, and to a moderately high degree ( $r = .47, p < .001$ ). The tendency was to answer 'yes' to both questions (47% did so, only 25% answered 'no' to both and the remainder — 28% — gave mixed responses). Recalling the indirect relationship between "Ability" and Hitting in the path analysis it appears that belief had a part to play in Hitting success, but not a direct one.

## Discussion

In general, the experiment has been fairly successful, in the sense that four of the eleven hypotheses were significantly confirmed, though, in addition, Hypothesis 2 (overall hitting) and Hypothesis 4 (a correlation between Transliminality and Changing Lines) were marginally significant. Two hypotheses which were not confirmed related to the novel exercise of seeking a deviation from MCE in the number of Changing Lines (Hypothesis 3), and a significant difference in Hitting between Groups A and B (which was based on Question 1 — prior experience of the *I Ching*) (Hypothesis 11). However, these two hypotheses (as well as Hypothesis 4) were in fact rather secondary to the major findings regarding Transliminality and Hitting, as were hypotheses 5, 6 and 7, which concerned prior use of the *I Ching* and belief ("Possibility" and "Ability").

The majority of the seventeen significant correlations obtained can probably be taken as meaningfully significant, in the sense that they are not artifacts of multiple analysis. That is, it might be expected that 5% of the total number of correlations relevant to the hypotheses would be significant by chance alone, but this percentage was exceeded in all cases. Thus, there was a total of 69 correlations, and 17 of these were significant, whereas 5% of 69 is 3.45 significant correlations by chance: of 48

correlations relevant to the hypotheses of Hitting with Transliminality, 16PF factors, Changing Lines, and the three *I Ching* questions, 12 were significant, where 2.4 correlations would be significant by chance; and of 21 purely psychological correlations computed for Transliminality with 16PF factors, 5 were significant, where 1.1 correlations would be significant by chance.

### *Two 'Psi-able' Types*

Given the data from one of the Multiple Regression Analyses (MRA1) and the path analysis (Figure 5), Factor H (Social Boldness) was found to be a good predictor of the Hitting variable (50% of high scorers on Factor H obtained a hit). Thus, if we take hitting success at face value, it might be possible to identify one 'psi-able' type in the sample, who could be described as socially bold and adventurous.

The MRA2 data and the path analysis (Figure 5) also suggested a number of characteristics that typified the highly transliminal type. The highly transliminal individual, was more likely to be warm and out-going (Factor A), idea-oriented and imaginative (Factor M), and to believe in his or her own ability ("Ability") to achieve a successful outcome in a psi-task, a belief which was vindicated in part by the fact that 40% of the highly transliminal participants obtained a hit, suggesting that they too might be 'psi-able'.

However, such personalities are somewhat idealised. A psychopathological dimension to at least one of these types is possible, given some of the constituents of transliminality — namely, manic-like experience, fantasy-proneness, and hyperaesthesia. Further to the list of potentially adverse features are transliminality's correlates of dissociation, hallucination, and schizotypy, etc. As Thalbourne and Houran (1999, p. 11) have stated: "something more abundant (but not necessarily positively toned) is going on in the minds of persons high in transliminality."

### Limitations

There were two major limitations to this study, which were largely unavoidable.

First, inferences cannot be made to the population from the sample, since the sample was not random, for the following reasons:

- (i) Females outnumbered males more than 2:1 (72% and 28%, respectively).
- (ii) The sample was comprised mainly of young people with an average age of 26 years.
- (iii) The majority of the sample (85%) consisted of university students.
- (iv) It is highly likely that the sample was over-represented by enthusiastic and motivated volunteers, many of whom may have been 'psi-able', and interested in the experiment for its paranormal component.

Second, response bias to some, if not all, hexagram descriptor-pairs became a consideration at the mid-stage of the experiment. A cursory analysis of the response rate on selected descriptor-pairs was undertaken to ascertain whether or not the Hexagram Descriptor Form had demand characteristics, thereby fostering biases in selection of descriptor-pairs. It could be argued that some descriptor-pairs, for example, hexagram #12: 'Stagnant, Unassisted', by its negative tone, might be avoided to some degree by participants. Other descriptor-pairs, such as hexagram #14: 'Supreme, Successful', by its positive tone, might prompt a higher response rate.<sup>4</sup> In fact, "Stagnant, Unassisted" was selected nine times by the whole sample, while 'Supreme, Successful' was selected only eight times. Although anecdotal, this example suggests that participants were honest with their choices, as requested in the instructions on the Descriptor Form.

<sup>4</sup> Recall that these Descriptor-pairs are taken directly from the texts of Wilhelm (1989), *I Ching, or Book of Changes*, and Hazel (1990) *Consulting the Coins: A New Age Interpretation of the I Ching*.

Only an analysis of the distribution of hexagram choices could confirm this assumption, but a sample of at least 300 participants would be necessary for this task (Thalbourne et al., 1992-1993, p. 20).

### Future Research

Notwithstanding the foregoing caveats and limitations of this study, the findings that suggest a paranormal dimension to personality in the sample might still be considered, not only from within the context of this study, but from the perspective of the possible implications they may have for our understanding of personality in the population, and for future ESP-personality research in general. However, it is a sobering thought to note that Nicol and Humphrey's (1953) ESP/16PF results did not replicate in their second study (Nicol & Humphrey, 1955). Nicol and Humphrey's (1955) example indicates the often mercurial nature of results in parapsychology, and is a caveat to other researchers — it is often impossible to "argue from the sample to the population" (Nicol & Humphrey, 1955, p. 150).

It is clear by the methods used in this study for testing the hypothesis that transliminality may have a connection with psychic ability that only a limited distance has been covered. It might be of interest to investigate the possibility of a significant relationship between transliminality and success at other tasks, such as the ganzfeld.

Nevertheless, the encouraging psi-results obtained through the use of the *I Ching* in this study and three previous studies suggest its continued use in psi research. Both hitting *and* changing lines should be examined further.

Notwithstanding the fact that replicability of results must come before research findings can be reliably and generally applied to practical situations in the population, it may eventuate that certain personality factors (such as transliminality) can be used as predictors of psi ability, as was found in this study. If a certain type in the population is good at psi 'guessing' tasks, it may follow that there is a type who is the antithesis of the 'psi-hitter' — the 'psi-misser'. In gambling tasks, for

example, attempting to achieve a designated outcome (the fall of dice, or coins, or the outcome of cards, etc.) may involve paranormal effects, and not just chance alone. If a certain type of compulsive gambler happens to be a 'psi-misser', and habitually so, there is every reason to suggest that such a person should be persuaded to avoid the indulgence. It might be possible to identify such a person by establishing their personality type, so that appropriate advice could be given, to the benefit of the individual and the wider community. Future research would involve further study of the psi-missing type in the context of personality theory.

## Conclusion

The main requirement of a good personality theory is that it describes the nature of the human subject as he or she is, while still maintaining a degree of flexibility that will take into account our developing awareness of the nature of human behaviour. The definition of transliminality, which has changed when inconsistent or unexpected findings arose, is a demonstration of this flexibility.

It is suggested that personality theories might perhaps broaden their compass, particularly when the need arises for a theory to explain ostensible paranormal phenomena associated with certain personality types. Transliminality, as a personality factor in itself, may in part serve this need, and even perhaps fill the gap between personality as it is understood thus far, and personality theory as it continues to unfold and develop.

Lately, or right now, I feel:

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

## Appendix B

Variance-covariance Matrix for Path Analysis (see Fig. 5)

	perfacm	perfach	ichingq3	perfaca
perfacm	2.831	-	-	-
perfach	-.740	4.124	-	-
ichingq3	.191	-.060	.250	-
perfaca	-.231	1.704	-.015	3.384

## References

- Arbuckle, J. L. (1997). *AMOS User's Guide*. Chicago: Small Waters Corporation.
- Åström, J. (1965). GESP and the MPI measures (Paper read at eighth annual Convention of the Parapsychological Association, New York, 1965). *Journal of Parapsychology*, **29**, 292-293 (Abstract).
- Barrett, D. (1992). *Destiny and Your Dreams*. Leicestershire, U. K.: Treasure Press.
- Bem, D. J., & Honorton, C. (1994). Does psi exist? Replicable evidence for an anomalous process of information transfer. *Psychological Bulletin*, **115**, 4-18.
- Brier, B. (1974). Parapsychological principles from anthropological studies. *Parapsychology Review*, **5**, 3-8.
- Broughton, R. S. (1991). *Parapsychology: The Controversial Science*. New York: Ballantine.
- Capra, F. (1988). *The Tao of Physics*. Glasgow: Flamingo/Fontana.
- Covello, E. M. (1977). Symbolization of conscious states in the *I Ching*: A quantitative study. *Journal of Altered States of Consciousness*, **3**, 111-129.
- Eysenck, H. J. (1967). Personality and extrasensory perception. *Journal of the Society for Psychical Research*, **44**, 55-71.
- Green, C. E. (1966a). Extrasensory perception and the Maudsley Personality Inventory. *Journal of the Society for Psychical Research*, **43**, 285-286 (Abstract).
- Green, C. E. (1966b). Extra-sensory perception and the extraversion scale of the Maudsley Personality Inventory. *Journal of the Society for Psychical Research*, **43**, 337 (Abstract).
- Hazel, R. (1990). *Consulting the Coins: A New Age Interpretation of the I Ching*. Port Melbourne: Lothian.
- Humphrey, B. M. (1949). The relation of ESP to mode of drawing. *Journal of Parapsychology*, **19**, 31-46.
- Irwin, H. (1986). Personality and psi performance: Directions of current research. *Parapsychology Review*, **17**, 1-4.
- Jung, C. G. (1989). *Foreword to The I Ching or Book of Changes*. In R. Wilhelm, *The I Ching or book of changes* (pp. xxi-xxxix). C. F. Baynes. (trans.). Princeton, NJ: Princeton University Press.
- Kanthamani, B. K., & Rao, K. R. (1971). Personality characteristics of ESP subjects: 1. Primary personality characteristics and ESP. *Journal of Parapsychology*, **35**, 189-207.
- Kanthamani, B. K., & Rao, K. R. (1972). Personality characteristics of ESP subjects: 3. Extraversion and ESP. *Journal of Parapsychology*, **36**, 198-212.
- Kanthamani, B. K., & Rao, K. R. (1973). Personality characteristics of ESP subjects: 4. Neuroticism and ESP. *Journal of Parapsychology*, **37**, 37-50.
- Lawrence, T. (1994). Comment: Tony Lawrence comments on the article 'A further attempt to separate the yins from the yangs: A replication of the Rubin-Honorton experiment with the *I Ching*' by Thalbourne, Delin, Barlow, & Steen (1992-1993). *European Journal of Parapsychology*, **10**, 144-145.
- Nicol, J. F., & Humphrey, B. M. (1953). The exploration of ESP and human personality. *Journal of the American Society for Psychical Research*, **47**, 133-178.
- Nicol, J. F., & Humphrey, B. M. (1955). The repeatability problem in ESP-personality research. *Journal of the American Society for Psychical Research*, **49**, 125-156.
- Palmer, J. (1978). Extrasensory perception: Research findings. In S. Krippner (Ed.), *Advances in Parapsychological Research: 2* (pp. 59-243). *Extrasensory perception*. New York: Plenum Press.
- Rao, K. R. (1974). Psi and personality. In J. Beloff (Ed.) *New Directions in Para-*

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- psychology*. (pp 60-76). London: Elek Science.
- Rhine, J. B. (1950). *New Frontiers of the Mind*. Harmondsworth, England: Penguin. (Original published 1937).
- Rhine, J. B. (1954). *The Reach of the Mind*. Harmondsworth, England: Penguin. (Original published 1948).
- Rosenthal, R., & Rubin, D. B. (1989). Effect size estimation for one-sample multiple-choice-type data: Design, analysis and meta-analysis. *Psychological Bulletin*, **106**, 332-337.
- Rubin, L., & Honorton, C. (1971). Separating the yins from the yangs: An experiment with the *I Ching*. *Journal of Parapsychology*, **35**, 313-314.
- Rubin, L., & Honorton, C. (1972). Separating the yins from the yangs: An experiment with the *I Ching*. In W. G. Roll, R. L. Morris, & J. D. Morris (Eds.), *Proceedings of the Parapsychological Association 1971, No. 8* (pp. 6-7). Durham, NC: Parapsychological Association.
- Russell, M. T., & Karol, D. L. (1994). The 16PF Fifth Edition Administrator's Manual. Champaign, IL: Institute for Personality and Ability Testing, Inc.
- Sanders, R. E. (1997). The role of transliminality, emotional states as targets, and participant interaction in an ESP task. Unpublished B. A. (Honours) thesis, Department of Psychology, Adelaide, South Australia.
- Sanders, R. E., Thalbourne, M. A., & Delin, P. S. (1998). *Transliminality and the telepathic transmission of emotional states: A pilot study*. Paper submitted for publication.
- Schmeidler, G. R. (1950). Some relations between picture-frustration ratings and ESP scores. *Journal of Personality*, **18**, 331-344.
- Schmeidler, G. R. (1960). ESP in relation to Rorschach test evaluation. *Parapsychological Monographs No. 2*. New York: Parapsychology Foundation.
- Scopp, A. (1974). Self-actualization and psi: Prediction of performance using stepwise discriminant function analysis. In J. D. Morris, W. G. Roll, & R. L. Morris (Eds.), *Research in Parapsychology 1974* (pp. 35-37). Metuchen, NJ: Scarecrow.
- Thalbourne, M. A. (1991). The psychology of mystical experience. *Exceptional Human Experience*, **9**, 168-186.
- Thalbourne, M. A. (1994). Postscript to an experiment with the I Ching: How many changing lines? *European Journal of Parapsychology*, **10**, 130-145.
- Thalbourne, M. A. (1996). An attempt to predict precognition scores using transliminality-relevant variables. *Journal of the Society for Psychical Research*, **61**, 129-140.
- Thalbourne, M. A. (in press). *Transliminality: Correlates and a short measure*. *Journal of the American Society for Psychical Research*.
- Thalbourne, M. A., Bartemucci, L., Delin, P. S., Fox, B., & Nofi, O. (1997). Transliminality: Its nature and correlates. *Journal of the American Society for Psychical Research*, **91**, 305-331.
- Thalbourne, M. A., & Delin, P. S. (1994). A common thread underlying belief in the paranormal, creative personality, mystical experience and psychopathology. *Journal of Parapsychology*, **58**, 3-38.
- Thalbourne, M. A., & Delin, P. S. (1995). *Correlates of belief in the paranormal: A partial replication*. Unpublished manuscript.
- Thalbourne, M. A., & Delin, P. S. (in press). Transliminality: Its relation to dream-life, religiosity and mystical experience. *International Journal for the Psychology of Religion*.
- Thalbourne, M. A., Delin, P. S., Barlow, J. A., & Steen, D. M. (1992-1993). A further attempt to separate the yins from the yangs: A replication of the Rubin-Honorton experiment with the *I Ching*. *Journal of Parapsychology*, **9**, 12-23.
- Thalbourne, M. A., & Houran, J. (1999). *Transliminality, the Mental Experience Inventory, and tolerance of ambiguity*. Submitted for publication.
- Wilhelm, R. (1989). *The I Ching or Book of Changes*. C. F. Baynes (trans.). Princeton, NJ: Princeton University Press.
- Wing, R. L. (1982). *The Illustrated I Ching*. Wellingborough, Northamptonshire: Aquarian Press.

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