

## Investigations of the *I Ching*: I. Relationships between Psi and Time Perspective, Paranormal Belief and Meaningfulness

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**Abstract:** The *I Ching* is an ancient Chinese system of divination. The user throws three coins, six times, to generate one of 64 possible six-line symbols or hexagrams, and then consults the associated divinatory reading. It is conjectured that the *I Ching* process is underscored by a paranormal process the cause of which is likely to be the individual user. Past research has produced mixed results—in five studies, effects have ranged from chance, to significantly above chance, but no effect significantly below chance has been found. In a study by L. Storm (2006) it was theorised that hexagram targeting may accord with the participant's time perspective—a present time perspective (PTP) refers to immediate events; a future time perspective (FTP) refers to what fate has in store. PTP and FTP types are determined from scores on the Time Perspective Inventory (Zimbardo & Boyd, 1999). In Storm's (2006) study and the present study it was hypothesised that PTP types prefer first-hexagrams, and FTP types prefer second hexagrams. Storm (2006) produced results that were in the directions hypothesized. In this replication study ( $N = 150$ ), hit rates for PTP types on first-hexagram hitting (30%) did exceed hit rates for FTP types (25%) as hypothesised, although the difference was not significant. The hit rate for FTP types on second-hexagram hitting (22%) did not exceed the hit rate for PTP types (27%). Hit rates were above chance on first-hexagram hitting (25.3%), but below chance on second-hexagram hitting (24.6%). Neither effect was significant. First-hexagram hitters rated their readings significantly higher on meaningfulness than first-hexagram missers. This effect was interpreted as fulfilling a theoretical condition that defines "meaningful coincidence" or synchronicity (Jung, 1960). Correlations between pro attitude and hexagram hit rates were not significant, but a significant sheep-goat effect was found. A just-significant aggregated hexagram hit rate across the six studies was found: 27% ( $p = .057$ ).

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**Keywords:** *I Ching*, psi, Time Perspective Inventory, sheep-goat effect, synchronicity, meaningfulness.

## INTRODUCTION

Systems of divination have been practiced in a variety of forms since ancient times in all cultures (Geddes & Grosset, 1997). The main reason these systems prevail is because people wish to know what the future has in store for them, or they are looking for a solution to a problem. The *I Ching*, one of the oldest divinatory systems, is said to have originated in China up to 5000 years ago. Traditionally the *I Ching* is a tool for guidance (Hazel, 1990; Whinchup, 1986; Wilhelm, 1989).

It has been argued that divination, including the *I Ching*, “does not foretell the future but rather [indicates] whether an activity had divine sanction” (Chandler, 2001, p. 183). Modern-day *I Ching* users most likely are not seeking divine sanction, and certainly for the purpose of the present study it is theorised that the *I Ching* involves some proportion of paranormal influence at the personal level. Storm (2006) argued that chance might be subverted by conscious or unconscious intention so that outcomes in the *I Ching* process may tend to be veridical and pertinent. In other words, *I Ching* users might influence the system so that hexagrams are generated that correspond with readings that are of some utility to the user. Thus, successful use of the *I Ching* may depend on other than normal processes (i.e., a paranormal or otherwise anomalous process). The well-structured design and systematic procedure involved in the *I Ching* renders this primary assertion amenable to controlled investigation.

### *Previous I Ching Studies*

In ancient times yarrow stalks were thrown to generate one of 64 so-called *I Ching* hexagrams, or six-line symbols, each with its own unique reading which can be taken as advice or as a forecast. In the modern era, the user throws three coins six times to generate the hexagram. Using the three-coin method, the *I Ching* has been investigated a number of times to determine an ostensible paranormal influence in its process (e.g., Rubin & Honorton, 1971, 1972; Thalbourne, 1994; Thalbourne, Delin, Barlow, & Steen, 1992-1993), with mixed results (see Storm & Thalbourne, 2001a, for a review).

Storm and Thalbourne (1998-1999, 2001a) hypothesised that participants could predict their hexagrams in advance based on feeling states, under the assumption that psi was operating, so that the number of predicted hexagram outcomes would be above-chance. There are two types of hitting—first-hexagram hitting (any of 64 possible outcomes) and second-hexagram hitting, where the second-hexagram is derived from the

first hexagram (second hexagrams can only be one of the 63 remaining hexagrams).<sup>1</sup> The binomial (exact) test was used to calculate the proportion correct (i.e., the hit rate) and the *p* value (a hit is designated “1” and a miss is designated “0”). Significant hexagram hit rates were found in the above two studies by Storm and Thalbourne. The term “*I Ching* effect” was later coined for an unspecified form of GESP/PK (Storm, 2003, p. 147) that referred either to hexagram hit rates that deviated significantly from chance or a significant number of coin-throws of three-of-a-kind.

Storm and Thalbourne (1998-1999, 2001a,b) also theorised that hexagram-hitting would co-vary with individual differences in personality and belief. They therefore administered Cattell’s 16PF questionnaire (Cattell, Eber, & Tatsuoka, 1970) and Thalbourne’s (Thalbourne & Delin, 1994) Transliminality Scale<sup>2</sup> to participants under the assumption that these measures may function as predictor variables. Significant predictors of the *I Ching* effect were found in the form of transliminality and five 16PF factors (Liveliness, Social Boldness, Self-Reliance, Tension, and Extraversion). These effects have not been replicated (Storm, 2002; Thalbourne & Storm, in press), but Houran and Lange (in press) have found a gender specific effect where low-transliminal males and high-transliminal females tend to elicit the *I Ching* effect.

## OTHER PREDICTORS OF *I CHING* EFFECTS

### *Time Perspective*

Storm (2006) maintained the search for predictors of *I Ching* effects, but shifted his focus to factors other than personality traits and belief-based variables. He theorized that the *I Ching* effect might depend on time perspective. Storm used Zimbardo and Boyd’s (1999) Time Perspective Inventory to classify temporal persuasion. Persons with a present time perspective (i.e., PTP-types) focus on immediate events, whereas those with a future time perspective (i.e., FTP-types) focus on the future. Since *I Ching* readings are traditionally read in the context of past and present for first-hexagrams, and future for second-hexagrams, Storm

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<sup>1</sup> Coin throws of three-of-a-kind (i.e., HHH or TTT) generate changing lines. The changing line, as the name suggests, changes a line in the first hexagram from “broken” to “unbroken” or vice versa, thus resulting in a second hexagram (any or all of the six lines in the first hexagram can be changing lines).

<sup>2</sup> Transliminality is “the tendency of psychological material to cross into or out of consciousness” (Lange, Thalbourne, Houran, & Storm, 2000, p. 853).

theorised that PTP-types prefer first hexagrams, and FTP-types prefer second-hexagrams.

Storm found that PTP-types did hit more often on first hexagrams (29%) compared to FTP-types (20%), whereas FTP-types did hit more often on second hexagrams (36%) compared to PTP-types (31%). The highest of these hit rates are comparable with significant *I Ching* effects found in Storm and Thalbourne's (1998-1999, 2001a) earlier studies, but they were not significant in Storm's (2006) study as group sizes were too small.

### *Paranormal Belief—Pro Attitude and the Sheep-Goat Effect*

Continuing the search for predictor variables, Thalbourne and Storm's (in press) Pro Attitude Scale (PAS) was developed. This scale measures a participant's so-called 'pro attitude' during a given psi task. A person may be said to have a pro attitude towards state **S** when they would prefer **S** rather than **not-S** if those two alternatives were to be brought to their attention (state **S** includes goals, intentions, needs, and dispositions, be they conscious or unconscious). A favourable pro attitude is said to be instrumental in a desired outcome (see Storm & Thalbourne, 2000). In three of three studies (Storm, 2003, 2006; Thalbourne & Storm, in press), pro attitude has been found to predict the *I Ching* effect. Specifically, Storm (2003) found that scores on a two-item subscale (items 4 and 5) of the PAS and hit rates on first-hexagrams were *negatively* related. The same relationship was then found for second-hexagram hitting (Storm, 2006). These counter-intuitive findings are in keeping with Heath's (2003) theory that those who are successful at psi tasks do *not* try too hard, but merely "trust that things would work out as they should" (p. 303). In other words, the more participants shift from excessive desire and concern for a hit to calm feelings based on 'some interest', the more they tend to hit. For this reason, extreme scores (low and high) were excluded from these analyses.

Thalbourne and Storm (in press), however, found a significant *positive* correlation between scores on the full six-item PAS and first-hexagram hitting, so the reliability of the PAS is still not certain insofar as the two-item subscale and the full scale seem to predict contrary directions of the *I Ching* effect. Only further testing will confirm the status of these results.

Significant sheep-goat effects<sup>3</sup> based on single-item questions have been found in all studies where the effect was hypothesised (Storm &

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<sup>3</sup> Schmeidler (1943) categorized participants as either those who believed in the ability to demonstrate ESP under a given experimental condition ('sheep'), or those who rejected this possibility ('goats').

Thalbourne, 1998-1999, 2001a,b; Storm, 2002; Thalbourne & Storm, in press). In two studies only (Storm, 2003, 2006), the Rasch-scaled (Lange & Thalbourne, 2002) version of the Australian Sheep-Goat Scale (ASGS; Thalbourne, 1995) was used as a more accurate measure of paranormal belief than the two sheep-goat questions, the latter of which were used exclusively in the Storm and Thalbourne studies. In those two studies (i.e., Storm, 2003, 2006), where the specific group performance of sheep was tested, the *I Ching* effect was above chance in both instances, but significant in only one of the two studies (Storm, 2003).

In the same sense that paranormal belief is considered to be psi conducive (see Lawrence, 1993), it is proposed that experimenters should not only test paranormal belief as a predictor of psi, but also consider it a necessary condition in bringing about stronger psi effects than might ordinarily be attained. This ‘psychopractic approach’ (Thalbourne, 2004) is a response to conventional testing wherein experimenters often set themselves up for failure because random sampling inevitably produces samples comprised of believers and skeptics in equal or near-equal numbers so that we can often expect that the psi effect will vary bi-directionally between hitting and missing. When this happens, Timm and Boller (2002) claim that “positive and negative partial effects cancel each other out and the overall deviation drops to zero” (p. 292). The literature often presents proof-oriented studies reporting chance results for the whole sample, but partial psi effects (e.g., sheep-goat effects; SGEs) were not reported. As Lawrence (1993) states: “One reason why people steer clear of the SGE is that they prefer not to have subjects that deflate their psi scores” (p. 83), but that attitude in “people” (i.e., researchers) does not make the SGE go away. Whatever experimental design researchers have in mind, they might, just for the sake of it, administer a sheep-goat scale to their participants on the off-chance that an SGE will be found in the data. Alternatively, the criterion for selection of participants for psi studies could be based on pre-test results, and/or the experimenter’s prior knowledge of participants’ psi ability, to justify the rationale described in Lawrence’s claim. In the present study, sheep data and goat data will be given special focus.

### *Meaningfulness*

The issue of meaningfulness has been raised in relation to the *I Ching* effect (e.g., Storm & Thalbourne, 2001a), but has never been empirically evaluated. An investigation into meaningfulness would be considered crucial by some researchers if psi is to be taken as a form of synchronicity (see Jung, 1960, 1989). In fact, in an ontological and phylogenetic sense, the meaningfulness that attaches to psi might be a more

important ecological aspect of the paranormal process than the psi effect *per se*.

Generally, the meaningfulness of psi is seldom addressed by parapsychologists. However, von Lucadou (1995, 2001) does recognise psi in a more natural and holistic sense. In his Model of Pragmatic Information (MPI), the 'pragmatic' component of psi is *meaning* and it is given pride of place psychotherapeutically speaking. Von Lucadou also states that "psi is not a signal" *per se*; it is a "correlation in an entangled psycho-physical system" (2001, p. 13). Meaningful coincidence is born of this entanglement so that psi in this sense is little different from synchronicity.

A crucial factor required for a synchronistic effect in the *I Ching* setting is that the participant thinks or believes the process has produced a meaningful outcome (usually in the context of the reading). Insofar as the outcome is taken as meaningful by the participant, we might expect the participant to regard the process as successful. We acknowledge that the problem of subjective validation might arise in regard to the personal issue of meaningfulness, but we do not argue that personal determinations of meaning prove synchronicity. Rather, a differential 'meaningfulness' effect might be indicated by a difference between 'hitters' and 'missers' on hexagram outcomes. Since a 'meaningfulness' effect would go some way towards proving the equation,  $\text{psi} + \text{meaningfulness} = \text{synchronicity}$ , it is planned in the present study that participants' ratings of meaningfulness be evaluated statistically to test for a synchronistic effect.

Also, we can expect a relationship between meaningfulness and paranormal belief under the assumption that believers tend to rate highly or even over-rate the veracity of information of allegedly paranormal origins whereas the resistance that skeptics have towards the notion that psi could be involved in the production of veridical material manifests in under-rating that material. This effect is known as the Barnum effect. Where the effect has been supported by some researchers (e.g., Glick, Gottesman, & Jolton, 1989), it has been undermined by others (e.g., French, Fowler, McCarthy, & Peers, 1998; Tobacyk, Milford, Springer, & Tobacyk, 1988). Ratings of meaningfulness in relation to paranormal belief will be evaluated statistically to test this psychological assumption.

### *Hypotheses*

The first part of the present study is an attempt to find further evidence of *I Ching* effects and predictors of same. Raw data will be analysed statistically using SPSS. Statistical testing procedures include the Binomial test, the *t* test, and Pearson's *r* test. The following hypotheses are

proposed (sheep data will also be tested separately for Hypotheses 1a to 4; Hypotheses 5 to 9 will be tested using the full-sample data only):

1. First-hexagram hitting is at a rate greater than MCE (where  $P_{MCE} = .250$ ).
2. Second-hexagram hitting is at a rate greater than MCE for first-hexagram 'hitters' ( $P_{MCE} = .238$ ) and first-hexagram 'missers' ( $P_{MCE} = .254$ ).
3. Present-time perspective types (i.e., PTP-types) correctly predict more first hexagrams (excluding and including static hexagrams)<sup>4</sup> than types with a future-time perspective (i.e., FTP-types).
4. FTP-types correctly predict more second hexagrams than PTP-types.
5. There is a positive relationship between scores on the six-item and eight-item Pro Attitude Scales and hexagram hitting.
6. There is a negative relationship between scores on the two-item Pro Attitude Scale and hexagram hitting.
7. There is a positive relationship between paranormal belief and hexagram hitting.
8. There is a difference between sheep and goats on hexagram hit rates.
9. There is a difference between sheep and goats on meaningfulness ratings.
10. There is a difference in meaningfulness ratings between first-hexagram hitters and first-hexagram missers.

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<sup>4</sup> A static hexagram is a first hexagram that does not have any changing lines and therefore cannot produce a second hexagram. Storm (2006) argued that static hexagram readings are traditionally read in the context of past-and-present, but they are also to be read in a future-oriented context. Hence, the tested differences in hit rates on first-hexagram hitting between PTP-types and FTP-types will both include and exclude static hexagrams (see RESULTS section, Hypothesis 3).

## METHOD

### *Participants*

The sample was comprised of 150 University of Adelaide students. There were 57 males (38%) and 93 females (62%). Ages ranged from 16 to 66, mean age = 26 years ( $SD = 11$  years). Participants were drawn from a volunteer pool of students who deposited response slips in a box in the university library. They were contacted by telephone and asked to come in to the experimenter's office in the School of Psychology for one session only lasting approximately 60 minutes.

### *Measures*

There are three measures: (1) the eight-item *Pro Attitude Scale* (PAS; Thalbourne and Storm, in press) with two items (4 and 5), specifically about pro attitude. The eight-item PAS covers various states of mind and motivations: relaxation (item 1), tension (item 2), general capacity to achieve goals (item 3), confidence (item 6), task know-how (item 7), and focus on the task (item 8). Items use a graduated scale ranging from 1 to 7. For example, Item 4: "I'm not at all interested in achieving my assigned goal" [score = 1] to "I'm extremely interested in achieving my assigned goal" [score = 7]; Item 5: "It's not at all important to me that I achieve my assigned goal" [score = 1] to "It's of utmost importance to me that I achieve my assigned goal" [score = 7]. Scale descriptive statistics reported in the RESULTS section are based on the use of scores of 3, 4, and 5 only (extreme scores of 1, 2, 6, and 7 were excluded for reasons given in the above section *Pro Attitude*, in the section Other Predictors of the *I Ching* Effect). Thus, the theoretical range for the two-item scale is between 3 and 10 inclusive; (2) the 18-item Rasch-scaled *Australian Sheep-Goat Scale* (ASGS; Lange & Thalbourne, 2002), each item scoring 0, 1, or 2 points, where 0 = false, 1 = uncertain, and 2 = true; Raw range is 0 to 36; Raw  $M = 18$ . The ASGS data are then top-down purified to eliminate age and gender bias from the scale (Lange & Thalbourne, 2002), and this procedure alters the scoring range and mean. The Rasch-scaled theoretical range is 8.13 to 43.39, and the Rasch-scaled theoretical mean is 25.51; Cronbach's  $\alpha = .92$ ; (3) the 56-item *Time-Perspective Inventory* (TPI; Zimbardo & Boyd, 1999). There are five ZTPI scales: (i) Past Negative (PN), (ii) Past Positive (PP), (iii) Present Hedonistic (PH), (iv) Present Fatalistic (PF), and (v) Future (F). The theoretical range for all five scales is between 1 and 5 inclusive. For the five scales, Cronbach's  $\alpha$  ranges from .74 to .82, and test-retest reliability ranges from .70 to .80 (interval: 4 weeks). Only the two PTP scales and the single FTP scale were used to test two relevant hypotheses (i.e., Hypotheses



3 and 4). Participants were assigned to a time perspective category (i.e., PTP or FTP) on the basis of scale scores (i.e., if F scores were greater than PH or PF scores, participants were classed as FTP-types, otherwise participants were classed as PTP-types).

### *Materials*

Six sets of material were used in the study: (1) three coins (Australian 10-cent pieces—75% copper, 25% nickel); (2) a coin cup (for shaking the coins); (3) a felt-lined box as a receptacle for the falling coins; (4) an *I Ching* hexagram file with (i) diagram showing the experimenter how to convert the outcomes of the coin tosses to “yin” and “yang” lines, and whether they were so-called changing lines, (ii) an “eight-by-eight (8 × 8) trigram chart to find hexagram numbers, and (iii) the 64 hexagram readings (one reading per page, totalling 64 pages from Wing, 1982, with the changing line readings on the back of each page from Wing, 1979); (5) The *I Ching* Descriptor Form (APPENDIX A)—includes the three questions: (i) Have you ever used the *I Ching* before? (Answer: Yes or No); (ii) In this experiment, do you believe *in your own abilities* to exhibit paranormal effects and predict the outcome hexagram, or influence the fall of coins so that the outcome hexagram matches one of your sixteen choices? (Answer: Yes or No), (iii) In this experiment, do you think it is *possible* for at least some people to exhibit paranormal effects and predict the outcome hexagram, or influence the fall of coins so that the outcome hexagram matches one of their sixteen choices? (Answer: Yes or No); and (6) Recording Sheet for Coin Throws, which includes a first-hexagram meaningfulness visual analogue scale (0% = ‘not very meaningful’; 100% = ‘very meaningful’).

### *Procedure*

Participants were required to complete the first of the two scales (i.e., PAS); then pre-select 16 of 64 descriptor-pairs that epitomized the meanings underlying the corresponding six-line symbols (i.e., hexagrams). Choices were made in response to their emotional and cognitive states of mind, in accordance with the statement: “Lately, or right now, I feel . . .”

Participants then threw three coins, six times, to generate the six lines of the so-called first hexagram. If three-of-a-kind was thrown at least once, changing lines were produced which gave the so-called second hexagram.

Participants were given their reading(s) and the meaningfulness of the first-hexagram reading only was rated by participants on a scale of 0%

(not very meaningful) to 100% (very meaningful). If the first hexagram matched one of the sixteen pre-selected hexagrams it was deemed a 'hit' ( $MCE_1 = .250$ ), and if the second hexagram matched one of the sixteen pre-selected hexagrams it was also deemed a 'hit'. Those participants who already got a hit on their first hexagram have a reduced chance of getting a hit on the second hexagram ( $MCE_2 = 15/63 = .238$ ), but those participants who did *not* get a hit on their first hexagram have a slightly improved chance of getting a hit on their second hexagram ( $MCE_3 = 16/63 = .254$ ).

Participants were not told whether their hexagram was a hit or not. They were then instructed to complete the second and final scale—the ZTPI. At a later date, participants were given hexagram results and test feedback via e-mail.

*Precautions.* The *I Ching* experiment requires certain precautions so that errors are reduced. The major precaution was the use of individual testing as opposed to group testing, the latter of which is deemed not conducive to psi (for example, see Honorton & Ferrari, 1989). Also, administration of the PAS was prior to the psi task. The lengthy ZTPI was administered after the psi task to eliminate the problem of possible fatigue effects during the psi task (no hexagram feedback was given to participants prior to completion of the ZTPI so that responses to that inventory were not influenced by psi test feedback).

*Methods of evaluation.* Raw data was analysed statistically using *SPSS* (*Statistical Package for the Social Sciences*) and the online *VassarStats* Exact Binomial Calculator (Lowry, 1998-2006).

## RESULTS

### *Scale Scores*

*Zimbaro and Boyd Time Perspective Inventory (ZTPI).* There were 82 PTP-types, and 68 FTP-types. The theoretical range on all five scales is between 1 and 5 inclusive. The mean PH score was 3.50 ( $SD = 0.48$ ; min. = 2.27; max. = 4.67; Cronbach's alpha = 0.74); the mean PF score was 2.59 ( $SD = 0.61$ ; min. = 1.00; max. = 4.44; Cronbach's alpha = 0.67); the mean F score was 3.41 ( $SD = 0.60$ ; min. = 1.62; max. = 4.38; Cronbach's alpha = 0.74).

*Australian Sheep-Goat Scale (ASGS).* The Mean ASGS score (Rasch-scaled version) is 24.81 ( $SD = 6.64$ ; min. = 8.13; max. = 43.39). The median-score is 24.91. A median-split analysis was performed on ASGS

scores (see the section, Post Hoc Analyses). Scores at or above 24.91 were classed as 'sheep', and scores below 24.91 were classed as 'goats'. There were 83 sheep (Mean ASGS = 29.16,  $SD = 4.16$ ) and 67 goats (Mean ASGS = 19.43,  $SD = 4.97$ ).

### Planned Analyses

*Pro Attitude Scale.* The mean score for the eight-item scale was 41.35 ( $SD = 6.80$ ). Scores ranged between 20 and 55 (theoretical range being 8 to 56). The mean score for the six-item subscale was 31.91 ( $SD = 4.83$ ). Scores ranged between 18 and 41 (theoretical range being 6 to 48). The mean score for the two-item subscale (which excludes extreme score) was 5.99 ( $SD = 2.44$ ). Scores ranged between 1 and 10 (theoretical range being 3 to 10).

### Results of Planned Analyses

*Hypothesis 1.* The hit rate on first-hexagram hitting was just above chance but not significantly,  $P = 25.3\%$  (38 hits;  $N = 150$ ), exact  $p = .494$ .

*Hypothesis 2.* For first-hexagram hitters, the second-hexagram hit rate was not above chance,  $P = 23.5\%$  (8 hits;  $n = 34$ ), exact  $p = .581$ . For first-hexagram missers, the second-hexagram hit rate was also not above chance,  $P = 25.0\%$  (22 hits;  $n = 88$ ), exact  $p = .575$ . The combined hit rate was at chance,  $P = 24.6\%$  (30 hits;  $n = 122$ ), exact  $p = .536$ .<sup>5</sup>

*Hypothesis 3.* Table 1 shows that PTP-types (29.9%) successfully predicted more first hexagrams (excluding static hexagrams) than FTP-types (25.4%), but the difference was not significant,  $t(120) = 0.54$ ,  $p = .297$ , one-tailed. When static hexagrams were included, PTP-types (26.8%) still successfully predicted more first hexagrams than FTP-types (23.5%), but the difference was again not significant,  $t(148) = 0.46$ ,  $p = .323$ , one-tailed.

Table 1 also shows the corresponding results for sheep data only. PTP-types (32.4%) successfully predicted more first hexagrams (excluding static hexagrams) than FTP-types (32.3%), but the difference was not significant,  $t(66) = 0.02$ ,  $p = .494$ , one-tailed. When static hexagrams were included, PTP-types (30.4%) still successfully predicted more first hexagrams than FTP-types (29.7%), but the difference was again not

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<sup>5</sup>  $P_{MCE} = [.238 + .254]/2 = .246$ .

significant,  $t(81) = 0.07$ ,  $p = .473$ , one-tailed. The hit rates are in the directions hypothesised in four tests out of four, but the  $n$  values are probably too small for the hit rates to be significant.

Table 1  
First-Hexagram Hit Rates: PTP-Types vs. FTP-Types (Full Sample and Sheep)

Time Perspective	Full Sample				Sheep			
	$N$	Hits	$P^*$	Exact $p$	$N$	Hits	$P^*$	Exact $p$
PTP (exc. static hexagrams)	67	20	.299	.216	37	12	.324	.194
FTP (exc. static hexagrams)	55	14	.254	.521	31	10	.323	.229
PTP (inc. static hexagrams)	82	22	.268	.392	46	14	.304	.243
FTP (inc. static hexagrams)	68	16	.235	.655	37	11	.297	.309

\*  $P_{MCE} = .25$

*Hypothesis 4.* Table 2 shows that FTP-types (first-hexagram hitters) did not correctly predict more second hexagrams (hit rate: 21.4%) than PTP-types (first-hexagram hitters; hit rate: 25.0%). Nor did FTP-types (first-hexagram missers) correctly predict more second hexagrams (hit rate: 22.0%) than PTP-types (first-hexagram missers: 27.7%).

If we combine first-hexagram hitters with first-hexagram missers, the results are similar—FTP-types did not correctly predict more second hexagrams (hit rate: 21.8%) than PTP-types (hit rate: 26.9%). The directional hypothesis was not supported.

Table 2 also shows the corresponding results for sheep data only. FTP-types (first-hexagram hitters only) did correctly predict more second hexagrams (hit rate: 30.0%) than PTP-types (hit rate: 16.6%). This substantial difference was not significant due to the very small  $n$  values,  $t(20) = -0.72$ ,  $p = .240$  (one-tailed).

FTP-types (first-hexagram missers only) effectively tied with PTP-types at approximately 24%.

Still on sheep data, first-hexagram hitters combined with first-hexagram missers produced similar results—FTP-types correctly predicted more second hexagrams (hit rate: 25.8%) than PTP-types (hit rate: 21.6%), but the difference was not significant,  $t(66) = -0.40$ ,  $p = .345$  (one-tailed). The hypothesis was not supported for sheep only, or the whole sample, but the results in both cases were in the directions hypothesised.

Table 2  
Second-Hexagram Hit Rates: FTP-Types vs. PTP-Types

Time Perspective	Full Sample				Sheep			
	<i>N</i>	Hits	<i>P</i>	Exact <i>p</i>	<i>N</i>	Hits	<i>P</i>	Exact <i>p</i>
FTP—1 <sup>st</sup> -hexagram-hitters	14	3	.214*	.683	10	3	.300*	.438
FTP—1 <sup>st</sup> -hexagram-missers	41	9	.220**	.749	21	5	.238**	.648
Total	55	12	.218 <sup>†</sup>	.732	31	8	.258 <sup>†</sup>	.507
PTP—1 <sup>st</sup> -hexagram-hitters	20	5	.250*	.536	12	2	.166*	.849
PTP—1 <sup>st</sup> -hexagram-missers	47	13	.277**	.318	25	6	.240**	.639
Total	67	18	.269 <sup>†</sup>	.378	37	8	.216 <sup>†</sup>	.722

\*  $P_{MCE} = .238$ ; \*\*  $P_{MCE} = .254$ ; <sup>†</sup>  $P_{MCE} = .246$

*Hypothesis 5.* The relationship between scores on the six-item PAS and first-hexagram hitting was positive, but it was not significant,  $r(148) = 0.03$ ,  $p = .356$  (one-tailed). The relationship between scores on the eight-item PAS and first-hexagram hitting was also positive, but it was not significant,  $r(148) = 0.02$ ,  $p = .383$  (one-tailed).

The relationship between scores on the six-item PAS and second-hexagram hitting was not positive. The relationship between scores on the eight-item PAS and second-hexagram hitting was positive, but it was not significant,  $r(120) = 0.02$ ,  $p = .434$  (one-tailed). Three of the four tests were in the direction hypothesised.

*Hypothesis 6.* The relationship between scores on the two-item PAS and first-hexagram hitting and second-hexagram hitting was not negative. The directional hypothesis was not supported.

*Hypothesis 7.* The relationship between paranormal belief (ASGS scores) and first-hexagram hitting was positive and significant,  $r(148) = 0.17$ ,  $p = .018$  (one-tailed).

A weak negative relationship was found between ASGS scores and second-hexagram hitting. The hypothesis was supported for first-hexagram hitting, but not for second-hexagram hitting.

*Hypothesis 8.* Given that Hypothesis 7 was partially supported, it would follow that a significant difference on first hexagram hitting between sheep and goats is likely, with sheep scoring higher than goats. A median-split analysis was performed on ASGS scores (see the subsection above,

Scale Scores). For sheep, first-hexagram hitting was above chance,  $P = 30.1\%$  (25 hits;  $n = 83$ ), exact  $p = .170$ . Goats scored below chance,  $P = 19.4\%$  (13 hits;  $n = 67$ ), exact  $p = .887$ . The difference was marginally significant,  $t(147.31) = -1.53$ ,  $p = .065$  (one-tailed).

Second hexagram hitting for sheep was below chance but not significantly,  $P = 23.5\%$  (16 hits;  $n = 68$ ), exact  $p = .627$ . For goats, second hexagram hitting was above chance but not significantly,  $P = 25.9\%$  (14 hits;  $n = 54$ ), exact  $p = .462$ .

There was marginal support for a sheep-goat effect on first-hexagram hitting, but for second hexagram hitting, the results run counter to the hypothesis.

*Hypothesis 9.* The mean meaningfulness rating for sheep of 77.24% ( $SD = 20.44$ ) was higher than the mean meaningfulness rating for goats of 53.26% ( $SD = 27.64$ ). The difference between sheep and goats was highly significant,  $t(114.21) = -5.85$ ,  $p < .001$  (one-tailed). The hypothesis was supported. Looked at another way, we would expect to find a relationship between ASGS scores and meaningfulness, and it was found that the correlation was highly significant,  $r(146) = 0.47$ ,  $p < .001$ .

*Hypothesis 10.* The mean meaningfulness rating for the whole sample was 66.71% ( $SD = 26.62$ ). The mean meaningfulness rating for hitters of 72.53% ( $SD = 22.66$ ) was higher than the mean meaningfulness rating for missers, 64.70% ( $SD = 27.66$ ). The difference was significant,  $t(77.89) = -1.73$ ,  $p = .044$  (one-tailed). The hypothesis was supported.

Interestingly, hitters do not know they are hitters until they receive feedback at a later date so the higher meaningfulness ratings would be a paranormal effect even though some other variable might contribute towards that effect. Specifically, the significant sheep-goat effect just reported in the testing of Hypothesis 9 suggests that paranormal belief might influence the meaningfulness differential between hitters and missers since sheep are said to overrate readings of a paranormal source, while goats are said to under-rate the same readings.

In a univariate ANOVA test, the significant difference on meaningfulness ratings between sheep and goats was maintained,  $F(1, 144) = 34.66$ ,  $p < .001$ . Also, the significant difference between hitters and missers is still significant,  $F(1, 144) = 3.02$ ,  $p = .042$ , but it is important to note that there is no significant hitting  $\times$  belief interaction,  $F(1, 145) = 0.05$ ,  $p = .409$ . Thus, there is no evidence that meaningfulness ratings were inflated for hitters, or were deflated for missers, due to over-representation of sheep in the hitters group, and goats in the missers group.

*Post Hoc Analyses*

*Time perspective.* When time perspective effects were tested in Storm’s (2006) study for first-hexagram hitting, the differences between PTP-types and FTP-types were in the directions hypothesised, just as they were in the present study. These effects may be too small to yield significant *p* values in the *t* tests, so tests on a combined-samples database are warranted.

Table 3 gives the various hit rates. PTP-types successfully predicted more first hexagrams (29.5%, excluding static hexagrams) than FTP-types (22.9%), but the difference was not significant,  $t(243.80) = 1.22$ ,  $p = .111$  (one-tailed). When static hexagrams were included, PTP-types still successfully predicted more first hexagrams (25.7%) than FTP-types (22.8%), though the difference was smaller and not significant,  $t(348) = 0.61$ ,  $p = .272$  (one-tailed). The hypothesis was not supported, but results were in the directions hypothesised.

Table 3  
First-Hexagram Hit Rates: PTP-Types vs. FTP-Types (Combined Samples)

Time Perspective	Combined Samples			
	<i>N</i>	Hits	<i>P</i> <sup>*</sup>	Exact <i>p</i>
PTP (excluding static hexagrams)	166	49	.295	.106
FTP (excluding static hexagrams)	109	25	.229	.724
PTP (including static hexagrams)	210	54	.257	.432
FTP (including static hexagrams)	140	32	.228	.750

\*  $P_{MCE} = .25$

Also in Storm’s (2006) study, in support of the hypothesis, FTP-types correctly predicted more second hexagrams than did PTP-types, but the effect was reversed in the present study. It was considered worthwhile to test the combined-samples database to see which way the effect might go for a larger sample. Table 4 shows that FTP-types did *not* correctly predict more second hexagrams (hit rate: 26.6%) than PTP-types (hit rate: 29.5%). The outcomes were the same for the respective sub-groups of first-hexagram hitters and missers. The directional hypothesis was not supported.

Table 4  
Second-Hexagram Hit Rates: FTP-Types vs. PTP-Types (Combined Samples)

Time Perspective	Combined Samples			
	<i>N</i>	Hits	<i>P</i>	Exact <i>p</i>
FTP—1 <sup>st</sup> -hexagram-hitters	25	7	.280*	.383
FTP—1 <sup>st</sup> -hexagram-missers	84	22	.262**	.475
Total	109	29	.266 <sup>†</sup>	.348
PTP—1 <sup>st</sup> -hexagram-hitters	49	14	.286*	.263
PTP—1 <sup>st</sup> -hexagram-missers	117	35	.299**	.155
Total	166	49	.295 <sup>†</sup>	.085

\*  $P_{MCE} = .238$ ; \*\*  $P_{MCE} = .254$ ; <sup>†</sup>  $P_{MCE} = .246$

*Cumulative record.* Table 5 shows the cumulative results for hexagram hitting over the course of six *I Ching* studies. For first-hexagram hitting, the hit rate was above  $MCE_1$ , but not significantly,  $P = 26\%$  ( $N = 793$ ; Hits = 207;  $p = .248$ , one-tailed). For second-hexagram hitting, hit rates ranged between 27% for first-hexagram missers ( $N = 460$ ; Hits = 123;  $p = .270$ , one-tailed) and 28% for first-hexagram hitters ( $N = 171$ ; Hits = 48;  $p = .112$ , one-tailed). It is noted that 11 out of 18 tests (61%) across six studies gave hit rates *above* chance ( $p = .240$ ), which is the direction hypothesised in every case, although only two were independently significant.

Hit rates for any kind of hexagram hitting (i.e., ‘aggregated’ first- and second-hexagram hitting)<sup>6</sup> are given in Table 6. The overall hit rate for all six-studies combined ( $N = 1424$ ; Hits = 378) was just significant,  $P = 27\%$  ( $p = .057$ , where  $P_{MCE} = 24.7\%$ ). It is noted that five out of six studies produced aggregated hit rates above chance, although only two of those hit rates were independently significant.

<sup>6</sup> Note that for the aggregated hexagram hitting effect,  $P_{MCE} = (15/64 + 15/63 + 16/63)/3 = 24.7\%$  (see *Procedure*).



Table 5  
Hexagram Hit Rates for Six *I Ching* Studies ( $N = 793$ )

Study	1 <sup>st</sup> Hexagrams				2 <sup>nd</sup> Hexagrams (1 <sup>st</sup> hexagram hitters)				2 <sup>nd</sup> Hexagrams (1 <sup>st</sup> hexagram missers)			
	<i>N</i>	Hits	% <sup>a</sup>	<i>p</i>	<i>n</i>	Hits	% <sup>b</sup>	<i>p</i>	<i>n</i>	Hits	% <sup>c</sup>	<i>p</i>
1. Storm & Thalbourne (1998-99)	93	30	32	.070	27	9	33	.173	52	15	29	.333
2. Storm & Thalbourne (2001)	107	37	35	.017	27	6	22	.649	52	15	29	.333
3. Storm (2002)	43	11	26	.523	7	2	29	.525	28	7	25	.383
4. Thalbourne & Storm (in press) <sup>d</sup>	200	43	22	.891	36	10	28	.347	127	30	24	.709
5. Storm (2006)	200	48	24	.654	40	13	33	.135	113	34	30	.150
6. Storm (present study)	150	38	25	.494	34	8	24	.581	88	22	25	.575
Totals	793	207	26	.248	171	48	28	.112	460	123	27	.270

Note: *p* values are exact <sup>a</sup> $P_{MCE} = .250$ ; <sup>b</sup> $P_{MCE} = .238$ ; <sup>c</sup> $P_{MCE} = .254$ ; <sup>d</sup>corrected hit rates (see Storm, 2006, p. 136).

Table 6  
 'Aggregated' Hexagram Hit Rates for Six *I Ching* Studies ( $N = 1424$ )

Study	<i>N</i>	Hits	% <sup>*</sup>	<i>p</i>
1. Storm & Thalbourne (1998-99)	172	54	31	.028
2. Storm & Thalbourne (2001)	186	58	31	.027
3. Storm (2002)	78	20	26	.467
4. Thalbourne & Storm (in press)	363	83	23	.808
5. Storm (2006)	353	95	27	.183
6. Storm (present study)	272	68	25	.478
Totals	1424	378	27	.057

\*  $P_{MCE} = (15/64 + 15/63 + 16/63)/3 = 24.7\%$

## DISCUSSION

### *Hexagram Hitting*

For the sample tested in the present study ( $N = 150$ ), the hypothesized first-hexagram hitting effect was not statistically significant though it was in the right direction. Second hexagram hitting was also not significant. However, as shown in Table 5, the results from the present study do not suggest a downward trend towards psi-missing for either kind of *I Ching* effect (for comments and tests on decline effects, see Thalbourne & Storm, in press; Storm, 2006). In fact, psi-hitting has been significant in two studies, and no significant psi-missing effects have ever been found.

Nevertheless, as indicated by the trend for a single (aggregated) *I Ching* effect (see Table 6), it is yet to be shown whether hexagram outcomes can be determined in advance with hit-rates fluctuating on both sides of the chance baseline, ranging from 23% to 31% across six studies (1998 to 2008). The cumulative aggregated hexagram hit-rate across the six studies is a near-significant 27% ( $p = .057$ ), with five of these six studies having produced hit-rates above chance. The weak 27% might be strengthened if more was understood about the phenomenology of individuals who use the *I Ching*. A study is planned to investigate these issues.

When we consider the sheep and goats data separately, we get a slightly different story—in support of the findings in the literature (e.g., Lawrence, 1993), sheep produced a high first-hexagram hit rate (30.1%),

which only approached significance due to a low *n*, whereas goats produced a low first-hexagram hit rate (19.4%). The difference between sheep and goats was marginally significant (see results for Hypothesis 8). Second-hexagram hit rates for sheep and goats, however, were no better than those for the whole sample and no second-hexagram hit rates were significant.

### *Time Perspective*

Based on results in the present study, there was no statistical evidence that PTP-types have a preference for first hexagrams compared to FTP-types, but the results are again in the directions hypothesised (see test results for Hypothesis 3). In the post hoc analysis on the combined database, the time perspective hypothesis was not supported. Furthermore, there was a reversal of effect for second-hexagram hit rates—FTP types did not produce larger effects than PTP-types.

It is still not certain if the psi function is ‘bifurcatory’ in the sense that one can direct one’s psi to more than one target simultaneously, but both first- *and* second-hexagram hitting have been above chance across six studies, though still not to a significant degree, so that we are not in a position to make rulings about the limits of psi at this stage. Therefore, it may only be a case of motivation that determines the performance differential between PTP-types and FTP-types. There is the possibility that FTP-types are not sure what their motivations should be when two options (i.e., two hexagram outcomes) are possible. Perhaps given the option, PTP-types are able to concentrate their psi on first hexagrams *and* second hexagrams, whereas FTP-types are not.

Suffice it to say, and in defense of time perception as a psi predictor, the statistical evidence suggests that first hexagram hitting is preferred by those participants with a present time perspective, and it may not be going too far to say that those same participants prefer second hexagrams as well, which still leaves us unclear about the motivations of those participants who have a future time perspective. Perhaps those habituated to a present time perspective need and seek compensation in the form of information, clarification, and advice about possible futures, whereas those who already focus their energies on the future, and spend more time solving future-based problems, need stability in the present, and in both cases these needs may stimulate the various conscious and unconscious motivations that determine whether or not psi will be activated. This conjecture could be resolved by determining which of the two types, PTP-types or FTP-types, most prefers using systems of divination because they get more reward out of them.

### *Pro Attitude*

Scores on the Pro Attitude Scale (and the two-item subscale thereof) have not predicted hexagram outcomes in the present study. In past studies, the pro attitude measures have predicted hit rates according to the type of target (i.e., first- or second-hexagram hitting), but findings here suggest that the scale and subscale are not reliable. It can only be said at this stage that more painstaking effort needs to be made to obtain a more general picture of pro attitude, either in further *I Ching* studies, or tests of other psi effects.

### *Paranormal Belief*

A significant difference on meaningfulness was found for believers and skeptics. Such effects have been well-documented in the literature (see the INTRODUCTION). This effect might be explained by the fact that believers have an emotional and motivational investment in producing a psi effect. If a believer's *I Ching* reading could possibly be the product of psi, then the believer will assume that it is just that, thereby becoming a victim of subjective validation (i.e., believers will over-rate the reading by focussing on the positive and favourable content, while disregarding the negative and unfavourable content). Whether the rating process is governed by conscious or unconscious motives, the result will largely be the same.

However, we must bring in the skeptics as well since they can contribute to the effect through counter-emotional and counter-motivational investment. We have to expect that skeptics are not a special breed of highly aware individuals who have exceptional discriminative skills. So, skeptics are likely to under-rate their readings by focussing on the negative and unfavourable content, while disregarding the positive and favourable content. Likewise, they would not be intent upon undermining their own belief system, so they are likely to ignore psi even when it is present, but we acknowledge that believers are likely to see psi when it is not present.

### *Meaningfulness*

The previous claim that paranormal belief explains the meaningfulness difference is undermined by test results for Hypothesis 10—hitters rated their readings significantly higher on meaningfulness than do missers, but there was no interaction effect between hitting and belief. In other words, getting a hit had nothing to do with being a sheep or a goat. One possible explanation of this difference is that the readings are

genuinely meaningful *because* they were generated paranormally. Hitters do not know they are hitters, so they cannot over-rate their readings regardless of whether some might be sheep (and missers cannot under-rate their readings regardless of whether some might be goats). The bias therefore cannot be psychological in this limited sense. That is, paranormal belief does not explain the meaningfulness effect between hitters and missers.

Given that we have evidence supporting the psi hypothesis, and from a synchronistic standpoint, it is perhaps likely that hexagram hitting is contingent upon meaningfulness because the targets were meaningfully pre-selected. While the *I Ching* studies are not conducted to test the veracity of the *I Ching* divinatory process *per se*, the *I Ching* methodology might yet encourage synchronicity insofar as some form of meaningfulness can be gleaned from the process. Also, in accordance with the mainstream parapsychological tradition, some attempt at a causal explanation of this type of effect would be *de rigueur*, but the argument from synchronicity theory is that there is a convergence of events, both *physical* and *psychic*. Where the two, physical and psychological, have thus far ‘enjoyed’ a philosophical distinction, the relativity of both through the common ground of meaningfulness challenges this dualistic distinction.

In discussing the *pragmatics* of the effect, hitters thought their readings were more meaningful than did missers in the sense that the readings tended to give the former group greater insight, or a better solution to a prevailing problem in their lives than did the latter group. The overall effect is in keeping with von Lucadou’s Model of Pragmatic Information (1995, 2001). It is stressed that *generally* we can speak of an “entangled psycho-physical system” (von Lucadou, 2001, p. 13) if these results are anything to go by.

### *Conclusion*

From the evidence in this study, and from the evidence of the cumulative record, there is no overwhelming statistical evidence of an *I Ching* effect, but a replication study is planned for 2009 with the aim of rectifying that situation. There is every reason to continue this research because the cumulative record has nevertheless produced a marginally significant ‘aggregated’ hexagram hitting effect. Furthermore, we have found an effectively significant sheep-goat effect, a significant meaningfulness effect, and a trend indicating that time perception may influence the *I Ching* user and subsequent success at predicting the outcome of that divinatory process. While the results of the proof-oriented work and the process-oriented work undertaken in this study are encouraging, our understanding of time perception as a psi predictor is still not clear and

needs further work. In the second part of this two-part study, the reliability and validity of the Hexagram Descriptor Form will be assessed.

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APPENDIX A

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"/> Behavior-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, Re-appraising	<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