

May 30, 2014

Attention: Daniel Bessa

FINAL REPORT TO THE BIAL FOUNDATION, MAY 2014

GRANT No. 127/12

**PROJECT: "AN INVESTIGATION OF THE *I CHING* USING THE Q-SORT METHOD
AND A PK-RNG DESIGN"**

PROJECT LEADER: DR. LANCE STORM

The Bial Foundation has financially supported me, Dr. Lance Storm, as project leader over the course of the experiment—March 1, 2013 to April 30, 2014. The School of Psychology, University of Adelaide, has provided amenities for the conduct of the research. The project was scheduled to be completed February 28, 2014, but a two-month extension was granted via email from Paula Guedes, dated Friday, March 14, 2014. The extension was necessary for reasons outlined in my email to Paula Guedes, dated March 11, 2014, and given here in brief: "... the technician who wrote my computer program was away for 4 weeks; I lost 2 weeks in August due to flu and sinus infection, and I [lost] 2 weeks [in] March/April [2014] due to travel to Bial Symposium. I thought I would be able to make up the time, but testing participants has proved to be slower than usual due to structural changes in my University."

The following report describes the experimental and analytical work carried out for the project (pp. 2-4). A financial statement is also included (p. 5), and invoices (pp. 9-16).

The *I Ching*

There are five major aims in this proposed *I Ching* study:

- (i) use the more sensitive Q-Sort method in an *I Ching* setting to facilitate or more readily detect psi effects compared to similar effects in studies reviewed by Storm (2008);
- (ii) use a RNG device that performs the two-fold function of a psi-task that also randomly generates an outcome hexagram (it is expected that predicted hexagrams will match outcome hexagrams to a degree greater than is expected by chance);
- (iii) test whether paranormal belief, as measured on Thalbourne's (1995) Australian Sheep-Goat Scale, is conducive to psi effects with believers psi hitting more often than non-believers;
- (iv) determine the relationships between hexagram hitting and reactance scores using the Hong Psychological Reactance Scale (HPRS; Hong & Faedda, 1996); and,
- (v) show that pro attitude (as measured on the PAS) and Meaningfulness (ratings of the *I Ching* reading) are related to psi outcomes.

Description of *I Ching* Experiment

There is some indication that the 5000-year-old Chinese system of divination the *I Ching* is underscored by a paranormal process the cause of which is yet to be determined (for a review, see Storm, 2008). Though the so-called '*I Ching* effect' is weak, as is the case for psi generally, it is possible that the small effect is a consequence of the overly conservative direct-hits measure used in Storm's past *I Ching* studies.

The Q-Sort method may be a solution to the conservative approach taken in previous *I Ching* studies, and this new approach may yield stronger effects. The more sensitive Q-sort procedure requires a sorting (i.e., rating) of all 64 hexagram synopses (see Roe, Martin, & Drennan, 2010), which participants arrange across a grid from most preferred to least preferred in accordance with the participant's feeling states. A modified Q-Sort method using, as stimuli, hexagram descriptor-pairs instead of synopses is used in the proposed study.

A hexagram is a six-line symbol, comprised of broken ('yin') and unbroken ('yang') lines, generated randomly as part of the *I Ching* divination process. Storm's past research with the *I Ching* featured the traditional coin-throwing method as the means by which hexagrams were generated. Methodological problems can arise using coins (which is a macro-PK task), so for this Bail-funded study, a random number generator (RNG) was used (a micro-PK task) serving a two-fold function: (a) to test psi by way of a RNG-PK (unintentional psi) task, while (b) simultaneously generating outcome hexagrams. If the generation of yin and yang lines are set-up as two different goals (unbeknownst to participants) and, according to the literature on paranormal belief, psi-targeting outcomes depend on whether the participant is a psi believer ('sheep') or psi non-believer ('goat'), then scoring differentials should be determinable. In looking at sheep-goat effects, it was deemed wise to take into consideration mid-range scorers on the ASGS which are known as "indecisives". Evidence shows that this group produce erratic scoring patterns, which can compromise the sheep-goat effect.

Finally, the psi-predictive capacities of (i) attitudes towards psi (as measured on Thalbourne and Storm's, in press, Pro Attitude Scale [PAS]), and (ii) 'reactance' (as measured on Hong & Faedda's, 1996, Hong Psychological Reactance Scale; HPRS) were assessed. Pro Attitude refers to a positive (favourable) attitude towards a paranormal outcome, and some evidence exists to suggest that pro attitude may be conducive to psi (see Storm, 2006, 2008), but the findings are inconclusive. Regarding Reactance Theory (Brehm & Brehm, 1981), when an individual's freedom is threatened by coercion, reactance usually sets in, which is "a motivational state aimed at restoring the threatened freedom" (Silvia, 2005, p. 277). Reactance may lead to 'boomerang effects' (i.e., noncompliant behaviours). Storm, Ertel, and Rock (2013) found that a reactance treatment resulted in significantly lower psi scores compared to a control group. However, Storm et al., did not measure reactance *per se* as a psychological (trait) variable, so the HPRS was administered to participants in the study to determine (a) the influence of trait reactance on psi outcomes, and (b) the relationship between trait reactance and paranormal belief. Scores on the various scales were used to predict psi hitting.

Progress of Experiment

The experiment was scheduled to start March 1, 2013. A 'ballot box' and invitation letters were placed in various locations on the University of Adelaide campus. Participants dropped contact slips into the box, and these were collected on a daily basis by Dr. Storm. Participants were contacted via SMS so that a suitable day and time for testing could be arranged. First-Year Psychology students, who signed-up online, were also tested and they received credit for participation as part of their curriculum program.

After preparation, submission, and subsequent approval of an ethics proposal through the Ethics Sub-Committee, and printing of testing and promotional material, actual testing of participants did not begin until April 2013, and continued through until the end of April 2014. The planned number of 120 participants were tested. Interim results ($N = 62$) by way of a two-minute talk and a poster were presented at the Bial Symposium 2014 on April 27 (see APPENDIX A).

Thirteen hypotheses were tested comprising a total of 41 tests. Eleven were significant or marginally significant (27%). Eleven hypotheses were directional, but of 35 tests, 26 (74%) were in the directions hypothesized which is significant (Binomial Exact $z = 2.70$, $p = .003$). We stress the fact that most effects were very weak, but with a significant 74% of tests supporting our directional hypotheses, it is likely that our hypotheses are theoretically sound—statistical support for the actual effects was only likely with a sufficiently larger sample. Results are to be written up in two papers and submitted to a peer-review journal. The first paper (Part 1) is already out for review (title: "An Investigation of the *I Ching* Using the Q-Sort Method and an RNG-PK Design: I. Four Possible Psi Predictors"). Part 2 is underway.

Hypotheses and Results

The following results are the most salient in terms of the study's objectives:

While Q-Sort scoring was not significantly above normal chance expectation (MCE), we found that sheep with a Mean Q-Sort score of 0.30, scored highest of three groups (goats: 0.07; indecisives -0.92). An ANOVA test showed a marginally significant difference with sheep scoring higher than indecisives ($p = .06$). This result was in the direction hypothesized. The hypothesis was effectively supported. We stress that effects are weaker than would ordinarily be expected since we tested the whole sample of 120 participants, half of which were underwent a reactance treatment which is hypothesized to inhibit psi functioning.

Sheep scored higher than goats and indecisives on RNG scores. For sheep, mean RNG score = 3.45, $z = 1.78$ ($p = .038$). For goats, mean RNG score = 0.64, $z = 0.28$ ($p = .390$). For indecisives, mean RNG score = -1.31, $z = -0.77$ ($p = .721$). An ANOVA test showed a group difference that only approached significance. The hypothesis was partly supported. Sheep also scored higher on number of Yang lines than goats and indecisives (MCE = 3.00 in six throws), but there was no significant difference between the groups.

A significant sheep-goat effect was found on the Meaningfulness variable (one of four psi predictors tested in this study) with scores significantly higher for sheep (Mean score = 77.30) compared to goats (Mean score = 57.54) and indecisives (Mean score = 64.81). The difference was significant and in the direction hypothesized (sheep score significantly higher than goats and indecisives). The hypothesis was supported. Meaningfulness was also higher for Q-Sort Hitters (Mean score = 89.20) compared to Q-Sort Missers (Mean score = 66.32). The difference was significant, and it was in the direction hypothesized. The hypothesis was supported.

As far as the tests on the other three predictors is concerned, *trait* reactance and Pro Attitude did not prove to be predictors of psi outcomes. However, Pro Attitude did correlate significantly with paranormal belief (as measured on the ASGS) and Meaningfulness, which correlated significantly with Direct Hits (Q-Sort scores of +7) and Binary Hits (Q-Sort scores of +6 and +7).

A reactance treatment produced a significant difference on Q-Sort scores between reactants (mean Q-Sort score = -0.61) and controls (mean Q-Sort score = 0.07).

Finally, an important post hoc finding in the form of a mediation model revealed that Meaningfulness is a connecting principle between paranormal belief and hexagram outcomes as measured on the Binary Hits variable. This result means that any given response to the Meaningfulness scale may not simply be a psychological effect but, in many cases, may be driven by parapsychological outcomes.

Conclusion

In our study, we determined that the ideal psi participant was a psi-believer (i.e., scored 'high' on paranormal belief), scored high on the RNG-PK task, and rated their *I Ching* reading high on meaningfulness. We may not be too bold in suggesting that this ideal participant also held a tendency to score positive on the Q-Sort task and score more Yang lines. However, we did not find any evidence that pro attitude and *trait* reactance (measured on the HPRS) was conducive to psi or, for that matter, inhibits psi. We did, however, find that the reactance treatment impaired psi scoring on the Q-Sort task. Our investigations also revealed that the more successful psi-scorer is a compliant older sheep who takes his/her time and may well be rewarded for his/her patience with higher RNG scores and more Yang lines.

In terms of methodology, we have made some progress in demonstrating some novel sheep-goat effects in the *I Ching* setting that involve indecisives, but we have also experienced a set-back or two. Q-Sorting may be too taxing on participants, but if we are to conduct a replication study, we plan to simplify the Q-Sort Grid, and incorporate a feedback measure to gauge the degree to which any adverse effect of the Q-Sort Task inhibits psi performance. Also, the Pro Attitude Scale needs to be administered to participants just before the RNG-PK task instead of at the beginning of the study.

Finally, we must also acknowledge that in some tests, the sub-samples may have been too small for weak effects to reach significance in the various tests. Specifically, the division of the sample into three groups, sheep, goats, and indecisives, reduced the full sample of 120 participants to three under-sized sub-groups.