

## Study Registration for the KPU Study Registry

The registration information for the study is given below. Each section can be expanded as needed.

### 1. The title or name of the experiment (for listing the experiment in the registry).

The Effects of Imagery-Cultivation on Phenomenological and Paranormal Experience

### 2. The name, affiliation, and email address for the lead experimenter(s) for the study.

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### 3. A short description or abstract of the purpose and design of the experiment.

There is evidence that Imagery Cultivation (IC; Rock & Storm, 2012; Storm, 2019, in press; Storm & Goretzki, 2021) can induce a psi-conducive altered state of consciousness. However, little is known about the phenomenology (subjective experience) of psi test participants under the IC condition. This study has two aims: (1) to determine if there is a difference between a baseline condition and the IC condition with regards to phenomenology using the Phenomenology of Consciousness Inventory (PCI; Pekala, 1991); and (2) to determine if there is a relationship between the PCI dimensions and psi performance. The sheep-goat effect will also be tested ('sheep' [i.e., believers in psi] will perform better on the psi task than 'goats' [i.e., nonbelievers in psi]).

### 4. A statement or list of the specific hypothesis or hypotheses being tested, and whether each hypothesis is confirmatory or exploratory. ([confirm/explore guidance](#))

Hypotheses H1, H2, H3, & H4 are confirmatory; Hypotheses H5 & H6 are exploratory:

H1. Direct Hitting (as a proportion) for the whole sample is above MCE = 20% (Exact Binomial test, one-tailed.)

H2. Mean Rank Score for the whole sample is lower than MCE = 3.00 (Wilcoxon signed-rank test, one-tailed).

- H3. ‘Sum-of-Ranks’  $z$  score for the whole sample is above MCE (sum of ordinal weighted ranks formula, one-tailed; Solfvin, Kelly, & Burdick, 1978, p. 99).
- H4. There is a sheep-goat psi effect as measured on (i) Direct Hits and (ii) Mean Rank Scores (Mann-Whitney test, one-tailed).
- H5. Difference scores on PCI major and minor dimensions correlate with (i) Direct Hitting (Pearson’s  $r$ ), and (ii) Rank Scores (Pearson’s  $r$ ).
- H6. PCI major and minor dimensions differ between (i) pre-IC and post-IC conditions, and (ii) sheep and goats ( $2 \times 2$  mixed-model MANOVAs). The first IV (factor A) is repeated measures and consists of two time points (i.e., pre-IC vs. post-IC) and the second IV (factor B) is between groups (i.e., sheep vs. goats). We will inspect for (i) a main effect for factor A, (ii) a main effect for factor B, and (iii) an interaction effect between the two factors regarding scores on the DVs as we expect that sheep and goats may respond differentially to PCI changes.

**5. The planned number of participants and the number of trials per participant.**

Students from University of Adelaide ( $N = 100$ ). One trial per participant.

**6. A statement that the registration is submitted prior to testing the first participant, or indicating the number of participants tested when the registration (or revision to the registration) was submitted.**

Testing is scheduled to start June 1, 2022 and conclude September 30, 2022. At this time, Beta Testing of the computer program has been completed ( $N = 30$ ), and a few problems (e.g., demographic data entry) were corrected, but the data is still usable.

**The following additional information is needed for studies that include confirmatory analyses:**

**7. Specification of all analysis decisions that could affect the confirmatory results, including: the specific statistical test for each confirmatory hypothesis, whether the test is one-sided or two-sided, the criterion for acceptable evidence, any transformations or adjustments to the data, any criteria for excluding or deleting data, and any corrections for multiple analyses. Checklists and examples for registering classical analyses, permutation and bootstrap analyses, Bayesian analyses, and classification analyses are provided in the [statistics registration document](#). (This information can be included in section 4 above for simple experiments.)**

Tests to be used are given above in the Hypotheses section (Section 4). Tests are one-sided for test on pure psi effects (H1 to H3), and for the sheep-goat psi effect (H4), and two-sided for the two hypotheses involving PCI variables (H5 & H6). Critical alpha ( $\alpha$ ) = .05. The study is partly confirmatory (regarding the three psi measures, H1 to H4) and partly exploratory (H5 & H6), since the PCI has not been used in a psi study featuring the revised Imagery-Cultivation (IC) protocol. Storm (2019) simplified the original IC procedure by (a) shortening the guided imagery component to a 9½-minute pre-recorded soundtrack (down from 19 minutes), (b) removing the drumming component from the soundtrack, (c) introducing background tonalities, and (d) altering the wording of the guided imagery. These changes were not merely for the sake of expediency, but were aimed at testing the limits of the protocol. Also, the number of images (actual photographs) in the on-screen array was increased from four to five.

All demographic and questionnaire data is usable with no missing cases as participants cannot skip demographic questions or questionnaire items. The program records time taken to complete questionnaires; case deletions will be necessary if these times are unreasonably short. Prior to testing data, participants who complete the PCI in an unreasonably short time of 60 seconds or less will be deleted, as such speeds indicate they did not read all the items. Otherwise, such data will only create artifacts.

## **8. The power analysis or other justification for the number of participants and trials.**

There is one group of 100 all to be administered the IC treatment. The PCI is administered twice (pre-IC treatment to establish baselines, and post-IC treatment), so since all participants receive IC, power is increased. The baseline/treatment difference scores give the IV values to be tested in H5; the DVs are Direct Hitting and Rank Score. It is expected that the overall direct hit rate for the full sample will be significantly above chance (where MCE = 20%).<sup>1</sup> This design is governed by time constraints and participant availability, and 100 was the highest number of participants I could reasonably expect to test in four months given a 1/4-time work load and other commitments. However, hit rates are previous studies suggest 100 participants can deliver significant results. Storm and Goretzki (2021) reported a significant hit-rate of 26% for 200 participants who received the IC treatment: Direct hitting (52 hits;  $z = 2.03$ ,  $p = .024$ ). If exactly 26% can be achieved for  $N = 100$ , then  $z = 1.38$ ,  $p = .03$  (for 26 or more,  $p = .087$ ). In a smaller study of only 50 participants in the IC condition, Storm (in press) reported a comparable direct hit rate of 25.5%, though earlier Storm (2019) reported a hit rate for the whole sample of only 23% ( $N = 100$ ;  $z = 0.63$ ,  $p = .261$ ). However, mean rank score was marginally significant for the same sample at 2.78 (MCE = 3.00),  $p = .069$  (one-tailed).

## **9. The methods for randomization in the experiment. If a pseudorandom generator is used, specify how and when the seed(s) will be obtained.**

Psychology I students sign up online and choose their own time for testing; other participants will volunteer by ballot-box, and will be contacted via mobile phone (SMS) by the experimenter—a series of time slots are offered; participant selects a suitable time.

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<sup>1</sup> I am using Ed May's (May et al., 2012) picture set designed with 12 Groups containing 5 photos in each of five categories, so that each target set has 5 photos per array (i.e., per trail; thus  $k = 5$ ).

Randomization of target sets and targets is conducted using a true-noise RNG (Schmidt, 1970, 1973).

## **10. A detailed description of the experimental procedure.**

**Step 1:** Via on-screen message on computer, participants complete the preliminary pages (consent, demographics). All participants are tested in the experimenter's office. All participants complete the Australian Sheep-Goat Scale (a measure of belief in psi; Thalbourne, 1995), and the PCI (pre-IC), and then will be informed that they will undergo the IC procedure (duration: 9½ minutes), which asks them to relax in their chair, start the pre-recorded instructions, close their eyes, and listen to pre-recorded instructions adapted from Harner (1990): Excerpt: "... *Now visualise the future target photograph before you. Study the photograph in all its detail. Remember this information for later.*" After the IC procedure, participants are instructed on-screen to make notes (mentation) about their impressions of the future target. At this stage, neither the participant, nor L.S., knows what the target is since it has not been generated. All participants complete the PCI again (post-IC).

**Step 2:** Target selection following May et al.'s (2012) recommendation. First, the RNG is used which randomly selects one Group of twelve, followed by one photo from each of five Categories in that Group, from the fuzzy set encoded target pool. The RNG lights are numbered on a template '1' to '12' for Group, and '1' to '5' (twice) on a second template for Category (participants may have to repeat a Category run as 2 of the 12 lights are necessarily excluded and say "Spin Again"). These six randomly generated numbers (one for Group, plus five for Category) are entered sequentially into the computer, thus identifying the target set of five photos for automatic on-screen presentation for participants to rank (target selection is not performed until Step 4).

**Step 3:** Ranking—once the set of five photos appears on-screen, the experimenter instructs the participant to rank the five photographs from 1 to 5 (#1 = 'best fitting photo to the mentation'; #2 = 'next best fitting photo to the mentation', etc., down to #5). That is, participant ranks photos according to how well elements in the images match the mentation; they are permitted to re-read their mentation, in order to prompt their memory, thereby assisting them in the ranking. The experimenter (L.S.) does not offer personal interpretations of the mentation as this may mislead participants. The experimenter makes sure that all participants type under each photo the respective rank number.

**Step 4:** Using the same Category procedure in Step 2, the target photograph is generated. This target will be one of the five already selected and ranked (MCE = 20%). The participant enters the RNG number into the computer. The computer finds the associated rank number for that photo, and automatically presents it as feedback to the participant (e.g., if the photo is ranked #1, it is a Direct Hit). The participant is debriefed.

## Data Analyses

The statistical analyses of this study involve testing for (i) psi as a pure effect, and as a sheep-goat effect (Direct Hitting and Mean Rank Score); (ii) correlates between psi outcomes (Direct Hitting & Rank Score) and PCI pre/post difference scores; (iii) PCI differences between pre-IC (baseline) and post-IC (IC/ASC) conditions (factor A); (iv) sheep-goat pre-IC and post-IC PCI differences (factor B), and possible interaction effect between the two factors, in accordance with the hypotheses given above.

A report will be provided to SPR, and a scientific paper will be submitted to the *Journal of the Society for Psychical Research*.

## References

- Harner, M. (1990). *The way of the shaman* (3<sup>rd</sup> ed.). San Francisco: Harper & Row.
- May, E. C., Faith, L. V., Blackman, M., Bourgeois, B., Kerr, N., & Woods, L. (2012). A target pool and database for anomalous cognition experiments. *Journal of the Society for Psychical Research*, 76, 94-103.
- Rock, A. J., & Storm, L. (2012). Shamanism, imagery cultivation, and psi-signal detection: A theoretical model, experimental protocol and preliminary data. *International Journal of Transpersonal Studies*, 31, 91-102.
- Schmidt, H. (1970). A PK test with electronic equipment. *Journal of Parapsychology*, 34, 175-181.
- Schmidt, H. (1973). PK tests with a high-speed random number generator. *Journal of Parapsychology*, 37, 105-118.
- Storm, L. (2019). Imagination and reactance in a psi task using the imagery cultivation model and a fuzzy set encoded target pool. *Journal of Scientific Exploration*, 33(2), 193-212.
- Storm, L. (in press). The effects of imagery-cultivation on mood and psi performance. *Journal of the Society for Psychical Research*.
- Storm, L., & Goretzki, M. (2021). The psychology and parapsychology of spiritual emergency. *Journal of Scientific Exploration*, 35(1), 40-68.
- Thalbourne, M. A. (1995). Further studies of the measurement and correlates of belief in the paranormal. *Journal of the American Society for Psychical Research*, 89, 234-247.