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# EXPERIMENTAL INVESTIGATION OF PRECOGNITION IN YOGA PRACTITIONERS

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*ABSTRACT*

Yoga, which traditionally includes meditative practices, can reportedly improve cognitive and perceptual functioning. This study aimed to investigate the effects of these practices on precognition. The study was conducted online during the COVID-19 lockdowns. Three online forced-choice precognition experiments and one questionnaire study were conducted. The first experiment consisted of a pre-/post-training programme involving a short-term yoga course ($N$ = 104 participants). The second was a pre-/post-training design with meditation as an intervention ($N$ = 103). The third was a one-time assessment of performance between students with low vs. high levels of experience with yoga ($N$ = 164). The fourth study examined correlations between precognition performance and gender, age, education, and reports of unusual childhood experiences ($N$ = 245). Three questionnaires, including the Gunas Scale, a Mindfulness Attention Awareness Scale (MAAS), and a Mysticism Scale (M-scale), were used for these assessments. This study's hypotheses were preregistered with the Open Science Framework website. The results showed that none of the experimental outcomes were statistically significant. Participants' gender, age, and unusual childhood experiences did not significantly relate to precognition test outcomes, or with the Gunas Scale, MAAS, or M-scale questionnaires. Nevertheless, there were *post hoc* indications of psi-missing in each of the three experimental studies. Although the results of the planned study were not statistically significant, precognitive performance associated with yoga and meditation practice showed weak trends in the predicted direction. Further research on the relationship between precognition and yoga and meditation practices may benefit more by studying advanced meditators who report experiences described as a sense of 'timelessness'.

## Introduction

Psi (psychic) abilities like precognition and telepathy (Thalbourne, 2003), as reported in the parapsychological literature (Alibalaei & Ilavarasu, 2024), and extraordinary abilities reported in the yoga literature, traditionally called the 'siddhis' (Kanojia, 2022), bear a resemblance. However, only a few empirical studies have been conducted to understand their potential overlaps. Our study addressed this gap by investigating how those who participate in yoga, which traditionally includes meditation practices, performed in an online forced-choice precognition task. We report three experimental studies and one correlational

study exploring the performance of yoga and meditation practitioners with different levels of experience and personality factors.

A yoga programme combining postures (asanas) and breathing practices (pranayama) has been shown to improve aspects of cognitive functioning (Brunner et al., 2017). Additionally, yoga reportedly reduces stress (Gura, 2002) and anxiety (Agte & Chiplonkar, 2008; Telles et al., 2009), enhances concentration and attention (Sheela Joice et al., 2018), and increases self-awareness (Thompson et al., 2018). Meditation too is said to be beneficial in improving core cognitive functions such as attention, emotions, and self-regulation (Brown et al., 2022), ultimately leading to psychological well-being, mental peace, joy, empathy, and compassion.

Meditation practices vary widely, but many require the practitioner's focus and concentration. Concentration meditation involves focusing the mind on an object, like a mantra or the breath, and then continually returning attention to this object when it wanders (Ainsworth et al., 2013; Colzato et al., 2016; MacLean et al., 2010). Practicing focused attention reportedly influences various cognitive processes, including visual perception (Srinivasan & Singh, 2017). Open-monitoring meditation techniques, which aim to enhance distributed attention, also affect visual perception and attention (Carter et al., 2005; Felver et al., 2017; Norris et al., 2018). Evidence suggests that meditation-induced changes can improve perceptual performance across a range of tasks measuring different types of attentional processes, such as the Attentional Network Task (Ainsworth et al., 2013; Baijal et al., 2011; Tsai & Chou, 2016), Attentional Blink (Colzato et al., 2016), and the Stroop Task (Chan & Woollacott, 2007).

In the 1970s, researchers began to explore meditation as a potential catalyst for psi phenomena, partly inspired by Patanjali's claim in his Yoga Sutras that psychic abilities can emerge upon reaching samadhi, or enlightenment (Honorton, 1981; Schmeidler, 1994). A study aimed at determining if a correlation existed between yoga practice (including meditation) and precognitive abilities in an Indian ashram was conducted, involving both advanced meditators who had engaged in Siddha Yoga practices for at least 10 years and novices with less than 2 years of practice. The results found evidence for psi experiences in the advanced meditators but not in the novice group (Roney-Dougal & Solfvin, 2006). The two hypotheses studied in that experiment were (a) psychic awareness develops gradually with meditation practice, and (b) such abilities only become evident upon attaining samadhi. The study was repeated after 2 years, but did not yield conclusive findings, although the results showed a notable difference in psychic awareness between advanced meditation practitioners and beginners. The study proposed that this disparity was largely due to beginners' tendency to psi miss (i.e., to systematically miss the correct target) (Roney-Dougal et al., 2008). This prompted further investigation into the psi potential among Tibetan Buddhists, renowned for integrating psychic practices into their spiritual rituals (Roney-Dougal, 2006, 2018).

In Buddhist practices, two primary meditation forms are recognized: Shamatha, focusing on a single point, and Vipassana, centred on contemplative insight. Shamatha's core practice involves developing calm-abiding or mental tranquillity. Traditional Mahayana texts and contemporary Tibetan Buddhist teachings often link the mastery of meditation with the emergence of psychic abilities, similar to the claims in yogic traditions (Conze, 1975; Cutler & Newland, 2014; Tenzin, 1995). In both cases, these abilities are traditionally described as the ability to perceive past, present, and future, which in the vernacular may be known as 'clairvoyance', with perception of future events in particular known as 'precognition' (Mutz & Javadi, 2017; Schaefer, 2014).

Little is known about what kinds and levels of meditation practice give rise to these abilities (Wiseman & Watt, 2006). Interviews with experienced monks suggest that achieving samadhi, and consequently purported psychic abilities, is rare. Not all who meditate will reach samadhi or develop psychic skills, as meditation practice does not necessarily lead to these states.

Parapsychologists have also explored the relationships between psi and other factors like abnormal childhood experiences (Rabeyron & Watt, 2010; Scimeca et al., 2015), personality (Tressoldi et al., 2011), mindfulness (Roney-Dougal et al., 2013), educational level (Yu et al., 1998), and age and gender (Sheldrake et al., 2015). However, no reliable or repeatable relationships with psi performance were found for these factors.

In Patanjali's Yoga Sutras, yoga is defined as a method to stop the mind's 'playfulness', or tendency to wander. In so doing, psi abilities were said to be evident as the 'fruits of the mind' within a deep level of meditation called samadhi (Kanojia, 2022). This lore suggests that one of the sources of the psi abilities is a calm mind that is under conscious control. As such, any factor that causes mental noise may be an obstacle to psi abilities.

Meditation practice is said to sensitize the unconscious, or to make it more available to conscious awareness (DelMonte, 1995). Parapsychologists who have studied spontaneous psi experiences, as well as psychophysiological studies of precognition, suggest that these abilities arise from the unconscious (Eisenbud, 1983; Mossbridge et al., 2012). Freud believed that the unconscious mind is more active and influential in childhood (Freud, 1900, Chapter 4). All this suggests that there might be a relationship between abnormal childhood experiences and psi.

The current study is based on the existing scientific literature that shows that yoga and meditation can affect practitioners' normal perceptual abilities. It also compares beginners and advanced yoga and meditation practitioners to see if these differences lead to discernible variations in precognitive ability. The possible relationship between psi and demographic factors, and other relevant factors, like mysticism, childhood experience, etc., will also be analysed in this study.

The following hypotheses were formulated:

H1: Forty days of continuous yoga practice (a minimum of 60 minutes daily) affect the precognitive ability of students with different histories of yoga practice.
H2: Meditation influences precognitive accuracy.
H3: More yoga experience is associated with better precognition results.
H4: The demographic characteristics of the participants correlate with their precognitive skills.

## Method

### *Pre-registration details*

This study was pre-registered with the Open Science Framework (OSF) (https://doi.org/10.17605/OSF.IO/NRAK2), and the study was conducted as per the pre-registered protocol.

### *Participants*

The present research work comprised four distinct studies. All participants came from a yoga university based in south India. They were pursuing various yoga programmes of different course lengths. Prior to their participation, detailed explanations of the study's procedures were provided to all participants, who then gave their voluntary consent to participate. A total of 273 students, both male ($N$ = 72) and female ($N$ = 201), aged between 18 and 67 years, participated in all of the studies. In the first study, 104 students participated as part of a 2-month online yoga teacher training programme, as the study was conducted during COVID-19 lockdowns. The course training was considered as part of the intervention. In the second and third studies, 103 and 164 students participated, respectively. Owing to their interest, some of these participants were involved in more than one study. For the fourth study, participants were pooled from the previous three studies based on their availability, providing a dataset of 245 unique participants. Thus, the sample size for testing the four hypotheses was as follows:

1. Yoga practitioners who had practiced yoga for a minimum of 40 days in a row ($N$ = 104).
2. Meditation practitioners who had practiced for a total of 40 minutes in a single session ($N$ = 103).
3. Students who had practiced yoga/meditation regularly for a minimum of 6 months for at least 5 days per week and for at least 45 minutes per day without interruptions ($N$ = 164). We adopted the cut-off of 2 years based on the literature (Roney-Dougal & Solfvin, 2006), to categorize participants into two groups, where those with experience of 6 months to 2 years were classified as beginners and those with more than 2 years of experience were classified as experienced participants.
4. Students studying at an Indian yoga university in different fields of yoga ($N$ = 245).

*Study design*

The sampling techniques adopted were convenience and purposive sampling. We specifically sought those students who had credible experience with yoga practices. We approached the whole class, and whoever consented to participate was involved in the study. The first study consisted of pre-/post-training, where assessments were carried out at the beginning and toward the end of the online yoga training programme. The duration of the yoga programme was a total of 40 days. The second study also consisted of a pre-/post-training; however, the assessments were carried out before and after the practice of a specific moving mindfulness practice called 'cyclic meditation' (CM). CM is a 40-minute practice, and the participants were given orientation and practice in this method. The assessment was performed before and after the CM session.

In the third cross-sectional study, two groups of yoga practitioners were assessed at a given time point. Participants with less than 2 years of yoga practice experience were considered as having low experience, and those with more than 2 years were considered as having high experience. Further, those participants who were practicing yoga or meditation regularly at least 5 days per week and at least 45 minutes per day without interruptions were included in study 3. These three studies were designed to evaluate the first three hypotheses.

In the fourth study, participants were pooled from the previous studies, and their demographic factors were analysed. We examined the correlation between gender, age, education, and unusual childhood experiences through three self-report questionnaires on the Gunas Scale, the Mindfulness Attention Awareness Scale (MAAS), and the Mysticism Scale (M-scale). Figure 1 illustrates the steps involved in the implementation of the intervention process.

*Procedures of intervention*

Cyclic meditation practice

The meditation taught to the participants was a multi-step practice of 40 minutes duration known as cyclic meditation (CM). This meditation technique was an integral part of the course curriculum, and it has been evaluated in previous research, where positive changes in different physiological and mental health benefits were demonstrated (Ningthoujam et al., 2021; Subramanya & Telles, 2009). The participants had already completed at least three CM sessions in the days leading up to the test session. To prepare for the CM, participants were asked to close their eyes and breathe deeply. This technique of moving meditation is derived from one of the Upanishads and involves practicing postures (asanas) and relaxation techniques. After a prayer, practitioners of CM practice isometric muscle contractions, lay down on the floor with their face up, then stand in a relaxed pose and centre themselves by balancing the weight of the body on the feet, then bend to the right and left (*ardhakaticakrasana*),

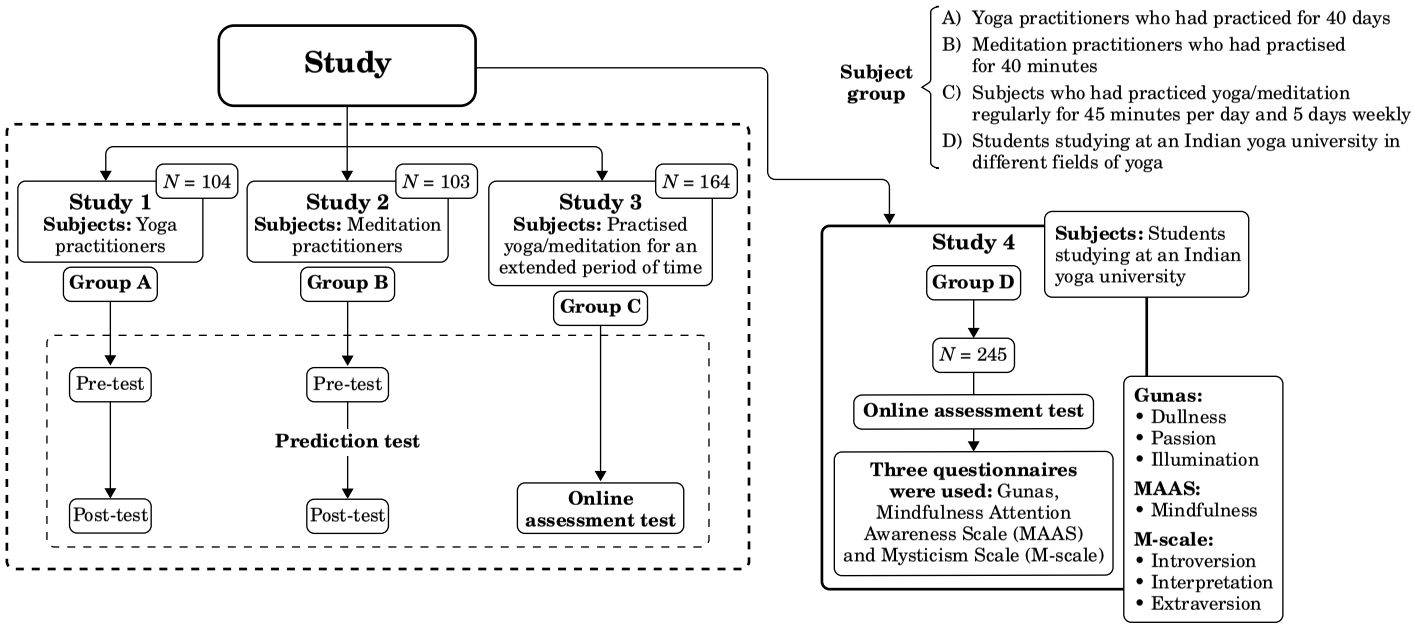


*Figure 1. The steps involved in the implementation of the intervention processes.*

bend forward (*padahastasana*), bend backward (*ardhacakrasana*), and end by resting on their back. This exercise focuses on relaxation and mindfulness, as all the movements are performed very slowly and with full awareness of the sensations that are generated in the process (Ningthoujam et al., 2021).

The CM meditation was led online, through the Google Meet platform, by the professors of the course, who introduced the process and supervised each step. During the meditation, all participants practiced simultaneously online using cameras. However, the precognition assessment was conducted without the aid of a camera.

Precognition test procedure

All the tests for precognition were carried out online through the Google Meet platform, following a consistent method. Each session was assigned a distinct Google form link, with a total of four links used across three studies. The fundamental design of the precognition test remained consistent throughout all the studies. To prepare the participants for the test, they were all given clear instructions. The participants were first given a mock test, which consisted of ten trials. This helped them get acquainted with the experimental task. After completing the mock test, participants were given a chance to clarify any doubts. They were then given the link to the main test, which consisted of a registration document, two tests with ten trials each, and three questionnaires. Participants were first asked to provide their demographic data on the test page. During the precognition test, participants were presented with an empty table with five rows and two columns containing a total of ten cells.

In the first column of the table (column 1), cells were labelled with numbers from 1 to 5, while in the second column (column 2), they were marked with numbers from 6 to 10. Four images numbered from 1 to 4 were presented to participants as part of the selection process. The images were obtained from the Unsplash website (https://unsplash.com). The selection criteria ensured that each set of four images differed in the following ways:

1. Originating from different categories; for instance, one image may feature a sea background, another on the street, a third related to sports, and the last depicting an object within a house.
2. Having distinct background colours.
3. Having a varying number of objects in each image.
4. Avoiding using images that might invoke strong emotions (e.g., war, death, etc.) to reduce any untoward influence on the precognition tests and to prevent disrupting the calm state encouraged by the meditation.

The importance of considering the maximum difference between the images in each set was to uphold and enhance participant motivation while also preventing a phenomenon where similar images may lead to confusion and negatively impact the test results. After ten trials, the images were changed to prevent habituation and mitigate bias resulting from exposure to the same

stimuli. Some of the images from the set of four images were randomly repeated to make a complete set of ten trials. Considering that the participants in study 1 and study 2 took part in two pre-tests and two post-tests (a total of eight tests), a grand total of 32 distinct images were utilized.

The participants were asked to predict which picture would be found in which cell in the table. As part of the process, the subjects were instructed to perform a 40-second contemplation exercise with the aim of reducing mental clutter and promoting serenity to improve their results. Before the participants selected the images, they were informed that when their eyes were closed they might see images or colours or hear a voice or whisper inside them associated with the image. A total of 20 trials were conducted. Because the probability of a hit with four possible images was 0.25, with 20 trials 5 hits would be predicted by chance. Thus, if the total number of correct hits was 5 or less, the person was considered to have no discernible precognition ability, whereas if it was more than 5, it was considered to be a possibly interesting outcome. Of course, in a total of 20 trials, 5 to 8 hits could still easily be a chance outcome. One would need 9 or more hits to be considered statistically significant at $p < 0.05$.

After all of the participants had conducted their 20 trials, the examiner emailed them their results. Considering that the target was computer selected, everyone in every test received the same set of targets. This precognition test design was easy to perform without requiring sophisticated laboratory equipment, but it also introduced a possible stacking effect (i.e., response bias effect) that complicated the statistical analysis.

To create a series of ten random images, between four images numbered 1 to 4, we utilized an online random integer generator (https://www.random.org/integers) to generate a set of ten random numbers ranging from 1 to 4. Subsequently, these numbers were allocated to individual cells sequentially within a table. Each number was linked to an image based on its value (image 1 for the number 1, image 2 for the number 2, and so on).

Self-report measures

In study 4, demographic details were included for analysis. A question was asked about participants' unusual childhood experiences: "Did you have any of the following abnormalities in your childhood?" There were five response options: (1) unusual abilities, (2) unusual dreams, (3) seeing unusual objects, (4) hearing unusual voices, (5) I have not had any of the following experiences. Based on the responses, participants were divided into two groups, namely, whether they had unusual childhood experiences (if participants selected any of the response options 1 to 4) or not (if option 5 was selected).

Apart from that, other standardized questionnaires used were:

1. *Gunas questionnaire*. This is a tool used to measure the personality traits of illumination (Sattva), passion (Rajas), and dullness (Tamas). It was developed based on Indian philosophy and the *Bhagavad Gita*.

The scale was created through a systematic process of item generation, empirical studies, and validation to ensure reliability and validity (Bhal & Debnath, 2006). According to the Gunas Scale, people can be divided into three categories: displaying the traits of dullness, passion, and illumination. This questionnaire was used to study the relationship between different personality types and the prediction of success in precognition tasks. According to the questionnaire's dullness and passion traits, people's scores for these domains can range from 5 to 25. People with scores between 5 and 14 are classified as low, and people with scores between 15 and 25 are classified as high in dullness and passion domains. In addition, scores for illumination can range from 3 to 15. A score of 3 to 9 places a person in the low category, and a score of 10 to 15 places a person in the high category. This scale was developed by Bhal and Debnath (2006) and aims to measure the intricate Indian personality construct of Gunas. Cronbach's alpha indicated that the reliability coefficients for the three scales varied from $\alpha = 0.57$ to $\alpha = 0.78$.

2. *Mindfulness Attention Awareness Scale (MAAS)*. The MAAS measures mindfulness frequency in daily life, a receptive state of mind where attention is sensitive to present events, and correlates with psychological well-being and self-regulation (Brown & Ryan, 2003). The MAAS questionnaire was used to explore the relationship between mindfulness and precognition. The questionnaire contains 15 statements where respondents indicate on a scale of 1 (almost always) to 6 (almost never) how often they engage in the activities described. An overall score is calculated from the ratings of these statements, indicating whether a person is more or less likely to engage in mindfulness. A higher agreement score indicates a greater tendency toward mindfulness, while a lower score indicates a lower tendency toward mindfulness. The MAAS has high internal consistency, with Cronbach's alpha ranging from $\alpha = 0.80$ to $\alpha = 0.87$ across different samples of college students, adults, and cancer patients (Brown & Ryan, 2003).
3. *Mysticism Scale (M-scale)*. This measures reported mystical experiences, based on Stace's universal core model. It reflects mysticism across traditions and cultures, studying its relationship with spirituality and its effects on outcomes (Streib et al., 2021). The M-scale consists of eight items measuring subjective spirituality, which is defined as individual, experiential religious attitudes. There are three subscales in the questionnaire that deal with the relationship between spirituality and prophecy: introversion, interpretation, and extraversion. The questionnaire scores for introversion and interpretation are independent and range from –6 to +6. Scores

between –6 and 0 indicate that the person falls into the low category, while scores from 1 to +6 indicate that the person falls into the high category. Scores on the extraversion subscale range from –4 to +4. Scores between –4 and 0 indicate that the person falls into the weak category, while scores between 1 and +4 indicate that the person falls into the strong category. Based on research by Streib et al. (2021), the M-scale has high reliability. For the short eight-item version, the Cronbach alpha values are $\alpha = 0.83$ for introvertive mysticism, $\alpha = 0.82$ for extrovertive mysticism, $\alpha = 0.80$ for interpretation, and $\alpha = 0.88$ for the total M-scale score.

*Ethics*

This study received prior approval from the Institute Ethics Committee of the Swami Vivekananda Yoga Anusandhana Samsthana (SVYASA) institute in Bengaluru, India, as RES/IEC-SVYASA/172/2029.

*Planned analysis*

Statistical software (JASP) was used for data analysis, and chi-square ($\chi^2$) tests were used to analyse the relationship between participants' demographic information and the number of predictions (Van Doorn et al., 2021). Depending on the types of measurements used, appropriate statistical tests were conducted. Non-parametric tests were used to identify the association between the proportion of hit rates across different levels of traits derived from the questionnaires (Gunas, MAAS, and M-scale). For the variable hit rate, which is considered a continuous variable, paired samples *t*-tests were used to analyse the results of the average hit rates before and after the intervention. Also, independent samples *t*-tests were used for one-time assessment conditions (e.g., demographic variables in study 4) to compare the mean values. The level of significance was fixed at 0.05 for all statistical tests. The *p*-values reported for all the studies are for two-tailed tests.

*Post hoc analysis*

As part of a *post hoc* analysis, we calculated probabilities associated with psi-missing. Psi-missing has been reported in previous psi-meditation experiments (Roney-Dougal & Solfvin, 2006). We calculated the psi-missing effect using the following procedure:

1. Calculate the exact binomial *p*-value associated with each individual's score using the Excel function 'binomdist'.
2. Transform the obtained *p*-value for each person into a one-tailed *z* score.
3. Count the number of these *z* scores below –1.96 (individuals with hits ≥ 10 out of 20 trials) to find the number of significant hits per person, and likewise count the number of scores greater than 1.96 (individuals

with hits $\leq 2$ out of 20 trials) to find the number of significant misses per person.

4. Calculate the exact binomial probability of achieving $X$ significant 'hitters' in $Y$ total trials, given a hit probability of $p < 0.05$, and likewise for significant 'missers'.

## Results

### *Study 1*

A paired $t$-test was performed to examine the mean scores of precognition between the pre-test ($M = 0.247$, $SD = 0.099$) and post-test ($M = 0.251$, $SD = 0.113$), $t(103) = -0.276$, $p = 0.783$, 95% *CI* [–0.035, 0.027]. The effect size observed was very small, Cohen's $d = -0.027$. Pre-test hits ($H$) were 514 in a total of 2,080 trials ($N$), thus the hit rate ($hr$) was 0.247. The post-test values were $H = 523$, $N = 2080$, $hr = 0.251$. In the precognition tests administered before the intervention, out of 104 participants we found 10 who significantly missed (exact binomial $p = 0.028$) and 3 who significantly hit ($p = 0.475$). In the precognition tests administered after the intervention, we found 14 participants who significantly missed (exact binomial $p < 0.001$) and 3 who significantly hit ($p = 0.475$). These *post hoc* measures suggested the occurrence of psi-missing in this study, both before and after the intervention.

In another *post hoc* analysis of psi-missing, the cumulative $z$ score was calculated based on performance per person calculated using Greville's 'stacking effect' correction for a multiple-response forced-choice experimental design (Greville, 1944). Figure 2 shows the cumulative $z$ score for all 200 trials. That is, the participants in this study came from five different batches. In each batch, the participants contributed 20 trials before the training and 20 trials after the training. As we had five batches, we got 100 pre-trials and 100 post-trials (5 batches × 20 trials). In Figure 2, pre-trial data are represented by black dots post-trial data by white dots, which essentially conveys the batch-wise performance of participants within the study duration. What we can infer from this analysis is the differential psi-effect demonstrated across different batches, possibly due to inherent differences in the batch characteristics or the experimenter's influence. The trend of the results shows distinct differences between pre- and post-performance; however, overall, the results failed to yield statistical significance.

### *Study 2*

To test the effect of cyclic meditation (CM) on precognition, data from a total of 103 participants was analysed. A paired $t$-test was performed to compare the average scores obtained in the post-test ($M = 0.250$, $SD = 0.085$) with those of the pre-test ($M = 0.245$, $SD = 0.108$), $t(102) = -0.351$, $p = 0.727$, 95% *CI* [–0.032, 0.023]. The effect size observed was not significant, Cohen's $d = -0.035$. The

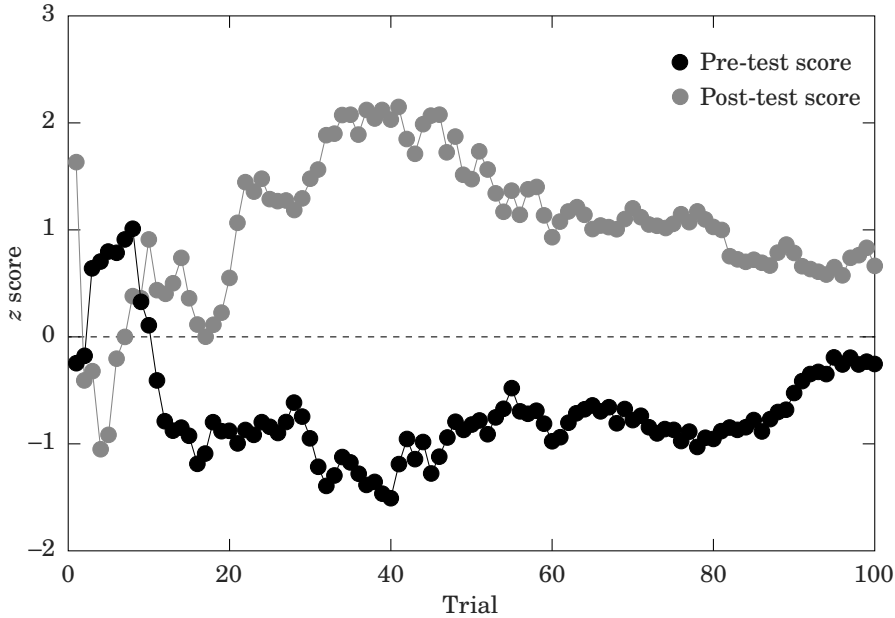


*Figure 2. This graph shows the cumulative z score for all 100 trials in study 1 (black dots indicate the pre-test and white dots the post-test score for each participant). The final result is not significant, but the trend is in the direction suggesting that post-test performance was better than pre-test performance, with that difference declining with increasing number of trials.*

pre-test $H = 505$, $N = 2{,}060$, $hr = 0.245$ and the post-test $H = 515$, $N = 2{,}060$, $hr = 0.25$. Study 2 included 164 students, each taking part in 20 trials before and 20 after the intervention. During the pre-test, there were 15 significant missers according to an exact binomial calculation, indicating a statistically significant result ($p < 0.001$), and 2 hits ($p = 0.221$). In the post-test, there were 5 significant missers (exact binomial $p = 0.804$) and 1 hit ($p = 0.068$).

In the *post hoc* analysis of psi-missing based on individual results, as in study 1, the cumulative $z$ score was calculated based on performance per person using Greville's 'stacking effect' correction for a multiple-response forced-choice experimental design (Greville, 1944). Figure 3 shows the cumulative $z$ score for all 160 trials, stacked across four batches, in study 2. Participants came from four different batches. In each batch, the participants contributed 20 trials before the training and 20 trials after the training. As we had four batches, we got 80 pre-trials and 80 post-trials (4 batches × 20 trials). In Figure 3, black dots represent pre-trial and white dots represent post-trial data, which essentially conveys the batch-wise performance of participants over the study duration. What we can infer from this analysis is the differential psi-effect demonstrated

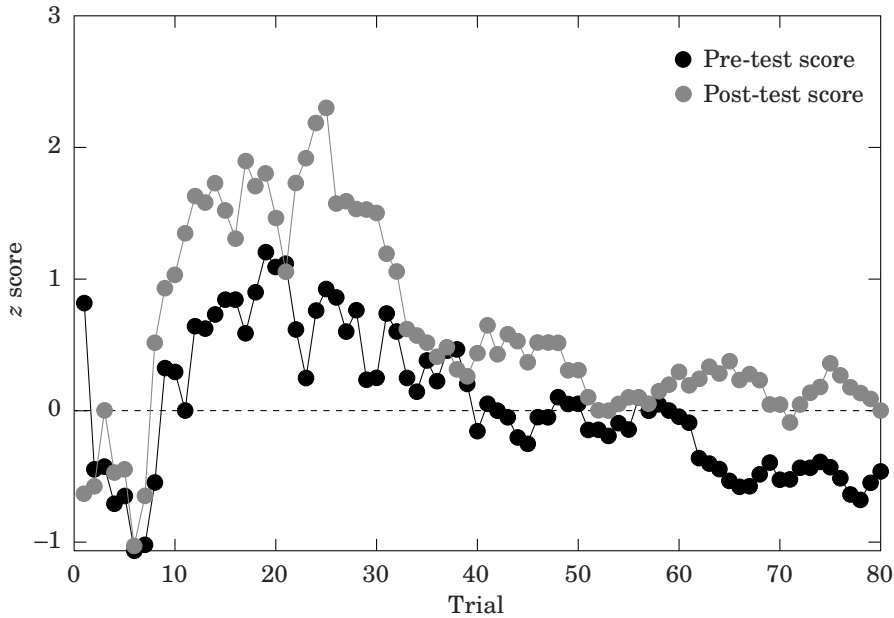


*Figure 3. This graph shows the cumulative* z *score for all 80 trials in study 2 (black dots indicate the pre-test and white dots the post-test scores corrected for stacking effects). The final result is not significant, but as in study 1 the trend was again in the direction suggesting that post-test performance was better than the pre-test performance, and again this difference declined with increasing number of trials.*

across different batches, possibly due to inherent differences in the batch characteristics or the experimenter's influence. The trend of the results shows distinct differences between pre- and post-performance; however, overall, the results do not reach statistical significance.

*Study 3*

This study investigated if there was a difference in precognition scores between 70 individuals experienced in yoga ($M$ = 0.258, $SD$ = 0.084) vs. 94 beginners ($M$ = 0.251, $SD$ = 0.093). The results were not significantly different, $t(162) = -0.481$, $p = 0.631$, $d = -0.076$, 95% $CI$ [–0.035, 0.021]. The results for beginners were $H$ = 1,880, $N$ = 472, $hr$ = 0.251, while results for those experienced in yoga were $H$ = 1,400, $N$ = 361, $hr$ = 0.258. This study involved a total of 164 students, each participating in 20 trials. There were 15 significant missers ($p$ = 0.016) and one hitter, indicating another statistically significant outcome, in this case too few ($p$ = 0.004).

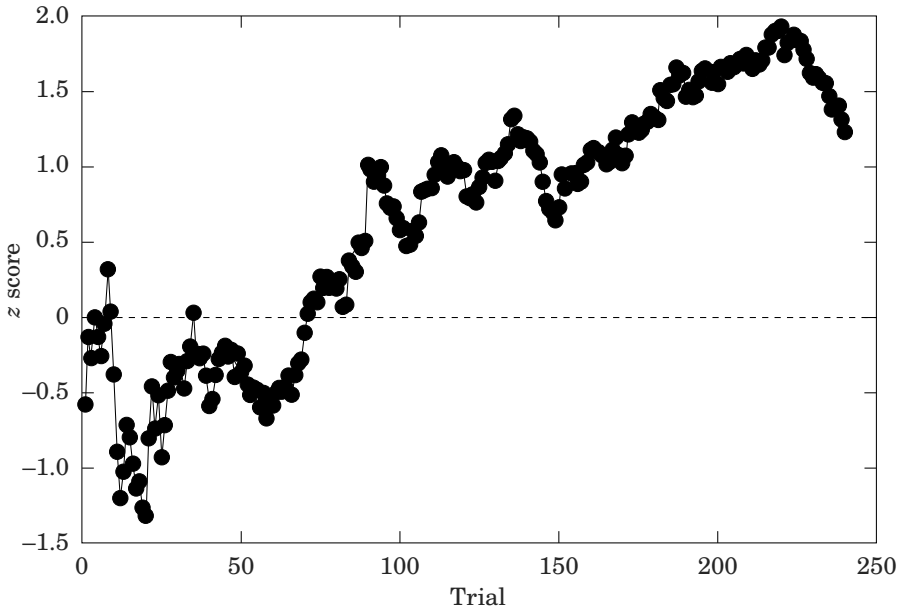


*Figure 4. The cumulative* z *score for all 240 trials in study 3 (black dots indicate each test for each participant after correction for a stacking effect (there was no pre- or post-test)). The final result was not significant, but the trend suggested that performance progressively increased.*

Figure 4 shows the cumulative *z* score for all 240 trials (each trial represented as a black dot) stacked together in study 3, which happened in 12 batches, and in each batch, the participants contributed 20 trials in one assessment test (12 batches × 20 trials). Figure 4 shows the class-wise performance of participants within the study period. The results failed to yield statistical significance.

*Study 4*

The fourth study explored differences in precognition success rates across participants' gender, age, or unusual childhood experiences.

Gender

Independent sample *t*-tests revealed no statistically significant differences in the precognition scores between 182 females ($M = 0.26$, $SD = 0.095$) and 63 males ($M = 0.256$, $SD = 0.087$), $t(243) = 0.26$, $p = 0.795$, 95% *CI* [–0.023, 0.030]. The effect size was very small, $d = 0.038$. For females $H = 946$, $N = 3{,}640$, $hr = 0.26$, and for males $H = 323$, $N = 1{,}260$, $hr = 0.256$.

Age

Regarding age, participants were categorized into two cohorts: 176 participants aged 18–27 years and 69 participants aged above 27 years. An independent sample *t*-test showed no statistically significant difference in mean precognition scores between the group aged 18–27 years ($M = 0.26$, $SD = 0.092$) and the group aged above 27 years ($M = 0.256$, $SD = 0.097$), $t(243) = 0.258$, $p = 0.796$, $d = 0.037$, 95% *CI* [–0.023, 0.030]. For the group aged 18–27 years $H = 915$, $N = 3{,}520$, $hr = 0.26$, and for the group aged above 27 years $H = 1{,}380$, $N = 354$, $hr = 0.256$.

Abnormal childhood experiences

Based on the question about any abnormal occurrences during childhood, individuals were categorized into two groups: 73 who responded affirmatively ($M = 0.261$, $SD = 0.097$) and 172 who responded negatively ($M = 0.258$, $SD = 0.092$). Those responding affirmatively produced $H = 381$, $N = 1{,}460$, $hr = 0.261$ and those responding negatively produced $H = 888$, $N = 3{,}440$, $hr = 0.258$. The *t*-test showed no statistically significant difference in mean precognition scores between the two groups, $t(243) = –0.216$, $p = 0.829$, $d = –0.03$, 95% *CI* [–0.029, 0.023].

Education

Participants were categorized into two groups, high and low educational levels. Fifty-eight individuals were master's degree holders or students, and 152 were bachelor's degree holders or students. Their precognition scores were $M = 0.233$, $SD = 0.097$ for high education level and $M = 0.266$, $SD = 0.084$ for low education level. The high education level participants' results were $H = 270$, $N = 1{,}160$, $hr = 0.233$, and the low education level participants' results were $H = 809$, $N = 3{,}040$, $hr = 0.266$. The difference was statistically significant, $t(208) = 2.46$, $p = 0.015$, $d = 0.364$, 95% *CI* [0.007, 0.060], with the lower educational group performing better.

Questionnaires

Some 245 individuals completed the three questionnaires, each having distinct subscales. Each subscale was bifurcated into 'upper' and 'lower' echelons. Participants' responses were scored using the Likert scale, categorizing them into 'low' or 'high' proficiency groups based on their cumulative scores. This categorization ensured that the sum of individuals in both proficiency groups equated to the total number of participants, maintaining a 100% distribution. Furthermore, within these proficiency groups, participants were further classified as 'successful' or 'unsuccessful' based on their performance in a precognition test. A 'successful' designation required a hit rate exceeding 5, whereas an unsuccessful status required a hit rate of 5 or below. Comparative analysis focused on the success rates within the 'low' and 'high' proficiency groups.

*Gunas personality trait*. There were no statistically significant findings in the Gunas 'dullness' group. However, it is worth noting that individuals with lower levels of Gunas 'inertia' performed possibly more effectively as compared to those with higher levels (46.1% vs. 35.9%). These percentages mean that within the 'low dullness' category, 46.1% of participants, amounting to 77 out of 167, achieved a hit rate above 5. In contrast, within the 'high dullness' group, only 28 out of 78 participants surpassed this benchmark. The comparative lower success rate of 35.9% in the 'high dullness' group led to the inference that a lower degree of dullness was related to a higher likelihood of success in precognition tests. However, a chi-square test of independence determined that there was no relation between the level of dullness and performance for precognition, $\chi^2$ (1, $N$ = 245) = 2.26, $p$ = 0.132. Similarly, in the 'passion' group of the Gunas Scale, no statistical significance was found, $\chi^2$ (1, $N$ = 245) = 0.001, $p$ = 0.971. When looking at the 'illumination' group measured by the Gunas Scale, no significant differences were discovered overall, $\chi^2$ (1, $N$ = 245) = 0.785, $p$ = 0.376, but participants who expressed this particular trait achieved slightly higher scores on their precognition performance (45.8% vs. 40.2%). The results of this questionnaire are presented in Table 1.

TABLE 1.

*The results of the Gunas Scale and subscales as a function of 'failure' or 'success' on the precognition task*

| Subscale | Score range | Fail: 0 to 5 (0–0.25) | | Success: 6 to 20 (>0.25) | | Total | |
|---|---|---|---|---|---|---|---|
| | | *N* | % | *N* | % | *N* | % |
| Dullness | Low: 5–14 | 90 | 53.9 | 77 | 46.1 | 167 | 100 |
| | High: 15–25 | 50 | 64.1 | 28 | 35.9 | 78 | 100 |
| Passion | Low: 5–14 | 69 | 57.0 | 52 | 43.0 | 121 | 100 |
| | High: 15–25 | 71 | 57.3 | 53 | 42.7 | 124 | 100 |
| Illumination | Low: 3–9 | 76 | 59.8 | 51 | 40.2 | 127 | 100 |
| | High: 10–15 | 64 | 54.2 | 54 | 45.8 | 118 | 100 |

*Mindfulness*. The chi-square test of independence indicated that there was no relationship between the MAAS questionnaire results and precognition performance, $\chi^2$ (1, $N$ = 245) = 0.349, $p$ = 0.555. Specifically, 39.7% of participants in the MAAS-low category (25 out of 63 individuals) showed hits. In contrast, 44% of participants in the MAAS-high category (80 out of 182 individuals) demonstrated hits. This comparative analysis suggests that individuals with higher mindfulness scores, as indicated by the MAAS, may possibly exhibit a greater propensity for precognition. The results of this questionnaire are presented in Table 2.

TABLE 2.

*The results of the MAAS questionnaire as a function of 'unsuccessful' and 'successful' precognition performance*

| Score range | Unsuccessful: 0 to 5 (0–0.25) | | Successful: 6 to 20 (>0.25) | | Total | |
|---|---|---|---|---|---|---|
| | *N* | % | *N* | % | *N* | % |
| Low: 15–52 | 38 | 60.3 | 25 | 39.7 | 63 | 100 |
| High: 53–90 | 102 | 56.0 | 80 | 44.0 | 182 | 100 |

*Mystical experiences*. None of the three traits of mystical experiences, namely introversion, interpretation, and extraversion, yielded statistically significant results. Table 3 presents the results of the respective scales. Participants with low levels of introversion (40.6%) demonstrated lower success rates than those with high introversion levels (44.4%). Similarly, participants with lower levels of interpretation (35.9%) showed decreased success rates as compared to those with higher levels of interpretation (46.1%). Although not statistically significant overall, participants scoring lower on extroversion tendencies exhibited modestly decreased success rates (41%), as opposed to their counterparts displaying higher extroversion tendencies (44.5%).

Based on the results of a chi-square test of independence, no statistically significant associations were found between: introversion preference and precognition, $\chi^2\,(1, N = 245) = 0.359$, $p = 0.549$; interpretation and precognition preference, $\chi^2\,(1, N = 245) = 2.263$, $p = 0.132$; or extraversion and preference for precognition, $\chi^2\,(1, N = 245) = 0.307$, $p = 0.580$.

TABLE 3.

*The results of the M-scale and its subscales as a function of those classified as 'failing' or 'succeeding' at the precognition task*

| Subscale | Score range | Fail: 0 to 5 (0–0.25) | | Success: 6 to 20 (>0.25) | | Total | |
|---|---|---|---|---|---|---|---|
| | | *N* | % | *N* | % | *N* | % |
| Introvertive | Low: –6 to 0 | 60 | 59.4 | 41 | 40.6 | 101 | 100 |
| | High: 1 to 6 | 80 | 55.6 | 64 | 44.4 | 144 | 100 |
| Interpretation | Low: –6 to 0 | 50 | 64.1 | 28 | 35.9 | 78 | 100 |
| | High: 1 to 6 | 90 | 53.9 | 77 | 46.1 | 167 | 100 |
| Extrovertive | Low: –4 to 0 | 69 | 59.0 | 48 | 41.0 | 117 | 100 |
| | High: 1 to 4 | 71 | 55.5 | 57 | 44.5 | 128 | 100 |

## Discussion

### *Study 1*

There was no evidence in favour of the study 1 hypothesis that short-term yoga practice would improve precognitive abilities.

The idea that yoga exercises may potentially enhance mental abilities or siddhis is supported by ancient texts such as the *Yoga Sutras of Patanjali*, which posit that attaining inner peace and tranquillity through yoga and meditation can lead to unlocking human superhuman powers. However, at least in this experimental test, that potential enhancement factor was not observed.

The statistically significant psi-missing results, found *post hoc*, are more interesting. We speculate that this result may have been due to the combination of an online study conducted during the COVID-19 lockdowns with unselected students who were participating in a psi test for the first time. Whether such factors lead to psi-missing would be an interesting hypothesis for a future study.

### *Study 2*

Differences between the pretest and post-test precognition results were not statistically significant. Previous literature suggests that meditation practices can influence precognitive abilities (Roney-Dougal et al., 2008). Furthermore, yoga practices are known to enhance meditation effectiveness through associated enhancement in cognitive abilities like decision-making, concentration, memory, etc. (Boccia et al., 2015; Hernández et al., 2016, 2021). The present study has convincingly shown that yoga or meditation can improve precognition. Thus, further investigation is necessary to delve into this potential relationship.

In study 2, as in study 1, the phenomenon of psi-missing was again observed. Nevertheless, Figures 1 and 2 suggest that post-test performance was better than pre-test performance. That is, the results obtained were in the hypothesized direction, that yoga/meditation training would improve psi performance. Why each of these studies showed a performance decline can only be speculated upon; for example, perhaps the groups involved in these studies differed in some way, or the participants lost interest on repeated testing.

### *Study 3*

The results of the third study showed no difference in precognitive performance between meditators classified as beginners and those categorized as more experienced. However, psi-missing was again observed, possibly suggesting uncontrolled factors at play.

### *Study 4*

In light of the psi-missing observations in the first three studies, it is important to interpret the study's results with caution, as they may not

necessarily negate the potential relationship between the investigated variables and precognitive performance. While certain demographic factors, such as gender, age, and childhood abnormal experiences may not have had a significant influence on precognition performance, other factors, such as educational background, might. That is, according to the literature, those who believe more in psychic abilities may show better results in psi tests (Luke et al., 2008). Aarnio and Lindeman (2005), which suggests that people educated in disciplines that encourage analytical thinking may believe less in psychic abilities. Less educated people have been reported to have stronger paranormal beliefs (Bader et al., 2012; Sparks & Miller, 2001).

In the self-reported measures, the Gunas questionnaire indicates that individuals who are less dull and more passionate, coupled with those who possess greater illumination, tended to perform slightly better in precognition tasks. The MAAS questionnaire results were not statistically significant. The M-scale, used to measure subjective spirituality, revealed that traits like introversion, interpretation, and extraversion, although not statistically significant, were weakly associated with better precognition outcomes, further emphasizing the complexity of factors influencing psychic abilities.

*Limitations*

One limitation of this study is that we did not use more ecologically valid testing procedures, such as free response tests, which might have captured the participants' spontaneous and wide spectrum of performance. However, such procedures were not feasible to implement in our online setting, so we opted for forced-choice tests that were easier to administer and score, even though that method may have introduced a stacking effect. In addition, these tests were conducted during COVID-19 lockdown periods, which introduced unusual stressors among both the investigators and the student participants.

There is also the possibility that some of the participants did not properly understand the nature of the test and instead viewed it as entertainment or a game. These students may have also been under unusually high stress during the pre-tests due to unfamiliarity with this type of test, and further stress during the post-tests because of approaching final exams.

Although the planned results of this study were not significant, the psi-missing trends were intriguing enough to warrant further research. Other factors, such as the intensity of yoga practice and duration of meditation, and the participants' general health, diet, and lifestyle during the pandemic, which we did not track, might have also influenced psi performance. We recommend a longitudinal study to assess whether long-term yoga and meditation practice enhances precognition accuracy. This would involve following yoga course participants for a year or more and conducting periodic tests under more optimal conditions.

*Conclusions*

In conclusion, this study's investigation into whether yoga and meditation may enhance university students' psi abilities, as measured via planned forced-choice precognition tests, yielded non-significant results. *Post hoc* observations of significant psi-missing results were more intriguing. Future research along these lines may benefit more by focusing on highly advanced meditators to better explore the experiential phenomenon of 'timelessness' and historical claims of 'supernormal' effects associated with intensive practice. The present findings also reinforce the need for maintaining better control over participants' environmental factors and conscientiousness during online studies, to help reduce external noise as much as possible.

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# EXPLORING THE EFFECTS OF LINGUISTIC VERSUS NON-LINGUISTIC MENTATION IN A REMOTE-VIEWING PROTOCOL, WITH COINCIDENT MICROPSYCHOKINESIS DETECTION USING A NOVEL MATRIX REG

By Paul Stevens & Ben Roberts

*ABSTRACT*

This study explored the mode of mentation (linguistic versus non-linguistic) and possible micropsychokinesis coincident effects within a remote-viewing (RV) protocol, using a novel random event generator (REG): a complementary metal-oxide semiconductor (CMOS) imaging sensor under dark conditions. Sixty participants took part via a standardized website interface. Each session consisted of a 20-minute RV period, during which participants either typed or drew their mentation. Meanwhile, the RV agent was at the target site, recording REG data (20 minutes of control data, randomly split into pre- and post-session segments around the 20 minutes of the RV period). Participants submitted their mentation (typed or an uploaded photo) and then ranked four video clips (target site plus three decoys), with later independent judge ranking for comparison. The results demonstrated evidence of successful RV for online ($\Pi = 0.67$, $p = 0.02$) but not in-person participant ($\Pi = 0.46$, $p = 0.31$) sessions. No differences were seen in the mode of mentation. The novel REG did show significantly greater baseline deviation for RV hits versus misses ($p = 0.03$), but only in the first half of the session (mean $z = 2.23$, $p = 0.01$) and not the second half (mean $z = 0.88$, $p = 0.19$). However, the matrix REG design may not be beneficial as analyses did not reveal any consistent differences in complexity (fractal dimension) between RV hits and misses. We conclude that: RV can successfully be performed with a minimal set-up, using a standardized webpage interface; the mode of mentation is not meaningful; and the significant differences in REG activity for hits versus misses suggest the usefulness of an REG as a coincident detector.

## Introduction

This study considered two primary ideas: (1) that the way in which mentation is expressed—linguistically or not—inherently affects a person's interpretation of that mentation; and (2) that extrasensory perception (ESP) and psychokinesis (PK) have a unitary aspect such that the presence of one may be coincident with the presence of the other. To assess the first idea, we focused on mentation relating to remote viewing (RV)—defined as "a neutral term for general extrasensory perception ... especially in the context of an experimental design

wherein a percipient attempts to describe the surroundings of a geographically distant agent" (Thalbourne, 2003, p. 107). To assess the second idea, during RV attempts we concurrently monitored the output of a novel random event generator (REG) matrix based on a complementary metal-oxide semiconductor (CMOS) chip. CMOS is the semiconductor technology used in most of today's integrated circuits; in this case, a digital camera primary sensor under dark conditions, located close to the RV agent.

*Remote viewing*

RV is a free-response methodology, the development of which has been attributed both to Puthoff and Targ's work at the Stanford Research Institute (SRI) (Utts, 2019) and to studies exploring out-of-body experiences with Ingo Swann (Tressoldi & Katz, 2023). In a remote-viewing study, an individual is asked to provide information (not necessarily visual) about a distant target that is beyond their normal sensory perception and cannot be inferred from available information. Typically, they will give a verbal description and/or sketch their impressions. The experimenter is blind as to the target in any given session, to avoid them giving any inadvertent cues, and feedback about the target location is provided to the remote viewer after they have recorded their attempt. A recent meta-analysis suggests that this methodology may be superior to other ESP methods in terms of average effect size: 0.30 for RV, 0.28 for presentiment, 0.047 for free-response Ganzfeld, and 0.01 for forced-choice experiments (Tressoldi & Katz, 2023).

*Non-linguistic versus linguistic mentation*

I have previously (Stevens, 2017) argued that our minds can be seen as a continuum between the exogenous (socially oriented) world and the endogenous (body-oriented) world. The exogenous world is dominated by communication with others through shared rules and constructs (i.e., language). The endogenous world, in contrast, is more idiosyncratic, shaped by the form of the individual's body and by the complex network of interconnections between their neuronal cells (i.e., the embodied brain/mind).

When we use language—a form of consensus communication that is firmly a part of the socially oriented world—to describe our inner state, it is always going to convey only an approximation of what is occurring in the body-oriented world. When an experience is reified by putting it into words, language shapes what we can express, what we think, about an experience (Francis, 2023). The chosen words structure any experience, giving it cause and effect, placing it in the linear timeline of past–present–future, reducing the fuzziness and idiosyncrasy to recognizable (and so communicable) categories. Yet our experiences have subtleties and nuances that words cannot completely describe. Even something as simple as saying an object is 'red' doesn't ensure that we are seeing the same shade, that my experience of the colour is the same as your experience of that colour, let alone that

we have the same associations or emotional responses to it. Every experience is unique, with sensations that are malleable, in constant flux, so delicate that even paying them too much attention can bring about their dissolution. Given that psi does not appear to involve a specific organ or site that deals specifically with psi stimuli, and exhibits a variety of apparent sensory modes, most studies assume that receptive psi information (i.e., ESP) affects a person's inner experience (i.e., their mentation) more directly. This may either be via a physical perturbation of more general physiological processes (e.g., Stevens, 2009) or a more esoteric direct interaction with a person's consciousness (e.g., Radin & Nelson, 1989). In either case, it seems reasonable to suppose that better receptive psi performance would result when it involved a more accurate description of a person's inner experience. Based on the reasoning above, this would then suggest that a non-linguistic mode of description (e.g., drawing) might outperform a linguistic mode (e.g., verbal description)—the former being a more direct representation of ongoing mentation as it avoids reshaping that mentation by trying to find the closest descriptive words (Maddox et al., 2024). This could then provide a simpler explanation for the diverse findings from a variety of psi studies indicating that receptive psi success was associated with non-analytical thought processes and with right hemisphere activity (e.g., Williams, 2012): the key aspect is whether the psi experience is indirectly expressed by being converted to (and so altered by) by language, or more directly expressed as basic forms such as shape, colour, and texture.

This study therefore aimed to compare the outcomes based on mentation expressed in words only versus that which was only expressed via drawing, with the prediction that the latter will be associated with better RV performance.

*Micropsychokinesis (μPK) as a coincident detector of ESP*

Several researchers have suggested that psi may be a unitary phenomenon (e.g., Roe at el., 2003), meaning that categories such as ESP and PK can be seen as differences in the way in which the phenomena are measured rather than reflecting fundamentally different processes. So, for example, the apparent influence of a random system would be called μPK, whereas the same influence affecting a living system would be 'direct mental influence of living systems' (DMILS), or ESP if the influenced system was a brain/mind. In each case, the 'influence' could be identical but the way in which the 'influenced' system responds is used to categorize the phenomenon. A simple analogy would be to consider a more conventional 'influence': the sound of a repeated hand clap. The generated air-pressure changes ('sounds') would:

- perturb a microphone above its background level (analogous to μPK in this example)
- cause physiological arousal in receptive biological systems (analogous to DMILS)
- would change the mental state of the person who heard 'the applause' in complex ways (analogous to ESP).

In each case, the physical influence was identical, but the outcome would be widely variant, showing differences based on the specifics of the 'influenced' system (including personality differences in the case of the ESP analogy).

So, if psi can be seen in the same unitary way, then we would expect to find psi phenomena clustering together, depending on which systems were present at the site of influence, or which systems were measured in a study. Although not widely researched, a few studies indicate that this might occur: Schmidt (1975) reported µPK effects in a study where the duration of an unpleasant task was (unbeknown to participants except via ESP) linked to the activity of a hidden REG, with the REG showing biases linked to shorter durations of unpleasantness; Osis and McCormick (1980) reported changes in a strain gauge next to an ESP target during successful remote viewing; and Crawford et al. (2003) found that an REG in alternative-healing sessions produced greater than chance perturbations more often than a control REG. Later research projects such as field REG studies and the subsequent Global Consciousness Project (Nelson & Bancel, 2011) suggested that focused mental activity *en masse* was also correlated with perturbations in hidden REGs.

This study therefore looked for perturbations—relative to baseline pre- and post-session control periods—in the activity of an REG located next to the RV agent (i.e., µPK effects) that were associated with successful (target identified) RV sessions but not with unsuccessful (target not identified) RV sessions.

*A novel REG (CMOS-based REG Matrix)*

There have been some unpublished trials using a similar RV-REG protocol which appear to show limited success (Smith & Stahler, 2009). While those researchers report REG deviations during some of the successful RV sessions, the results are erratic. We propose that the issue is a wider one with µPK research using REGs, and relates to the nature of the REGs in common use within parapsychological research. For example. previous studies have looked for REG activity (Berger, 1988; Radin, 1989, 1993; Radin & Nelson, 1989) that might indicate patterns relating to the participant attempting to influence the system. While one might expect such idiosyncratic patterns to exist given that humans are individuals with unique mental and physical attributes, the aforementioned research has only offered limited evidence for such patterning in the REG data, with results that are weak and inconsistent.

We think that the problem arises from the design of REGs, all of which make use of some random physical process that is processed to give a simple sequential binary (1 or 0) output that is far removed from those underlying quantum processes. The most common process used is 'electronic noise', which reflects the quantum mechanical processes within the semiconductor material of the electronic components being used, but where the raw measurements are heavily filtered to remove any correlation between the measured fluctuations in the electronic noise and the final output of the REG. The reasoning behind

this filtering is to ensure that the REGs are not showing a direct response to more mundane environmental events (e.g., fluctuations in the electrical supply) so that any statistical deviations could only be attributed to 'paranormal' influences. Although this may sound useful, there is a huge assumption there: that µPK is not itself a direct influence on the underlying processes that generate the electronic noise but is instead one which depends only on the final form of the output—a legacy of Schmidt's (1975) Teleological (goal-oriented) Model. Indeed, this assumption is explicitly stated in the literature (e.g., May et al., 1995; Schmidt & Pantas, 1980), even though a more recent analysis suggested otherwise (Ibison, 1998). So, as the REG output is only indirectly connected to the underlying random processes, perhaps it is not so surprising that µPK studies looking for consistent patterns have shown weak and often inconsistent results.

One solution is to use a novel REG that directly accesses the same underlying physical process used in standard REGs. Such a system could not be safely used as a source of true randomness (e.g., for cryptographic purposes) due to the aforementioned possibility of external influences, but it is ideal for psi studies comparing the same output between different conditions, where any such external influence would be as likely to occur in each condition. A novel REG of this type can also be conceptualized as being the closest electronic equivalent to the stochastic processes seen in all biological cells, where there is an apparently random component to the opening and closing of ion channels in the cell membrane which is based on the same physical principles imparting the random variation to the standard REG (Hille, 1984). Analysis of the novel REG activity can also be more detailed, going beyond simple deviation statistics, as there is more information to work with.

For this study, we used a different type of semiconductor component: a CMOS sensor. These are the components used to take photos in webcams and other digital cameras, and consist of a matrix of light-sensitive materials. When not exposed to light, such sensors still show fluctuations (referred to as 'temporal dark noise') which are due to the same inherent quantum-level noise as in traditional REG components (typically semiconductor-based diodes). What this means is that a single CMOS chip under dark conditions can be utilized as a matrix of individual REGs (Figure 1), each REG corresponding to a single pixel of the (unfiltered) sensor image. Each pixel contains an 8-bit value between 0 and 255. In simple terms, this allows a series of REG matrix 'images' to be collected, each of which contains a large amount of unfiltered information about the state of the target. This can be reduced to a single mean value (which makes it comparable to a standard REG) or allow a more complex analysis to be undertaken (e.g., looking at spatial patterns within the matrix, complexity measures such as fractal dimension, etc.).

Comparing activity in the same CMOS sensor between experimental and matched-control sessions should then show differences that relate to the

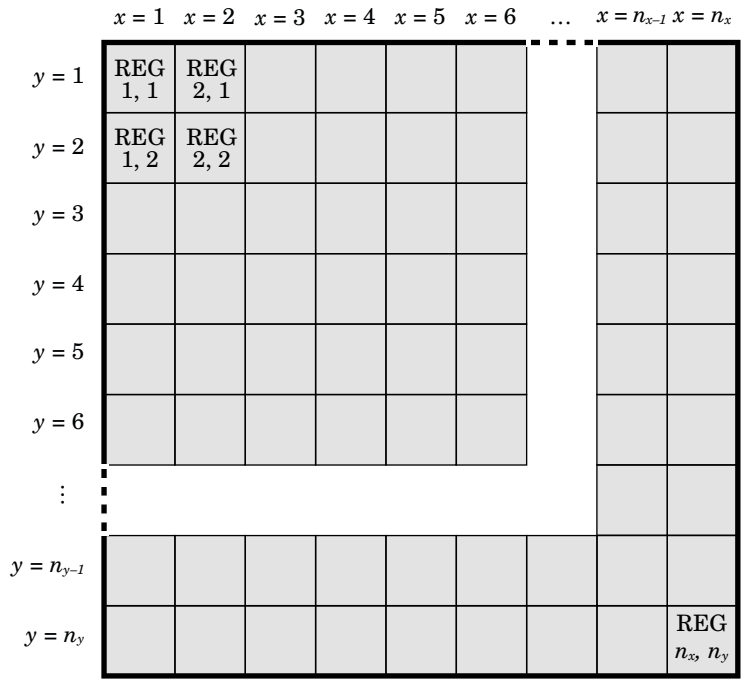


*Figure 1. Schematic of the matrix REG based on a CMOS chip.*

proposed RV-coincident effect plus unrelated and non-systematic random variations. For comparison with the existing literature, this study used a basic 'perturbed' REG-output measure (overall deviation from baseline during first-ranked RV sessions) for the formal hypotheses, with *post hoc* exploratory analyses exploring the possibility of more complex effects.

*Setting*

Given ongoing interest, but little clarity, in the role of the experimenter in psi studies (e.g., Roe et al., 2006), a comparison was included between 'in-person' (in a typical university laboratory setting) and 'online' participants, essentially comparing having an experimenter versus the lack of any experimenter at all. A standardized interface (an automated webpage interface) was used in both conditions, accessed in-person on the laboratory computer screen with an experimenter present, or remotely on the participant's own computer from the location of their choice. No predictions were made—this was simply an exploratory design.

*Hypotheses*

H1. The rankings of remote-viewing targets will be higher for sessions with non-linguistic mentation than for sessions with linguistic mentation, for both participants (H1a) and independent judges (H1b).

H2. REG activity (*Z*-scores) will show greater deviation from the control-session baseline for remote-viewing 'hits' (target ranked as 1) than for remote-viewing 'misses' (target ranked as 2, 3, or 4).

## Method

*Pre-registration details*

While based on a funded research proposal with pre-planned procedures and analyses (available from Fundacao Bial reference PT/FB/BL-2018-180), the study was not preregistered in a public repository.

*Participants*

It was originally planned to recruit 80 participants in total (40 online and 40 in-person), but the appearance of COVID-19 and subsequent lockdowns meant that recruitment suddenly became much more difficult. A decision was therefore taken to stop the study once 60 sessions had been completed. Due to the random condition allocation, this resulted in 33 online sessions and 27 in-person sessions. No analysis, including calculation of the hit rate, was performed prior to these studies being completed, to avoid optional stopping concerns. No demographic information about participants was collected as previous research has not identified any consistent characteristics that affect RV performance and, as per current best practice guidelines in research (Hand, 2018), we only collected data specific to our experimental aims. Recruitment was via advertising on a dedicated website, posts to relevant social media groups on Facebook and Twitter, via a credited student participation scheme for University of Derby students, and word of mouth. Enquirers were sent a standardized information sheet via email with more detailed information and asked to respond with potential dates and available times. On agreement, the experimenters—the first author for online participants, the second author for in-person participants—entered the date and approximate start time into the server database (via a password-protected interface), which then generated a unique, anonymous ID code that was sent to the participant together with joining instructions. There was no reward given to any participants. University of Derby students were required to take part in a number of studies each year, of which this could be one.

*Participant interface*

All sessions (both online and in-person) made use of the same participant interface, accessed via the on-campus laboratory computer, or via the 'online'

participant's own computer from the location of their choice. This interface was an interactive website, written by the first author in PHP, on a private, secure server, using the domain https://psi.wyrdwise.com. Instructions on the website (including recruitment information) framed the study as a 'missing person' scenario (making clear that this was an experimental study to evaluate such a scenario and that the RV agent was not actually missing). Each participant's ID code and IP address were recorded upon log-in to ensure that they only contributed a single RV session. The server software: handled randomization of location selection, target choice, and presentation order; applied a random offset to the start time to avoid the agent knowing the timing of the control and experimental period; emailed reminders and information to participants, experimenters and agent; and provided participants with standardized instructions (after logging in with a unique ID code), and recorded ranking and mentation.

This allowed a standardized double-blind protocol, where both participants and anyone who had contact with participants was unaware of the target choice until all data had been securely recorded. Target selection occurred automatically at 4 a.m. on the day of a RV session, and only the agent was aware of the target until each session was complete. The selection process used the PHP shuffle command (which uses the Mersenne Twister pseudo-random algorithm) to randomly sort the array of eight possible locations. The first four locations in the array were then taken to be the set for that session. The PHP mt_rand function was then used to pseudo-randomly select one of those four locations as that session's RV target, and again to add a randomized offset to the session start time.

*Target sites*

These were actual physical locations, visited in real-time by the same RV agent (the first author). For each session, the target location was randomly selected, along with three dummy locations, from a pool of eight possible locations. These were 'Football playing fields', 'Old quarry in the woods', 'Waterfall', 'Garden view over a valley', 'River flowing under iron bridge', 'Whitworth Centre park', 'Railway station', and 'Church grounds' (labelled L1 to L8, respectively, in Figure 2). A 360° video clip of each site (plus one static picture of each site as a fallback should the video not display properly—see Figure 2) was recorded to be used for participant viewing and ranking. No attempt was made to make targets visually unique (which is very difficult in real-world situations); instead they were selected to have a different overall 'feel', e.g., while both the football playing fields and the park could be described as open and airy, the former had an obvious purpose, with related infrastructure and noise, and was maintained as a flat, monotonous area, whereas the latter had vertical height, and an aesthetic of peaceful beauty and diversity. While there would be potential for visual feature overlap between sites, the experience a person would have if they were present in each site would be very different.


*Figure 2. The eight locations used in the study.*

*REG device*

This was based on the recording of the read-out from a CMOS sensor (Sony ICX098BQ) in a light-excluded digital camera (Philips Toucam Pro 2 webcam), comprising a 640 × 480 matrix of 8-bit (an integer from 0–255) simultaneously recorded values once every 30 seconds during the 40-minute session. This consisted of 20 minutes of control data randomly offset around a 20-minute RV period. The pre-session control data collection was randomly determined to be between 5 and 15 minutes long, and the post-session control data was therefore 20 – (pre-session duration) minutes long, i.e., this could range from a 5-minute pre- plus 15-minute post-session control to a 15-minute pre- plus 5-minute post-session control data collection. This gave a per-participant dataset of 640 × 480 = 307,200 integers every 30 seconds, totalling 24,576,000 data points over a single RV session. Data collection was via a Linux laptop over a USB connection. The raw 'image' data from the camera was accessed using FFMPEG software (https://ffmpeg.org), recorded as a 40-minute raw video AVI in grey mode at a sample rate of one frame every 30 seconds. This was then processed post-session using FFMPEG to extract each of the 80 frames as a 640 × 480 bitmap; the image values were then converted to a 640 × 480 matrix comma-delineated text file using the VIPS open-source image processing software (Cupitt & Martinez, 1996).

*Magnetic field monitoring*

As an early reviewer of the project funding application suggested the (unlikely) possibility that local magnetic fields might affect this type of REG in a psi-mimicking manner, magnetic field strength and variance at the RV site were monitored during each session: The magnetometer in a mobile phone was accessed using a custom app to record the local magnetic field once every 200 seconds, giving 12 readings throughout a 40-minute session (during both control and RV periods). These were then used to calculate a mean magnetic field strength and variance for that session.

*Data analysis*

All analysis was performed using the R statistical programming language (R Core Team, 2013). As well as more standard statistical analysis, two complexity measures were used for the raw REG data. Both of these calculated the fractal dimension (*FD*) of the REG activity. This is a non-integral quantity that relates to the number of self-similar pieces that an object can be 'broken into' at different scales (e.g., see Glass & Mackey, 1988, p. 53). So a simple line can be broken into as many self-similar pieces as you want at any magnification: you can break it in half and get two pieces (termed a 'magnification' of 2), into three pieces at a magnification of 3, or $N^1$ pieces at a magnification of $N$. A square, however, can be broken into four self-similar pieces, where each piece has sides that are half as long as the original, or nine self-similar pieces with sides one-third as long as the original; that is, you get four pieces at a magnification of 2, nine pieces at a magnification of 3, or $N^2$ pieces at a magnification of $N$. This pattern thus gives us a simple power-law-based definition of fractal dimension: *FD* = log(number of self-similar pieces)/log(magnification factor). A commonly used technique for estimating *FD* is the box count technique (Abarbanel, 1996), which has been useful when looking at human responses to natural stimuli (e.g., Stevens, 2018); this was implemented here using the fd.estim.boxcount function in the R *fractaldim* package (Sevcikova et al., 2014). Additionally, a second technique was employed that makes more use of the two-dimensional nature of the data from each REG frame; it performs a similar calculation but looks at the variation along rows and columns of a two-dimensional surface and is often used to characterize the 'roughness' of a surface in landscapes or mineral planes (Loehle, 1994). It was implemented here using the fd.estim.transect.var function, also in the R *fractaldim* package.

PROCEDURE

At 4 a.m. on the day of a pre-scheduled RV session, the server automatically selected one set of four locations, and allocated one of those locations as the target. An automatic email was then sent to the agent [PS] giving the location of the target site to be visited and the time at which they should be there; this was

randomly determined to be between 5 and 15 minutes prior to the actual start time, to allow for pre-session control data to be collected, and to avoid the agent knowing precisely when the RV would take place and thus avoid potential agent-originated PK effects on the REG. An automatic reminder was also sent to the participant—and to the on-campus researcher [BR] for in-person sessions—of the pre-agreed start time for their session. Participants were randomly assigned to either the non-linguistic (drawn mentation) or linguistic (typed mentation) condition. For online sessions, the participant could be located anywhere in the world and acted alone; for in-person sessions, the participant was present at the University of Derby campus and accompanied by a researcher [BR]. At their instructed time, the agent was physically present at the target location and started the REG data collection along with magnetic field monitoring. They remained there for 40 minutes (giving a total of 20 minutes control and 20 minutes RV data). During that time, the agent interacted with the site, paying attention to where they were and not engaging in any subsidiary activity. Notes were taken of any noteworthy or unusual events.

Meanwhile, as per instructions in their email, the participant logged in to the website using their unique ID code, ready to start at the pre-specified time (which included an extra 4 minutes to do a relaxation exercise), and asked to confirm their voluntary participation and informed consent. They then saw a countdown showing the remaining time until their session was due to start. After logging in, all participants were shown a standard brief that summarized the idea of RV, framed within a missing person scenario, along with instructions for the session. They were also shown a photo of the 'missing person' (the agent) who they were being asked to attempt to locate via RV. At the designated start time, participants saw an on-screen prompt asking them to listen to a short relaxation exercise (audio imagery for progressive relaxation) which lasted for 4 minutes. They then heard an audio cue and were instructed to begin their RV attempt, and were prompted to either draw (on paper) or type a description of (in an on-screen text box) any mental imagery that they experienced relating to their RV attempt. If the participant was in the non-linguistic drawing condition, it was emphasized that they should not write any words at all.

At the end of the RV period, participants in the non-linguistic condition were asked to photograph their drawing and upload it to the website via an on-screen form. Participants in the linguistic condition were given a 30-second warning prior to the end of the period to finish typing, and their mentation was then automatically saved on the server. The screen then changed to show all four video clips of the different locations (one being the actual target site and the other three being decoys, i.e., the remaining clips from the target set, in pseudo-randomized order). Participants could view each as many times as they wished simply by clicking on the relevant video image. They were instructed to view the clips and assign a ranking to each one, where 1 was assigned to the clip that most resembled their mentation and 4 was assigned to the clip

that least resembled their mentation. Rankings were assigned via a drop-down menu on-screen, and software checks made sure participants could not allocate the same rank to more than one video, and that all videos were ranked. They then submitted their ranking, at which time the decoys were removed from the screen and the actual target video was revealed to them along with a display for their mentation. They were thanked for their participation and provided with an email address for comments or further questions. They were also asked whether, given a free choice, their preference would have been to have drawn or typed their mentation and told that the overall study results would be emailed to them once analysed if they so wished.

Finally, after all 60 sessions were completed, an independent judge was shown the same target plus dummy clip selections along with the accompanying mentation writing/drawings and asked to rank them for correspondence to the mentation.

## Results

### *Randomization of target pool*

Table 1 shows the number of times each location was selected as part of a set of four, as the target, and the order in which it was shown to the participant during the judging process.

As would be expected from a pseudo-random selection of locations, there was some variation in the frequency with which each location appeared in experimental sessions (as target or as dummy—see Table 1). A chi-square test of display position showed no significant deviation from expected values: $\chi^2(21, N = 240) = 24.76\ p = 0.26, V = 0.07$. Similarly, a chi-square test of selection frequency was also non-significant: $\chi^2(7, N = 300) = 4.51, p = 0.72, V = 0.05$. Randomization of location selection was therefore satisfactory.

Table 1.

*Frequency of locations selected as decoys and as target*

| Location | Displayed in position | | | | No. of times selected | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | From pool | As target |
| L1: Football playing fields | 4 | 12 | 13 | 6 | 35 | 13 |
| L2: Old quarry in the woods | 8 | 11 | 5 | 7 | 31 | 7 |
| L3: Waterfall | 8 | 8 | 3 | 10 | 29 | 5 |
| L4: Garden view over a valley | 11 | 3 | 7 | 10 | 31 | 11 |
| L5: River flowing under iron bridge | 5 | 9 | 5 | 10 | 29 | 7 |
| L6: Whitworth Centre park | 11 | 7 | 7 | 7 | 32 | 8 |
| L7: Railway station | 8 | 5 | 10 | 5 | 28 | 4 |
| L8: Church grounds | 5 | 5 | 10 | 5 | 25 | 5 |

*Evidence of remote viewing*

Table 2 summarizes the direct hits (target given first ranking) by condition and setting, along with the measure of effect size (proportion index, Π: Rosenthal, 1991, p.123) and associated z-score.

Table 3 summarizes the same measures based on the ranking by an independent judge.

A closer look at the distribution of the ranks given to the RV target (see Table 4) shows some possible differences between non-linguistic and linguistic modes for participant judging, with very few fourth ranks and quite high third ranks. However, a chi-square contingency test for non-linguistic versus linguistic participant rankings showed this was non-significant: $\chi^2(3, N = 57) = 5.55, p = 0.14, V = 0.31$.

TABLE 2.

*Direct hits (RV target ranked as 1 by participant) by condition and setting*

| Condition | Participant hits (target ranked as 1) | | | Proportion index, $\Pi$<br>$z$ ($p$-value) |
|---|---|---|---|---|
| | Online<br>($N$ = 30) | In person<br>($N$ = 27) | All<br>($N$ = 57) | |
| Non-linguistic<br>($N$ = 28) | 5 | 4 | 9 | 0.59<br>1.26 (0.10) |
| Linguistic<br>($N$ = 29) | 7 | 2 | 9 | 0.57<br>1.06 (0.14) |
| Total<br>($N$ = 57) | 12 | 6 | 18 | 0.58<br>1.16 (0.12) |
| Proportion index, $\Pi$<br>$z$ ($p$-value) | 0.67<br>2.77 (0.02) | 0.46<br>–0.49 (0.31) | 0.58<br>1.16 (0.12) | |

TABLE 3.

*Direct hits (RV target ranked as 1 by independent judge) by condition and setting*

| Condition | Participant hits (target ranked as 1) | | | Proportion index, $\Pi$<br>$z$ ($p$-value) |
|---|---|---|---|---|
| | Online<br>($N$ = 30) | In person<br>($N$ = 27) | All<br>($N$ = 57) | |
| Non-linguistic<br>($N$ = 28) | 3 | 1 | 4 | 0.33<br>–1.98 (0.02) |
| Linguistic<br>($N$ = 29) | 4 | 2 | 6 | 0.44<br>–0.76 (0.22) |
| Total<br>($N$ = 57) | 7 | 3 | 10 | 0.39<br>–1.33 (0.92) |
| Proportion index, $\Pi$<br>$z$ ($p$-value) | 0.48<br>–0.29 (0.25) | 0.27<br>–2.72 (0.003) | 0.39<br>–1.33 (0.92) | |

TABLE 4.

*Frequency of RV target ranks for participant and independent judging*

| Judging by | | Target rank | | | | Mean target rank |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | |
| Participant | Non-linguistic | 9 (32.1%) | 8 (28.6%) | 10 (35.7%) | 1 (3.6%) | 2.1 |
| | Linguistic | 9 (32.1%) | 7 (25.0%) | 6 (21.4%) | 7 (25%) | 2.4 |
| | All | 18 (31.6%) | 15 (26.3%) | 16 (28.1%) | 8 (14.0%) | 2.3 |
| Independent | Non-linguistic | 4 (14.3%) | 6 (21.4%) | 10 (35.7%) | 8 (28.6%) | 2.8 |
| | Linguistic | 6 (21.4%) | 9 (32.1%) | 5 (17.9%) | 9 (32.1%) | 2.6 |
| | All | 10 (17.5%) | 15 (26.3%) | 15 (26.3%) | 17 (29.8%) | 2.7 |

A Wilcoxon rank sum test was performed to see whether, as predicted, non-linguistic participant target rankings were lower, but the difference was non-significant: $Z = -0.83$, $p = 0.21$ (one-tailed), $r = 0.11$. A subset analysis was also performed for the online participants only (mean target rank of 2.1 for non-linguistic versus 1.9 for linguistic) and was also non-significant: $Z = 0.64$, $p = 0.75$ (one-tailed), $r = 0.11$. For completeness, the same test was carried out for independent judging rankings, which was again non-significant: $Z = 0.661$, $p = 0.75$ (one-tailed), $r = 0.09$.

There was no indication that preference for a particular mode affected the outcome: of the RV hits, seven were in the preferred mode, six in the non-preferred mode, and five had no preference.

*Coincident REG activity*

Raw data from the REG showed a non-linear trend of increasing mean over the duration of the session (a temperature-linked effect that is common in CMOS chips) so it was detrended via a twice-differencing process (using the diff function in R: Holmes et al., 2021). Detrended data was split into control and RV periods for each participant and a $z$-value calculated for each 640 × 480 frame, based on the standard deviation of the data from that participant's entire dataset (continuous 40-minute control and interspersed RV sessions). These were then combined to give an overall Stouffer $Z$ as the base measure for each control and RV session dataset per participant. Overall means of these values are shown in Table 5 and are visualized in Figure 3 for both RV hits and misses versus their associated control periods. The expansion of the REG activity, showing the by-frame profile of mean REG activity (i.e., how it changed on average over the 20-minute session) can be seen in Figure 4.

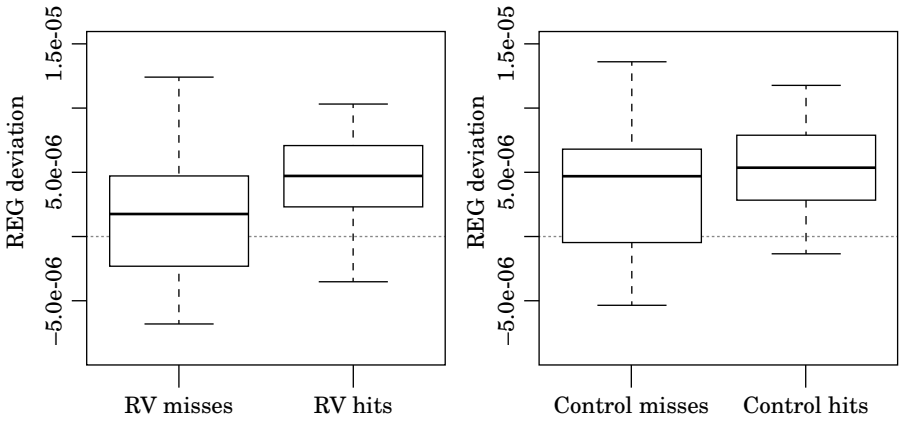


*Figure 3. REG deviation (Stouffer Z values) in the RV periods (left) and control periods (right) for hits versus misses.*

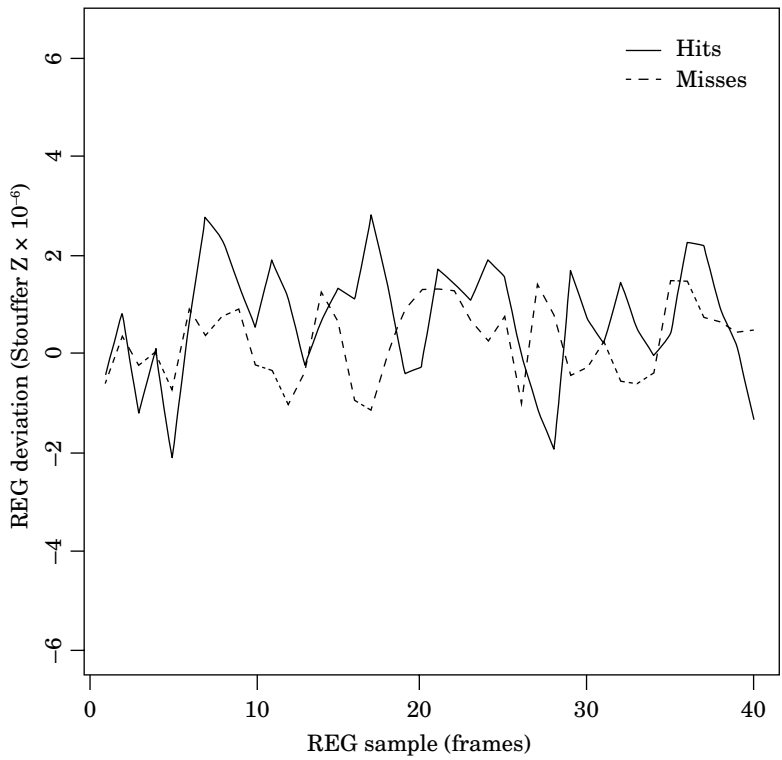


*Figure 4. Profile of mean REG deviation (Stouffer Z values) for RV hits versus RV misses.*

TABLE 5.

*Mean of combined (Stouffer) Z scores showing REG deviation from baseline*

| | Control | RV | RV | | Control | |
|---|---|---|---|---|---|---|
| | | | Hit | Miss | Hit | Miss |
| *N* | 44 | 44 | 16 | 28 | 16 | 28 |
| Mean $Z_{Stouffer}$ | $3.96 \times 10^{-6}$ | $2.69 \times 10^{-6}$ | $4.44 \times 10^{-6}$ | $1.68 \times 10^{-6}$ | $4.70 \times 10^{-6}$ | $3.54 \times 10^{-6}$ |

A pre-planned independent-samples *t*-test of REG activity (based on the individual Stouffer *Z* values for each participant in the two groups) in the RV period, predicting that RV hits will show higher *Z* values than RV misses gave $t(42) = 2.00, p < 0.05$ (one-tailed), one-sided 95% CI [$-4.36 \times 10^{-7}$], $d = 0.60$, which was a statistically significant difference. For comparison, the corresponding control period data for hits versus misses gave $t(42) = 0.72, p = 0.24$ (one-tailed), one-sided 95% CI [$-1.6 \times 10^{-6}$], $d = 0.23$, which is a small yet statistically non-significant effect. *Post hoc* tests showed REG activity was not significantly different between the RV and control periods overall: $t(86) = -1.20$ $p = 0.23$, 95% CI [$-3.38 \times 10^{-6}$, $8.33 \times 10^{-7}$], $d = 0.26$. For misses only: $t = -1.37, p = 0.91$ (one-tailed), one-sided 95% CI [$-4.13 \times 10^{-6}$], $d = 0.36$. For hits only: $t(30) = -0.16, p = 0.56$ (one-tailed), one-sided 95% CI [$-3.03 \times 10^{-6}$], $d = 0.06$. Again, these are statistically non-significant results, albeit with a moderate effect size in the case of the comparison of RV and control periods for misses, primarily driven by lower RV misses *Z* values.

*Magnetic fields*

No statistically significant effects were found between magnetic field strengths or variances and REG activity (see Table 6).

TABLE 6.

*Correlations between local magnetic field strength and REG activity*

| Correlation with REG activity ($Z_{Stouffer}$) | Magnetic field intensity | | Magnetic field variance | |
|---|---|---|---|---|
| | RV | Control | RV | Control |
| Spearman rho (*p*-value) | –0.03 (0.87) | 0.14 (0.43) | 0.12 (0.48) | 0.11 (0.51) |

*Complexity analyses*

Two exploratory analyses were carried out, looking at the complexity of the raw REG activity by calculating the *FD* (Table 7), with the prediction that hits and misses would show different *FD* values.

The *t*-tests of the complexity of REG activity for hits versus misses in the RV period gave: for the box-count method, $t(41) = 0.81$, $p = 0.43$,

TABLE 7.

*Comparison of the fractal dimension (FD) for REG activity obtained by the box-count and the transect methods*

| | Control | | | RV | | |
|---|---|---|---|---|---|---|
| | All | Hit | Miss | All | Hit | Miss |
| Mean $FD_{\text{Box count}}$ | 1.73 | 1.73 | 1.73 | 1.72 | 1.72 | 1.73 |
| Mean $FD_{\text{Transect}}$ | 2.71 | 2.70 | 2.71 | 2.71 | 2.70 | 2.71 |

95% CI [–0.007, 0.018], $d = 0.29$; and for the transect method, $t(41) = 0.33$, $p = 0.74$, 95% CI [–0.006, 0.008], $d = 0.11$. That is, there is no significant difference for either of the fractal dimension measures. For comparison, the respective control period data gave $t(41) = 0.14$, $p = 0.89$, 95% CI [–0.009, 0.01], $d = 0.05$ for the box-count method, and $t(41) = 0.28$, $p = 0.78$, 95% CI [–0.005, 0.006], $d = 0.09$ for the transect method.

## DISCUSSION

### *Evidence for remote-viewing*

Overall, there were 57 fully completed sessions with usable data, with 18 direct hits. This gave an effect size of 0.58, which is slightly less than the mean value for $\Pi = 0.62$ given by Bem and Honorton (1994) in their Ganzfeld meta-analysis. There was a marked difference in hit rate when comparing participants who took part in person (i.e., being present on the university campus and having contact with an experimenter) and those who took part online. As the same automated program was used for both settings, the primary variables that differed were that in-person participants had contact with an experimenter [BR] during the session, and, perhaps most pertinently, were all students participating for course credit. This suggests a potential psychological experimenter effect due to BR's interaction with participants, or differing motivation of the students. Anecdotally, the online participants were highly motivated, with a number of them having been recruited via information posted to social media RV discussion sites, with some spontaneously mentioning in emails that they had taken part in previous RV training (i.e., were not novice participants). This is a feature of internet-based studies that has been noted previously: online participants are "generally volunteers, so data quality may be improved because their motivation and involvement may be higher than that of college students who participate not out of any real interest, but to fulfil course requirements or to earn pocket change" (Skitka & Sargis, 2006, p. 545). While target randomization was satisfactory, it is also interesting to note (albeit with tongue firmly in cheek) that the two most commonly selected targets were the two locations closest to the agent's home. Given the inclement weather that occurred during many of the sessions, this could be seen as fortuitous experimenter psi!

*Non-linguistic versus linguistic mentation*

The entire dataset showed that non-linguistic mode participants achieved 9 hits out of 28 sessions, and linguistic-mode participants had 9 hits out of 29 sessions. Given the only evidence of RV was in the online group, that group was analysed on its own, but still showed no significant difference between non-linguistic and linguistic modes. Hypothesis H1a was therefore not supported, as it appears the mode in which mentation is expressed does not affect the outcome. It was noted that, despite repeated exhortations to not write on drawings (in the non-linguistic condition) or to make additional drawings while typing the mentation (in the linguistic condition), some of the submitted drawings did contain text, and some post-session remarks from a few linguistic-condition participants suggested they had also made drawings. This would have blurred the distinction between conditions but seems unlikely to have been able to completely remove an effect had it been there. Congruence between a participant's stated preference for either typing or drawing and the condition they had been assigned to also did not affect the outcome. So, it seems that the mode of mentation in RV studies is unlikely to be something that needs further consideration with respect to successful outcomes.

*Independent judging*

The independent judge rankings did not match the participant rankings. This could suggest that the mentation did not contain useful information pertaining to the target (i.e., the participant's judgements were based on other factors such as hunches rather than conscious impressions). However, the independent judge's rankings were such that they *avoided* ranking the target as first rank so often that it was a statistically significant anomaly in both the non-linguistic condition and the in-person setting. This could suggest that the mentation did contain target-relevant information but, for whatever reason, it led the independent judge to consistently choose incorrectly (a case of 'psi missing' in parapsychological parlance). However, this does mean that hypothesis H1b was not supported, and so suggests that independent judges are not useful in RV studies.

*Mentation*

There was no consistency to the mentation from different participants, within or between conditions, or in comparing hits to misses. For example, the most detailed typed mentation was 247 words in length, and the shortest just five words, but both scored a direct hit. There were a couple of anecdotal 'best hits': one, where a local park was the target, talked about a "multicoloured spiral circus tent" on a day when a fun fair had unexpectedly arrived on site; another, where the target was the tree-lined grounds of a church, where the agent was sitting on a bench, simply drew the picture seen in Figure 5.

*Figure 5. Mentation sketch example of a correctly identified target (the Church grounds).*

As mentioned earlier, some participants found it difficult to express their mentation in the specified mode. For example, one participant drew a very basic sketch of a stick man by a road, but then also emailed (prior to the target being revealed) to say that it was meant to be a road "cut through an embankment or hillside"); the actual (correctly identified) target was the garden view, but the end wall is above the road, which is cut into the hillside, which is not visible from the video. This, and the fact that several participants mixed text and images, does suggest the best protocol would be to allow remote viewers to express their mentation in whatever manner suits them. While this is harder to fit into a standardized protocol (and to analyse!), it might better fit the mix of impressions participants report.

Having participants upload photos of their drawings worked well (with a backup plan of allowing them to email their drawings in prior to the target being revealed), as did the typing of the mentation into an online box (an HTML form textbox) with automatic save. The majority of participants in the online condition engaged very well with the protocol and expressed enjoyment of the experiment, as well as the ease of being able to participate from home.

*REG activity*

Based on the calculation of per participant Stouffer *Z* values, hypothesis H2 was supported: the REG did show significantly greater deviation from baseline for RV hits versus misses. Comparison of hits versus misses for the control periods showed no significant difference. RV periods overall (hits and misses combined) were not significantly different from the control periods overall, nor were there any significant differences between RV and control data for hits or misses. However, looking at the mean values, it appears that this effect is due to a lower mean (larger negative deviation) in the misses than in the hits. There was only a slight decrease from baseline (compared to control data) for hits, and neither RV hits nor RV misses showed significant deviation from control data. This suggests that there is a statistically measurable difference in REG activity between successful and unsuccessful RV sessions, which, if replicable, would be very useful in future studies. However, the meaning is hard to interpret as it suggests that the REG is responding by showing lower activity (in terms of the underlying quantum noise) when participants are attempting to remote view the location where the REG is present but are not able to use their subsequent mentation to correctly identify that target location. When they are able to make this identification, REG activity is not affected.

The closest comparison to this type of REG use in experimental work is the fieldREG (e.g., Crawford et al., 2003) and Global Consciousness Project studies (e.g., Nelson & Bancel, 2011), which suggest that strong emotions or (perhaps) psi activity increases coincident REG activity. This could suggest that RV misses were accompanied either by a lack of emotional engagement or a lack of whatever processes psi involves, but, again, this doesn't explain why the REG activity during RV hits was statistically indistinguishable from the control data. The only highly speculative suggestion that I can think of is that there may be stronger emotions at play when a motivated participant feels they are not successful, and this affects the REG in a measurable way. This could be evaluated in future laboratory studies by monitoring affective correlates (e.g., electrodermal activity) to determine if misses relate to stronger emotions.

An attempt was made to look at the REG activity in more detail by plotting the profiles (i.e., looking at the REG activity from each of the 80 'frames'), but this did not reveal any consistent patterning other than a possible slight increase in the mean and variance of hit-related activity in the early parts of the session. This was looked at in a *post hoc*, split-half analysis, which confirmed that the RV hit versus miss effect appeared only in the first half of the session data, with a similar, though smaller, effect also appearing in the first half of the control data for hit versus miss. This could be looked at specifically in future experiments, to better understand when in the process of RV any target-related information is gained, or at least how participants respond during RV.

No correlation was found between local magnetic field activity and REG activity, confirming that this type of device is relatively robust against external

influences (other than temperature, though this is a consistent trend easily compensated for).

The complexity measures, based on the fractal dimension of the REG activity as a continuous stream and as a set of two-dimensional surfaces, did not show any significant differences between hits and misses, or for overall RV session data versus control data. One of the reasons for using this type of device as the REG was that it allowed more detailed data to be collected, the analogy being that a traditional REG is akin to a rubber duck floating on the surface of a sea of quantum noise (with some additional constraints due to filtering), whereas the CMOS-based device is more like seeing a section of that sea surface directly. The hope was that this might allow patterns to be observed. However, no such patterns were discernible in this study. It may be that they exist and that more complex analysis or a higher sampling rate are needed, but these would produce a much larger body of data, with much longer processing time (e.g., even the basic transect analysis performed in this study took around 96 hours of continuous processing time on an i5 1.2GHz Linux laptop with 8GB RAM). Given the lack of useful complexity outcomes coupled with the positive results found when treating this CMOS REG in the same manner as traditional REGs, it may be more useful to attempt to replicate this study using a traditional REG setup for coincident detection before recommending others make use of similar CMOS REG devices.

### Conclusions

This study demonstrated that RV can successfully be performed with a minimal setup, using a standardized webpage interface. There was evidence of successful RV only with online (versus in-person) participants, probably due to differing levels of motivation of participants (the in-person participants being students participating for credit) and possibly non-naive subjects in the online condition. No differences were seen based on the mode of mentation (linguistic or non-linguistic). The novel CMOS REG did show significant differences in activity for hits versus misses, suggesting its usefulness as a coincident detector, but there are doubts as to whether the more complicated design is needed, as opposed to the simpler REG used in micropsychokinesis studies.

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## BOOK REVIEWS

### APPARITIONS AT THE MOMENT OF DEATH: THE LIVING GHOST IN LEGEND, LYRIC, AND LORE

*By Daniel Bourke. Destiny Books. 2024. 308 pp. £19.76.*
*ISBN 9798888500569*

Any study or investigation of phenomena other than those firmly fixed to and rooted in the physical universe meets the immediate problem of scepticism at best and immediate dismissal at worst. Evidence presented in favour of a possible inclination towards amenable discussion of these phenomena therefore has to be wide ranging, cumulatively suggestive, and forensic. Daniel Bourke's new book fulfils the first two of these criteria. His range of reference, based upon an impressive amount of reading, is remarkable. It spans virtually the whole world, from Scandinavia to Australia and the USA to the Far East, historical chronology from 3000 BC to 2022 AD, and a great diversity of literature of every kind, both religious and secular. One cannot but admire the industry that has gone into producing such a comprehensive and potentially fruitful body of material, for which researchers and other investigators will certainly be grateful and note Bourke's observation that "the idea that we 'die alone' may be one of the strangest and most criminally unsubstantiated of all our platitudes" (p. 231).

Bourke's aim is clearly to provide a full and wide-ranging body of evidence to support the proposition that there can be and is interpenetration between the present temporal world and other potential states of being, and that there is a much wider set of evidential indicia for this than has been realized and set before interested parties before. The book is divided into ten chapters and covers disparate types and possibilities of crisis apparitions and related phenomena—ghosts, dreams, visions, voices, noises, and revelations both of individual deaths and post-mortem spiritual states of being. In his conclusion, Bourke also sketches directions that further work on the subject matter could take, including the novel suggestion that "a similar survey of solely poetic sources would bear great fruit; so too would a deep dive into still untranslated, non-European medieval, and especially Latin literature … Work could begin in establishing links between particular accounts and biblical or pre-biblical motifs … Statistical analysis could be applied" (p. 230).

The principal modes of Bourke's reportage fall into two very general types which one may perhaps call 'journalistic' and 'literary'. Both types call for a fairly similar approach to enable the reader to evaluate both them and their contribution to the overall argument or thesis, but if one is looking at evidence drawn from 'literary' (i.e. fictional) sources, one is inevitably faced by the questions: 'What makes this evidence reliable as a guide to anything other than the imagination of the writer? Who wrote it? When? Under what circumstances? What external influences, such as that of the culture prevailing at the time of writing, were or may have been brought to bear on the writer at the time of his or her writing?' (Such questions are obviously relevant and important, of course, whichever 'type' of evidence one is considering, but are of particular importance if one is presenting 'literary' material to a sceptical audience whose reactions to this kind of subject matter are likely to be rooted in the assumption that only physicality can be 'real' or 'true'. 'Facts, facts, facts', as Dickens's Mr Gradgrind insisted.)

One of the drawbacks to Bourke's book is that it concentrates on the presentation of possible evidence but offers little or no discussion of it. It is not sufficient, for example, to assume that 'literary' evidence is likely to be based in some way upon 'journalistic' reports, whether known to the author personally or assumed by him or her from a knowledge of tradition or presumption in the prevailing culture. The reader requires more, for example, than the bare statement that "Dido, the legendary queen … had a similarly revealing dream, according to the Greek historian Appian" (pp. 43–44). The statement, as such, is perfectly true, but in what way or ways does what it says contribute to an argument in favour of the freshness of the reported dream of a fictional character's contribution to a philosophical–religious exploration of the possible reality of a crisis apparition? Is the mere weight and volume of evidential material enough to convince a sceptical reader and either overcome or at least make a dent in his or her reservations?

Bourke's approach is characteristic of many early modern treatises on witchcraft and magic, but modern readers, with different assumptions and approaches to argument, are perhaps less inclined to be battered into submission. At one point—chapter 3—it is true, Bourke appears to be about to present an important discussion on 'Those Who See, Those Who Don't', but the discussion never materializes. Instead, the reader is offered quantities of illustrative extracts drawn from Bourke's wide reading, but nothing further. To be fair, occasionally Bourke does make gestures in the direction of commentary: "It is important to note that distinctions between *kinds* of dreams were often very carefully made" (p. 36, Bourke's italics); "while in-depth comparisons between more literal, legendary, and literary accounts are not the primary aim of this survey as such, there is a need to provide greater historical context than is generally offered for these visions in order for us to understand them better" (p. 29). Unfortunately, these interesting gestures are not followed up in any detail. Bourke is well acquainted with modern scholars' observations on some of the material he describes—"Carol

Zaleski or folklorist Gillian Bennet noted more directly the connection between the 'Peak in Darien' experiences recorded by Gregory the Great and those reported to parapsychologists more than a millennium later" (p. 199)—so one would have liked to see at least some of these other observations pursued a little further.

In one of his books, Edward Bever, in a chapter dealing with divination and prophecy, makes a pertinent observation: "In a few instances, any validity of the knowledge these people might have gained could only have come by chance or from some process of information transfer that is on the fringe of or beyond modern scientific understanding, but for the most part the insights and revelations, guidance and instructions can be explained most efficiently as the results of unconscious cognitive processes that could rise to consciousness spontaneously, but access to which could also be cultivated through ritual and fostered by belief" (Bever, 2008, p. 269). Whether Bever is right or not, his material—equally voluminous—enables his readers to begin to assess his extensive evidence and so to progress their own opinions on the subject. It would have been useful had Bourke either sacrificed some of his repetitive material, or been willing to extend his book further, to do something of the same kind. As it is, the reader is in danger of indigestion from consuming so much material, without being offered many pauses to digest it before being overwhelmed by yet more being piled on his or her plate. That said, however, Bourke has done his subject matter a great and interesting service by laying so much material in front of his readers, and for that he deserves their thanks.

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## GHOSTS OF THE BRITISH MUSEUM: A TRUE STORY OF COLONIAL LOOT AND RESTLESS OBJECTS

*By Noah Angell. Monoray. 2024. 256 pp. £20. ISBN 9781800961340*

Noah Angell's *Ghosts of the British Museum* is an engaging and meticulously researched exploration of the phantoms and the mysterious stories intertwined with one of the world's most iconic cultural institutions. Angell delves deep into the hidden narratives and ghostly lore of the British Museum, offering readers a unique blend of historical context, folklore, and thoughts on what it could be like given the opportunity to conduct a paranormal investigation there.

Angell structures his book with each chapter focusing on different types of hauntings or specific areas within the museum. This organizational format not only allows for a comprehensive exploration of the subject matter but also

invites readers to experience the museum's various haunted facets in a more immersive and engaging manner.

### Historical and cultural context

One of the book's primary strengths lies in its examination of ghostly encounters within the broader history of the museum and its collections. Angell explores the origins of various artefacts and their potential connections to paranormal phenomena. For example, he delves into the histories of objects that might carry residual energies or memories of their past owners, providing a basis for the ghostly activities reported. Further expanding the thought that if ghosts still carry their religious beliefs into the afterlife, is all forgiven and forgotten when housed in the same building with artefacts considered their opposition? This approach not only enriches the ghost stories but also offers a deeper appreciation of the museum's extensive and diverse collections.

Angell's meticulous research is evident throughout the book. He draws on a wide array of sources, including archival documents, interviews with museum staff and visitors, and existing literature on paranormal activity. This thorough documentation lends credibility to elements of the stories, making them all the more intriguing for readers.

### Narrative and storytelling

Angell's talent in storytelling provides a blend of historical facts with personal anecdotes and ghostly legends, creating a narrative that is both informative and intriguing. His writing style is engaging and accessible, making complex historical and cultural details easy to digest. The book is peppered with vivid descriptions and atmospheric details that transport readers into the eerie world of the museum after hours.

Each chapter reads like a carefully crafted short story, complete with characters, settings, and a plot that unfolds. Angell's ability to weave together multiple narratives while maintaining a coherent and compelling overarching theme is commendable. This narrative approach not only makes the book a page-turner but also allows readers to connect with the material on a deeper emotional level.

### Visual and aesthetic elements

In addition to its rich textual content, *Ghosts of the British Museum* is also a visually engaging book. Angell includes illustrations of artefacts and the blueprint map of the museum itself (within the cover), which enhances the reader's experience and provides a sense of place. These visual elements are thoughtfully integrated into the text, complementing the stories and helping to bring them to life. The inclusion of such visuals not only makes the book more appealing but also aids in the reader's understanding and appreciation of the museum's haunted history.

## Speculative approach

Angell's willingness to entertain various interpretations of paranormal phenomena is also one of the book's strengths. His speculative approach to certain stories, where concrete conclusions are often elusive, might leave some readers feeling frustrated. However, this open-endedness is also part of the book's charm, as it encourages readers to form their own opinions and engage in further exploration of the mysteries presented.

Angell does not shy away from presenting multiple perspectives and possible explanations for the hauntings he describes. This balanced approach, where there is a certain level of scepticism and belief coexisting, is particularly appealing. It demonstrates a respect for both scientific inquiry and the human fascination with the unknown, making the book a thoughtful contribution to the topic of the paranormal.

There is, however, a sense of sadness in some parts of the book. Angell describes times in history when peaceful negotiations were certainly not utilized in obtaining many artefacts that are still stored well out of the public eye. And the reasons given for their storage are equally challenging.

The book also encourages a deeper contemplation of the relationship between history, memory, and the paranormal. Angell's exploration of how historical events and cultural artefacts might influence ghostly phenomena offers fresh insights into the potential nature of hauntings. It invites readers to consider the ways in which the past can continue to impact the present, and how the physical and metaphysical worlds might intertwine.

## Conclusion

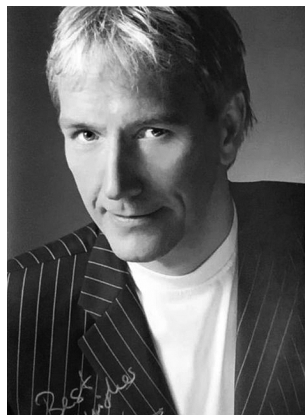
Angell's *Ghosts of the British Museum* is a thought-provoking exploration of one of the world's most storied cultural institutions. His skilful storytelling, combined with rigorous research and a balanced approach to the paranormal, makes this book a great read for anyone interested in ghost stories, cultural history, and surface-level psychical research. Angell not only sheds light on the ghostly inhabitants of the British Museum but also encourages readers to ponder the deeper connections between history, memory, and the paranormal.

*Ghosts of the British Museum* offers both a rich source of ghostly lore and methods used for conducting thoughtful and balanced investigations into the paranormal. Angell's work demonstrates the enduring allure of ghost stories and the ways in which they continue to captivate the imagination, and the possibility to challenge our understanding of the world around us.

*beth@accessparanormal.com* Beth Darlington-Bailey

# OBITUARIES

## HOWARD HUGHES
## 1958–2024



On 16th November 2024, I learned of the news of the passing of Howard Hughes. BBC news and other outlets announced his death the following day. I was devastated, and still feel the impact of his sudden passing and my own disbelief that I should be writing this obituary.

Hughes had been a newsreader and presenter for BBC Radio Berkshire when it first aired in 1992, before moving over to read the news for Capital Breakfast Show—alongside Chris Tarrant of *Who Wants to be a Millionaire?* fame. He'd interviewed figures such a David Bowie, Lionel Richie, and former prime minister Tony Blair, and provided live coverage for the death of Princess Diana in 1997, and the London 7/7 terror attack in 2005.

With a long-time interest in the paranormal, Hughes forever reminded me—even when I was live on radio with him—that in his early days of radio at the age of 22, he took it upon himself to travel to the University of Nottingham and interview Dr Alan Gauld about parapsychology (former SPR president 1992–1993 and vice president). In one of our interviews of 2023, Hughes even played an extract from that interview which the many listeners and I were delighted to hear.[1]

*The Unexplained with Howard Hughes*,[2] as it was titled, ran from 2006 to 2024. This was his pet project which had followed him in all formats, from his own podcast, to TalkTV and TalkRadio, and also *The Unexplained* cruise, the latter

1. I am currently trying to retrieve the full interview of Hughes and Gauld with a view to transcribing it for SPR members for perhaps a feature in the *SPR Magazine*.

2. All past podcasts from a wide variety of guests are available to search through, listen to, and/or download at the website: https://theunexplained.tv


*16th October 2022, TalkTV live,* The Unexplained with Howard Hughes*, discussing the phenomenon of* déjà vu *and then plugging Dr Alan Gauld's book, which had just been published.*

having started only a couple of years ago. Council member, Dr Melvyn Willin, attended the cruise as a speaker in 2022. I was asked to be part of the 2023 cruise but opted for 2024, which alas, due to Howard's illness, did not come to pass.

Over this near 20-year period, Howard interviewed a wide variety of people on strange phenomena, from conspiracy theories, to UFOs, to life after death. Looking on his website at the back catalogue of interviews to listen to and download, there are a number of noted names in psychical research and parapsychology that he spoke with, for example: Dr Allan Botkin, Dr Ciarán O'Keeffe, Dr Dean Radin, Dr Barry Taff, Dr Bruce Greyson, Dr Eben Alexander, Dr Gary Schwartz, Dr James Carpenter, Dr Jeffrey Long, Dr Jim Tucker, Dr Melvyn Willin, Dr Neil Dagnall, Dr Penny Sartori, Prof. Susan Blackmore, Dr Jeffrey Mishlove, Loyd Auerbach, Major Paul H. Smith, Prof. Caroline Watt, Prof. Chris French, Prof. Etzel Cardeña, Dr Rupert Sheldrake, Dr Russell Targ, Steve Parsons, and Tricia Robertson, to name but a select few, with many providing more than one interview over time.

One of the first podcasts I did for Howard was back on 24th January 2014. He'd been meaning to get me on the show for some time, and we spent the hour discussing the life and work of Dr Alex Tanous—as I'd just edited a book of Tanous's work on ghosts—and then the topic of telephone anomalies. Over the years, between *The Unexplained* podcast and, later, TalkRadio and TalkTV, Howard kindly had me on to discuss a variety of topics that had cropped up in the news, or when he needed a filler of 4–5 minutes discussion in the show before a break to the next guest. I was delighted to make these regular appearances, typically in the late hours of a Sunday. Searching social media and the University of Northampton's

media history, it seems Hughes turned to me for a number of topics: work in parapsychology, ghostly experiences, the life and death of medium Derek Acorah, third man syndrome, moon phases and psychic abilities, bereavement and sensing the presence of the dead, whether people can kill other people with the mind alone, whether coincidences are real, near-death experiences, theories of survival of death, AI-simulated survival, and *jamais vu* (the opposite of *déjà vu*).

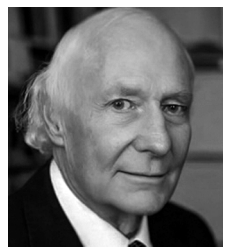
Hughes was born on 10th June 1958, and passed away 9th November 2024, due to a very sudden and unexpected illness. This shocked and brought immense grief for his thousands of devoted fans and listeners of *The Unexplained with Howard Hughes*. Social media, BBC news, and other outlets were inundated with memories and appreciation for Hughes and comments of condolence. He is survived by his sister Beryl, whom he loved immensely, and his very close inner circle of friends, who were his chosen family, including the medium Claire Broad. I'm humbled to be among them, while still heartbroken and trying to come to terms with such a significant, kindly, and bright life being extinguished so suddenly. Survival of death was a key interest of Hughes, and I do wonder if he'll make a post-death appearance for someone.

I give the final words here to Hughes himself, concluded in a discussion of his life and work on David Loyd's *Radio Moments* podcast:

> My parents were very important to me, I'd like to think that they thought well of me because a lot of it I did for them. So y'know I'd like to think of myself as having been someone who at one time or another made his mum and dad proud. That's all I've got.

*callum.cooper2@northampton.ac.uk* CALLUM E. COOPER

## PETER FENWICK
## 1935–2024



Peter Fenwick, who has died at the age of 89, was a neuroscientist and a leading authority on the phenomenon of near-death experiences (NDEs). He was perhaps more closely connected with the Scientific and Medical Network (SMN) than the SPR—indeed it was my great privilege to succeed him as SMN President—but he also made an important contribution to psychical research

and had many friends and admirers in the SPR. He gave us many lectures, attended our conferences, and contributed to our journal. Of course, the SPR has always had an interest in the issue of survival.

From my perspective, Peter also played an important role in regarding psi as a link between science and spirituality. Many parapsychologists prefer to focus on experimental work and eschew any reference to mystical or transpersonal experience. However, there has been a shift of emphasis in recent years, with a greater attention on topics like transpersonal psychology and mediumship. In my view, a final theory of mind must accommodate its normal, paranormal, and transpersonal aspects, and it's impossible to draw a sharp distinction between psychic and spiritual experience.

Peter was born and grew up in Kenya, where his father was a coffee farmer and his mother a surgeon—indeed, the first woman to be admitted to the Australian College of Surgeons. She inspired Peter's ambition to go into medicine. At prep school in Kenya, he would always take on the role of doctor if somebody was hurt, doing the triage and then sending them to see the matron. He moved to the UK to board at Stowe before studying natural sciences at Trinity College, Cambridge. The Master of Trinity at the time was, appropriately, the Nobel Laureate neurophysiologist Lord Adrian, and one of his tutors was the Nobel Laureate Sir Andrew Huxley.

Peter's initial ambition was to become a brain surgeon, but he changed his mind after observing an operation during medical training and decided to become a neuropsychiatrist so that he could talk to people and "not have them unconscious while I looked into that deep, dark hole." He became consultant neuropsychiatrist at the Maudsley, with a particular interest in the study of epilepsy. He was in charge of the Neuropsychiatric and Epilepsy Unit until his retirement in 1997, and was also Co-Director of the Department of Neurophysiology at Broadmoor Hospital. From 2000 to 2009 he spent several months a year working at the RIKEN Neuroscience Institute in Japan, using magnetic field tomography to probe various psychological paradigms. Indeed, I once visited his lab there.

Peter had a long-standing interest in the problem of consciousness and published many papers on altered states. He also conducted some of the first studies on the effect of meditation on brain activity. One of his subjects was George Harrison, who had begun meditating after meeting Maharishi Mahesh Yogi, and volunteered to have his brain waves analysed. Peter noted wryly that his EEG record could have acted as his pension fund if he had kept it, but it vanished, someone else having recognized the value of 50 metres of a Beatle's brainwave!

His interest in NDEs was prompted by Raymond Moody's 1975 best-selling book *Life after Life*. When he first read it, he dismissed it as 'psychobabble', but a year later a patient walked into his clinic at St Thomas' hospital and vividly described having had such an experience and Peter changed his mind. He realized that this is a phenomenon for which science cannot provide a rational

explanation. Thereafter, the study of NDEs—and other studies of the dying process—would become an important part of his life's work.

He interviewed carers, medical staff, and chaplains, and was the first scientist in the UK to broadcast on the subject. Then, in 1987, he presented a TV programme *Glimpses of Death*, which raised public awareness of the topic. He received over 2,000 letters from the general public after the programme, and this led to his comprehensive study of the characteristics of the experience. In 1985, with Margot Grey and David Lorimer, he founded and became President of The International Association for Near-Death Studies UK.

In 1995, he and his wife Elizabeth, a writer on health matters, coauthored *The Truth in the Light*, a book that gave personal accounts of NDEs reported to him by over 300 members of the public. In 2000, he began research in hospices and nursing homes in the UK and Holland, examining the experiences reported by the dying and their carers around the time of death. He also stressed the importance of spiritual support in palliative care. At a hospital in Southampton he studied the phenomenon of bi-location, where patients report looking down on their prone bodies on the operating table. He placed cards with writing and pictures on the ceiling of the operating theatres in the hope they could be seen by patients leaving their bodies, although the results were inconclusive. In 2008, Peter and Elizabeth published a second book, *The Art of Dying*, examining end-of-life experiences and the connections between the dying and their relatives at the time of death. In 2019, an account of his life-long exploration of consciousness was provided in his autobiography *Shining Light on Transcendence: The Unconventional Journey of a Neuroscientist*.

His contention that NDEs provide evidence that consciousness can survive bodily death was criticized by some scientists, who argued that the phenomena resulted from the dying brain being starved of oxygen (anoxia). Peter dismissed this, since trainee pilots in flight simulators were routinely subjected to loss of oxygen but never had NDEs. Anoxia leads to confusion and disorientation rather than the clarity which characterizes an NDE. This is most striking in the cases of people who experience a 'panoramic life review', where their life is played back, sometimes in its entirety, affording a view not only of their own thoughts and actions but a realization of how those thoughts and actions affected others. He was particularly interested in Buddhist teachings on the subject of death and dying. In many cases, NDE experiences resemble those recorded in *The Tibetan Book of the Dead* (Coleman & Jinpa, 2008), which dates from the eighth century and was read to a dying person to guide them through the post-mortem experience. In 2022, he joined a group on a visit to India to meet the Dalai Lama.

Although I've stressed his interests in NDEs, this was part of his broader fascination with the question of whether consciousness is just brain activity—in which case, when the brain dies, consciousness dies with it—or whether the brain just acts as a filter to produce our conscious experience of the world. He

took the latter view, as argued by William James (1890) over a hundred years ago but still regarded as heretical today.

He was also interested in the link between consciousness and spirituality—his understanding being influenced by his personal meditation practice—and through his writings and lectures became a pioneer in promoting this link as a legitimate area of scientific inquiry. He argued that the structure of the world just does not fit into a reductionist framework in which there is nothing beyond the brain. "We live in a world that has the most wonderful things in it, and among those things are spiritual experiences. How are you going to fit that into a reductionist framework?"

Andrew Powell, founding chair of the Spirituality and Psychiatry Special Interest Group of the Royal College of Psychiatrists, shared Peter's conviction that immaterial mind can never be explained by physics, and recalls that Peter played a crucial role in bringing the spiritual dimension into psychiatry. His infectious enthusiasm and status as a scientist was invaluable in helping to establish the Special Interest Group, and this has now grown to more than five thousand, around one in four of UK psychiatrists. I've already referred to Peter's involvement in the SMN, a group of scientists and doctors who use spiritual understanding to deepen their understanding of science and medicine. Between 1985 and 2000 he was Chair of the Council of the SMN, becoming President in 2001 and Emeritus President in 2020. He was also the inspiration behind the SMN's Beyond the Brain conferences.

The sadness and sense of loss at Peter's passing is balanced by the knowledge that he himself was looking forward to his 'promotion' and had no doubt that life does not end with the death of the body. In Mick Brown's (2024) obituary for Peter, he recalls his saying: "There is no death, I know that now. There is death of the body, but there is no death of the individual person. I don't fear it at all. I'm looking forward to it." It was not clear if he believed in a universal consciousness or in the persistence of some form of survival of individual consciousness after death, but he clearly believed that some form of merging would occur.

I will end this obituary with some remarks about Peter's character. Andrew Powell described him as a man "always radiating enthusiasm and bonhomie, and whose favourite word was 'wonderful', and who lived his life in a state of wonderment. No subject was off-limits; his curiosity about life, about people, about the universe physical and metaphysical, everything was to be experienced, shared and (if possible) researched as well" (Powell, 2024).

And, finally, a quote from our President Adrian Parker: "Peter was for me, during many years, a source of true inspiration, and the more I got to know him the greater this became. He was a true English gentleman in always showing humility and warmth. He radiated both enthusiasm and basic goodness. Yet he was in no way oblivious to the darker sides of human nature and the difficulties in dealing with these. I was impressed that, despite being a consultant for many years at Broadmoor high-security prison for severely disturbed criminals, he

was nevertheless still enthusiastic about the positive sides to human nature. He had a superb way of dealing with aggressive critics, which was to summarize their attacks but in non-aggressive words, before replying."

He leaves a wife, Elizabeth, three children, Annabelle, Tris, and Natasha, and nine grandchildren, Sebastian, Oliver, Huw, Ben, Carwyn, Cameron, Juliette, Ryan, and Madoc.

*b.j.carr@qmul.ac.uk* BERNARD CARR

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## DENNIS RICHARD BURY[1]
## 1943–2024

It is with deepest sympathy that I write of the passing of Mr Dennis Bury. He was born 11th June 1943 and died 30th December 2024. Having been diagnosed with motor neurone disease in the past couple of years, Dennis battled on bravely and did not let the condition stop him reading and engaging

1. With gratitude to his daughter, Nina, for additional information on her father's life.

with the latest books and research. Indeed, he was keen to attend in some way the November 2024 SPR conference which was held in Derby.

Dennis was born in a Stockport nursing home and was later adopted by distant relatives. He attended Malvern College boarding school as a boy and later attended the University of Manchester. At Manchester he completed a Bachelor of Arts degree in theology with 'classics', and went on to complete a Master of Arts degree in theology at Salisbury College. In 1968 he gained a scholarship for a year's study in the USA. There he met Ursula. They married in Germany in 1969 and moved to Southport, where he was ordained. He had two daughters, when living in Liverpool and then Birmingham, later moving back to London. This became a multi-generational household, even living with the grandchildren. He was a chartered psychologist with the British Psychological Society (est. 1901) and Associate Fellow, as well as being a Chartered Scientist. He held various diplomas in psychological counselling and psychotherapy, and spent many years in practice as such. In the 2000s, he was a lecturer in psychology at Syracuse University (London branch), and retired after turning 70.

Although Dennis only joined the SPR in October 2008, and later was invited onto the Survival Research Committee (SRC), he had a long-time interest in anomalous phenomena, survival research, and awareness of the SPR and its works.

He had previously been a member of the Association for the Scientific Study of Anomalous Phenomena (ASSAP, est. 1981). I had discovered just before my very last SRC meeting with Dennis—24th July 2024—some of his writings for their newsletter. One of the earliest I found was his managing of ASSAP's PASS scheme, standing for 'Press Abstract and Survey Service', whereby Dennis had been assigned to gather together and organize press cuttings which members and non-members sent into ASSAP regarding anomalous phenomena, most notably haunting-type phenomena (Bury, 1990). Another was *The New Scientist* reporting on molecules which had a persistent presence long after they had been removed by dilution—naturally, this caused a stir among ghost enthusiasts and debates (Bury, 1991). The PASS role was taken over by Valerie Hope a few years later. In conversation with Mrs Marian Barton and myself, Dennis said with a cheerful laugh and smile at that last SRC meeting that he remembered writing such pieces for the newsletter. He emailed after the meeting with what seemed to be a case suggestive of 'text messages from the dead'.

He contributed to the 20th anniversary edition of ASSAP's journal *Anomaly* (Bury, 2001). Here, he discussed his interests in the survival of bodily death, regarding the Survival Joint Research Committee Trust (SJRCT)—a group that worked closely with ASSAP. The group had a focus on survival codes, that is, people making an agreement to have a code hidden away before they die which they will try and relay in some form beyond death, or even a precise code for a padlock. Dennis believed only one demonstration would be needed to be

of scientific merit—the white crow principle.[2] He stated: "Replication would then be icing on the cake" (p. 20). Apparently, SJRCT had kept several such combination padlocks to explore such a premise. And it was admitted not to be something new, since the idea of lock tests can be traced back decades before in the history of the SPR and American SPR (e.g. Smith, 2000; Stevenson, 1968).

Dennis relayed an instance of how such potential use of digits and significant numbers, gained the interest of Dr Arthur Berger (Bury, 2001, p.22):

> Some time after the said Dr Arthur Berger left to return to the USA, having given lectures (including one to ASSAP), there came a letter to *ASSAP News* where a writer who had been involved in a sitting had had a drop-in communicator and he had said "Tell Arthur, tell Arthur" and given a number. The writer in *ASSAP News* had asked it to be published, but the readers didn't get the outcome. This was—that Arthur Berger to whom I sent the item said "Yes, that was my army number bar one digit", i.e. one digit wrong. On the strength of this Arthur Berger came over and went to a sitting in Exeter, but, as is often the case with such things, nothing came of it. I alluded to it later on in a letter, and we were only able to wonder—which is what people do about this subject. Arthur had come close to his life's ambition, which was to precisely have replication of a numbered code, and he perhaps had hoped that this was the beginning of something greater.

A fairly regular attendee at the SPR lectures and weekend study days/workshops, it was always a delight to chat with Dennis over a cup of tea. Always carrying a smile and a supportive nature for anything he heard you were doing—it also shows you would have been well supported by Dennis in his capacity as a therapist. He had also contributed book reviews to the SPR journal over time, all geared towards his survival interests (e.g. Bury, 2009, 2010, 2020).

Dennis was a keen walker and loved nature. He learnt piano in his 60s and learnt to sail at the age of 69. It goes without saying, he had strong interests in the environment, social justice, and fighting the harm caused by poverty. As such, charities that friends and loved ones supported at his funeral and celebration of his life included: Woodland Trust, Amnesty International, and the Motor Neurone Disease Association.

I found Dennis to be one of the most approachable gentleman I've ever met. He was calmly spoken, encouraging, and above all, kind natured. He always came across to me as someone who would try to find any positive in a negative. And yet, in his capacity as a member of the SRC, when he found research grant proposals to be weak, he would not mince his words in saying that he could not support it. He continued his involvement in the church, and gave a sermon on the first Sunday of advent a few weeks before his death. His daughter, Nina, states "in classic Dennis style, he managed to include detailed research from

2. For an insightful discussion of 'the white crow' see the former SRC members David and Julie Rousseau (the latter being former Chair) joint SPR conference talk 'What is a White Crow Good For?' Cambridge, 2001. Audio available from the SPR.

parapsychology into a theme around predicting the future, finishing with the hope represented by the coming of Christmas."

It was a pleasure to be on the SRC with Dennis, as a fellow committee member. To mention once again that final meeting with him in July 2024, we knew Dennis was not well. I asked him if he'd be willing to be interviewed by me on his career. He was hesitant as he didn't think anyone would be interested. I wish I'd smooth-talked him into it a little more, and readers, take heed of these missed opportunities. My heart goes out to his family and friends.

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# NOTICES

## Invitation For Proposals
## Yew-Kwang Ng (黃有光) Fund For Survival Research

The SPR's Yew-Kwang Ng (黃有光) Fund for Survival Research supports scientific research into the fundamental question of whether some aspect of consciousness or personality survives the death of the body. It supports projects that aim to generate new evidence for survival, that collate, analyse, and/or disseminate relevant evidence, that draw on such evidence for theory development, or that generate frameworks for relevant theory building. Of particular interest are projects that stimulate thinking and debate about the kinds of research that could potentially shed light on the survival question. With a focus on the truth (or otherwise) of survival claims, the fund is unlikely to support research into psychological or sociological aspects of belief in survival.

The Survival Research Committee would like to invite proposals for projects that address the priorities of the Fund. The deadline for submission of grant proposals is 1st June 2024. Typical awards are in the order of £3,000 to £5,000 but for a very special project the award may be up to £7,000. Applications for sums of up to £1,000 may be considered at any time of the year. Proposals should be no more than three pages, outlining the project's tasks, cost breakdown, outputs, strategic premise, and relevance to the aims of the Fund. The proposer should demonstrate familiarity with relevant methods in survival research and should place the proposed work in the context of prior research. Investigators' CVs and the names of two referees should be included. Proposals should be addressed to the Chairman of the SRC at the Society's address. More details are available at http://www.spr.ac.uk/research/funding-research.

Successful applicants are encouraged to publish their findings in the Society's journal (i.e., The Journal of the Society for Psychical Research) and, where possible, make their research data available to the public; ideally using the SPR's repository, Psi Open Data (https://open-data.spr.ac.uk) for this purpose. Additionally, the SPR encourages researchers to preregister their study. We recommend using the KPU Study Registry (https://koestlerunit.wordpress.com/study-registry).

## Research Grants

The SPR possesses a modest Research Fund, the proceeds of which are available to support research in any generally recognized area of psychical research, except those specifically related to survival. Survival-related applications should be directed to the Survival Research Fund. Applications are considered and grants awarded by the Society's Research Grants Committee (RGC), and applications should be sent to the RGC, c/o the Society's Secretary. Applications will be considered on an annual basis, with the deadline for receipt of proposals being 1 June of each year. Application forms can be obtained from the SPR Secretary or on-line via the Society's website.

Applications should include: a description of the proposed research, including its rationale and hypotheses/anticipated outcomes; a general description of the methodology; costing of the research (i.e., the amount being requested should be itemized against specific costs); a short CV; and the names of two referees. Normally, grants do not exceed £7,000. If the research is being funded by multiple sources, specific information should be provided about the source of other funding, the amount being received, and information about what aspects of the proposed research other funding is covering. Details of the research being proposed, its rationale, and methodology should ideally not exceed 1,500 words.

Usually, an applicant/co-applicant will only be awarded funding for one research project per annum. It is also a condition of the grants that a report of the completed research is sent to the RGC, c/o the Society's Secretary. No further awards will be made to an individual until reports have been received for any previous grants obtained from the Research Grants Committee.

Successful applicants are encouraged to publish their findings in the Society's journal (i.e., *The Journal of the Society for Psychical Research*) and, where possible, make their research data available to the public; ideally using the SPR's repository, Psi Open Data (https://open-data.spr.ac.uk) for this purpose. Additionally, the SPR encourages researchers to preregister their study. We recommend using the KPU Study Registry (https://koestlerunit.wordpress.com/study-registry).

## Perrott–Warrick Appointments

The Perrott–Warrick fund, administered by Trinity College, Cambridge, supports senior academics to investigate mental or physical phenomena that seem to suggest (i) the existence of supernormal powers of cognition or action in human beings in their present life, or (ii) the persistence of the human mind after bodily death.

I am pleased to announce that two senior Perrott–Warrick researchers have just been appointed and they will each be funded for three years. Dr Donna Thomas, Co-Director of the ICreateS International Research Centre at the

University of Central Lancashire, will be investigating extrasensory experiences in the context of human development with children and adults. Prof. David Luke, Associate Professor of Psychology in the School of Human Sciences at the University of Greenwich, will be investigating precognitive dream performance among lucid and non-lucid dreamers.

Smaller awards have also been made to Dr Melvyn Willin for digitizing SPR archival material and to Dr Nancy Zingrone for completing a book initiated by the late Dr Carlos Alvarado about the role of the SPR in the development of the concept of the unconscious mind, dissociation, and psychic phenomena during the 19th century.

Although the SPR plays no role in making these appointments or funding the awards, I'm sure SPR members will join me in congratulating the recipients and wishing them every success in their projects.

*Secretary of Perrott–Warrick Fund* BERNARD CARR

# NOTES FOR AUTHORS

The Journal of the Society for Psychical Research (JSPR) provides a peer-reviewed forum for communication and critical debate for the community of scholars and interested parties involved and/or interested in the field of psychic, parapsychological or anomalous effects.

## TYPES OF PAPER

The journal publishes empirical research, research notes and short letters to the editor. All submissions need to be in English. Research based submissions to the JSPR for publication need to be *original* (i.e., not published or submitted for publication elsewhere), provide a *significant* contribution to the field, and be underpinned by a highly *rigorous* methodology.

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## MANUSCRIPT PREPARATION

As noted above the major criteria for the acceptance of a research article will be its originality, significance and rigour. Detailed guidance on the preparation of empirical research articles, research notes and letters to the editor can be found on the SPR website at: https://www.spr.ac.uk/publicationsrecordingswebevents/journal-society-psychical-research.

## SUBMISSION PROCESS

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