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Etzel Cardeña

In Memoriam: Stephen Edward Braude (1945–2026)

The Sui Generis Jazz Philosopher

Etzel Cardeña

Lund University



On January 3rd, parapsychology lost not only its most consequential philosopher of the last few decades, but a one-of-a-kind polymath wit. Stephen E. Braude's prolific output (7 books and more than 100 other publications) was matched by incisive analyses and their implications (tinged at times with mordant humor), along with strong critiques of both skeptical and some mainstream parapsychological positions. Esteban (as I called him) and I met sometime around the turn of the century when we both lived in Maryland. We shared an interest not only in psi but in dissociation and, as it turned out, in obscure avant garde music. A brief obituary cannot do him justice, but I will introduce some of his main ideas and list resources so that interested readers can go much further (see also <https://psi-encyclopedia.spr.ac.uk/articles/stephen-e-braude>).

Macro-Psychokinesis

Braude was for decades one of the strongest proponents of macro-psychokinesis, a conclusion fueled by an experience of levitating a table in a group. Among other points, he stated that: 1) the evidence for macro-PK was persuasive and could not be

explained away, even after discounting fraudulent cases, and that 2) the distinction between micro- and macro-PK is fallacious (Braude, 1986, 2015). He also conducted observational studies of physical mediums and unusual people such as Katie, the “gold leaf lady,” on whom thin, brass foil would suddenly appear and partly cover her, and dismantled skeptical accounts of the Ted Serios “thoughtographs” (Braude, 2007; 2015). I value his daring to investigate phenomena in their occurring milieus, something that investigators at the beginning of psychical research carried out brilliantly but is rarely done nowadays.

Possible Survival of Death

When discussing the evidence for survival as suggested by different bodies of evidence such as mental mediumship, Braude (2003) made the case that good evidence from these sources cannot be explained away and weighed different psi explanations. Primarily he compared the “living-agent psi” (or “super-psi”) hypothesis that the source of information comes from living individuals with the hypothesis that the source is deceased individuals. His careful arguments are elaborated across more than 300 pages in one of his books and dismiss easy, pat answers: “we can say, with little assurance but with some justification, that the evidence provides a reasonable basis for believing in personal postmortem survival. It doesn’t clearly support the belief that everyone survives death: it more clearly supports the belief that some do... for a limited time” (Braude, 2003, p. 306). His conclusion is similar to that of the foremost scholar on mental mediumship, Alan Gauld (1983). In both authors, I appreciate their laying out of the evidence and arguments supporting their (moderate) conclusions, as compared with the strident authors who take it as axiomatic that survival without a functioning brain is impossible, or that the extant evidence proves *conclusively* that our personalities/selves continue beyond death.

Other Topics

Steve also discussed dissociation, particularly what used to be called *multiple personality disorder* (currently *dissociative identity disorder*; Cardeña, 2017), as well as hypnosis, dissociative processes, and personal unity, taking to task the deniers of dissociation and the possibility of recovered memories (Braude, 1991). With respect to proposals within parapsychology, he was sometimes dismissive of the experimental evidence and posited that psi in real life is much stronger (he prioritized PK, but for anomalous cognition examples see e.g., Stevenson, 1970). One lesson from him, not

learned to the necessary degree by the field in recent years, is that mental phenomena are of a different nature, and do not have to be investigated or understood the same way, than physical ones.

Steve expressed himself forcefully about the dishonesty of much anti-psi ignorant and dogmatic criticism (for some examples see Cardeña, 2015) and had also terse words for psi explanations that he thought did not elucidate much. The latter include retrocausal explanations of precognition (1986) and mechanistical explanations for parapsychological (and psychological) phenomena (Braude, 2014).

Despite the intolerance against psi, Steve became Emeritus Professor and former Chair of Philosophy at the University of Maryland Baltimore County, as well as Editor-in-Chief of the *Journal of Scientific Exploration*. He received many grants, fellowships, and awards, including the Distinguished Achievement Award from the International Society for the Study of Trauma and Dissociation, and the F. W. H. Myers Memorial Medal from the Society for Psychical Research

Steve Braude: The Whole Person

As impressive as his philosophical contributions to parapsychology are, there was (or is?) a lot more to him (Braude, 2020). Always dapper, Steve created not only books and papers, but music. He called himself the “jazz philosopher” because he played piano jazz (recordings of some of his music with the Yamara Band can be found on Spotify, Apple Music, or be streamed from <https://www.jazzphilosopher.com/>; and scores of his compositions can be downloaded from <https://www.jazzphilosopher.com/scores>). He was also very knowledgeable of classical music and when I could not find a rare, out of print recording, I could often count on him recording it and sending it to me.

Steve was fearless and acted out of principle rather than self-interest. A couple of decades ago, before we had actually become good friends, I was attacked by Adrian Parker and his ally Göran Brusewitz because I got the position that Parker had also applied to. Over the course of more than 10 years their hostilities included trying to block me from becoming a member of a parapsychology closed list group, misrepresenting to an examiner the topic of one of my doctoral students’ doctoral dissertation, after which she resigned from the examining committee, and complaining to the Parapsychological Association for an award they gave me. In the midst of a deafening silence from many in the parapsychology community who sided with me only in private, Steven supported me publicly, something that I appreciated enormously.

In parting, I send my deepest condolences to Steve's partner in crime (and also always elegant), Djurdjina "Gina" Ruk.

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Memory In Nature: A Study of Morphic Resonance Predictions on Learning¹

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Abstract: *Objective.* Within the context of learning, morphic resonance predicts that a skill should become easier to learn as more people practice it due to the pattern of learning existing within a morphic field. Several studies have investigated this theory, with some providing preliminary support for its predictions. The objective of this study was to add to this literature by conducting three studies that used the online game Wordle. We hypothesized that as the day progressed, attempts needed to solve Wordle should decrease because of resonance from earlier players. *Method.* Study 1 used a questionnaire to collect Wordle scores and completion times in an experimental group that completed the official NYT Wordle and a control group that completed a custom Wordle. Studies 2 and 3 used WordleBot to collect data based on a random sample of Wordle players worldwide. *Results.* Study 1 did not find the predicted negative correlation between attempts and time of day in the experimental group. As expected, no significant correlation was found for the control group. The results of Study 2 revealed a significant increase in the percentage of players solving the puzzle from morning to evening on the first two guesses. These findings were not replicated in Study 3. *Conclusion.* Taken together, the findings suggest that if morphic resonance is at play, it is likely a subtle effect that is easily inhibited by factors such as conscious cognitive processes. It may thus require more refined experimental designs to be detected.

Keywords: morphic resonance, morphic fields, formative causation, learning, Wordle, WordleBot

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Highlights

- Morphic resonance suggests that patterns of learning become embedded within morphic fields, to which subsequent individuals learning the same skill can tune in, facilitating faster learning.
- We conducted three quantitative studies exploring the association between time of day and Wordle score. Morphic resonance predicts that Wordle should become easier to solve as the day progresses.
- Studies 1 and 3 did not support the hypothesis that as time of day progressed, Wordle should become easier to solve in fewer attempts.
- Study 2 found that the percentage of players solving Wordle from morning to evening increased on the first two guesses, perhaps indicative of morphic resonance.

Morphic resonance (MR) is a hypothesis put forth by Rupert Sheldrake suggesting that memory is inherent within nature (e.g., Sheldrake, 2012). The hypothesis proposes the existence of a group of fields—called morphic fields—that exist within and around self-organizing systems guiding them towards characteristic patterns of activity. One of the key features of morphic fields, which differentiates them from the traditional idea of a field as defined by physicists, is that they have an inherent memory (Watts, 2011). This memory forms the basis of the hypothesis of MR, through which each member of a system or species draws upon, and in turn contributes to, the collective memory within morphic fields. Through this process, the patterns we see in nature—such as an organism’s physical form or patterns of learning and behavior—literally become embedded within morphic fields. As a result, these patterns become increasingly probable.

MR forms the basis of Sheldrake’s hypothesis of formative causation, which suggests that organisms are subject to an influence from previous similar organisms (e.g., Sheldrake, 2012). For instance, once many people have learned a particular skill, that skill should become progressively easier to learn for subsequent individuals because that pattern of learning is embedded within a morphic field. Other individuals can tune into the morphic field through MR based on similarity—by being similar organisms in similar circumstances. This proposition radically differs from the conventional view of learning, which is assumed to be enabled by changes in brain activity (e.g., Kolb et al., 2019). It is thus unsurprising that MR has been controversial (Gomez-Marín, 2021) and even deemed “the best candidate for burning there has been for many years” (Mad-

dox, 1981, p. 245). However, as Sheldrake (2012) points out, MR is an empirically testable hypothesis. The current study aims to add to the empirical literature on MR, specifically in relation to its predictions regarding learning.

Morphic Resonance and Learning: Predictions and Research

In the field of cognitive neuroscience, MR makes radically different predictions than conventional theories regarding memory. Contrary to the traditional assumption that memory is underpinned by physical traces in the brain, MR proposes that memory operates based on resonance and is not stored in the brain at all (Sheldrake, 1987, 2012). This conforms with current experimental evidence within neuroscience, because despite numerous attempts to locate such traces, they remain elusive (e.g., Abraham et al., 2019). Sheldrake (1987, 2012) further suggests that morphic fields may provide a basis for collective memory—similar to Jung’s (1968) collective unconscious.

MR also has important implications regarding learning. Like memory, learning is conventionally assumed to be supported by physical changes in the brain (e.g., Kolb et al., 2019). Sheldrake (2012) proposes that learning is additionally facilitated by MR: patterns of learning become embedded within morphic fields. Through tuning into the morphic field of those who have practiced a skill before, MR predicts that learning should become easier, particularly if many individuals have previously practiced the skill. This type of MR concerns mental and behavioral fields—two types of morphic fields that influence mental activity and behavior, respectively.

Across a variety of disciplines, there is empirical research suggesting that patterns of behavior and learning are indeed inherited through means that remain unexplained. Several well-documented examples have been advanced of the inheritance of acquired characteristics—an idea that has been strongly opposed within biology (Liu, 2011). For instance, one study found that offspring of chickens raised in an unpredictable diurnal light rhythm displayed a similar foraging behavior to their parents, despite not being raised in those unpredictable conditions (Natt et al., 2009). Similarly, another study found that a conditioned fear response to a specific odor in mice can be passed onto offspring who have never been exposed to the odor (Dias & Ressler, 2014). Such transgenerational effects can extend to the second generation of offspring, such as the effects of acute parental exposure to predation risk in mice (Bhattacharya et al., 2023). The results of the latter study caused the researchers to conclude that “similar transgenerational responses are the rule rather than the exception in free-living organisms” (Introduction, para. 5).

A variety of mechanistic explanations have been advanced for this kind of inherited behavior—such as epigenetic inheritance which proposes that the acquired characteristics result in heritable changes in gene expression (Heard & Martienssen, 2014)—but MR provides an alternative (or complementary) explanation. Indeed, as one might predict based on MR, these types of inherited behavior are not limited to an animal’s direct relatives. This suggests that mechanistic explanations are not sufficient to explain all instances of inherited behavior. For example, McDougall (1938) conducted an experiment on the hereditary transmission of learning by training rats to escape a water maze. The maze had two exits: one dim and one illuminated. The illuminated exit resulted in an electric shock—the rats thus had to learn to use the dim exit. Over the course of the 30-year experiment, McDougall’s rats and their offspring showed a remarkable improvement in learning—a result he attributed to Lamarckian inheritance. Agar et al. (1954) repeated McDougall’s experiment over a 20-year period, rectifying what they believed to be a fundamental weakness: the lack of a control line whose ancestors were not trained. Like McDougall’s, the experiment obtained long duration trends of improvement, but these effects were not sustained. Agar et al. concluded that this forbade a Lamarckian interpretation and suggested that the changes in learning rate were correlated to the health of the rat colony. Such a finding is not inconsistent with MR, which does not preclude the operation of other factors. Of particular interest, is the parallelism between the performance of the trained and control lines, which “suggests that the changes were related to factors, not necessarily having any genetic basis, that influenced the rate of learning” (Agar et al., 1954, p. 315). Shel-drake (1987, 2012) suggests that such learning may be underpinned by MR: the new pattern of learning was in the morphic field of rats, to which other rats can tune in.

Similar progressive trends in learning have been found with respect to human skills. For example, a meta-review found that IQ test scores have increased over the last century—a phenomenon known as the Flynn effect (Pietschnig & Voracek, 2015). A variety of explanations have been advanced to account for this effect, such as better education (e.g., Teasdale & Owen, 2005), guessing effects (e.g., Must & Must, 2013), and increasing access to technology (Neisser, 1997). Individually, these explanations are unlikely to account for the full extent of IQ gains. Consequently, Pietschnig and Voracek (2015) concluded that the most likely explanation is a combination of factors. Interestingly, their meta-review revealed that gains were substantially stronger for fluid IQ (derived from reasoning-based tasks) than crystallized IQ (derived from knowledge-based questions). These findings are consistent with MR, which predicts that the patterns of learning derived from the reasoning-based tasks are embedded within a morphic field, facilitating better problem-solving for subsequent individuals completing the same tasks.

Several experiments have been specifically designed to test for learning-related factors in MR. In one, Mahlberg (1987) compared participants' ability to learn the real morse code to a novel code (devised by re-assigning the dots and dashes). The participants learned the real code significantly more accurately and, interestingly, subsequent participants also began learning the novel code increasingly accurately. Both findings are consistent with MR, and the latter may be explained by the resonance from previous participants learning the novel code—especially due to the specificity in the way they were learning the code throughout the experiment (Sheldrake, 2012). In another experiment, non-Chinese participants were exposed to both genuine and false Chinese characters and subsequently tested on which ones they recognized (Robbins & Roe, 2010). Consistent with the predictions of MR, they recognized significantly more of the genuine characters. This remained true for characters they had not been previously exposed to. Additionally, Dienes (1994) tested the speed at which participants recognized strings of letters—some real English words, and some non-words. The more often a non-word had been seen, the faster subsequent participants responded to it. This effect was statistically significant and is consistent with MR. However, no significant effect was found when Dienes repeated the experiment.

Similarly, other MR experiments have given inconsistent results. Monica England, an undergraduate psychology student, conducted an experiment testing two crossword puzzles a day before and a day after they were published by a London newspaper (described in Sheldrake, 2012). This experiment gave mixed results, with participants solving significantly more clues the day after publication with one crossword puzzle, but without change for the other. In a replication of Robbins' and Roe's study, Roe and Hitchman (2011) found that participants recognized more false than genuine Chinese characters, contrary to the predictions of MR. Similarly, Vernon et al. (2021) tested whether non-Chinese speaking participants implicitly preferred real versus decoy Chinese characters, and whether they were able to explicitly identify the real characters, as would be predicted by MR. The data did not substantiate these hypotheses and there was even a preference for the decoy characters. Indeed, it must be acknowledged that Robbins and Roe's initial successful results might be explained by factors such as cryptomnesia—an original idea that is in fact derived from a latent memory (Colman, 2015)—rather than MR.

If MR is at work, such inconsistencies in experimental results may be accounted for by several limitations. Sheldrake (1999) suggests that a potential weakness of small-scale experiments is that the resonance may be too weak to be detectable with only a few thousand boosters. This may explain the results in England's experiment since there likely were not enough people completing the crossword puzzle to produce

a strong MR effect. Another limitation concerns whether a pattern being tested is truly a new pattern. For instance, Sheldrake (2012) discovered that some of the crossword clues were in fact recycled, which means that previous resonance may have interfered with the experiment.

Summary and Objective of the Current Study

Taken together, evidence for the potential impact of MR on learning is preliminary, but promising. Some studies have found null or mixed results, whereas others provide initial support for the ideas proposed by MR. The current study aims to contribute to this research by investigating MR using the online puzzle Wordle (The New York Times, 2022a). Wordle is a free online puzzle published by the New York Times (NYT) which gives users six chances to guess a particular word, with previous guesses indicating which letters the word includes, and whether those letters are in the correct place. Wordle resets with a new word every 24 hours and is played by millions of people every day (Katz & Bhatia, 2023). If memory is inherent within nature, as MR predicts, there should be a cumulative influence from previous players who have completed the puzzle. Consequently, Wordle should become easier to solve as the day progresses, as the solution will have been “boosted” by other players through the process of MR. Regarding the current study, the large number of daily Wordle players is expected to help combat the limitation that many small-scale MR studies face: resonance that is too weak to be detectible. Additionally, since Wordle resets with a new puzzle every day, it can be classed as a new-field test (a test that investigates a new pattern of activity) that should theoretically make the resonance easier to detect.

Interestingly, the NYT published an article claiming that more people than can be explained by chance—approximately one in 250—solve Wordle on their first guess (Katz & Bhatia, 2023). After analyzing Wordle data for four months, Dilger (2023) observed a similar trend and concluded that it must be the result of rampant cheating. Cheating is certainly a reality when it comes to Wordle—as was confirmed by Tapparia’s (2022) survey in which one in ten of 1,087 players admitted to cheating—but the question remains as to whether cheating is enough to explain these unexpected trends. An alternative explanation is MR. With this in mind, the current study evaluates whether Wordle becomes easier to solve as the day progresses, as predicted by morphic resonance, and these hypotheses:

Study 1 Hypotheses (Confirmatory):

1. There should be a negative correlation between Wordle score and time of day (i.e., the number of attempts taken to solve Wordle should decrease as the day progresses).
2. There should be no significant correlation between Wordle score and time of day for a control group completing a custom Wordle that has a small number of other players (null hypothesis).

Studies 2 and 3 Hypothesis (Confirmatory):

1. There should be a significant increase in the percentage of Wordle players guessing the correct word in fewer attempts from morning to evening, demonstrating an improvement in Wordle score.

The study hypotheses and analyses were not preregistered. The data for this study are available from the corresponding author upon request.

Method

Research Design

This research was split into three studies. Study 1 involved gathering participants' Wordle scores and included both an experimental and a control condition. The experimental condition collected participants' scores for the official NYT Wordle (i.e., the number of attempts it took them to guess the correct word). The control condition collected participants' scores for a custom Wordle—the solution to which was a word that had *not* been used by the NYT and was selected by Georgia Black. After completing either the official or the custom Wordle, participants were asked to complete an online questionnaire (described in more detail below). Study 1 examined the relation between two variables: participants' Wordle scores and time of day. Thus, Study 1 was correlational.

Studies 2 and 3 used WordleBot (The New York Times, 2022b) to assess the Wordle scores of randomly selected groups of NYT Wordle players. WordleBot is an online tool, provided by the NYT, that supplies comparative data of other players around the

world who have played Wordle that day. Specifically, WordleBot randomly selects a large number of Wordle players and provides the percentage of players who guessed the correct word on each attempt, allowing for an assessment of whether there is a change throughout the day in the number of people who guessed the word in fewer attempts. Over a period of 12 days in Study 2, and 30 days in Study 3, GB completed the official NYT Wordle in both the morning and the evening, and subsequently used WordleBot to investigate whether there had been an increase in the percentage of players who guessed the word in fewer attempts throughout the day. Additional details about WordleBot are provided below. Both Studies 2 and 3 aimed to study the relation between Wordle performance and time of day. Study 3 took place approximately 7 months after Study 2 and was conducted to investigate whether the pattern of results in Study 2 would replicate over a larger number of days. Given that the researchers did not have control over when players completed Wordle, the research design for Studies 2 and 3 was a quasi-experimental comparison of groups. All three studies were granted ethical approval by the Alef Trust Research Ethics Panel (#ATREP2310).

Participants

Based on the assumption that the effect under investigation should apply to anyone who plays Wordle, Study 1 did not have many inclusion/exclusion criteria. Additionally, it was assumed that a large sample size that maximized diversity would help mitigate potential confounding variables such as individual differences in language ability and the difficulty of the Wordle target word on any given day. Consequently, anyone was allowed to participate provided they were over the age of 18 and capable of giving informed consent. Participants also needed to be native English speakers to mitigate the potential impact of English as a second language.

In total, Study 1 collected 332 responses for the experimental group and 272 responses for the control group (604 responses total). Twenty-one responses were excluded from the control group for the following reasons: 1) The respondent stated Wordle's solution as opposed to the control solution; 2) the respondent claimed to have guessed the word within 6 attempts but gave the wrong solution; 3) one participant made the authors aware of a duplication of their questionnaire response which was easy to locate on the spreadsheet and thus excluded. No responses were excluded from the experimental group. Therefore, the total number of analyzed responses were 332 for the experimental group and 251 for the control group (583 responses total). Participants were allowed to participate in Study 1 multiple times (provided the puzzle solution had changed), therefore this did not equate to 583 individual participants. Participants were only required to complete the demographics questionnaire

the first time they participated in the study. Based on this criterion, we estimate that approximately 342 unique individuals participated in Study 1, ($n = 117$ for the experimental condition and $n = 225$ for the control condition).

The majority of Study 1 participants were female (61% and 60% of experimental and control participants, respectively), and were from the United States and Northern or Western Europe (41% and 38% of experimental participants, and 36% and 34% of control participants, respectively). Participants were on average 58.8 years old ($SD = 16.1$) in the experimental condition and 56.7 years old ($SD = 14.9$) in the control condition. The highest level of education for most participants was a post-graduate degree, followed by college/university (44% and 36% for the experimental participants, and 46% and 35% for the control participants, respectively). For Studies 2 and 3, WordleBot randomly selected an average of 641,303 and 696,690 morning Wordle players, and 1,745,345 and 1,779,495 evening Wordle players, respectively, across the 12 and 30 days that GB completed Wordle prior to using WordleBot (Study 2 morning range: 482,366 to 809,764; Study 3 morning range: 592,964 to 900,129; Study 2 evening range: 1,722,314 to 1,765,769; Study 3 evening range: 1,772,595 to 1,785,361). WordleBot does not provide demographic information for its participants.

Materials

Questionnaire

For Study 1, the questionnaire was created using Google Forms. The questionnaire took approximately five minutes to complete and included several demographic questions before proceeding onto the questions about Wordle. The two key pieces of information the questionnaire collected were: 1) how many attempts it took the participant to guess the word, and 2) at what time they did the puzzle (including their time zone). To indicate the time, participants were asked to select a 2-hour time window (e.g., 04:00–06:00). The questionnaire also included other questions to help inform the research, such as what the solution was (the word) and participants' perception of how easy the solution was (rated on a scale of 1 to 5, with 1 labelled "very easy" and 5 labelled "very difficult").

Custom Wordle

The custom Wordles for the control condition were created using a free website that allows one to choose the target word and disseminate the puzzle via a link (Strive, 2022). The custom Wordles created on this website operated in the same way as the official NYT Wordle. The solutions chosen had *not* been used by the NYT Wordle. This was ensured by consulting a website that had posted an archive of Wordle’s previous words. GB verified this site by checking that the NYT Wordle solutions corresponded to the website (which was updated daily). ChatGPT was used to provide a list of five-letter words that were not included in this archive. Six words were selected and cross-referenced with the archive to ensure that they had not already been used by the NYT Wordle. Three easy (*crisp*, *might* and *chair*) and three hard (*fable*, *hovel* and *nexus*) words were selected to counterbalance the potential ease of the word. This selection was based on GB’s intuitive sense of the ease of the word. Each control word was used for approximately 5 days. The NYT Wordle solution was monitored daily to ensure that the NYT did not use the words currently being used for the custom Wordle.

NYT Wordle

The experimental condition required participants to complete the official NYT Wordle puzzle which is freely available online. The solution for the official NYT Wordle changes every day (see the Appendix for a list of solutions throughout the course of this study).

WordleBot

WordleBot uses the official NYT Wordle to produce its data. Two NYT subscriptions were purchased, which allowed access to WordleBot twice in one day. The WordleBot data is based on a sample of users that WordleBot randomly selects from individuals around the world who completed Wordle that day. The specific data collected from WordleBot for the current study were: 1) the sample size, 2) the percentage of players guessing the target word on each attempt (from one to six), and 3) the target word.

Procedure

Participants were recruited for Study 1 over a two-month period from two main sources: dedicated Wordle Facebook groups and personal social media outlets belonging to the researchers. Participants were asked to either complete the NYT Wordle, or the custom Wordle, and subsequently fill in the questionnaire described above. The questionnaire links were shared in alternating order until data collection needed to be closed due to timing constraints placed on the project, which was part of an M. Sc. dissertation. To minimize the risk of participants guessing the study's hypothesis and unintentionally influencing their Wordle performance, MR was not mentioned. Instead, participants were informed that the purpose of the study was to "explore factors that might influence people's Wordle scores." Participants were allowed to participate in both the experimental and control condition multiple times if they wished, because Wordle solutions changed regularly. Skip logic was used in the questionnaires so that participants did not have to read the study information or answer the demographic questions on subsequent attempts.

For Study 2, over a period of 12 days GB completed Wordle at 06:30–08:00 in the morning and collected the accompanying WordleBot data. Using a second account, this process was repeated at 22:30–00:00 in the evening. Thus, GB completed Wordle and collected the WordleBot data a total of 12 times in the morning and 12 times in the evening. The relevant WordleBot data were then entered into an Excel spreadsheet for analysis. For Study 3, this process was replicated over a period of 30 days with one difference: the morning data was collected at 06:00–06:30 and the evening data at 23:00–23:30.

Data Preparation

Prior to conducting the analysis for Study 1, the time of day that participants completed Wordle was converted into GMT (for both the experimental and control responses). This was done using an Excel formula and subsequently manually checked by GB for accuracy. Any responses consisting of a location and time zone that did not match were converted based on their stated location. Since Wordle is released at midnight for each local time zone, each "Wordle day" is longer than a 24-hour period. This meant that some converted times fell outside of the 24-hour GMT window and needed to be accurately classified as either occurring *before* or *after* the main period. For example, 06:00–08:00 in New Zealand converted to 17:00–19:00 GMT on the *previous* day. This would indicate that the participant completed Wordle later in the day when they were actually one of the first in the world to complete that day's puzzle. Conse-

quently, such timeslots were labelled as “(pre)” to indicate that they occurred before the main GMT window and were analyzed accordingly as early completions for their respective Wordle day.

For Studies 2 and 3, the average sample sizes across the 12 and 30 days were calculated for both the morning and evening. The percentage of players who guessed the correct word on each attempt was also averaged across the 12 and 30 days tested. This resulted in 6 average percentages, representing each of the 6 attempts, for both the morning and the evening (12 in total for each study).

Statistical Analysis

Study 1

To test whether participants’ Wordle scores were related to the time of day they completed the puzzle, a correlational analysis was performed on both the experimental and control responses. For both conditions, the Shapiro-Wilk test was conducted on both variables: time of day and attempts. The test revealed that the experimental data for time of day and number of attempts was not normally distributed, Shapiro-Wilk’s $W = 0.93, p = < .001$, and $W = 0.91, p = < .001$, respectively. The test showed that the control data for time of day and number of attempts was not normally distributed either, $W = 0.99, p = 0.01$, and $W = 0.93, p = < .001$. Spearman’s Rho was used to estimate correlations for both conditions.

Studies 2 and 3

To test whether there was an increase in the percentage of players guessing the correct word from morning to evening on each attempt, six two-sample z -tests for proportions were performed on the WordleBot data obtained in each study (i.e., one z -test comparing the percentage of players who guessed the correct word in the

morning vs. evening for each of the six attempts). Effect size was estimated in Studies 2 and 3 using Cohen's *h*.

Results

Study 1

Descriptive Statistics: Experimental Group

The most frequent Wordle scores were 3 or 4, making up 33% and 38% of the responses, respectively (Table 1). The mean Wordle score was 3.81, meaning participants solved Wordle in an average of 3.81 attempts. Only 0.3% of respondents reported solving Wordle in 1 attempt (see Fig. 1)

Table 1

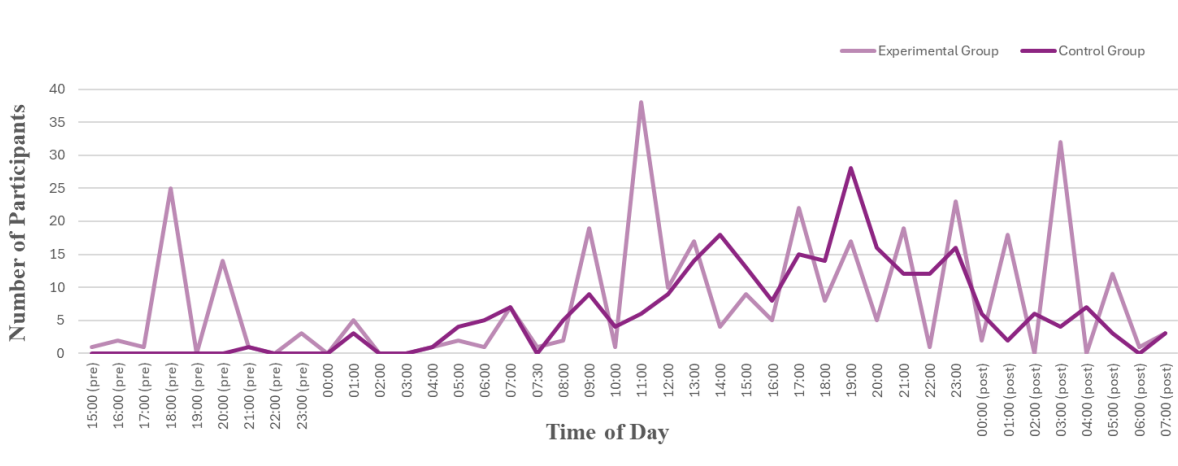
Frequencies of Wordle Score: Experimental Group

Number of attempts	Counts	% of total
1	1	0.3
2	22	6.6
3	109	32.8
4	127	38.3
5	56	16.9
6	13	3.9
7	4	1.2

Note. 7 attempts means that the participant failed to solve the puzzle.

Figure 1

Frequencies of Time: Experimental and Control Group



Note. Time periods marked as (pre) or (post) fell before or after the 24-hour period (respectively) after being converted to GMT.

Descriptive Statistics: Control Group

Like the experimental data, the most frequent number of attempts taken to solve the control puzzles were 3 or 4, accounting for 24% and 31.5% of the total responses, respectively (Table 2). The mean Wordle score was 4.26, meaning participants solved the custom Wordles in an average of 4.26 attempts. Interestingly, 1.6% of respondents reported solving the custom Wordle in 1 attempt: 1.3% more than the experimental group.

Table 2

Frequencies of Wordle Score: Control Group

Number of attempts	Counts	% of total
1	4	1.6
2	10	4.0
3	60	23.9
4	79	31.5
5	57	22.7
6	23	9.2
7	18	7.2

Note. 7 attempts means that the participant failed to solve the puzzle.

Test of Hypothesis

The correlational analysis for the experimental group revealed a very small negative correlation between the time of day and number of attempts taken to solve Wordle, $rs(332) = -.03, p = .59$. This means that as time of day increased, the number of attempts taken to solve Wordle decreased (i.e., the Wordle score improved). However, the correlation was very small and not significant. Thus, the hypothesis for the experimental group was not supported. The analysis for the control group produced a very small negative, non significant correlation, $rs(251) = -.01, p = .86$. Thus the control group results were consistent with the null hypothesis.

Study 2

The results of the two-sample z-test for proportions for each of the 6 attempts can be seen in Table 3. The results revealed a significant *increase* in the percentage of Wordle players guessing the correct word from morning to evening for the first two attempts. For both attempts, the observed effect size was very small. Attempt three also showed a non-significant increase, with a very small effect size. In addition, the WordleBot data showed a *decrease* in the percentage of players guessing the correct word from morning to evening on the latter three attempts. For the fourth, fifth, and sixth attempts, the z-test indicated a very small, significant difference between the morning and evening samples, with a very small effect size. Overall, the pattern of results is consistent with the hypothesis, reflecting an increase from morning to evening in the proportion of players solving in fewer attempts, particularly in one or two attempts.

Table 3

Study 2 WordleBot Results: Two-Sample z-test for Proportions

	Attempt 1	Attem. 2	Attem. 3	Attem. 4	Attem. 5	Attem. 6
Morning %	0.6	4.7	30.63	68.5	90.77	98
Raw number	3,848	30,141	196,431	439,293	582,111	628,477
Evening %	0.7	4.92	30.72	68.24	90.43	97.85
Raw number	12,217	85,871	536,170	1,191,023	1,578,315	1,707,820
Direction of trend	Increase	Increase	Increase	Decrease	Decrease	Decrease
z-score	8.38	7.01	1.34	3.83	7.95	7.15

<i>p</i> -value	< .001	< .001	.181	< .001	< .001	< .001
Significant	Yes	Yes	No	Yes	Yes	Yes
Cohen's <i>h</i>	0.012	0.01	0.002	0.0056	0.012	0.011

Note. "Morning %" and "Evening %" refer to the average percentage of the WordleBot sample guessing the correct word on each attempt across the 12 days. "Raw Number" is the raw number of participants who guessed the correct word on each attempt based on the average morning (641,303) and evening (1,745,345) sample sizes (these raw numbers are cumulative, including the number of participants who completed Wordle on the previous attempts). These average sample sizes were calculated across the 12 days tested.

Study 3

The results of the two-sample *z*-test for proportions for each of the attempts can be seen in Table 4. The results revealed a significant *decrease* in the percentage of Wordle players guessing the correct word from morning to evening for five of the six attempts. A non-significant decrease was found for the second attempt. For all attempts, the observed effect size was very small. The hypothesis was thus not confirmed in Study 3.

Table 4

Study 3 WordleBot Results: Two-Sample z-test for Proportions

	Attempt 1	Attem. 2	Attem. 3	Attem. 4	Attem. 5	Attem. 6
Morning %	0.56	4.7	27.46	61.99	84.71	94.81
Raw number	3,901	32,744	191,311	431,878	590,166	660,532
Evening %	0.53	4.66	27.24	61.67	84.50	94.70
Raw number	9,431	82,924	484,734	1,097,415	1,503,673	1,685,182
Direction of trend	Decrease	Decrease	Decrease	Decrease	Decrease	Decrease
<i>z</i> -score	2.9	1.34	3.49	4.66	4.11	3.48
<i>p</i> -value	.004	.180	< .001	< .001	< .001	< .001
Significant	Yes	No	Yes	Yes	Yes	Yes
Cohen's <i>h</i>	0.0041	0.0019	0.0049	0.0066	0.0058	0.0049

Note. "Morning %" and "Evening %" refer to the average percentage of the WordleBot sample guessing the correct word on each attempt across the 30 days. "Raw Number" indicates the raw number of participants who guessed the correct word on each attempt based on the average morning (696,690) and

evening (1,779,495) sample sizes (these raw numbers are cumulative, including the number of participants who completed Wordle on the previous attempts). These average sample sizes were calculated across the 30 days tested.

Discussion

Study 1 did not find a significant correlation between time of day and Wordle score in the experimental or control groups. The data from the experimental group therefore did not support the hypothesis that as time of day increased, Wordle score should improve (i.e., the number of guesses taken to solve the puzzle should decrease). Study 2 found a significant *increase* in the percentage of players guessing the correct word from morning to evening on the first two attempts, and a significant decrease in the percentage of players guessing the correct word from morning to evening in four, five, or six attempts, which may be partially explained by successful solving on earlier attempts. The data from Study 2 was thus in line with the hypothesis that as time of day increased, a greater percentage of players should guess the correct word in fewer attempts (demonstrating an improvement in Wordle score). The significant increase on the first two attempts was not replicated in Study 3, which found *decreases* across all six attempts.

Relation to Existing Research and Theory

The results from Studies 1 and 3 did not confirm the hypothesis that Wordle would be easier to solve as the day progressed, in line with other experiments which have failed to produce results in support of MR. Roe and Hitchman (2011), for instance, found that their participants recognized more imitative Chinese symbols than genuine ones. Similarly, Vernon et al. (2021) found that their participants showed an implicit preference for decoy over real Chinese characters.

The simplest explanation for the results in Studies 1 and 3 is that MR is not at work, which is a possibility. However, several other factors that might have prevented an MR effect from being found are worth considering. One explanation for the results of Study 1 concerns the potentially subtle effects of MR, which may result in a small effect size that requires a large sample size to be detected. Sheldrake (1999) suggests that MR may be too weak to be detected with only a few thousand boosters. This might explain why one of the crosswords tested by Monica England did not produce a significant effect: the London newspaper which published the crossword likely did not have enough

readers to create a strong enough resonance effect. The use of Wordle in the present study was expected to combat this limitation, given that it is played by millions of people. However, the analysis in Study 1 was based on 332 experimental responses (and 251 control responses) – perhaps this sample size was not sufficient to detect MR. In Studies 2 and 3, the sample sizes were much larger, and Study 2 did provide some evidence of Wordle becoming easier to solve as the day progressed, however Study 3 did not replicate this finding. It would thus be helpful for future research on Wordle to conduct additional, well-powered studies in order to further explore these potential effects. In addition, the small effect sizes found in the current research mirror many studies of psi phenomena that have found similarly small effect sizes (e.g., Cardeña, 2018). Small effect sizes are common in controversial research areas because otherwise, modest sample sizes would routinely be able to reject the null hypothesis and the research would thus not be as controversial (Cohen, 1977). As explained by Rosenthal (1986) in his analysis of the issue of successful replication, a small effect size does not mean that the effect is of no practical importance.

Another consideration worth exploring is the potential impact of distance. Vernon et al. (2021) suggest that the distance between their participants (in the UK) and the resonance they were trying to detect (in China) might have reduced the signal intensity of the resonance. Similarly, Sheldrake (2012) tested participants' ability to recognize two hidden images before and after one of those images was broadcast to a British TV audience. Sheldrake found that there was a significant *increase* in the number of European participants recognizing the image after the broadcast, however, the effect was not replicated in North America. Sheldrake (2012) suggested that a potential explanation is that the European participants may have been more "in phase" with the British TV audience than the North American participants because of the time difference. If this explanation is correct, it raises the question of whether the resonance from Wordle would be easier to detect if all boosters (and study participants) were in one location. In reality, Wordle players are spread across the globe, perhaps producing a less concentrated resonance effect.

It is also worth considering whether Wordle is an ideal candidate for testing MR. Sheldrake (2012) suggests that old-field tests—which attempt to detect resonance from previously established skills—may be less effective than testing novel skills. This is because it will be difficult to detect a change in the resonance of previously established skills that already have resonance built up. Conversely, new-field tests utilize new patterns of activity that will naturally have less interference. Wordle might be classed as a new-field test in the sense that the puzzle itself resets every 24 hours. However, the solution to each day's puzzle is an already-established English word. According to MR, words read by millions of people should be associated with mor-

phic fields that facilitate the perception of those words (Sheldrake, 2012). Perhaps this makes it difficult to distinguish between resonance that has been built up solely from players completing the puzzle and the cumulative resonance built up from the use of the English words in general. In contrast to this, Mahlberg's (1987) experiment used a novel morse code (made up of random strings of dots and dashes) that is unlikely to be associated with any other existing resonance. This might explain why Mahlberg's experiment yielded statistically significant results in line with the predictions of MR while the current study produced mixed results.

In contrast to Studies 1 and 3, the increase in correct guesses from morning to evening seen in the first two attempts in Study 2 is in line with the predictions of MR: that earlier players will have boosted the solution, making it easier for subsequent players to guess the correct word by tuning in to the morphic field of earlier players. This finding mirrors other experiments that have produced data in line with the predictions of MR. For example, in Mahlberg's (1987) experiment comparing participants' ability to learn real versus novel morse code, participants started to learn the novel code progressively more quickly as the experiment went on. Like the Study 2 data, this suggests that the more people practice a particular task, the easier it might become for subsequent individuals practicing the same task, as predicted by MR. Several other experiments (outlined in the literature review) have also produced statistically significant results that support the predictions of MR (e.g., Dienes, 1994; Robbins & Roe, 2010).

The Study 2 data also showed a statistically significant *decrease* in the number of players guessing the correct word from morning to evening for the latter three attempts. Such decreases are expected when a greater proportion of players solve the puzzle earlier, but the specific pattern observed in this study might also be informative about the nature of Wordle and how players experience MR. Vernon et al. (2021) suggest that explicit memory processes generally require greater conscious cognition. This might allow more time for unhelpful conscious processes to interfere and potentially negate any MR effects. Indeed, Wordle is a game that relies on conscious cognitive processes: players use the clues from previous attempts to inform their subsequent guesses and draw upon their memory of existing words. This is certainly true for the latter attempts, but for the first two attempts, players have either no or very few clues to work from. They are thus less reliant on conscious cognitive processes and perhaps more open to unconscious processes such as intuition. As Vernon et al. (2021) suggest, this may mean that during the first two attempts, MR effects are less likely to be influenced by other cognitive processes. Therefore, perhaps the WordleBot data is indicative of MR being experienced as intuition for the first two attempts but being inhibited by other cognitive processes for the latter three attempts.

This hypothesis conforms with evidence from psi experiments, which suggest that fast-thinking protocols are likely to be more effective because they prevent conscious cognitive processes from interfering with the automatic nature of psi (Bem et al., 2015). Similarly, research on cognitive priming has suggested that subliminal stimuli produce greater changes in learning than consciously recognized stimuli (Bornstein, 1989). This is potentially because of a lack of counter-control mechanisms (i.e., conscious processes that scrutinize attitude changes induced by stimuli), which minimize the impact of consciously recognized stimuli (Kihlstrom, 1987). Indeed, the fact that a significant proportion of players in Studies 2 and 3 were able to guess correctly on the first attempt is surprising, given that such guesses must rely entirely on intuition (assuming that the players are not cheating). This result mirrors Dilger's (2023) finding: based on four months of WordleBot data, at least five times as many people were guessing the correct word on their first attempt than would be expected by chance. These findings from Dilger (2023) and Studies 2 and 3 are highly unexpected and are practically very important. In Study 3 for instance, the percentage of players guessing the correct word on attempt one never fell below 0.3%, which is remarkably higher than the 0.04% that would be expected based on the 2,315 possible target words (Dilger, 2023). An alternative explanation for these unexpected results is cheating which is discussed in the limitations section below.

Limitations and Alternative Explanations

This study is subject to a variety of methodological limitations that should be considered alongside the results. First, with regard to Study 1, the data relied upon self-reporting. Although several responses were excluded from the analysis to try and mitigate the risk of inaccuracy, it is unlikely that this risk was eliminated altogether. For instance, some responses indicated that the time the participant claimed to have completed Wordle may have been inputted incorrectly (i.e. AM instead of PM). With no way of verification, such responses had to be assumed accurate and included in the analysis.

A further limitation concerning Study 1 stemmed from participants being permitted to participate multiple times. This was intended to maximize responses but resulted in almost half of the responses coming from a small number of people who participated on consecutive days. There is thus the risk of individual characteristics—such as a participant being particularly good or bad at word puzzles—impacting any potential MR effects. With regard to the control group, one limitation is that the number of responses across the six custom Wordles were not balanced: more responses were collected for the difficult words. Furthermore, the six control words were selected by

the researcher based on an intuitive assessment of their ease/difficulty, rather than a data-based decision. In addition, both the experimental and control group participants were primarily located in the United States and Northern or Western Europe, and most were female, raising concerns regarding the representative nature of the findings.

Also, with regard to Studies 2 and 3, some might argue that the WordleBot sample sizes are too large because at that scale, any effect—even very small effect sizes—can be statistically significant (Hand, 2015). Indeed, the numeric differences between the morning and evening samples were often very small (e.g., 0.6% vs. 0.7%), yet had large *z*-scores and high statistical significance. In these instances, it is helpful to consider the effect sizes, which were all very small and thus prevent one from over-emphasizing the high significance. These findings therefore raise questions around practical versus statistical significance. In other words, is a difference between 0.6% and 0.7% practically meaningful or useful, particularly when the effect size is so small? An important consideration here is that small effect sizes can carry profound implications. For example, if the small differences between morning and evening on attempt 1 cannot be attributed to cheating, other factors might be at play. Future research can use the results of the current study to explore what those factors might be. It will be helpful for future research to strike a balance between effect size and sample size, by conducting pre-registered power analyses to ascertain the minimum sample size required to detect potential MR effects, which may be subtle. It should be noted that reducing the WordleBot sample size would require collecting all of the study data earlier in the day, which would undermine the tool's ability to detect potential differences between morning and evening, which is crucial for testing MR. Instead, a questionnaire-based method—like the one used in Study 1—would allow for Wordle scores to be gathered at a sufficiently large, but more manageable, sample size.

One difficulty with any experiment seeking to test for MR is the ability to distinguish MR from other variables. Regarding Wordle, the most obvious alternative explanation for better performance is cheating, which is a much more straightforward explanation than MR experienced as intuition. However, although it is certain that some players do cheat (as confirmed by Taparia's (2022) survey of 1,087 American Wordle players, which found that 10% admitted to cheating), the findings of Studies 2 and 3 and the results of Dilger (2023) suggest that the number of people getting Wordle right in one attempt is much greater than chance. Dilger (2023) concluded that this effect can be explained by rampant cheating—though he did suggest that players should be more likely to cheat as the game progresses. It seems reasonable to assume that cheating would increase as players use up their guesses and become increasingly

frustrated. However, it makes little sense why players would cheat on their first try on a one-player game—thus calling into question whether these trends can be entirely explained by cheating. Moreover, the fact that success rates decreased in the evening in Study 3 (and for attempts four, five, and six in Study 2) is not easily compatible with cheating. If cheating were widespread, it might be expected to increase as the day progressed, as more people knew the answer and shared it on social media. Taparia's (2022) study did not specify on which attempts players are most likely to cheat, so future research using Wordle to test for MR might benefit from more thoroughly surveying players' cheating behaviors.

Another potential confounding variable is the impact of circadian rhythms, which have been found to regulate a variety of cognitive functions. For example, some research suggests that working memory, which plays an important role in advanced cognitive processes such as problem solving, usually reaches peak capacity at noon (Xu et al., 2021). Consequently, participants might perform better on Wordle at certain times because of their unique circadian rhythm.

Furthermore, Robbins and Roe (2010) argue that it would be useful for MR to be distinguished from other forms of anomalous cognition. They suggest that their findings—which were consistent with MR—might also be explained by mechanisms such as large-scale telepathy. Another plausible psi explanation is precognition—the ability to anticipate future events through an unknown inferential process—which has been supported by a growing body of empirical literature (e.g., Bem, 2011; Bem et al., 2015). Indeed, research has suggested that psi performance might also be mediated by circadian cycles (e.g., Luke et al., 2012), further elucidating the difficulty in teasing these different variables apart. Future research would thus benefit from designing experiments, as far as is feasible, in which the impact of these variables can be separated from MR. With regard to anomalous cognition, Sheldrake (2019) suggests that the difference between MR and telepathy is that the former is a bulk effect which often involves complete strangers, whereas the latter typically occurs between closely bonded people. Similarly, precognition may struggle to account for a global increase in Wordle scores unless it is assumed that all players are independently accessing the same future outcome.

As with MR, both telepathy and precognition face the challenge of lacking a well-established scientific mechanism. Nevertheless, several theoretical contenders have been proposed: some psi researchers draw parallels to quantum phenomena such as entanglement (Bem et al., 2015), while Sheldrake (2012) proposes that MR operates through morphic fields, which he argues may be compatible with physical fields as described in contemporary physics. Compared to MR, telepathy and precognition

have the advantage of requiring fewer new theoretical constructs, as they rely on information transfer rather than proposing entirely novel fields. As a result, they would allow for players to “sense” the correct answer without the need to posit a collective memory or field-based mechanism.

Future Research

It would be useful to repeat Study 1, rectifying the limitations identified above. One avenue would be to conduct the experiment in a controlled setting in which participants are tested in person. This would allow for the following adjustments to be made: 1) pre-testing participants for relevant skills and controlling for differences in the analysis; 2) ensuring that the data collected is as accurate as possible; 3) eliminating, as far as is feasible, conventional explanations such as cheating and circadian rhythms; and 4) conducting the experiment for a longer period. The disadvantage of this approach over an online approach is that it would be more difficult to test a larger sample size. Another approach would therefore be to repeat the online experiment carried out in Study 1, this time aiming for a larger sample size, which would hopefully make the experiment more sensitive to MR. It may be wise to not allow repeat participants, unless the researcher is confident they can garner enough responses to counterbalance the risk of individual characteristics (such as memory and problem solving skills) drowning out any MR effects. The questionnaire could also be adjusted, as far as is feasible, to alleviate the risk of incorrect data being inputted (e.g., changing times from 04:00 to 04:00AM).

An additional approach would be to repeat Studies 2 and 3 with a longer period between the morning and evening samples. This could be done by collecting data in the morning and evening of the earliest (e.g., New Zealand) and latest (e.g., Hawaii) time zones respectively, to ensure that the early sample has as small of an MR effect as possible. Such a refinement could make the experiment more sensitive to MR if it does exist (see Black et al., in press, for an example of this approach).

Another avenue for future research would be to test tasks that could be considered more novel—such as the novel morse code in Mahlberg’s (1987) study or the strings of random letters used in the studies by Dienes (1994). If MR is at play, such experiments might help differentiate resonance from related factors (such as the resonance from the historical use of English words), making it potentially easier to be detected. This might be most effective with tasks and experimental designs that require minimal conscious cognitive processes. A methodological challenge for future

research will be balancing the need to distinguish MR effects from psi phenomena such as telepathy (e.g., by using procedural tasks that are less sensitive to extrasensory perception), while also employing tasks that minimize conscious cognitive interference and theoretically make experiments more sensitive to MR.

Summary and Conclusions

The current study aimed to add to the empirical literature testing the predictions of MR, specifically with regard to learning. Taken together, the results of the current study suggest that if MR is at play, it is likely a subtle effect that might require more refined experimental designs to be detected. Several considerations and limitations have been highlighted in the current study that future research could address to further explore the predictions of MR. The findings also suggest that future research might benefit from investigating the relation of MR to other cognitive processes that might inhibit it.

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Appendix

Wordle Solutions Throughout the Study

AFTER	BOSSY	CORER	EVOKE	GUSTY	LINER	PASTA	SMALL	THESE	VERGE
AGING	BRASS	COURT	EXPEL	HALVE	LITHE	PHONE	SNAKE	THING	VINYL
AISLE	BRIEF	DAISY	FAITH	HANDY	LOCAL	RELIC	SPENT	THREE	WEIRD
ALIVE	BRUTE	DEBIT	FINAL	HEARD	LUNCH	REPEL	STEAM	THREW	WOULD
ALOOF	BUILT	DECAY	FLUNK	HOUSE	LUNGE	RERUN	STILL	TOPIC	
APART	BULKY	DELAY	FUNNY	JOINT	MICRO	ROUTE	STOLE	TORCH	
BACON	CABLE	DOING	GAMUT	KNAVE	MOMMY	SALTY	STONY	TOUCH	
BEAUT	CARVE	EASEL	GLOBE	LARGE	MURAL	SCANT	TABLE	TUNIC	
BLOCK	CHILD	EMBER	GRACE	LEARN	NORTH	SHOUT	TALON	TWEAK	
BLOND	CLEFT	ERUPT	GRANT	LEGGY	OWNER	SLOPE	THANK	TWIRL	

Ian Stevenson's Rabih Elawar at 60: Past-Life Memory Loss and Retention in Adulthood¹

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Abstract. *Objective:* We wanted to assess how well a Lebanese Druze man, Rabih Elawar, now living in Richmond, Virginia, retained the past-life memories studied by Ian Stevenson when he was a child in Lebanon. *Methods:* Over a series of interviews, we first asked Rabih to relate all he recalled about the previous life, then presented Stevenson's report, which he had not previously read, to get his responses to items he had not mentioned spontaneously. *Results:* Statements Stevenson recorded in his published report and unpublished field notes and memories Rabih recounted to us are highly consistent, although Rabih recalled some events differently and related details Stevenson apparently did not hear about. When we presented the items recorded by Stevenson but not mentioned spontaneously by him, Rabih was prompted to recall these also and clarified points on which there was apparent disagreement. *Conclusions:* Rabih's recall of the previous life at 58–60 is superior to what has been reported for past-life memory retention among other Lebanese Druze adults or with Sri Lankan, Indian, Brazilian, and American adults. This may be related to Rabih's recalling a life in the same village and same extended family that, moreover, ended only a short while (6 months) before his birth, providing plentiful cues to recall from early in his life. Our findings are consistent with those regarding present-life memory retention and loss, supporting the view that the foundations of past-life memory are closely similar to those of present-life memory.

Keywords: memory loss and retention, memory reliability, observational research, past-life memory, reincarnation case studies, CORT

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Highlights

- We interviewed Rabih Elawar at 58–60 years of age, more than 50 years after the investigation of his childhood past-life memories by Ian Stevenson.
- We found that he remembered all the major incidents Stevenson recorded, sometimes adding new details to them.
- Rabih’s memories may have remained strong because he recalled having lived before in the same village, dying only six months before his birth, which would have furnished many cues to recall.
- The new items Rabih recalled may not reflect new memories, but rather memories not recorded by Stevenson.
- Rabih’s past-life memory retention is similar to what has been observed with present-life memory retention, suggesting that present- and past-life memory have similar cognitive foundations.

From his decades of research on past-life memory, Ian Stevenson concluded that, “children nearly always stop talking about the previous lives between the ages of five and eight, but some stop earlier and others later. A few subjects claim to preserve their memories into adulthood, and a few others pretend to have forgotten everything, although they apparently still remember much” (Stevenson, 2001, p. 108). The impression that past-life memory retention into adulthood is unusual persisted until follow-up studies by Erlendur Haraldsson in Sri Lanka (Haraldsson, 2008) and Lebanon (Haraldsson & Abu-Izzedin, 2012).

In Sri Lanka, Haraldsson (2008) discovered that 16 of 42 individuals (38%) still remembered some things about the previous life, and among the Lebanese Druze (Haraldsson & Abu-Izzedin, 2012), 24 of 28 (86%) did so. Mills (2008) found the same with 16 (52%) of 31 follow-up Indian participants. More recently, Eric Pires (Ávila Pires, 2024) learned that 6 (33%) of 18 Brazilians whose childhood past-life memories had been studied by Hernani Andrade remembered some things many years later. In follow-up studies of American experiencers by Marieta Pehlivanova and colleagues (Pehlivanova et al., 2024), 11 (48%) of 23 respondents reported retaining some past-life memories from childhood into adulthood.

The issue of loss and retention of past-life memories is more complex than the persistence of memories into adulthood, however. It would seem that if past-life memories are retained past the early teen years, some will last for life, but much that is recalled in childhood is lost in later years. Sri Lankans recalled a mean of 29.25 items in childhood, but 6.56 in adulthood (Haraldsson, 2008). Lebanese Druze recalled a mean of 29.76 items in childhood, but 8.76 in adulthood (Haraldsson & Abu-Izzedin, 2012). Brazilians recalled a mean of 33 items in childhood, but 11.3 in adulthood (Ávila Pires, 2024). Moreover, only about half of the memories reported in the follow-ups of Haraldsson and Abu-Izzedin (Haraldsson & Abu-Izzedin, 2012) and Pires (Ávila Pires, 2024) matched those recorded when the participants were children, “raising the question of false and distorted memories” in adulthood (Haraldsson & Abu-Izzedin, 2012, p. 985).

Haraldsson (2008), Haraldsson and Abu-Izzedin (Haraldsson & Abu-Izzedin, 2012), Pires (Ávila Pires, 2024), and Pehlivanova et al. (2024) analyzed patterns across groups. Here, we report a follow-up study of a single individual, Rabih (pronounced RaBEEah) Elawar, whose case Stevenson investigated between 1969 and 1978 and reported in the third volume of his *Cases of the Reincarnation Type* series (Stevenson, 1980). Rabih emigrated from Lebanon in 2000 and since November 2003 has resided in a suburb of Richmond, Virginia, where we interviewed him on six occasions between August 2022 and October 2024. Rabih was 58–60 at this time but claimed still to have clear memories of the previous life he had spoken about as a child. In fact, he turned out to be exceptional in his past-life memory retention, spontaneously reporting 17 (43.5%) of the 39 statements Stevenson recorded for him at ages 5–6 and claiming to recall another 21 (53.9%) when they were read to him.

This paper focuses on factors related to Rabih’s past-life memory retention and loss. A companion paper (Matlock et al., in press) treats the behavioral dimensions of the case, including personality changes in Rabih as he matured. A timeline of events related to the case and its investigation is presented in Table 1.

Matlock (2019) drew attention to parallels between past-life and present-life memory, suggesting that they share a cognitive foundation. In our Discussion, we comment on how research with present-life memory retention sheds light on Rabih’s past-life memory retention.

Table 1*Events in the Development and Investigation of the Case of Rabih Elawar*

Date	Event
May 1946	Chowki Asaad Sabra Elawar (Al-Aawar) born in Portuguese Guinea.
July 29, 1963	Chowki fatally injured in accident at Deir El Harf, Lebanon; dies in hospital.
February 1, 1964	Rabih Amin Ali Elawar (Al-Aawar) born in Qornayel, Lebanon.
August 1968	Rabih's leads way to Chowki's house, enters, meets people there.
Autumn 1968	Rabih first speaks with Chowki's cousin Hisham Elawar about accident.
Feb 23, 1969	IS's first interviews with Rabih's parents in Qornayel.
March 1, 1969	IS interviews Chowki's uncle Yusuf Sabra Elawar at gas station in Qornayel.
July 1969	IS interviews Chowki's cousin Hisham Elawar and Chowki's mother in Beirut.
March 30, 1970	IS interviews Rabih's cousin Hamad Elawar, Qornayel.
March 31, 1970	IS interviews Rabih's grandmother Latife Elawar in Qornayel.
March 31, 1970	IS interviews Hisham Elawar and other members of Chowki's family in Beirut.
April 1, 1970	IS receives phone call from Chowki's elder brother, Mohammed Sabra Elawar.
April 2, 1970	IS consults with Hisham Elawar by telephone.
March 5, 1971	IS examines records of accident at police station at Ras el-Matn.
March 1, 1972	IS's second interview with Rabih's parents and first interview with Rabih, in Qornayel.
March 11, 1972	IS interviews Rabih's elder brother Walid in Qornayel.
August 17, 1972	IS's interpreter Wadih Rabbath goes to Qornayel to ask follow-up questions; reports to IS in letter of August 25, 1972.
December 1974-February 1975	IS correspondence with Wadih Rabbath over details of testimony.
	Rabih meets driver of truck involved in accident that killed Chowki.
March 3, 1978	IS's third interview with Rabih's parents, second with Rabih.

June-August 1978	IS exchanges letters with Hisham Elawar.
1980	Publication of IS's report of Rabih's case.
June 2000	Rabih emigrates from Lebanon to the United States.
Sept 19, 2000	From Raleigh, North Carolina, Rabih sends word he would like to be in touch with IS; they speak briefly by telephone, but never meet.
November 2003	Rabih settles in Henrico, a suburb of Richmond, Virginia.
August 20, 2022	CL meets AB at Richmond, Virginia, IONS meeting.
August 26, 2022	CL's first meeting and interview with Rabih at his Lebanese Bakery in Henrico, along with AB and LK.
November 2022	CL meets KH.
July 6, 2023	Second interview with Rabih with AB, CL, and KH (in-person) and JM (via Zoom).
May 8, 2024	CL, KH, and JM meet in person to discuss case.
June 10 2024	Third interview of Rabih, by CL, KH, and JM.
July 9, 2024	Fourth interview of Rabih, by CL, KH, and JM (in person).
July 22, 2024	CL, KH, and JM meet without Rabih.
August 21, 2024	Fifth interview of Rabih, by CL, KH, and JM, with EP.
September 12, 2024	CL, KH and JM meet in Henrico to discuss investigation Symposium preparations.
September 18, 2024	Meeting with CL, KH (in-person), and JM (online).
October 17, 2024	CL, KH, and JM meet in Henrico to discuss investigation Symposium preparations.
October 23, 2024	Sixth interview with Rabih with AB, CL, and KH (in-person) and JM (on Zoom). KH reads Rabih statements Stevenson attributed to him when he was a child.

Note: AB = Anja Brightly, EP = Eric Pires, IS = Ian Stevenson, JM = James Matlock, KH = Khattar Hattoum, LK = Leila Kazzie, CL = Carole Louie.

Stevenson's Investigation, 1969–1978

The following description of Stevenson's investigation draws on his unpublished field notes preserved at the University of Virginia, along with his published report of Rabih's case (Stevenson, 1980). Stevenson first heard about Rabih's past-life memory claims in February 1969 when he was in Qornayel, Lebanon, studying other cases. Rabih had led the way to the house in which he remembered having lived, not far from his own home, about six months prior, and Stevenson lost no time starting his investigation. Rabih had just turned 5 when Stevenson spoke with his parents on February 23, 1969. A week later, Stevenson talked to the father of the young man—Chowki (pronounced SHAUkee) Asaad Sabra Elawar, a distant relative—with whom Rabih identified. On the latter occasion, Stevenson inspected Chowki's house, which figured large in Rabih's memories. When he returned to Lebanon in July 1969, Stevenson met four other witnesses, including Chowki's mother, in Beirut. At the end of March 1970, he conducted additional interviews in Qornayel. In March 1972, he consulted documents at a police precinct in Ras el-Matn, close to where Chowki suffered fatal injuries when the Vespa motor scooter he was driving collided with a truck. Stevenson had a second interview with Rabih's parents in March 1972, when he spoke with Rabih for the first time. Stevenson conducted a third interview with Rabih's parents and a second with Rabih in March 1978.

Stevenson's investigation included telephone calls and correspondence, as well as in-person interviews. Additionally, he tasked his main interpreter, Wadih Rabbath, with follow-up interviews on his behalf. Altogether, Stevenson spoke with or heard from 12 witnesses, some repeatedly, over the nine years he spent on the case. A detailed summary of Stevenson's activities appears in Table 1. Rabih's family and other witnesses on his side spoke only Arabic and required the intermediary of French-speaking Rabbath. All the principal witnesses on Chowki's side were fluent in either English or French, so required no interpreter for Canadian-born Stevenson. One important witness, Chowki's cousin Hisham Elawar, whom Stevenson interviewed in person, also corresponded with him after his return to Charlottesville.

Our Follow-Up Study, 2022–2024

Rabih immigrated to the United States in June 2000 and, after moving around for a while, settled in Henrico, Virginia (a suburb of Richmond), at the end of 2002. There he opened a succession of businesses, including Richmond Area Renovations (a home improvement concern) and a Lebanese bakery and restaurant. He sold his

bakery and restaurant in 2022 but retains his construction enterprise. Rabih spells his surname Al-Aawar and gives his full name as Rabih Amin Ali Al-Aawar, indicating that he is the son of Amin Ali Al-Aawar. We have elected to retain the French-inspired spelling of the surname (Elawar) Stevenson employed in his publications, as his case has become known under this variation.

We became acquainted with Rabih after Carole Louie (CL) heard about a Lebanese Druze man who recalled an earlier life. CL arranged to meet Rabih at his Lebanese bakery, along with Anja Brightly (AB) and Leila Kazzie (LK), in August 2022 (see Table 1). CL audio-taped this initial meeting with Rabih. A few months later CL met psychologist Khattar Hatoum (KH), a Lebanese Druze, and old friend of Rabih. When CL realized that KH was acquainted with Rabih, she reached out to him. CL also contacted James Matlock (JM), with whom she was acquainted on Facebook.

CL organized a meeting in July 2023 with KH, AB, and Rabih in person, with JM included over a Zoom connection. In this meeting, we agreed that Rabih's persisting memories provided an opportunity to study childhood past-life memory retention. Various factors prevented us from proceeding until May 2024, when JM visited Henrico. This second meeting gave us the opportunity to chart our way forward, although Rabih, unfortunately, was unable to attend. Our subsequent meetings with Rabih are listed in Table 1.

We spoke to Rabih in English, with KH interpreting in Arabic occasionally as required. CL recorded all meetings, those with and without Rabih, and generated transcripts of them. JM consulted Rabih's file at the University of Virginia, to supplement his published report (Stevenson, 1980). Rabih told us that he had never read the latter. Although Stevenson sent him an autographed copy of his book, Rabih's English was then very poor and he lent the volume to an acquaintance who never returned it. This provided the opportunity for us to present Stevenson's report to Rabih for the first time in October 2024.

JM dissected Rabih's testimony into a series of discrete statements to compare with the statements credited to him by Stevenson, noting which Rabih had related spontaneously and which were elicited in response to Stevenson's report. Rabih's memories of Chowki (both those collected by Stevenson and reported spontaneously to us) turned out to cluster around a series of episodes, which we describe next. Following this, we compare what Rabih told us to what Stevenson reported in a more systematic way, with the aid of a table and statistical analysis.

Rabih's Memories of Chowki Over Time

Chowki Asaad Sabra Elawar was born in Portuguese Guinea, now the Republic of Guinea-Bissau, in May 1946. His father was a businessman engaged in trade with Africa. His parents lived in Africa for many years but Chowki was sent back to Lebanon to live with relatives when he was three years old. He grew up in Qornayel and attended school in Lebanon. His family was wealthy, possessing a large residence in Qornayel and a second in Beirut. Chowki was fond of motorbikes, but because of his somewhat impulsive nature his family refrained from purchasing one for him. His cousin Hisham was given a Vespa motorized scooter, however, and Chowki was driving this one day in July 1963 with Hisham as passenger, when he rounded a curve at high speed and collided with a truck. Badly injured in the accident, Chowki was carried to a hospital, where he died a few hours later. He was only 17 at the time (Stevenson, 1980, pp. 121–122). Rabih was born six months later, on February 1, 1964, in Qornayel, to a different branch of the Elawar family. His modest house stood further up a tall hill from Chowki's large house, which could not be seen from its vantage. However, Chowki's house was in sight of the residence of Rabih's maternal grandparents, where he spent a good deal of time in his early years (Stevenson, 1980, pp. 117, 119–120).

Rabih's Statements and Recognitions Recorded by Stevenson, 1969–1978

Earliest Memories

Stevenson says that Rabih started speaking late, at about 30 months. He began to refer to a previous life at 36 months. According to his mother, his first allusion to that life occurred at a school for small children that he attended. A teacher called him "Rabih," but he would not respond to this name, insisting that he was "Chowki." Later, at about 3½ years, Rabih began to ask his parents to take him to "my family." He said that "his" family lived further down the hill on which Qornayel is built, specifying that their house was close to a hotel. Once, after being bathed, he insisted on getting dressed again to visit his other family. This was the family of "Uncle Sabra," but given that Druze children are taught to refer to all male elders as "uncle," and "Sabra" occurs commonly among the Druze, the name was non-specific, and his parents did not understand which family he intended.

First Visit to Sabra Elawar House

According to Stevenson, Rabih continued to ask to go to the Sabra Elawar house, but his parents did not know where this was. Nonetheless,

His demands to go to the house were so strong that eventually his parents let him go along the road in the direction he wanted to take, accompanied by his older brother Walid and a cousin, Hamad. Rabih went to the house of Asaad Sabra Elawar, which is located in [Qornayel] about 1.8 kilometers from his family's home. Having reached the house, Rabih boldly entered and found some members of the Sabra Elawar family assembled inside. They asked who he was, and he said: "I am Chowki." He then recognized several members of the family, much to their astonishment, for they had never seen the child before. They took him around the house, and he recognized various places in it that had been familiar to a son, Chowki, of the Sabra Elawar family. (Stevenson, 1980, pp. 117–118)

Item 26 in Table 6 of Stevenson (1980, p. 130) is the recognition of Chowki's mother. Stevenson supplies the following gloss:

This recognition occurred on the occasion of Rabih's first visit to the Sabra Elawar house, when he walked in by himself. Several members of the family were in the living room of the house. According to Mohammed Sabra Elawar, when Rabih entered, he went spontaneously and sat on the lap of Adeel Sabra Elawar [Chowki's mother]. He was asked: "Who is she?" and replied: "Adeel. She is my mother."

Adeel Sabra Elawar said Rabih had told her: "You are my mother," but had not given her name. (Stevenson, 1980, p. 130)

Stevenson credits Rabih with having recognized Chowki's brother Mohammed and several other family members on this first visit to the house. After the recognitions, Rabih was asked to show the way to Chowki's room, which he did, although it was one of multiple possible rooms. He also recognized "a statue of President Nassar of Egypt that had been kept in the attic of the Sabra Elawar house" (Stevenson, 1980, p. 133). Stevenson's gloss reads:

According to Mohammed Sabra Elawar (in 1969), Rabih started to go to the attic of the house. Mohammed Sabra Elawar asked: "Where are you going?" Rabih said: "I want to get Abdel Nasser." He then went directly to the attic

and to the place where the statue was. Mohammed followed him up to the attic.

In 1970 Mohammed Sabra Elawar modified somewhat his earlier testimony. He was no longer positive that Rabih had mentioned the statue of Nasser *before* he went to the attic, although he did not deny that he might have done so. . .

Probably Chowki himself had put the statue in the attic, but it is possible that the maid had put it there. In either case, the family members had no conscious recollection that it was there. Mohammed Sabra Elawar recalled that about two years before his death, Chowki had referred to the statue and had said that it had been damaged. (Stevenson, 1980, pp. 133–134; italics in original)

Salem Stealing Pears

The final item in Stevenson’s Table 6 (Item 56) is the “recognition of young man who had tried to steal pears from the Sabra Elawar orchard” (Stevenson, 1980, p. 144).

A young man of the community who had heard about Rabih’s memories of the previous life met him on the road one day. . . The man said to Rabih: “Well, Rabih, are you going to shoot at me again?” To this Rabih replied: “How about you? Are you still going to steal pears?” The man in question confirmed the appropriateness of Rabih’s riposte. I learned about the events related to these remarks from the Sabra Elawar family. The youth in question had tried to steal pears from the garden of the Sabra Elawar house. . . Adeel Sabra Elawar was sure that Chowki had been the one who fired on the thief. (Stevenson, 1980, pp. 144–145)

Uncle Yusuf’s Gas Station

Stevenson (1980, pp. 126–127; Items 14–17) relates that Chowki’s father’s brother Yusuf (whom Rabih called by his nickname, Abu Tariq, Tariq’s father) owned a gasoline station. Stevenson’s item 16 reads, “Once the filter of the gas pump was plugged; he went with his uncle [“Abu Tariq”] to Beirut, and they fixed the pump.” Stevenson counts this memory claim as unverified, because, he says, Yusuf recalled taking Chowki to

Beirut on several occasions, but not specifically the time they went “in connection with a broken pump,” although he considered it “quite possible” that he had done this. In Item 17, Stevenson credits Rabih with having said that the pump in question was white and blue.

Recognition of Hisham

Stevenson records Rabih’s recognition of Hisham (Stevenson, 1980, p. 141; Item 49), based on testimony from Rabih’s mother. There is no confirmation from Hisham.

Once Hisham passed by Rabih’s house when Rabih was outside the house. Hisham said “Hello,” but nothing more, because he did not place Rabih as a child known to him. Rabih became angry and said in his mother’s hearing: “Once we were friends. Now he does not stop to talk to me.”

Rabih had also seen Hisham on an occasion earlier than this. He had come into his house and told his mother that Hisham had passed by, and he (Rabih) wanted to go and see him. (Stevenson, 1980, p. 141)

Chowki’s Death

Stevenson’s witnesses for Rabih’s talk about Chowki’s fatal accident were Rabih’s mother, Chowki’s parents, and Chowki’s brother Mohammed. Confirmations of the accuracy of Rabih’s statements (Stevenson, 1980, pp. 128–129; Items 19–24) came from Hisham and a report filed with the police station in Ras el-Matn, which had jurisdiction over Deir Al Harf (Stevenson, 1980, p. 122).

Although Stevenson consistently calls the vehicle Rabih was driving a “motorcycle,” he clearly understood that it was a Vespa motorized scooter (1980, pp. 150, 157). He notes that Rabih identified a Vespa he saw as the type of vehicle involved (1980, p. 150). Rabih was afraid of motorcycles and trucks, generalized to cars, per his mother (Stevenson, 1980, pp. 150–151). The only detail about which Rabih was mistaken was that the truck was stopped and unloading, rather than moving, as Stevenson learned from Hisham and the police report (1980, p. 129; Item 23). Stevenson does not specify the type of truck hit or into what it was unloading. He notes that Chowki and Hisham were taken to a hospital, where Chowki died (1980, p. 122), but does not say where this hospital was located, or describe Chowki’s last moments.

Encountering the Truck Driver

Rabih told Stevenson about his encounter with the truck driver during his follow-up visit in 1978. Stevenson's account refers solely to Rabih; he evidently never sought to interview the truck driver for his perspective.

Rabih mentioned that a year before this interview he had met the driver of the truck with which Chowki had fatally collided on July 29, 1963. He recognized this man by his face and afterwards learned his name (normally). Rabih spoke with the truck driver about the accident and said that he was the person fatally injured in it. The truck driver received the information with skepticism and asked Rabih to recount the details of the accident. Rabih said that he had done this to the man's satisfaction. (Stevenson, 1974, p. 158).

Rabih's Memories Related to Us, 2022–24

In telling and retelling his story to us, Rabih never contradicted himself in any important fashion, although he sometimes shared different details. AB and LK participated in our first interview with Rabih, in August 2022. AB participated in our second interview in July 2023, but neither she nor LK were involved in the project thereafter. For convenience of exposition, we have merged Rabih's testimony across our interviews to produce the following narrative, which Rabih has reviewed for accuracy. To facilitate comparison with Stevenson's account, we have organized it under the same headings.

Earliest Memories

Rabih told us that when he started to walk, at about 18 months, it felt "like something broke," and he began to hear buzzing sounds pressing on his mind "24/7." Gradually these noises became clearer and were replaced by imaged memories. When he started talking, he would describe his previous mother as a large, heavy woman, unlike his present mother, who was slender. He recalls that, with his first words, he asked to return to his mother "with the big butt." He repeatedly demanded to be taken back to the family he remembered, which he called "Sabra," but his parents did not make the connection with their distant relatives in Qornayel (the Asaad Sabra family) and made no effort to verify his memory claims.

First Visit to Sabra Elawar House

Rabih remembers that when he was about 4 years old, his mother, in an effort to distract him from his incessant crying for the parents and home he recalled, asked his elder brother, Walid, and a cousin, Hamad, to take him to a store to purchase candy. The shop to which they were headed was downhill from his home, in the direction of the Sabra Elawar house. Along the way, Rabih told the other boys he could find his former home and started walking ahead of them. His hair went up when he saw the black gate to the house's compound and he began to run, getting 30 meters (100 feet) or more ahead of his companions. The gate was open and he ran up the steps into the house, where he found Chowki's mother seated cross-legged on the floor, mashing potatoes. Rabih approached her and announced, "Mom, I'm your son, Chowki," whereupon she passed out.

Hearing noises, Chowki's brother Mohammed entered from an interior room. He asked Rabih who he was, and Rabih replied, "I'm your brother. Have you forgotten me?" Rabih's brother and cousin appeared, and Walid told Mohammed that from birth Rabih had been a difficult child. Ever since he had begun to talk, he had said he wanted to return to his previous family. To test him, Mohammed asked Rabih to take him to his old room, which Rabih did.

Rabih reminded Mohammed of a statue of Gamal Abdel Nasser of Egypt, dear to Mohammed, which he said he (Chowki) had hidden in an attic room "near the chair behind the water cooler [cistern]." Chowki's cousin and best friend Hisham had been with him at the time. Chowki had engraved the stone statue with a swastika, to tease Mohammed. "He's going to kill us if he sees that," Hisham had said, and they had decided to hide the mutilated statue in the attic. Rabih led the way to the attic and retrieved the artifact. "Oh my God," responded Mohammed, hugging Rabih. Meanwhile, Chowki's mother had been revived with a drink of water. She too hugged Rabih, who told her, "I miss you. I've been looking for you."

Salem Stealing Pears

Rabih recalled that Salem was working abroad when he began talking about Chowki, but when Salem returned to Qornayel, he visited Rabih, wanting to test Rabih's memory for himself. They met when Rabih was about 3. Salem asked Rabih if he were Rabih. "No, I'm Chowki," Rabih told him. He would become angry when called Rabih, wanting to be called Chowki. "Are you going to shoot me again with a BB gun?" Salem asked. "Are you going to steal pears again?" Rabih responded.

Rabih told us details about this incident that Stevenson apparently did not hear. He said that at the time, Chowki was alone in his house, shooting small birds in the courtyard with a BB gun, when he saw Salem enter the courtyard and pull pears from a tree, gathering them in his up-turned shirt. Chowki shot him on his belt, at which Salem bolted, dropping the pears. Rabih thought that only Chowki and Salem had known about this incident, which had occurred shortly before Chowki's death.

Uncle Yusuf's Gas Station

Rabih stated that Chowki's father's brother, Yusuf Sabra Elawar, was the proprietor of a gasoline station in Qornayel. Rabih recalled that on one occasion Chowki had accompanied Yusuf to Beirut to purchase a new nozzle for the gas pump. Rabih recounted that he recalled this incident one day when Yusuf happened to visit his (Rabih's) father. Rabih told his father what he recalled and his father confirmed its correctness with Yusuf. In response to hearing that Stevenson had recorded that he had said that the pump was painted white and blue, Rabih claimed to still recall this.

Recognition of Hisham

As with other incidents, Rabih gave us a fuller (and partially divergent) account of his meeting with Chowki's cousin Hisham than that reported by Stevenson. Hisham was riding as a passenger on the Vespa at the time of the accident but threw himself off before impact and survived with a broken leg. In addition to the Vespa, he drove a Ford Taunus, a sedan made in Germany, sold throughout Europe, and exported abroad. Rabih told us that he saw this car when Hisham was visiting a house close to his and recognized it and Hisham. Running to Hisham, he exclaimed, "Hisham, you're still alive. How are you alive? I thought you died with me." "Who are you?" Hisham asked, puzzled. "Hisham, don't you know me? I'm Chowki," Rabih said. At this, Hisham hugged him, tears in his eyes. "Why did we use to go to the hotels?" he asked Rabih, as a test. "Because there was a girl coming from Beirut. We used to love her," Rabih responded. "He just hit the ceiling," Rabih told us. He estimated that he was about 4 years old at the time of this exchange.

Chowki's Death

Rabih recalled that he, as Chowki, and Hisham were playing cards in a café they frequented when they decided to take Hisham's Vespa to visit one of Chowki's sisters

in the town of Ras el-Matn. Rabih was driving the Vespa on the outskirts of the small village of Deir Al Harf when he rounded a curve at high speed and hit a dump truck coming from the opposite direction, intent on off-loading its cargo at a trash-collection site by the side of the road. Rabih told us that he (Chowki) and the truck driver tried to avoid each other but could not. The Vespa struck the truck's front fender. Its steering wheel turned and struck Chowki in the stomach and groin and his head hit the fender.

Rabih remembers that the truck driver held him and stopped a small red car, urging the driver to take them to a hospital in Beirut, 20 miles away. He and Hisham were put on the back seat of the car. The next thing he recalls was being in the hospital, with Hisham's mother sitting beside him. She told him, "Chowki, you'll be OK. I have your watch and your ring and stuff," articles he used to have in his wallet. Chowki said to her, "I'm thirsty, I'm very thirsty, I want to drink." The attending nurse said, "Don't give him water. His blood pressure is very low. Do not give him water. He will die if you give him water." Hisham's mother said, "But can I just, with the napkin, dip it in water and put it in his lips?" The nurse said, "It's up to you." Hisham's mother did this and, "boom, I was gone. That's the last thing I remember—the napkin on my lips."

Encountering the Truck Driver

Rabih told us that his father, who had worked for a while as a contractor, was asked to have a short (500-meter) extension of their road built to a neighboring house and hired a man with a dump truck to bring gravel for the road. As was the custom, the man was invited for lunch, and as he talked, he related that a few years previously he had accidentally killed a man from Qornayel on the Ras el-Matn highway when the man's motorbike struck the front of his truck. Another man was badly injured in the accident. Rabih's father listened without commenting, then called Rabih from his play and asked him to recount his memory of how Chowki died. Rabih did so and the truck driver started pulling his hair and crying. He asked Rabih what else he remembered. Rabih said that he (Chowki) and Hisham were put into the back of a red car and taken to a hospital in Beirut. The man affirmed that this had happened. The car which took Chowki and Hisham to the hospital was indeed a small red car, a Datsun 1200.

Rabih's Responses to Hearing Additional Statements Reported by Stevenson

On the evening of October 23, 2024, after we had spent some months interviewing Rabih about his memories of Chowki, KH read Rabih additional statements attributed to him by Stevenson in his 1969–1978 field notes and 1980 book. CL was in the room on this occasion, with JM participating via a Zoom link. The items KH read were either ones Rabih had not mentioned spontaneously or which differed in some respect from his spontaneous recollections. These items can be identified from the codes “C” (cued) and “F” (forgotten) in the righthand column of Table 2. Rabih not only claimed to recall most items, hearing some prompted him to add related details not noted by Stevenson.

Table 2 supplies a comprehensive list Rabih's statements about Chowki and his recognition of people, places, and objects related to Chowki, recorded by Stevenson in his unpublished field notes of 1969 to 1978 and in his published report of 1980, and compares them to Rabih's memories related to us in 2022–2024. Rabih's statements are listed in the rough chronological order employed by Stevenson, rather than by the episodes described above. Emphasis is on evidential aspects of the statements, of paramount concern to Stevenson. Thus, Rabih's statements made before and after his first visit to the Sabra Elawar house are separated in the table, which indicates whether Stevenson judged statements true (correct), false (incorrect), or unverified. Rabih's recognitions of people, places, and objects related to Chowki appear following his statements about Chowki.

The numbers Stevenson assigned to items are marked in parentheses in the lefthand column of the table. Witnesses for published items are noted by Stevenson in his Table 6 (1980, pp. 124–145); witnesses for items from Stevenson's field notes are indicated in brackets in our Table 2. Even though he observes that he spoke to Rabih in 1972 and 1978 (1980, pp. 156, 157–158), Stevenson does not credit Rabih as contributing any of the tabulated items, and only his 1978 field notes preserve a record of an interview with Rabih. On that occasion, Stevenson was most interested in learning if Rabih retained memories of Chowki, although he did not ask Rabih to recount them. This is the occasion on which Rabih told Stevenson about meeting the driver of the truck struck by Chowki.

Correspondences between Rabih's memories related to us and Stevenson's account of Rabih's memories in childhood are shown in the righthand column of Table 2. When Rabih told us something spontaneously, mostly in our earlier interviews, the item

is marked with an S. If Rabih claimed still to remember an item when it was read to him in October 2024, it is marked with a C, for “cued.” If Rabih said he no longer remembered an item, it is marked F, “forgotten.” If Rabih mentioned something to us that was not recorded by Stevenson, it is marked N, “new.” Discrepancies between Stevenson’s account and Rabih’s memories in 2022–24 are marked D. A few items are assigned more than one code, if their details are of mixed status.

Table 2

Comparison of Rabih’s Statements and Recognitions Recorded by Stevenson with Rabih’s Memories in 2022–24

Item	Stevenson’s Notes, 1969–78, and Report, 1980	Rabih’s Memories in 2022–24
Statements Made Before Meeting Chowki’s Family		
1	(1) His name was Chowki. At school at 3 years, Rabih would not respond to his name, insisting that he was Chowki. True.	S/C: Rabih spontaneously recalled wanting to be called Chowki and when asked about the episode at school, said he recalled this too.
2	(2) His family lived at the “Sabra house.” True for Chowki.	S
3	(3) The Sabra Elawar house was beside a hotel. True.	C
4	(4) The Sabra Elawar house was at a lower elevation than the hotel. True.	C
5	(5) The Sabra Elawar house was superior to his present house. True.	S
6	(6) The Sabra Elawar house had a black iron gate in front of the stairs. True.	S
7	(7) The shutters of the Sabra Elawar house were red. True.	C
8	(8) The Sabra Elawar house had stairways inside, whereas his present house had stairways only outside. True.	C
9	(9) He had brothers and sisters. Judged partially correct, because Chowki had three sisters, but only one brother.	C: Rabih said correctly that Chowki had one brother and three sisters.

10	(10) His brothers and sisters were fat (overweight). Judged true, if perhaps exaggerated.	C
11	(11) Asaad was his father. (Said in response to discussion about him = name recognition.) True for Chowki.	C
12	(12) He had a sister named Mona. True for Chowki.	C
13	(13) His mother was twice as big as his present aunt. True for Chowki.	PS: Rabih described his previous mother as being a large woman, unlike his mother, but did not compare her to his aunt.
14	(14) "Abu Tariq" (Tariq's father) was his uncle. True for Chowki.	C: Rabih did not spontaneously use the nickname, Abu Tariq, for his paternal uncle, whom he called by his name, Yusuf.
15	(15) "Abu Tariq" owned a gasoline station. True.	S: Rabih identified Yusuf as owning the gas station.
16	(16) Once the filter on the gas pump was plugged; he went with his uncle to Beirut, and they fixed the pump. Unverified.	S: In Rabih's telling of this story, it was the nozzle of a pump that was clogged.
17	(17) "Abu Tariq" painted the pump white and blue. True.	C
18	(18) All his family lived close together. True for Chowki.	C
19	(19) He was in an accident at Deir El Harf. True for Chowki.	S
20	(20) He was driving a motorcycle. True for Chowki, assuming the Vespa motorized scooter is equivalent to a motorcycle.	S: He was driving a Vespa motorized scooter, which Rabih referred to as a "motorcycle" when talking with us.
21	(21) He had a companion with him on the motorcycle. True for Chowki.	S
22	(22) This companion was his cousin Hisham. True.	S
23	(23) They hit a truck coming in the opposite direction. Incorrect, per Hisham and accident report.	S

24	(24) They hit the truck just at [after rounding] a curve. True.	S
25	[Hamad Elawar 3/3/1970] When he saw Vespas, Rabih said that was the type of vehicle he was on when he crashed into the truck. True for Chowki.	S
26	[Hamad Elawar, 3/30/1970] When he heard that Mohammed Sabra Elawar was engaged to be married, Rabih said that Mohammed was "his" brother and was upset at not having been invited to the wedding.	C
Statements Made After Meeting Chowki's Family		
27		N: When he started to talk, Rabih told his mother she was not his real mother; his real mother had a "big butt." The description of Chowki's mother is correct, but that Rabih said this with his first words is unverified.
28		N: When he entered the Sabra Elawar house, he found his (Chowki's) mother seated cross-legged on the floor, peeling potatoes in preparation for boiling and mashing them. Unverified.
29	For Stevenson's note of this incident, see Item 61, under Recognitions.	S/N: He (Chowki) had engraved a swastika on a stone statue of Abdel Nassar to tease Mohammed, then, fearing Mohammed's response, he and Hisham had hidden the statue behind a cistern in an attic room. Although Rabih located the statue where he said Chowki had put it, the circumstances leading to this action are unverified.
30	For Stevenson's note of this incident, see Item 70, under Recognitions.	S/N: He had shot a friend, Salem, on the belt with a BB gun he was using to shoot birds in the Sabra Elawar garden, when he observed Salem stealing pears from trees in the garden. True for Chowki.

31	(38) Once a man dressed in black had come to his old house and talked to the Syrian maid through a window. True for Chowki.	C
32		N: He had attended school in Broumana. True for Chowki. (Stevenson does not record Rabih having stated this, although it is implied in Item 33.
33	(42) There was a swimming pool at the school in Broumana. True.	C
34	(43) He had worn a pair of black glasses. True for Chowki.	C
35	(44) He had owned a camera. True for Chowki.	C
36	(50) Hisham used to chew his fingernails. True.	C
37	(45) The motorcycle he was driving at the time of his accident was a Vespa. True for Chowki.	S
38	(51) The motorcycle was gold in color. True.	C: When this statement was read to him, Rabih hesitated at "gold," then said the Vespa had been yellow.
39	(52) There were badges on the motorcycle. True.	C
40	(53) On the motorcycle were written the words, "If you pass me, you can have it." True.	C
41	(54) The license number of the motorcycle was 4195. True.	F: Rabih said he did not now recall this detail.
42	(55) The motorcycle had three speeds. True.	

43		N: The truck he and Hisham collided with was a dump truck. Unverified.
44		N: The dump truck was going to unload its cargo at a refuse collection site. Unverified.
45	(46) He died, but his friend survived. True.	PS: Rabih told us that until he met Hisham, he had presumed that both of them had died.
46		N: After the accident, the truck driver flagged down a red car and put him and Hisham in the back seat. True.
47	(47) He died in a hospital. True for Chowki.	S
48		N: The hospital was in Beirut. True.
49		N: Hisham's mother was there. She touched a moist towel to his (Chowki's) lips, and that's the last thing he (Rabih) recalls. Unverified.
Recognitions of People, Places, and Objects		
50	(25) Recognition of Sabra Elawar house, leads way to house.	S
51	[Hamad Elawar, 3/30/1970] When Rabih identified himself as Chowki, Chowki's mother dropped a tray of food she was carrying.	C: Rabih confirmed this, explaining that Chowki's mother had the potatoes she was peeling on a tray on her lap. She dropped the tray when she fainted.
52	(26) Rabih went and sat in Chowki's mother's lap and, in response to a question about who she was, identified her as his (Chowki's) mother.	C: According to Rabih, he (Chowki) did sit in his mother's lap, but after she had been revived from her fainting spell. By this point, he had already identified himself to her (see Item 26).
53	(28) Recognition of Chowki's brother Mohammed.	S/D Stevenson says that Rabih's identified Mohammed as his brother in response to a question, whereas Rabih told us he did so spontaneously.

54, 55	(27, 29) Recognition Chowki's father and grandfather.	C/D: Stevenson says that Rabih encountered several members of the family in the living room when he entered, but Rabih told us that Chowki's mother was alone and that the others arrived afterward. However, when prompted, Rabih recalled having recognized Chowki's father and grandmother, in addition to Chowki's mother and his brother Mohammed.
56	(30) Recognition of room where Chowki slept	S
57	(31) Recognition the pictures had been removed from Chowki's room	C
58	(32) Recognition of place where bed had been during Chowki's lifetime.	C
59	(33) Recognition of locker used by Chowki for his clothes.	C
60	(34) Recognition of room where Chowki's brother Mohammed had slept.	C
61	(35) Recognition of Nassar statue "that had been kept in the attic of the Sabra Elawar house." Rabih had let the way to the attic and retrieved that statue.	S/C: Rabih did not spontaneously describe having led Mohammed to the attic to retrieve the statue, although when asked, recalled having done this.
62	(36) Recognition of place cycles kept under the stairs in the Sabra house.	C
63	(37) Recognition of garage with well inside.	C
64	(41) Recognition of road to Broumana.	C
65	(39) Recognition of (intersection of) road to Deir El Harf.	C
66	(40) Recognition place on outskirts of Deir El Harf where accident occurred.	C

67	(49) Recognition of Hisham	S/D: Rabih recounted his meeting and recognition and meeting of Hisham, but under different circumstances than reported to Stevenson.
68		N: He recognized Hisham's Ford Taunus car.
59	(48) Recognition of Chowki's maternal aunt	C
70	(56) Recognition of young man who had tried to steal pears from the Sabra Elawar orchard, whom he met on the road one day.	S/D: Mentioned spontaneously by Rabih, but he named the man, Salem, and told us Salem had sought him out and come to his house to question him.
71	Recognition of truck driver (noted by Stevenson, 1980, p. 158)	S: Mentioned spontaneously by Rabih, with additional details.
	<i>Note:</i> Numbers in parentheses are numbers assigned to statements in Stevenson (1980, Table 6, pp. 124–145). Information in brackets refers to Stevenson's unpublished field notes. # Items not spontaneously recalled by Rabih but presented to him on October 23, 2024.	<i>Note:</i> C = Cued; recall claimed when prompted on October 23, 2024, D = Difference; unresolved discrepancy, F = Not recalled presently; forgotten, N = New item, not reported previously, PS = Partial spontaneous recall; some elements not recalled spontaneously, S = Remembered spontaneously; still recalled

Statistical Summary

We now summarize statistically the lessons we can glean from Table 2. Stevenson recorded 39 statements about Chowki attributed to Rabih in childhood, 37 in his book (1980) and another 2 only in his fieldnotes. Some 26 (66.6%) were reported to have been made before Rabih met the Sabra Elawar family. Of the 39 statements, Stevenson judged all but 3 (92.3%) to be fully or substantially correct. One (our Item 9) was partially correct; one (our Item 24) was incorrect; and one (our Item 16) was unverified.

In adulthood, Rabih recalled 49 discrete items, including 10 not reported for him in childhood (20.4% of the total). Of Stevenson's 39 items, Rabih recalled 17 (43.5%) spontaneously or partially spontaneously and claimed to recall another 21 (53.8%) when asked about them. He responded to Stevenson's three partially correct, incor-

rect, or unverified items in the same way he is reported to have related them as a child. Rabih said he could not recall (had forgotten) only one item (our Item 41) (2.7%). (In these calculations, we are ignoring the second code for those items which have two to avoid double-counting.)

Stevenson recorded 20 recognitions of people, places, or objects by Rabih. Of these, 8 (40%) were of people, 9 (45%) were of places, and 3 (15%) were of objects. All recognitions took place after Rabih first visited the Sabra Elawar house. Rabih spontaneously mentioned having made 7 (35%) of these recognitions and told us that he recalled making another 13 (65%) when we read him Stevenson's list. Rabih spontaneously mentioned one additional recognition, of Hisham's Ford Taunus (our Item 68), in his account of how he met Hisham, which was at variance with Stevenson's account of this (our Item 67). There were discrepancies between what Stevenson recorded and Rabih recounted to us spontaneously in three other instances (our Items 53, 54, and 70—concerning the recognition of Chowki's brother Mohammed, where Chowki's family was when he entered their house the first time, and the circumstances under which he met Salem. All four discrepancies concern Rabih's present life, not Chowki's life, and may be attributable to faulty information given Stevenson by the witnesses to whom he spoke.

Discussion

Remembering has neurological signatures, which is what leads to the assumption that memory depends on cerebral "traces," despite the fact that even single-celled organisms such as bacteria can remember (Reber et al., 2023). Because prokaryotes were in existence long before nervous systems and brains developed phylogenetically, it is clear that the cerebral trace theory of memory is in error. Memory—at least long-term memory—must be recorded outside the brain, a logical possibility being in or on the subconscious stratum of mind (Matlock, 2019).

Matlock (2019) proposes that reincarnation involves the possession of a body by a consciousness stream that has survived the demise of another body. Upon reincarnation, there is a "reset" at the level of conscious awareness, but information in the subconscious is available to the new person and may influence him or her from within. Matlock explains the transfer of physical traits, including the neurological pathways that support both implicit and explicit memory, as a psychogenic (psychokinetic) activity of the reincarnating consciousness stream. If Matlock's model is correct, we should see patterns of past-life memory conforming to patterns of present-life memory, and we do. It is significant that Rabih's past-life memory centers on events

of emotional significance, because the emotional valence of episodic memories is known to be a major factor in their retention (Yonelinas & Ritchey, 2015). Cuing and repetition are important factors in episodic memory retrieval as well (Wimmer et al., 2020). Now, of course, there are two lives involved here. Rabih's past-life memories were of events that likely impressed Chowki and thus carried over into Rabih's mind, where they were retained until age 60 and likely will be for the duration of his life.

With most people, there is significant forgetting of memories over time (Bauer, 2015). Rabih appears to be exceptional in his retention of past-life memories from childhood into adulthood, but he is not unusual in claiming to remember as an adult some things that were not recorded for him in childhood. The 10 new items Rabih recounted constitute 20.8% of the 48 items we tabulated, less than half the proportion of new items reported to Haraldsson and Abu-Izzeddin (Haraldsson & Abu-Izzeddin, 2012) and to Pires (Ávila Pires, 2024).

In the abstract of their paper (Haraldsson & Abu-Izzeddin, 2012, p. 985), Haraldsson and Abu-Izzeddin say that the large number of new statements raises "the question of false and distorted memories," but in their text (Haraldsson & Abu-Izzeddin, 2012, p. 987) they provide an alternative interpretation: "This indicates that half of the statements remembered today are either fictional or distortions of the original childhood memories *or that the old lists of statements might have been incomplete*" [our italics]. We suspect the latter is the answer with Rabih. A closer look at the discrepancies between Stevenson's report and our interviews reveals why we believe this.

Rabih's version of his first visit to the Sabra Elawar house differs in some respects from Stevenson's. Rabih told us that, when he entered, he found Chowki's mother seated on the floor mashing potatoes, but Stevenson wrote that he encountered the entire family in the living room. According to Stevenson, Rabih went and sat on Chowki's mother's lap and introduced himself as Chowki (our Item 52). Hamad Elawar (the cousin who followed Rabih into the house) told Stevenson that Chowki's mother had dropped a tray of food when she saw him (our Item 51). Stevenson did not include this last item in his case report, perhaps because he could not reconcile it with what other witnesses had testified, but when we asked Rabih about these differences, he explained them in a way that seems to us very natural. He said that Chowki's mother was alone when he entered the house. She had the potatoes she was mashing on a tray, which she dropped when she fainted. He indeed had sat on her lap, but later, after she had been revived, and other members of the family had appeared. Rabih insists that he recognized Mohammed spontaneously, although Mohammed apparently told Stevenson it was in response to a question about who he was (our Item 53). Stevenson's

account, based on interviews with various informants, appears to condense a series of events. If Rabih's testimony is credited, however, all apparent contradictions, except for the circumstances under which Mohammed was recognized, disappear.

Rabih's testimony on other incidents—Salem stealing pairs, Chowki's last moments—likewise add context to Stevenson's accounts without necessarily contradicting them. Rabih told us that with his first words he referred to Chowki's mother as his mother "with the big butt," whereas Rabih's mother told Stevenson that Rabih's first allusion to the previous life occurred at school, when he insisted his name was Chowki and refused to answer to Rabih (our Items 1 and 2). If Rabih's version is correct, it may be that his mother considered his characterization of Chowki's mother too embarrassing to relate to Stevenson. The most divergent episode is Rabih's recognition of Hisham (our Item 67). Rabih told us that this occurred when he happened to see Hisham with his Ford Taunus, but his mother told Stevenson something different. She is Stevenson's only witness for this and it seems possible that she was mistaken or that it was her memory, rather than Rabih's, which is faulty here. Stevenson's interviews with Hisham focused on details of the accident rather than his meeting Rabih, and Stevenson's notes are silent on this issue. Unfortunately, it is no longer possible resolve discrepancies such as this, because of the deaths of witness with the passage of time.

We can document but a single significant memory failing on Rabih's part, but it is not a new one. Rabih recalls that the truck Chowki struck was moving at the time, and that he and the driver maneuvered in an attempt to avoid each other. This evidently matches Rabih's childhood memories, yet according to Hisham and the police report of the accident, the truck was stationary and unloading when Chowki hit it (Stevenson, 1980, p. 129; Stevenson's Item 23, our Item 24). It is notable that Rabih's mistaken memories of the accident are the same now as they were when he was young. Matlock (2019, p. 130) observed that although deaths are very often recalled by children in reincarnation cases, the recollections of these events frequently are distorted.

Rabih admits to having forgotten only a single item recorded by Stevenson—the Vespa's license plate number. Rabih told us that he retained even his cued memories of Chowki, although he did not always remember the occasion or occasions on which he spoke about them in childhood. In general, he said, his present memory of Chowki's life was clearer than his memories of his own early years. As in most reincarnation cases, Rabih used the first person in describing his memories, demonstrating the persisting strength of his identification with them. This identification was expressed also in his demand to be called Chowki and his expectation, when young, of being recognized as Chowki, evidently not appreciating that his altered physical appearance made this impossible.

The strength of Rabih's memories of Chowki in adulthood is all the more impressive because he seldom shared them over the years. KH, who knew Rabih in Lebanon before they both immigrated to the United States, was unaware that Rabih remembered a previous life until apprised of it by CL at the start of this study. How may we account for the strength of Rabih's memories of Chowki, then? The most obvious answer is that Rabih was presented with reminders of Chowki from the very beginning of his life. Cuing plays a large role in the emergence of past-life memory (Matlock, 2019), and Rabih certainly had numerous and pervasive cues that would have helped not only to bring forth his memories of Chowki initially but to maintain them over time.

The new items in Rabih's memories do not look to us as if they were imagined. All were related to the same set of episodic memories he recounted as a child, and it seems more likely that they did not come to Stevenson's attention, due to his reliance on witnesses to Rabih's statements rather than testimony from Rabih himself. This means that the comparison of Rabih's adult memory claims to what was recorded for him in childhood is an unreliable measure of memory retention; the baseline data are indirect, and hence compromised.

We are concerned here with a single case study, and cannot know how widely this conclusion is generalizable, but it would seem to point to a compounding factor in all memory retention studies that rely on data collected from adult witnesses, rather than the children with the past-life recall, for baselines—which would be most reincarnation cases. Stevenson never explained why he did not interview his child subjects, but he rarely did. Our guess is that it has to do with doubts about the ability of many young children to recall events on demand and ethical issues related to unintentionally reinforcing their memories, thereby keeping the children mired in the past rather than furthering their adjustment to present circumstances.

It may not be possible to develop reliable and ethically sound procedures for interviewing young children about their past-life memories, but we believe that older children certainly can be and should be interviewed. Stevenson missed an opportunity to interview Rabih in depth when he was 14, but people in middle to late childhood have sometimes been consulted to good effect. Jürgen Keil was able to solve a case on the basis of interviews with 6-year-old Kemal Atasoy (Keil & Tucker, 2005) and Matlock (2019) heard a significant new memory claim (consistent with an autopsy report) from 10-year-old Rylann O'Bannion. Researchers working with older children whose past-life memories are still active would be well advised to interview them. Interviewing children directly not only would provide a good baseline for later memory retention studies but would bypass questions about the reliability of memories of adult witnesses reporting what they observed with the children.

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Sensing Accuracy: A Survey of Experienced Remote Viewers' Awareness of Correctness and Being on Target¹

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Abstract: *Objective.* Remote viewing data frequently contain a mixture of accurate and inaccurate elements, which has raised concerns regarding its reliability in applied contexts. The objective of this study was to examine whether remote viewers report being able to recognize when specific pieces of information are correct. *Methods.* A survey using an experience-centered, phenomenological approach was administered to remote viewers with varying levels of training and experience, recruited through snowball sampling, yielding 122 valid responses. *Analysis.* Quantitative analyses and thematic coding of open-ended responses were conducted. *Results.* Results showed that 89% of participants reported experiencing a sense of correctness regarding specific target details that were later verified. Among those endorsing this experience, 37% reported it occurred occasionally, 42% often, and 7% during every session. Most respondents (86%) indicated this awareness was developed independently through personal practice while 14% attributed it to instruction. Participants identified recurring phenomenological markers associated with correctness, including unexpected or surprising information, persistent or repeating impressions, vivid or unusual imagery, suddenness or immediacy, emotional impact, and instant cognitive “downloads.” Attitudes toward the study’s focus were mixed, with participants expressing both supportive and critical perspectives. *Conclusions.* Remote viewers report subjective cues they associate with accuracy at the level of specific target elements, paralleling reports from participants in forced-choice psi experiments, which may have implications for future research on confidence judgments and reliability in remote viewing applications.

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Remote viewing spans a 55-year history that includes over three decades of classified governmental research, exploration, and operational usage, followed by 25 years of further development through educational, research, and applied efforts carried out with civilians. These efforts and the efficacy of remote viewing have been well-documented. Targ and Katra (2000) defined remote viewing as “the acquisition and description by mental means of information blocked from ordinary perception by distance, shielding, or time” (p. 4). Swann (1993) described it as a “type of experiment” involving a design that utilizes psi and requires blinding protocols, feedback, and analysis (p. 75). The International Remote Viewing Association (IRVA) defines it as

a novel perceptual discipline for gaining information that is not available to the ordinary physical senses. For example, a viewer might be asked to describe a location on the other side of the world, which he or she has never visited; or a viewer might describe an event that happened long ago, or describe an object sealed in a container or locked in a room; or perhaps even describe a person or an activity; all without being told anything about the target—not even its name or designation. (IRVA, n.d.)

A recent meta-analysis of 36 studies with a total of 40 effect sizes, using both frequentist and Bayesian methods, revealed a strong average effect size of .34 (95% confidence interval: .22–.45). In the raw scores, these results correspond to a difference in hits of 19% (95% confidence interval: 14%–25%) above chance expectations. This prompted the authors (Tressoldi & Katz, 2023) to conclude:

A comparison among meta-analyses results observed with other experimental protocols testing extrasensory perception showed the clear superiority of remote viewing. After more than 50 years of investigation into extrasensory perception, remote viewing experimental protocols appear to be the most efficient for both experimental and practical applications. (p. 467)

A survey of experienced and professional-level remote viewers found that “remote viewing applications are wide, spanning from business to scientific and intelligence applications, and for the use of personal, corporate, and public agencies. The range of the training and experience with remote viewing was expansive, and the majority used mixed methods depending on the project... [They] expressed both awareness of and respect for the scientific principles related to blinding and separation of

roles, yet there was a range of views regarding the practicality of adhering to these for application purposes” (Katz & Tressoldi, 2022, p. 135). There are practical uses include intelligence gathering, treasure hunting, oil exploration, crime solving, health diagnosis, personality profiling, scientific discovery, locating missing people, pets, and objects, and gaining insights into esoteric topics such as orbs, UFOs, and non-human lifeforms. Another popular application is predicting future outcomes of financials, sports, elections, and the lotto (Katz & Knowles, 2023), and anticipating future weather events or disasters (Brown, 2005).

Issues with Accuracy and Confidence

Despite its promising results, researchers and government evaluators from its inception (Kreiss, 1977) have noted that remote viewing data often includes a mixture of correct and incorrect responses. This leads to a decrease in confidence that remote viewing can be used effectively or consistently in many real-life scenarios. Project managers must find ways to assess whether to include all or partial data when reporting to a client, and confusion may reign when a team of viewers have contradictory data. Therefore, finding a mechanism to know when viewers are on target or when they are correct about aspects of a target would serve to make this practice more reliable.

Many efforts have been made to improve accuracy in remote viewing and other free-response-type studies. These include training efforts (Smith, 2005); selecting targets thought to produce better results (Delanoy, 1989; Honorton et al., 1990; Honorton & Schechter, 1987; Katz & Knowles, 2023; Watt, 1989); constructing homogenous target pools integrated with analysis approaches (Humphrey et al., 1988; May et al., 1985, 1990; May & Spottiswoode, 1994); and utilizing approaches that have “redundant protocols” built in, such as multiple judging techniques, multiple judges, or multiple remote viewers for a single trial (Katz et al., 2021, 2022; Targ et al., 1995). Other ways of increasing success in remote viewing for predicting future outcomes include databasing impressions to identify which types of data individual viewers tend to get correct (Buchanan, personal communication, 2023) and combining intuition and logic for future-based predictions (Kolodziejzyk, 2012).

Confidence Calls in Parapsychology

A “confidence call” refers to the act of declaring how confident one is with a choice, mentation, or intuitive input made while carrying out a psychic task during an

experimental trial (Tart, 2001). Few formal remote viewing studies have examined the accuracy of confidence calls, some going back several decades. Most of these centered on forced-choice tasks that allowed respondents a very short time period—often from one to ten seconds, in rapid succession—to choose between a predetermined set of targets. For example, Kanthamani and Kelly (1974) conducted three series of card-guessing experiments, utilizing an exceptional participant, B.D., who had previously established high degrees of accuracy in similar experiments. In the first two series, he made 25 confidence calls, all of which were entirely correct. In the third series, he made 20 calls; fourteen were entirely correct, and six were partially correct.

For most forced-choice experiments, psi participants were rarely asked about the experiences that led to their choices or “guesses.” That changed when McCullum and Honorton (1973) used structured interviews to gain insights into participants’ experiences during trials where they had made correct confidence calls. Those who based their calls on a combination of intuition and somatic feelings showed the best results.

Watt (1996) published three studies involving forced-choice tasks in which participants were required to indicate whether their choices were based on impressions or guesses. She concluded that

Participants may have more success with forced-choice ESP impressions, particularly if these participants have had previous experience that may have facilitated the recognition of the characteristics of accurate ESP impressions. The importance of the phenomenological experiences underlying participants’ laboratory ESP mentations and calls is stressed. (p. 97)

In her review of the past literature, she concluded, “Despite this, however, the results of the studies reviewed above suggest that under certain conditions, participants can indeed have conscious insight into when they are having a correct psi impression under forced-choice conditions” (p. 98).

Mixed Methods Approaches to Confidence Calls: Surveying Participants

Milton (1994) conducted a mixed-methods study in which participants were given a forced-choice ESP task and later asked questions about their guessing strategies. Most often, respondents mentioned having an unusually vivid or clear image, a hunch, or just an overall feeling of confidence. Results were only slightly better for trials in which confidence calls were based on vivid imagery compared to “hunches.” Milton

suggested that those who took more time using introspective styles might achieve greater success with confidence calls to increase accuracy. However, the results of her study did not provide significant support for this. She noted that the short time span given to psi participants by researchers—who believed a guess was a subconscious reflex requiring little introspection—might not have been conducive to deeper reflection leading to confidence.

Phenomenological Inquiries

Only a small number of studies have surveyed participants on their experiences of what leads to success in psi-based tasks. White (1964) surveyed gifted participants and found consensus that preparation through relaxation, focus, and clearing the mind—followed by waiting for impressions to come in—often led to greater accuracy. Vivid and spontaneous imagery generated greater confidence in the moments they were received by many participants.

Research from the Windbridge Foundation has extensively explored the phenomenology of mediums, focusing on their subjective experiences and reading accuracy. Rock et al. (2009) conducted a qualitative analysis of six certified mediums and found distinctions between mediumship readings (survival psi) and psychic readings for the living. Mediumship experiences included unique features, such as olfactory signs, verifiatory cues, and independence themes, which were absent in psychic readings. These findings suggest that mediums can differentiate between the two types of readings, potentially improving accuracy.

Beischel et al. (2017) surveyed 127 mediums, 97% of whom reported being able to distinguish between discarnate communication and psychic information about the living. Mediums identified unique sensory aspects, such as taste and food-related themes, in mediumship readings that were not as prevalent in other types of readings. Their content analysis found that mediums often experience multiple sensory modalities that function concurrently in both mediumistic readings and psychic readings. Both involve similar emotional aspects as well.

Rock et al. (2014) investigated the relation between mediumship accuracy and specific PCI (Phenomenology of Consciousness Inventory) dimensions, identifying a significant negative correlation between self-awareness and accuracy ($r[16] = -.43$, $p = .04$). This suggests that as mediums become less “aware of being aware of myself,” their accuracy scores increase. Building on this, Beischel et al. (2021) conduct-

ed a quantitative study involving 10 masked mediums across controlled conditions, examining phenomenology and accuracy across 26 PCI dimensions. Their findings showed that dimensions such as altered time sense, imagery, and self-awareness were consistent across psi conditions. Accuracy scores correlated uniquely with certain dimensions, including feelings of love during mediumship readings. Although no significant differences were observed in affect, memory, or rationality across conditions, the study reaffirmed the link between lower self-awareness and higher accuracy scores, particularly in mediumship readings. Researchers noted limitations, such as non-masked raters potentially influencing results, but the findings emphasize the critical role of phenomenological factors in mediumship accuracy.

Purpose of the Study: Remote Viewing and Confidence Calls

Ingo Swann, who has been referred to as “the father of remote viewing” (Katz, 2001), extensively studied his own and others’ experiences to identify indicators of accuracy during remote viewing sessions. His insights led to the development of the Controlled Remote Viewing (CRV) methodology, a structured, stage-based approach widely adopted today (Smith, 2014; Swann Archives, n.d.). A key aspect of CRV is the organization of session data to distinguish between lower-level descriptors (e.g., adjectives, verbs) and higher-level descriptors (e.g., pronouns, specific nouns). This distinction addresses the issue of “analytic overlay” (AOL), defined as the analytical response of the viewer’s mind attempting to make sense of the information it receives by falsely interpreting or prematurely labeling perceptions, which may involve superimposing familiar patterns onto the received data, resulting in inaccuracies (Smith, 2011).

An example of this would be perceiving a rectangular shape with circles at the bottom and then either jumping to the conclusion the target might be a car or even spontaneously receiving a vision of a car when in fact the target is really a train. To decrease the impact of the mind’s tendency to construct meaning from patterns, Controlled Remote Viewing methodology aims to minimize early distortions caused by AOL by requiring the viewer to identify when they may have just experienced one and “set it aside,” allowing them to accumulate lower-level descriptors (adjectives or more general nouns) so that a detailed picture of the target can develop with less interference and contamination.

Even practitioners not strictly adhering to CRV methodology are often aware of its principles and remain cautious of data that seems overly coherent, recognizing the potential influence of AOL. The challenge lies in balancing this caution, as viewers of-

ten do receive highly accurate and specific information, such as proper nouns or detailed concepts (Katz et al., 2022). Although CRV's methodology seeks to prevent sessions from being derailed by AOL, it also risks dismissal of pertinent data. To date, no formal studies have evaluated the effectiveness of the CRV for enhancing accuracy.

Limited inquiry exists into whether remote viewers or participants in free-response psi studies can accurately gauge when they are on target or correctly perceiving specific aspects of a target, as well as the factors contributing to such self-awareness. Anecdotal evidence provided during a series of IRVA research unit meetings suggests that experienced remote viewing practitioners (including some of the present researchers) occasionally experience justified high confidence during sessions, confirmed by target feedback. Our research team developed an exploratory survey employing an experience-centered approach to explore the question of "Can viewers know when they are accurate about a data point or on target?" This method describes experiences without using potentially loaded or controversial terms (Beischel & Bocuzzi, 2020, p. 39).

Our exploratory study aimed to investigate the relation between remote viewing experiences, confidence levels, and accuracy. It also aimed to develop a questionnaire that can be used by other researchers to examine these questions.

METHOD

Development of the Questionnaire

As experienced remote viewers, instructors, and researchers, we set out to design a survey specifically tailored to capture the remote viewing experience, rather than relying on pre-existing tools from broader consciousness studies. Using SurveyMonkey, we developed a 24-question survey. The first question explained the project's purpose and acted as a participation agreement. The next six questions gathered biographical information, including age, gender, profession, and details about the respondent's remote viewing experience and training. Questions 8 through 24 focused on understanding whether participants could discern when they were correct or incorrect during a remote viewing session and the experiences that led them to these conclusions. Most of the questions were multiple-choice, allowing for the collection of quantitative data.

Additionally, each question included an option or requirement for open-ended

commentary, enabling respondents to provide qualitative data of unlimited length, which generated a substantial amount of rich, descriptive feedback.

Analysis Method

We used inductive thematic analysis, as outlined by Braun and Clarke (2006), to analyze the qualitative data. This iterative qualitative approach, described as “accessible and theoretically flexible,” involves identifying, analyzing, and reporting patterns and themes within data. Mihas (2023) outlines the process in six steps: (1) becoming familiar with the data through immersion and iterative cycles of reading, (2) generating codes, (3) identifying themes, (4) reviewing themes, (5) defining and naming themes, and (6) selecting exemplars to illustrate findings. Each cycle of reading provided deeper insight and understanding of the data.

We primarily employ descriptive statistics to summarize and highlight key patterns in our data, which aids in exploring the qualitative aspects of the phenomena under investigation. Additionally, where relevant, we incorporate some quantitative analysis to provide deeper insights into the prevalence and distribution of these phenomena.

Inter-Evaluator Agreement Controls

Two of the authors served as evaluators to have inter-evaluator agreement control. However, we divided up the questions and mostly checked each other’s work rather than independently coming up with themes for the same items. Once we (humans) completed our independent analysis, we ran all data through OpenAI’s ChatGPT-4 to perform its data analysis, qualitative coding, and thematic extraction from survey responses. We compared our own themes with themes identified by ChatGPT-4 to enhance the rigor and efficiency of qualitative analysis.

Participant Recruitment

To recruit participants, we employed snowball sampling, targeting intermediate to advanced remote viewers. Respondents were recruited through IRVA’s membership, email lists of remote viewing instructors, previous remote viewing research project participants, and private invitations. Potential participants were vetted for their level of

remote viewing experience. Intuitive practitioners and experiencers who did not have training and experience in specific remote viewing methodologies were excluded.

Ethical Considerations

All participants provided informed consent before taking part in the study. No identifying information, including names, was collected to ensure anonymity and confidentiality. The survey data were handled in accordance with established ethical guidelines and best practices for research involving human participants. All responses were stored securely and used solely for the purposes of this study, with strict adherence to data protection protocols to prevent unauthorized access or disclosure.

Formal Institutional Review Board (IRB) approval was not sought for this study, as it involved a minimal-risk survey focused solely on collecting anonymous, non-sensitive self-reported data. The research team determined that the study met the criteria for exemption from formal IRB review while still adhering to principles of informed consent, confidentiality, and data protection.

Results

Demographics

The 122 participants in this study included 54 who identified as “male” (44%), 66 who identified as “female” (54%), and 2 who identified as “other” (2%). Participants represented a diverse range of professions, including attorneys, real estate agents, engineers (information technology, systems, and electrical), and various others, including journalists, and individuals whose primary professional work involves mediumship, clairvoyance, or remote viewing. Eleven participants reported having obtained a Ph.D. or M.D. (9%); 39 had a master’s degree (32%); 32 had graduated from a 4-year college (26%); 17 from a 2-year college (14%); 22 from high school (18%); and 2 only from elementary school (2%).

Remote Viewing Methods. When asked about remote viewing methods they had studied (see Tressoldi & Katz, 2023 for definitions of methods), 52 (42%) indicated they had studied Controlled Remote Viewing or a derivative; 2 (2%) indicated Extended Remote Viewing; and 4 (3%) participants had only studied Associative Remote Viewing

(see Katz & Knowles, 2023 for a detailed description of this methodology). Forty-six (37%) indicated a combination of these methods, while 19 (15%) reported using other remote viewing methods.

Remote Viewing Training Level. When polled on the highest level of remote viewing training, 51 participants reported having completed advanced remote viewing training (41%); 33 intermediate remote viewing training (27%); 17 beginning remote viewing training (14%); and 22 had learnt through books, videos, etc. (18%). When asked about their level of expertise and experience based on the number of remote viewing sessions previously completed, 22 (18%) chose the response “Expert” (I’m a professional remote viewer); 53 (43%) indicated “Advanced,” defined by 100 or more sessions; and 48 (39%) chose “Intermediate,” defined as having completed 20 to 100 sessions.

Quantitative Assessment: Sense of Being Correct

When asked whether they ever had a sense of being correct about a specific piece of information that was later verified, 109 participants (89%) answered “Yes,” while 14 (11%) said “No.” Regarding how often they experienced such a sense of correctness during a session that turned out to be validated, 9 respondents (7%) reported “every session,” 52 (42%) said “often,” 46 (37%) answered “occasionally,” 10 (8%) chose “rarely,” and 6 (5%) selected “never.” When estimating the percentage of time during a session they felt on target and this sense was validated, the average response was 59%. Conversely, when estimating the percentage of time they felt on target but turned out to be incorrect, the average response was 30%.

On Being Wrong

When asked, “When remote viewing a target, do you have a feeling when you are wrong that is later verified?” Of 123 respondents, 86 (70%) answered “Yes,” while 37 (30%) answered “No.” The interquartile range (IQR) shows that 50% of respondents estimated their correctness between 45% and 78%, while incorrectness estimates fell between 16% and 40%. These findings indicate a significant variability in self-perceived accuracy among participants.

Participants were also asked whether someone taught them how to sense correctness or if they discovered this skill independently. A total of 106 respondents (86%) indicated that they realized this ability on their own, while 17 respondents (14%) cred-

ited an instructor or mentor. This finding suggests that most participants developed this awareness independently, which could indicate that some instructors either do not teach this skill or discourage its feasibility.

When asked about the nature of their sense of correctness, 13 participants (11%) described it as physical, 8 (7%) as emotional, 26 (21%) as cognitive or mental, 13 (11%) as “something else,” and 55 (45%) as involving more than one aspect. Furthermore, 27 participants (22%) reported that their sense of correctness changed during a session, whereas 38 (31%) indicated it remained consistent.

Regarding sensory impressions, 83 participants (67%) found certain senses (e.g., sight, sound, taste, smell, touch) to be more accurate than others, while 40 (33%) did not notice such differences. When asked whether accuracy levels differed across senses (such as vision, taste, smell, sound, or touch), 85 participants (69%) said “Yes,” while 38 (31%) said “No.”

Thematic Analysis

Respondents were asked open-ended questions, such as, “Please describe how you can tell when you are correct about something that turns out later to be correct.” They were also asked, “What does it feel like when you are correct during a remote viewing session? Name as many sensations as apply.” Because responses across both questions were repetitive, the data were combined within the same analysis. Several themes emerged and are presented below.

Surprising/Unexpected

Nine (9) respondents described the feeling of correctness as being tied to a sense of surprise or unexpectedness. One participant stated, “It stands out in a surprising way.” Another explained, “The first indication is when I get some piece of data that is ‘surprising’ to me. These often come in the form of words I normally don’t use or simply a piece of data that stands out as clearly.” A respondent elaborated, “The only sense is that feeling of surprise—like, ‘Oh, this isn’t what I thought it was.’” Another added, “I have found the ‘surprising’ and ‘interesting’ aspects of the target to often be correct.” Some referred to expert advice, such as “Russell Targ... always says to describe the ‘surprising’ aspect of the target with emphasis on the surprising aspect. Until I had enough sessions under my belt, I didn’t understand the importance of those words. It’s very subtle but real.”

Others mentioned specific examples, such as “sense of happy surprise” and “at times I have had the sense that a flash of an image came to me that is so different from anything I experience in my day-to-day life that I thought it must be correct because I don’t think I would have made that up. Likewise, I have had a phrase of words or a saying come to me unexpectedly while viewing, like ‘X marks the spot!’ or ‘look over here!’ or ‘pencil thin.’” Another shared, “Something I haven’t thought of or experienced on my own for many years caused me to determine, ‘This must be correct because it is so unusual for me.’ So, for me, generally, I get the sense that I must be on target because the information that is coming to me is not something I normally experience going through my mind on a day-to-day basis. This is usually right on target.” Finally, one participant noted, “When I get some piece of data outside what I think the target is ahead of time, that is when I really pay attention.” However, another concluded, “I could also say that when my data surprise me, intellectually, I could use that to speculate that it’s correct, but I don’t.”

Repeating/Persistent Information

Repetition and persistence of data were also strong indicators of accuracy for respondents. One participant observed, “Usually when the image or shape descriptors are very clear and repeat 1 to 3 times while probing around the target.” Another shared, “Certain data may appear multiple times within a session, which is an indication for correctness (as it wants to be expressed/reported).” Others noted the passive quality of recurring data, such as, “The data comes in muted but persistent. There is never required mental energy input to sustain this.” Another explained, “When I get a repeating idea that seems to be looping around. To me, that tells me that I may not be interpreting the data correctly, but I am on the signal line. So, the recurring data tells me to let go of what I think I am getting, probe again, or even take a break and probe it again.” Finally, one participant summarized, “Through probing the target from multiple angles and receiving similar descriptions.”

Viewers indicated repeating data as being a factor across multiple questions in the comments section. Later in the survey, when asked more specifically, “When the same information repeats at one or more points in a viewing session, does this information tend to be more or less correct?” Seventy-two (59%) responded “more correct,” 15 (12%) responded “less correct,” and 36 (29%) responded they hadn’t noticed.

Visual/Imagery and Other Phenomena

Visual and imagery-based perceptions were frequently described as indicators of correctness. Respondents mentioned visuals 76 times in all combined responses. Respondents described these experiences as “clearer visions” and “fleeting impressions, colors, density, and dimension,” with one adding, “Images are more vivid during the session; images are more and more detailed during the session. The details are really sharp, and the visuals appear in like 5D, as it feels very real.” Others emphasized the dominance of the visual sense, noting, “My output is mostly visual and doesn’t come with a strong feeling; as long as the visual aspect is coherent, I’m happy with that.” And “I don’t ‘know’ I’m correct, but the perceptions seem more rich, deep, multi-faceted, often more visually and experientially fulfilling.” Another stated, “The image I see looks much clearer than the others.” Specific methodologies were also referenced, such as, “When I’m probing a target and I close my eyes and focus on the blackboard (an imaginary frame to receive data in HRVG methodology), I see flashes of white and golden wiggly patterns; some decorative elements of the same figure come to the blackboard without my conscious probing—this is exactly when I know I’m on target!!!” Other responses included, “The clearer I see the target means more data will be correct.” “Sight is the strongest and most accurate.” And another: “Images are hyper-visual, almost dreamlike.” It should be noted a few viewers indicated that their visuals were usually incorrect or misleading.

Sounds/auditory. Only a couple of viewers mentioned auditory cues and sounds compared to visuals as indicators of being correct or on target. The strongest statement to this effect was, “I frequently have surround sound, like real life, as opposed to peeking in or only hearing from one spot.”

Suddenness/Immediateness/Speed

The immediacy of correct data was another theme among respondents. One shared, “For me, it’s like a blast of cold water... sensory information is visual, forms quickly, with accompanying awareness.” Another added, “The image comes immediately, and it just feels right. Sometimes it’s associated with a feeling about the image.” Others described the experience as “the sudden and spontaneous appearance of an image or physical sensation” and “feeling when I think I’m correct is rapid physical descriptors and thematic relationships. That I have got it.” Several respondents emphasized the speed of the experience: “It’s usually quick; it doesn’t take a huge ef-

fort when something is right.” “My writing speed increases.” And “Inevitable. Quick. Not mine. Flowing. Puzzling. Already there.”

Sense of Flow

Ten viewers mentioned the word flow. Examples included “flowing, already there”; “a state of flow; free flowing; connected to the divine; lighthearted”; “exciting, fun, engaging, flow state”; “easy, open, flow, confident; flowing openly”; “Inevitable. Quick. Not mine. Flowing. Puzzling. Already there.”

Fuller Integration with the Target

Aesthetic Impact (AI). In remote viewing, Aesthetic Impact (AI) refers to the viewer’s emotional and sensory response upon perceiving the target from a first-person perspective, often causing them to make “I” statements and sometimes accompanied by a sense of relationship between self and object or emotions. This response, typically noted during the second stage of Controlled Remote Viewing (CRV), can include sensations such as surprise, curiosity, or awe. It suggests that students wait for the AI experience to happen before proceeding to further stages, as it was observed by Swann and others that once a viewer has an AI experience, their data may be more accurate (Buchanan, personal communication, n.d.).

This theory is supported by our respondents, who described a variety of experiences linked to AI. One respondent noted, “I have had a couple of ‘AIs’ that were crystal clear, and when using CRV, I am confident when in AI during Stage 2, sensory perceptions, i.e., texture, smell, movement, etc., of what I’m perceiving are correct.” Another shared, “Usually, during the session, I do rarely get an ‘I am correct’ feeling, or rather, it has a strong ‘energetic’ component/impact [AI]. The latter is more related to totally unexpected information leading to AI’s like: ‘that’s weird/unexpected/surprising,’ etc., and is a typical indication for correctness.”

Others described the sensory immersion of AI. One participant explained, “Aesthetic impact and realness: I see and/or feel its intensity on myself (AI). It is similar to having my existence overlaid onto the target for a split second—long enough to retrieve the details.” Another noted, “The most interesting one was a feeling of nausea when the image turned out to be on the top of Mt. Everest. I get altitude sickness at real altitudes.” Physical sensations such as weight or size were also highlighted: “I feel

weight and size measures. True, clear, magnetic, pulled towards the information, clear sensation of what is around me at the target site and what I see in my mind's eye. It feels like you're there touching it. You're aware of what your boundaries can and cannot be."

The emotional element of AI was also prominent. One participant recalled, "After a few minutes, I had a fun 'whoop' of a moment in which I felt I was riding a roller coaster of light, twisting off into the darkness. I gasped, 'Oh! It's microscopic! I just rode a strand of DNA!' The gasping or surprise moment of the target is the turning point. Called the Aesthetic Impact, it is the moment that truly pulls the viewer onto the target, and from that moment on, many viewers are quite accurate."

Bilocation. In remote viewing, bilocation refers to the phenomenon where the viewer's consciousness appears to be simultaneously present at their physical location and at the target site. This dual awareness allows the viewer to vividly perceive and describe the target environment as though physically present, while still maintaining awareness of their actual surroundings (McNear, 2015).

Participants shared vivid accounts of bilocation. One stated, "Bilocation with the ability to move in the target by cueing myself. I was 100% sure of what I saw; I saw it all as if I were there." Another added, "I have bilocated multiple times and stood at/on the target. I have done many targets over the years that I was almost 100% confident in. I also won a worldwide contest where I bilocated to the exact target. I also did financial forecasting with ARV successfully at a 77-78% success rate."

The sensory immersion during bilocation was frequently noted. One respondent explained, "If I get a solid contact with the target, meaning some measure of a bilocation, then I know that most of the data recorded will be verified later on feedback." Another shared, "Then there are the sensations when I bilocate—taste, smell, sight, hearing, touch. When I am bilocating, that's the surest way I know the data will be good." Some participants described unique sensations, such as "Sometimes I feel 'thick,' like enduring two spaces at one time, but that's rare. I frequently have surround sound, like real life, as opposed to peeking in or only hearing from one spot."

Behavioral Indicators

Behavioral cues were frequently mentioned as indicators of correctness. One participant noted, "One time when I was viewing, I said aloud, 'Shouting but not in an-

ger.’ The target was of cowboys herding cattle.” Others emphasized the importance of drawing or sketching. One respondent explained, “When I remote view and I get intense in my focus of what I am drawing, I have no clue yet why I am drawing what I am drawing, but what I do know is that I have to draw it because it is correct.” Another shared, “The first time I remote viewed accurately, I drew an hourglass and some sort of a mechanism with wheels upon wheels. Well, the remote view was a watch. The feeling of certainty when I drew the hourglass is the same feeling when I remote view now.” Participants also noted, “I knew it was a festive gathering and was able to draw the scene fairly well.” Another stated, “My sketches are pretty accurate,” but added, “I never know when I’m on target—the only exception to this is when I get a very unique pictogram, and I get a strong feeling from it, but that is uncommon.”

Mixed Senses

Participants described the simultaneous involvement of multiple sensory modalities. One explained, “This is not restricted to separate perceptions (feeling, tasting, visuals, etc.), but by the expression of the data appearing multiple times.” Another shared, “The image and senses of the target are clear, repeat, don’t fade, feel strong, and stay with me.” Others highlighted the integration of multiple sensory experiences. One participant noted, “All my senses are in unison. When information comes to me, there is a clear feeling of knowing this absolutely is at the target.” Another shared, “If the imagery feels strong and won’t fade away, I go to my gut instinct, my clair-sentience, and if my gut tells me this is correct, then I ‘know’ that it is at the target.” Another: “Shivers, body sensations, clearer visions.”

Synesthesia

Synesthesia in remote viewing refers to the blending or merging of sensory modalities, where perceptions associated with one sense are simultaneously experienced through another. Participants provided vivid accounts of synesthetic experiences in their open responses. One explained, “I can ‘feel’ shapes and the surrounding area (internal-external).” Another noted, “Sensing colors is easier than other perceptions, but only for large volumes/areas.”

Knowingness, Sense of Certainty

Many participants indicated they will just have a sense of certainty without being able to say why. One stated, "I don't think personally that this can be taught; I think all RVs have this. It is with experience, after many RV sessions, that one gets to recognize this feeling/sensation/confirmation... difficult to describe. An example would be when you study hard for an exam, and the same question you have studied comes up on the exam paper; that feeling that you know the answer inside out and a 'confident-absolute' feeling." Another stated, "I have a knowing feeling. Like knowing the sun is about to rise and it does... with the added dimension of emerging from subconscious into conscious." Another stated, "I don't feel anything different. If anything, it's just a feeling of knowing." Another stated, "I have a confident, relaxed, confirmed feeling"; another stated, "confident, surprised, elated."

Types of Information: Names, Numbers, and Specific Details

Participants emphasized the importance of specific types of information, such as names, nouns, and numbers. One participant shared, "Names and significant dates to that person are often identified." Another explained, "One time early in my studying RV, I knew, without a doubt, that the target was the Grand Canyon, and it was." A detailed example involved Bridal Veil Falls: "From Tom McNear, many examples... In Ingo Swann's studio, with Ingo as my monitor, I did my first CRV session in 26 years. I knew the target was Bridal Veil Falls, yet the feedback I received was 'Niagara Falls.' This surprised me, but I accepted that I got the waterfall aspect correct, but I missed the name of the falls. More than a year later, as I was addressing the 2012 IRVA Conference, someone in the audience clarified that Niagara Falls, on the US side, is called Bridal Veil Falls. The CRV message was true and accurate. This was my feedback."

Numbers were mentioned less frequently. One participant stated, "Usually with numbers, it is just a hard-to-define sense that it is the correct number."

Criticism and Praise for Our Line of Questioning

Responses indicated a wide diversity of opinion within the remote viewing community regarding the utility and practicality of identifying correctness during a session. While some individuals recognized the value in developing this skill, others argued that it could interfere with the process by introducing unnecessary complications and

noise. One instructor who had initially agreed to share the survey expressed disappointment after taking it herself, stating that the line of questioning was counterproductive for new students. She emphasized that newer viewers often need help moving away from their intellect. This tendency can lead them to doubt and dismiss correct information or place undue confidence in distorted perceptions.

Other respondents emphasized that their primary goal in remote viewing is to experience and enjoy a target rather than focusing on their performance. One participant asserted that it is not the viewer's responsibility but rather the project manager's responsibility to determine accuracy. Another expressed doubt that anyone can reliably determine their correctness during a session and suggested that this line of questioning was not helpful.

One participant shared the perspective that individuals should not aim to be correct about specific aspects of a target but instead "be open and build trust towards [their] subconscious and to the spirit world." The participant added, "I know some people do develop this feeling of being on or off target, but I think it's much better to aim to be on all the time and not introduce analysis before feedback—except when something has gone really obviously wrong." An experienced viewer expanded on this idea, noting, "There are many times when my body (mind/physical/emotions) tries to give me information, but I'm too busy with competing thoughts, emotions, or commitments. With practice, you can learn to sense when you are on target. Learn to lean into this gentle whisper of sensations. Relax and allow your body (mind/body/emotions) to help you navigate RV journeys. The outcome isn't nearly as important as what you learn about yourself in the RV experience."

Another respondent cautioned against overthinking or worrying about correctness during a session. They stated, "Stop obsessing with being wrong or right or being able to sense it. That's not important, especially being able to sense it during a session. To me, this tells me you just haven't practiced enough, have poor technique, or aren't disciplined enough as a viewer. Not meditating, not taking care of your body. I never cared about sensing if I was wrong or right. My mind and body are as empty as I can make them. My body is a tuning fork, and I am a printer. Printers print; they don't question whether they are right or wrong. Inaccurate during a session? They only care about being a perfect vessel."

Another respondent emphasized that caring about correctness could lead to analytical overlay (AOL). They explained, "Caring about the correctness of the data has the potential to lead into AOL. My sessions are best when I do not care or think

about accuracy. In my opinion, it has more value to train to identify AOL correctly, while the impressions of being right will emerge naturally.”

Despite these varying perspectives, many participants expressed gratitude for the opportunity to reflect on this issue. One participant shared, “Oh, so much to say. I am so glad you’re doing this survey. It is the hardest thing for me as a remote viewer: how to be more consistent with accuracy and how to know if I’m on the right track. I would benefit from that confidence, and I believe it would help me be a better and more accurate RVer. Thank you so much. I look forward to learning what you all learn.”

Ultimately, these insights reveal a range of opinions about the importance of accuracy in remote viewing. Some prioritize experiential learning and trust in the subconscious, while others express a desire for tools to improve their reliability. Both perspectives underscore the complex dynamics of remote viewing and the diverse attitudes and approaches taken by practitioners.

Discussion

This exploratory project stemmed from the self-reports of seasoned remote viewers, including the present researchers, that they sometimes have a strong, even overwhelming sense that specific data received during a remote viewing session may be correct, and that verification of this will be received at a future point in time when feedback is received. Not all viewers experience this sense, nor do all believe it is possible or desirable to develop. However, 89% of respondents reported having experienced a sense of correctness that was later verified, and 37% indicated this occurs occasionally, with 7% claiming it happens every time. Only 13% said “rarely” or “never.” Interestingly, 86% of those who experienced this awareness or confidence reported that it developed over time and was not taught, while only 14% attributed it to instruction from a teacher. It is possible that some teachers primarily interact with newer viewers, or less experienced ones, who may not yet have developed this sense.

Respondents often identified this as a higher-level skill that develops gradually. For example, one respondent stated, “It probably takes many sessions of practice to develop this sense. It may require longer remote viewing sessions rather than shorter ones.” Another shared, “It takes hundreds of practice sessions, and it feels a lot like a muscle. It’s reliable with time and repetition.” A third respondent noted, “You will not be able to assess accuracy in the beginning or when you are new to remote viewing. Over time, it will develop on its own and have a unique way of appearing.” These observations support the idea that remote viewing skills, including making confidence calls,

can develop over time with consistent practice. However, it is also possible that not all viewers can cultivate this ability. Further, many participants indicated that the sense of correctness is self-taught, with few reporting being explicitly trained in this skill. This suggests a potential gap in remote viewing education that could be addressed by integrating specific modules on identifying correctness.

The survey data includes unique observations like synesthetic experiences (e.g., “feeling shapes,” “hearing colors”) and other mixed-sensory phenomena. This level of detail is not discussed in the paper but could be valuable for understanding how remote viewing manifests differently among individuals. It correlates with the findings of other studies that there is a connection between synesthesia and psi (Simmonds-Moore & Holt, 2019).

Limitations of the Study and Suggestions for Improvement

This study was exploratory, representing the first attempt to develop a questionnaire capturing viewers’ phenomenological experiences and their awareness of when they are correct or incorrect about a target. The study did not include real-time trials to test the accuracy of confidence calls; instead, it relied on respondents’ recollections of past experiences. This approach required us to depend on the honesty and memory of the participants. While the study included neutral, open-ended questions such as “Please describe how you can tell when you are correct about something that later turns out to be correct,” it also included narrower questions that could be construed as leading, such as “What does it feel like when you are correct during a remote viewing session? Name as many sensations as apply.” This latter question assumes correctness and the experience of “sensations,” which may not apply to all respondents or may cause them to overemphasize a bodily feeling as opposed to a visual or auditory impression. This issue seemed to have been mitigated somewhat by using an open-response format, allowing participants to clarify if they did not experience correctness or associated sensations, but it was not ideal. Another example of a somewhat problematic question was the one framed as “When you feel you have a sense of being correct about an aspect of a target, does this sense usually seem more physical, emotional, or mental/cognitive?” While we allowed for alternative options such as “more than one” or “something else,” we should have provided definitions of these, as it was unclear as to whether visual data or data experienced on a sensory level but then later interpreted would be considered “mental/cognitive” or “something else.” While these questions were unclear, they did not compromise the overall integrity of our study.

Another challenge was discerning whether responses reflected personal experiences or were influenced by previous instruction or shared opinions. For example, one respondent referenced a teaching from Russell Targ, who reportedly recommends to viewers that they pay attention to “surprising” data. This raises questions about whether all viewers were truly sharing their personal experiences or echoing an instructor’s perspective. This issue is likely unavoidable in any study involving highly trained respondents but could be mitigated by clearer instructions to participants about separating out teachings from pure experiences. That said, we believe this was not a significant problem in our study, as most teachers do not explicitly instruct students on how to identify correctness.

Accuracy and Its Role

A noteworthy finding was the diverse attitudes toward accuracy. While some viewers prioritize accuracy as a top concern, others do not. This perspective could be alarming in professional settings, such as intelligence gathering and crime solving, where accuracy is critical. However, this subset of viewers expressed sentiments such as that they consider remote viewing to be a creative, self-development, and exploratory experience and tool, trusting that accuracy will follow naturally. Some stated that they do not work solo but rather rely on project managers or analysts to handle the accuracy aspect. While we were not able to cross-reference responses with the various ways in which some viewers operate, we would assume that viewers who utilize project managers as an intermediary between themselves and clients might have less of a focus on results than those who act as their own manager. There was indication of this in the present survey as well as a previous survey conducted with professional viewers on their attitudes and behaviors in relation to applied projects (Katz & Tressoldi, 2022). Further, some may downplay accuracy to reduce performance anxiety. Some respondents seemed to indicate that their attitude during a remote viewing session may be different outside of the session itself. For example, a concert pianist in the middle of a performance cannot be thinking about whether they are playing the wrong notes any more than an Olympic ice skater cannot be thinking about whether they just got the previous jump correct if they are to do their next one properly. Likewise, if a viewer is not entirely focused on the target because they are thinking about how well they are doing, they are far less likely to access any data or the correct data.

Nevertheless, when going after a remote viewing target, remote viewers who would like to develop the ability to know if a data point is likely to be correct might consider just putting a star next to any item when they have a feeling something came

in stronger or more powerfully than other data. They don't need to be thinking about this every moment, but when the feeling of accuracy spontaneously arises, they could indicate how that piece of data came to them (sense, vision, word, etc.) with a simple notation. Since so many viewers are already using paper and pen and organizing their data in one form or another, this should not be too much to ask. Many already do this, such as when they get stuck on a potential analytic overlay and need to take a break.

Regardless of the diversity of attitudes, this survey revealed that experienced viewers often do value lifelong practice and training to ensure accuracy. It also revealed they do have the ability to effectively articulate and translate subtle senses and experiences into forms of expression we can categorize. It also revealed that some data stands out differently from others, although how often this indicates accuracy, or falsely gives the impression of accuracy, needs further exploration.

Future Research and Takeaway for Researchers

Given that several viewers find that some items that are surprising or unexpected offer clues into being on target, researchers constructing target pools might be able to help this along by choosing items that are unusual or stand out from the norm. This is in alignment with other projects that have found “numinous” targets to make better ones. For example, instead of a picture of a person with brown or blonde hair, the person might have pink or green hair. Instead of regular clothes, they might have on a funny costume. Instead of a location with a blue sky, perhaps one with a brilliant, unusual sunset color or dark, ominous clouds might stand out more to the viewer who is not expecting this.

Since aesthetic impact was mentioned quite a bit, it's recommended that photos or videos that contain a strong and unique sense of first-person perspective be used, as well as ones that might elicit strong body sensations and activate multiple senses at once.

Finally, future researchers might build on the categories and themes discovered in this study by developing multiple-choice surveys that include more robust quantitative measures. For example, whereas the present study invited participants to explain the way information comes to their awareness through an open-ended format, future studies could include the themes we found, such as “visual,” “auditory,” “smells,” “surprising,” “sudden,” “repeating,” “bilocation,” etc., and ask viewers about the frequency they experience each one of these. Additionally, phenomenological inquiry

such as that included in the present study could be paired with remote viewing tasks to provide stronger supporting evidence for the hypothesis that viewers can recognize when they are correct about specific data points.

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Questions about Questionable Research Practices¹

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Abstract. Parapsychologists have made considerable gains over the decades. For example, they have an informative (and constantly growing) series of meta-analyses, out of which have developed ongoing debates and critiques over methodologies. Some critiques, well-intentioned though they may be, center on so-called questionable research practices (QRPs), and it has even been argued that QRPs alone may account for psi effects. In this article, I critique an article by Bierman et al. (2016) on QRPs that finds a much-reduced but still significant overall effect in a meta-analysis of ganzfeld studies by Storm et al. (2010). The series of “hypothetical” analyses undertaken by Bierman et al. are themselves argued to be questionable. Researchers are advised to be watchful of methodological oversights that misrepresent the available data and ultimately cast parapsychological research in a dim light.

Keyword: questionable research practices, QRP, meta-analysis, publication bias, fraud, psi, anomalous cognition

Highlights:

- Questionable research practices in parapsychology and meta-analyses are disputed in the light of claims made by Bierman et al. (2016).
- Statistical simulations on ganzfeld data suggest optional stopping and optional extension are unlikely.
- Focusing on ganzfeld studies, the claim of publication bias in parapsychology is undermined given the long-standing controls against it.

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Often out of curiosity, scientific researchers follow up on various leads which they derive from a complex array of ideas, approaches, and findings in any given field, but the scope for interpretation may be so wide it leaves many doors and windows open in a house of meaning that we would rather see secured from outside threats. By that I mean researchers may massage the facts, or twist vital information, or tell half the story, or adopt questionable methods, or avoid conducting analyses that might turn things around. We do not have to assume we are always dealing with deliberate deception—after all, the primary objective of most researchers is to put things right, so one should give them the benefit of the doubt and assume their hearts are in the right place. It is on that note that I review a paper by Bierman et al. (2016). The major problem with this paper is that it is very loosely guided by a paper by John et al. (2012a), who went to the effort of actually sampling a population of psychologists (“5,964 academic psychologists at major U.S. universities”; p. 525). They had some real data to evaluate, whereas the analysis by Bierman et al. consists primarily of guesstimates based on John et al.’s statistics. On this same point of getting “real” data from the population in question, Palmer (2016a) notes that Bierman et al. (2016) did not need to make guesstimates; all they had to do was contact the authors of the ganzfeld papers to clarify with them whether certain QRPs were made. It is for these reasons that the approach taken by Bierman et al. needs to be addressed.

Bierman et al. (2016) borrowed five questionable research practices (QRPs) from John et al. (2012a) and came up with another two, and entered so-called prevalence intervals (a value range indicating how prevalent a QRP might be in parapsychological research) into simulations of the ganzfeld database taken from Storm et al. (2010). The ganzfeld is a “special type of environment (or the technique for producing it) consisting of homogenous, unpatterned sensory stimulation” to the eyes and ears of the participant, who is usually in ‘a state of bodily comfort’” (Thalbourne, 2003, p. 45). Traditionally, the ganzfeld is a procedure for eliciting *psi* (i.e., psychic functioning such as extra-sensory perception in the form of telepathy, clairvoyance, or precognition). In a ganzfeld experiment, a so-called agent in one room is required to “psychically communicate” usually one of four randomly selected picture targets or movie film targets to a perceiver in another room—the perceiver is in the ganzfeld condition. The ganzfeld environment involves setting up an undifferentiated visual field by viewing red light through halved translucent ping-pong balls taped over the perceiver’s eyes. Additionally, an analogous auditory field is produced by listening to stereophonic white or pink hissing noise. Typically, the perceiver’s mentation is recorded and accessed later in

order to facilitate target identification. At this stage of the session, the perceiver ranks from 1 to 4 four pictures (one target plus three decoys; rank 1 = hit, or a standardized z score can be estimated), although in some studies each trial can contain fewer or more than four choices. This condition follows the noise reduction model, considered psi conducive because it allegedly reduces irrelevant background noise, leaving mainly the psi signal.

Although p values are exponentially extremely low in ganzfeld meta-analyses (p values up to 10^{-16}) and therefore significant, Bierman et al. suggested that the ganzfeld database would be considerably less significant ($p = .003$) if these hypothetical QRPs were present (for a more sophisticated treatment but similar finding, see Bancel, 2018). The following QRPs are taken from Bierman et al. (2016, pp. 8-10):

1. *Confirmation-to-pilot* (a confirmatory experiment is prematurely halted if results are negative; trials are dumped, the protocols are adjusted, the experiment is restarted);
2. *Pilot-to-confirmation* (a 'test-run' study, data of which are included in a confirmatory experiment if there are no problems);
3. *Optional stopping* (stopping short of a specified number of participants as soon as significance is reached);
4. *Optional extension* (testing more than a pre-specified number of participants and only stopping once significance is reached);
5. *Publication bias* (not publishing studies that produce only chance or negative results);
6. *Deciding to exclude data post hoc* (removing participants who are unsuitable); and
7. *Fraud* (a.k.a. "deceptive research"; Bierman et al., 2016, p. 10).

If present in the ganzfeld studies, these seven QRPs can inflate the ganzfeld psi effect (e.g., by polluting the data with false positives), but of course evidence of QRPs has to be found. Although few would doubt that tightening the reins on parapsychological practice is a worthy idea if it identifies sources of artifacts, the problems with the rationale underpinning that intention are manifold. Palmer (2016b) recognized this fact when he said Bierman et al.'s paper was "a monumental waste of time (and journal space)" (p. 143), given that the authors ostensibly implied the whole venture was hypothetical. Palmer, however, even disputed that implication, pointing out that he (Palmer, 2016a) previously had argued that Bierman et al. had every intention of proving that the ganzfeld database was "inflated by QRPs" (Bierman et al., 2016, p. 1), so that their study was not hypothetical at all. In their own words, they aimed to demon-

strate the ganzfeld database “would be a good example of how purely random data can be distorted into the appearance of significance” (Bierman et al., 2016, p. 2). I will consider each of the above-listed seven QRPs and question the rationale adopted by Bierman et al. (2016).

Confirmation-to-Pilot and Pilot-to-Confirmation

Confirmation-to-pilot (CtoP) starts as a confirmatory study, whereas Pilot-to-Confirmation (PtoC) starts as a pilot study. These two QRPs suggest that trials are sometimes excluded *just because* they are misses, or sometimes included *just because* they are hits, when the decision to exclude or include should only hinge on technical issues to do with experimental design protocols. Bierman et al. (2016) claim that excluded data contribute to the file-drawer problem (i.e., publication bias), whereas the inclusion of questionable data (showing a promising hit rate) is inflationary. Although the latter is quite correct for both CtoP and PtoC, one of the reasons for halting an experiment is that protocol adjustments may be needed when there is a good reason to dump trials even if there seem to be (or are) excessive misses—under those conditions, those data should not be part of the file drawer. Bierman et al. may have allowed for that eventuality, but it is not clear in their paper.

Another of their problems is they (allegedly) borrowed for their simulation a CtoP prevalence estimate from John et al. (2012a), who never featured CtoP—the figure of “40.7%” (see Bierman et al., 2016, Table 1, p. 8) seems to have come from Table S2 (John et al., 2012b, p. 15) which is for optional stopping. The actual wording is “Stopping collecting data earlier than planned because one found the result that one had been looking for” (John et al., 2012b, p. 15). And there is no prevalence figure for PtoC; only prevalence intervals that seem to be stabs in the dark.

Optional Stopping and Optional Extension

Optional stopping and optional extension can push a study into significance; all the experimenter has to do is designate a certain number of participants to test, but then keep an eye on effect size and stop short when, or extend testing until, significance is reached. Palmer (2016b) keenly observed that any study that had committed optional stopping or optional extension could be identified from N (i.e., the number of trial counts)—specifically, “nonround N s” (p. 143). Of course, a non-round count does not automatically indicate a QRP; Mainstream researchers commonly report sam-

ples with nonround N s because of genuine oversampling, no shows, and so on. The two-fold hypothesis of optional stopping and optional extension following Palmer's assumption has not been conducted as an exercise, but I present one here.

Because researchers rarely state that they stop short, or extend testing, one has to be ruthless and exclude any study that seems to have an unusual number of trials, which means the innocent suffer with the presumed guilty. Nevertheless, on that basis, I reduced the same 102-study database used by Storm et al. (2010) in their meta-analysis to 52 studies (these 52 had N s of 10, or 20, or 30, and so on, up to the largest N of 120). Multiples of ten are as round as one can get, so I have been extremely conservative (the results of the original study, and the new findings for the reduced rounded N database, can be found in the Appendix).

Even for a database almost half its original size, little has changed statistically for the crucial values. Also, about 1/4 of the studies in both databases are independently significant (about the same for the original database). These results tell us all we need to know about the efficacy of the ganzfeld treatment. So, *as an exercise*, if we ruthlessly adjust for optional stopping and optional extension, on the hypothetical assumption that these options were present as QRPs in some ganzfeld studies, we end up with a purified database with consequent effects that are even more unquestionable than before (in the Appendix, I also reduced Bierman et al.'s "S1 Dataset" of 79 studies in the same conservative way—the results are comparable).

Publication Bias

Parapsychology journals (unlike mainstream psychology journals) go to great efforts to publish studies with nonsignificant results—they tend *not* to end up in the "file-drawer." That is because the Parapsychological Association (PA) Council adopted a policy in 1975 of opposing the *exclusive* publication of studies with *only positive outcomes*. Thereby, "negative findings have been routinely reported at the association's meetings and in its affiliated publications" since that date (Bem & Honorton, 1994, p. 6; see also Honorton, 1985, p. 66). Bierman et al. (2016) actually mention this publication policy, and they state that "a non-significant outcome is not a danger to the career of the parapsychologist" (p. 8). However, they argue that parapsychologists "may be driven by a non-materialist or spiritual worldview that they try to defend" (p. 8), implying that the policy would be ignored. Palmer (2016a) makes the same point about mainstream scientists (including "psi-skeptics") who defend "theories they identify with" (p. 7). Therefore, in order to be "cautious," Bierman et al. "assume that the prev-

alence values of the use of QRPs in parapsychological research *are similar to those measured in experimental psychology* [emphasis added]" (p. 8). Bierman et al. surely realize that experimental psychologists also have worldviews to defend, but the same experimental psychologists do not have a publication policy like that of the PA. Thus, there is no level playing field. In fact, it may be argued that all the QRP prevalences and prevalence intervals used in Bierman et al.'s model are inflated. Apart from this major problem, Bierman et al. (2016) state that "JLP estimated the prevalence of [optional extension and optional stopping] to be 58% ... and 22%", respectively (p. 7), but these are not prevalence figures—they are "Self-admission rate[s]" from John et al.'s (2012a) Table 1 (p. 521). Also, Table 1 in Bierman et al. presents five "JLP(%)" statistics that are supposed to be prevalence estimates, but are in fact "Admission estimates" from John et al.'s (2012b) Table S3 (p. 16). These are clear errors of commission because Bierman et al. state that their simulation will use prevalence intervals based on JLP's "*prevalence figure for each specific QRP* [emphasis added]" (p. 7). Bierman responded to these discrepancies by saying: "I think we took the admission rates as prevalence figures (as a lower estimate)" (D. J. Bierman, personal communication, December 6, 2017).

It is possible to test the likelihood of publication bias using various statistical tests. Storm et al. (2010) chose two methods to demonstrate whether publication bias was likely. The first test, using Rosenthal's (1979) so-called Fail Safe File Drawer (FSFD) formula, has been used by a number of parapsychologists since the 1980s, so Storm et al. used it for comparative purposes, whereas the other test from Darlington and Hayes (2000) is more conservative. Focusing only on the result using Rosenthal's formula, Bierman et al. (2016) observed:

Storm et al calculated that 2,414 unpublished studies were required to eliminate the overall [significant] results of the GF [ganzfeld] database. Storm et al argue that this number, given the limited resources of the field and the acceptance of publishing negative findings, is unreasonably large. (p. 9)

Bierman et al. (2016) then point out that researchers who calculate these numbers "generally assumed incorrectly that the decision not to publish is unbiased," and they also argue that the same researchers err in thinking "that the unpublished studies have zero effect size" (p. 9). It is true that Rosenthal's (1979) method is misleading "because it treats the inherently biased file drawer as unbiased" (Scargle, 1999, p. 22), and falsely assumes an overall effect size of zero. That is why Storm et al. (2010) also presented a more conservative estimate of up to 384 studies that *does* assume bias;

not only can these unpublished studies have a zero effect size, they can have negative values (p. 477). Bierman et al. focused on the least conservative result, thus making Storm et al. look like they were unjustifiably downplaying publication bias to the extreme, having based it on a figure so inflated that it made the ganzfeld database look too good to be true. Any reader not familiar with the Storm et al. meta-analysis would assume that Bierman et al. discovered a critical flaw in the meta-analysis.

Decision to Exclude Data Post Hoc

An experimenter's decision to exclude data *post hoc* in the ganzfeld context means unsuitable participants are removed (removal could be based on the fact that the participant fell asleep, or complained, or was late, or vexed, or uncooperative, etc.). However, if a participant produces a result that "conforms to the desired hypothesis [i.e., is a hit], the experimenter may be non-consciously less inclined to remove the subject [participant]" (Bierman et al., 2016, p. 10). Bierman et al. argue that this practice is tantamount to "fraud" (p. 10) if removal of "subjects with misses" gets *too high* (nominally over 5%)! Irrespective of whether it is fair to simulate this QRP in their model, setting an arbitrary frequency of 5% to demarcate fraud from legitimate practice is itself questionable.

Fraud

In regard to fraud, I suggest Bierman et al. (2016) have little to go on, so they rely on John et al. (2012a, 2012b) to inform them. They refer to John et al.'s admission figure of about 4.4% (actually it should be 4.34%—John et al., 2012b, p. 16), and adopt an apparent guesstimate for parapsychology of 3.4% which, it turns out, is based on one case (i.e., "one senior researcher in the 80 studies post-1985 database [who] might be guilty of deception" because he or she "had been implicated in errors in the randomization procedure"; p. 10). This one case is from a database of 29 principal investigators (1/29, or 3.4%), which yields an inflated fraud rate because they could have taken the "two studies" by the "senior researcher" out of the "80 studies" (thus, 2/80, or 2.5%).

What is questionable is (i) how "errors in randomization procedure" implies fraud; (ii) why only the principal investigators represent the "persons of interest" and not all the researchers (e.g., research assistants); (iii) why 3.4% is considered a fair and valid indicator of parapsychological fraud merely because it is "close" to John et al.'s 4.34%; and (iv) why the equally valid 2.5% is not preferred.

Conclusion

QRPs basically translate as many different ways to commit fraud when the QRP is deliberate—otherwise, one could assume they only indicate carelessness on the part of some researchers. However, the practice of assessing QRPs is questionable in itself when coupled with various oversights, errors of commission and omission, misrepresentations, and so on. It must be said that some researchers, in obeisance to a higher cause, interpret conservatism a little differently than the rest of us. When things like this happen, it is hard not to see an agenda that ignores the objective aims of a science that should tell all; an aim that should also let the pieces fall where they may. John et al. (2012a) are correct in saying “QRPs can waste researchers’ time and stall scientific progress ...” (p. 531), but we do have to be mindful, when checking for QRPs, that we do not punish the innocent with the guilty.

Declaration of interests: The author declares that there is no conflict of interest.

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Appendix

Optional Stopping and Optional Extension—Rounding Out Ns

Original Database (Storm, Tressoldi, & Di Risio, 2010)

The homogeneous database consists of 102 ganzfeld studies: mean $z = 0.81$ ($SD = 1.23$; range: -2.30 to 4.32), mean $ES = 0.135$ ($SD = 0.20$; range: -0.44 to 0.65), and Stouffer $Z = 8.13$ ($p < 10^{-16}$). *CIs* (95%) are as follows: z scores, $[0.56, 1.07]$; ES values, $[0.10, 0.17]$. Note that neither of these includes mean chance expectation (MCE)—that is, zero—which means there is no statistical likelihood that the results fall within chance parameters. Of the 102 studies, 74 (72.5%) had positive z scores. Twenty-seven (26.5%) of the 102 studies are independently significant ($\alpha \leq .05$).

Rounded Database ("nonround Ns" removed)

The database consists of 52 studies: mean $z = 0.71$ ($SD = 1.21$; range: -1.97 to 3.41), mean $ES = 0.130$ ($SD = 0.22$; range: -0.44 to 0.65), and Stouffer $Z = 5.08$ ($p = 1.89 \times 10^{-7}$). *CIs* (95%) are as follows: z scores, $[0.37, 1.04]$; ES values, $[0.07, 0.19]$. Note that neither of these includes MCE—that is, zero. Of the 52 studies, 34 (65.4%) had positive z scores. Thirteen (25.0%) of the 52 studies are independently significant ($\alpha \leq .05$).

The difference between the two mean z values is not significant, using the Z_{diff} (Z -difference) formula, $Z_{\text{diff}} = [Z_1 - Z_2] / \sqrt{2} = [0.81 - 0.71] / \sqrt{2} = 0.07$ ($p = .472$).

In a second unrelated analysis, it is worth mentioning that Bierman, Spottiswoode,

and Bijl (2016) provide a link to their own set of 79 ganzfeld studies which they label the "S1 Dataset" (p. 4). These 79 are all the post-1985 studies they deemed suitable for analysis, having excluded the questionable studies that had "procedural weaknesses" (p. 3). Bierman et al. produced a Cohen's effect size $d = 0.14$. If we take out all nonround N s from their database, the dataset reduces to 37 studies, with corresponding $d = 0.12$. Again, we see little change. There is little evidence of optional stopping or optional extension.

A Look for a Presentiment Model's Reasonable Parameters¹

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Abstract. Recently, I proposed an orthodox quantum mechanics' justification for the presentiment effect, which claims that the very existence of the presentiment effect points to the correctness of the orthodox interpretation of quantum mechanics. I carried out the mathematical calculations within the framework of the decoherent histories theory and their results depended on two unknown parameters. I suggested that these parameters can be determined by fitting empirical measurements and, indeed, as an example, such a rough fit was tried. I noted that with certain values the effect fluctuates and may have a surprising long duration. The current paper reconsiders these parameters' preferred values in regular presentiment experiments. I conclude that most probably these parameters should have values that under ideal resolution would reproduce time symmetry of the effect and tiny (if any) fluctuation. I blame the experimental method's poor resolution between partially overlapping sentiments, the existence of queued, perhaps prevailing, previous sentiments, and operation of positive feedback nervous loops after emotional stimuli for the empirical salient suppressed symmetry and finite duration of the effect. Certain other implications of these preferred values are examined and seem to justify these values in regular presentiment tests, which do not preclude other values under peculiar tests' designs and peculiar participants.

Keywords: wavefunction collapse; consciousness; presentiment; orthodox interpretation of quantum mechanics; effective past; decoherent histories; time symmetry; quantum reduction

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Highlights

- The values of free parameters of the theoretical quantum model recently suggested to explain the presentiment effect are theoretically reconsidered for the more regular presentiment tests. This study focuses on the size of the fluctuating term.
- I propose preferred values that effectively result in no (or tiny) fluctuation. With these values, exact time symmetry theoretically exists in the idealized model and the frequency of the fluctuation appears insignificant.
- The deterioration of the exact theoretical time symmetry under empirical conditions to a mere (salient) rough time symmetry, as well as the finite effect's duration, is attributed to the poor resolution between (fully or partially overlapping) sentiments of the experimental method used to detect presentiment and to positive nervous feedback while apprehending emotional stimulus.
- Certain other implications of these reasonable values are examined and seem to justify these values for regular presentiment tests.

The presentiment effect (PSE) can be considered among the more reliable within those covered under the umbrella term *psi*. The effect is small and embedded in strong noise, with an estimated effect size of 0.28 and a 95% confidence interval of 0.18-0.38; averaging improves the signal to noise ratio and allows the difference to become statistically significant, over 6σ (Duggan & Tressoldi, 2018). Various potential mechanisms to explain the surprising effect as an experimental artifact have been discussed and examined over the years, and can be reasonably rejected (Mossbridge & Radin, 2018).

Radin (2016) provides a concise review of the presentiment experiments. In brief, the PSE can be described as an unconscious phenomenon in which pre-stimulus physiological responses mirror, to a lesser degree, the post-stimulus responses. The PSE's mirroring feature is stressed, for example, by Bierman (2008, p. 36), "Incidental observations of the noisy skin conductance at the trial level showed a remarkable form symmetry before and after the stimulus. For instance, if the response showed a double bump there appeared to be also a double bump, though smaller in amplitude, before the stimulus. Double response bumps may occur, for instance, when a picture shows a lot of redness but it takes some time to find out what really causes all that color (perhaps blood)."

Most PSE experiments looked for (and detected) the effect over a few seconds (say, up to 10 seconds) before the stimuli presentations. Exceptional longer periods were seldom examined. The participants in these experiments and the tests' design were peculiar. In one example, Alvarez (2016) examined planarian worms' (precognitive) behavior and found that (p. 222) "Frequencies of Head Movements behavior during the two observation periods (one min before and immediately before stimulation) for the experimental planarians more than doubled that of values during the corresponding observation periods for the control subjects." In another case, Radin (2023) analyzed 13 years of daily Twitter sentiment data in 10 languages. The sentiment data was examined *two weeks* prior to events assessed as significantly negative and unpredictable (including acts of terrorism, mass shootings, unexpected deaths of celebrities, etc.). Results of the analysis were statistically significant ($p = .001$), suggesting the existence of a form of a long-time collective presentiment.

Bierman (2006) suggested that for a PSE to occur the mind has to *consciously* perceive the content of the stimulus. His suggestion was based on empirical data. While performing a successful re-examination of published data (that originally had been collected by Murphy and Zajonc, 1993, for other purposes than showing a PSE) to look for a previously unnoticed PSE, Bierman realized that although a previously unnoticed PSE was indeed buried in the data when the pictures' exposure time was long enough, no PSE was present in the data when the pictures' exposure time was less than about 100 msec. Since less than about 100 msec is too short for a full comprehension of the contents and meaning of a picture, Bierman concluded that for the PSE to appear, conscious observation is apparently a requirement. Based on this insight concerning the crucial role played in the PSE by consciousness Bierman postulated the pivotal role of the moment at which conscious perception is reached in the pre versus post approximate symmetry of the effect as well.

Using orthodox quantum mechanics (QM), I (Levin, 2020) justified the existence of the PSE through contemporary QM's ideas. I tested mathematically the commonsensical idea that an efficient real-time prediction of an unpredictable future sentiment is impossible and affirmed it. Then I discussed the difference between an "actual-past" and an "effective-past" (Stapp, 2017) in QM, verbally suggesting that the PSE is merely a "quantum delusion." That is, it really appears, yet retrospectively only. Stapp (2014) had described a similar concept.

I (Levin, 2023) went further and mathematically explained the way in which this effect retrospectively appears in quantum theory. I relied on the "decoherent histories theory" (Gell-Mann & Hartle, 1989) and the contentious claim of the Orthodox Inter-

pretation of QM (OIQM) that the reduction of the quantum state (sometimes called 'the wavefunction's collapse') occurs at the moment an agent's mind perceives the observation. Hence, although unobserved prestimulus records are decohered they retain their tentative nature (i.e., remain coexisting possibilities) until the moment the participant's mind consciously perceives the stimulus.

Concerning this "collapse" issue, it is interesting to note that this OIQM's assumption recently got an empirical support from psychological experiments. Lucido (2023) used true random number generators and an experimenter's early conscious observation of the coexisting possibilities for subliminal stimulus to reduce these possibilities to a definite stimulus, in the process reproducing the empirically well-established subliminal priming effect. After confirming that a usual subliminal priming effect had indeed appeared, he skipped the experimenter's early conscious observation of the coexisting possibilities for subliminal stimulus and repeated the test. He discovered that the subliminal priming effect disappeared. He (p. 193) concluded, therefore, that his findings support the OIQM's interpretation: "The outcome suggests that the act of conscious observation may play a critical role in quantum mechanics, and, by extension, physical reality." He successfully replicated this conclusion (Lucido, 2024, 2025).

Assuming that whether an emotionally significant experience would occur can be considered a "Yes" or "No" question posed to nature, I (Levin, 2023) assumed that the initial state of this qubit of information represents total ignorance and then used the formula to calculate from this initial ignorance state's density matrix (Schiff, 1968, pp. 379-380) the probability of a history composed of a sequence of decoherent alternatives and the usual rules of the classical probability theory to calculate the conditional probabilities to get "Yes" or "No" records at any prestimulus moment given any poststimulus record.

Throughout these calculations I used the most general 2 X 2 time evolution matrix. (In the current paper I continue to use the notations of Levin, 2023). I then used these conditional probabilities to calculate the retrospective difference between the "sentiment" (i.e., α_1) average (denoted by $\langle \rangle$) at a prestimulus moment (i.e., at t_1) due to an emotionally *significant* stimulus (i.e., a stimulus that generates the $\alpha_2=1$ post stimulus sentiment) at t_2 (i.e., $\langle \alpha_1(t_1) | \alpha_2(t_2)=1 \rangle$, where the vertical bar (i.e., the | symbol) stands for the conditioned on phrase) on the one hand, and the "sentiment" (i.e., α_1) average at the same prestimulus t_1 moment due to an emotionally *insignificant* stimulus (i.e., that generates an $\alpha_2=-1$ post stimulus sentiment) at t_2 (i.e., $\langle \alpha_1(t_1) | \alpha_2(t_2)=-1 \rangle$) on the other hand. That is, the PSE, as (p. 184)

$$\langle \alpha_1(t_1) | \alpha_2(t_2)=1 \rangle - \langle \alpha_1(t_1) | \alpha_2(t_2)=-1 \rangle = 2 - 4(1 - n_3^2) \sin^2[\omega(t_2 - t_1)], \quad \text{Eq. 1}$$

with an angular frequency ω and some parameter n_3 whose square cannot surpass one (i.e., $n_3^2 \leq 1$). Notice that the subscript 3 in n_3 stands for the fact that this parameter can be interpreted as a third component of a unit vector $\hat{\mathbf{u}} = (n_1, n_2, n_3)$ that scalarly multiplies a vector of Pauli matrices (Schiff, 1968, p. 206) $\boldsymbol{\sigma} = (\sigma_1, \sigma_2, \sigma_3)$ in the unitary time evolution matrix. Notice also that the two other components n_1 and n_2 were eliminated from the result on the right hand side of Eq. 1 in favor of $(1 - n_3^2)$ using the facts that as components of a unit vector their sum of squares obeys $n_1^2 + n_2^2 = 1 - n_3^2$ and their only appearance in the result is as a sum of their squares. I (Levin, 2023) argued, therefore, that the success of the OIQM to explain the surprising yet statistically well-established empirical existence of the PSE is clear evidence that this interpretation with its emphasis on mind and consciousness to solve the notorious measurement problem is the correct interpretation of QM.

The values of n_3^2 and ω appeared free in my (Levin, 2023) general mathematical model and as a matter of principle they are theoretically indeed free. So, I noted it and (as an example) exploited this freedom to naively get a rough fit to some specific available presentiment curve. In passing, I pointed out that with $n_3^2 \neq 1$ and $\omega \neq 0$ (and unless suppressed by some other factor) the PSE would constantly fluctuate for all $t_1 < t_2$. Wondering about this conclusion, I tentatively proposed to associate this result with the relatively long (1 minute) duration that Alvarez (2016) had found in his planarian worms' behavior experiment and called for more longer data. Moreover, nowadays one can try to associate this result with the Radin (2023)'s analyzed 13 years of daily Twitter sentiment test. Indeed, two weeks is a very surprising long period. However, one must remember that these experiments are peculiar in their participants and their designs, Therefore, most probably their interpretation requires special caution. The purpose of the current article is to justify an $n_3^2 \approx 1$ value for the more regular presentiment tests' designs and to discuss the implications of such a value.

The Data's Interpretational Implications of an $n_3^2 \approx 1$ Value

Note that with an $n_3^2 \approx 1$ value in Eq. 1 one gets

$$\langle \alpha_1(t_1) | \alpha_2(t_2)=1 \rangle - \langle \alpha_1(t_1) | \alpha_2(t_2)=-1 \rangle \approx 2.$$

That is, the fluctuating term vanishes and the PSE should naively appear as a constant for all $t_1 < t_2$. Moreover, this constant PSE almost exactly mirrors the post stimuli difference between the sentiments (i.e., $\Delta[\alpha_2(t_2)] = 1 - (-1) = 2$). At first sight these

results seem to contradict the known empirical facts that the presentiment difference is much smaller than the sentiment difference and has a short duration. However, this hasty observation is misleading. Whereas my calculation (Levin, 2023) is being carried out in a theoretical idealized model of just one qubit of information, the empirical PSEs are measured in complicated mundane experiments. One must take into account that the physiological arousals in which the PSE is detected, such as skin conductance, have poor resolution regarding the identification of the influential sentiment. The arousals measured by such methods at any moment are apparently a combined weighted response to several sentiments, sometimes temporally shifted relative to one another and even conflicting. Therefore, usually one should not expect that just a single sentiment would determine the EDA signal over a long period. Over time, other sentiments may usually contribute their influence to modify the effective (say skin conductance) signal. From the post stimulus signals we know that a sentiment is a slippery thing. Usually, it endures for several seconds at most. Therefore, it is nothing but reasonable to blame some queued previous sentiments for total masking of the presentiment long before the stimulus presentation and for partial masking of the presentiment shortly before the stimulus presentation. In addition, as I postulated (Levin, 2023) there is apparently poststimulus gain buildup that results probably by the nervous positive feedback systems while consciously contemplating the stimulus content. Looked in this way, neither the empirical time asymmetry of the presentiment difference's size with respect to the poststimulus difference's size nor the finite duration of the recorded PSE should surprise us.

Moreover, the insight that "originally" the presentiment difference mirrors the post stimulus difference between sentiments has a benefit. (By originally in the previous sentence I actually refer a mere hypothetical situation. That is, a situation with no (practically existing) other, previous, sentiments masking, and without the post-stimulus gain increase that most probably results in the nervous feedback systems while consciously comprehending the (say 'wild') stimulus content.) Whereas $n_3^2 < 0.5$ values, by the fluctuation they generate, may sometimes flip the direction of the PSE, a value of $n_3^2 \approx 1$ cannot do it. This can explain the aforementioned observation that usually the direction of the PSE resembles the direction of the poststimulus sentiment.

A Motivation for an $n_3^2 \approx 1$ Value from a Non-Ignorant Case

In order to describe an idealized typical presentiment test, my (Levin, 2023) calculation assumed the initial state (at t_0) to be a state of ignorance. That is, a 2×2 diagonal ρ ('density') matrix with two values of 0.5 along its diagonal. Such a density

matrix describes a mixed state in which although it is known that the stimulus would be either “wild” or “mild,” there is initially ignorance concerning which stimulus will eventually appear. With such an initial state the probability to get a value of 1 at t_1 is $p[1(t_1)] = \text{Tr}[\rho P_1^1(t_1)] = 0.5$ (where $\text{Tr}[\]$ stands for the trace operation, that is the sum of diagonal elements, and $P_1^1(t_1)$ is the Heisenberg’s projection operator onto the $|1\rangle\langle 1|$ ray at the t_1 moment) and likewise the probability to get a value of (-1) at time t_1 is $p[-1(t_1)] = 0.5$. These probabilities are forced by the unitarity of the time evolution operator $U(t_r, t_0)$ and *hold no matter what is the value of n_3^2* . On average, one predicts therefore at t_1 null net effect (i.e., $\langle \alpha_1(t_1) \rangle = 0$) and as shown in Levin (2023) if a stimulus is presented for the first time at $t_2 > t_1$ an appropriately correlated (n_3^2 dependent) PSE appears at t_1 as well.

Consider, however, the situation after a stimulus was presented at t_2 . The participant is not ignorant any more. Suppose, for example, that an emotionally significant stimulus was consciously observed. This observation was accompanied with a corresponding change in the density matrix. The only element of this new density matrix (call it $\rho_1(t_2)$, where the 1 subscript denotes the ‘wild’ sentiment) which differs from null is the $[\rho_1(t_2)]_{1,1} = 1$ element.

The predicted probability to get a “wild” sentiment at some later moment $t_3 > t_2$ can easily be calculated as

$$p[1(t_3)] = \text{Tr}[\rho_1(t_2) P_1^3(t_3)] = |U(t_3, t_2)_{1,1}|^2 = 1 - (1 - n_3^2) \sin^2[\omega (t_3 - t_2)]. \quad \text{Eq. 2}$$

The probability to get a “mild” sentiment at t_3 completes $p[1(t_3)]$ to 1. Hence it is $(1 - n_3^2) \sin^2[\omega (t_3 - t_2)]$. Therefore, on the average one expects at t_3

$$\langle \alpha_3(t_3) \rangle = (+1) p[1(t_3)] + (-1) p[-1(t_3)] = 1 - 2 (1 - n_3^2) \sin^2[\omega (t_3 - t_2)]. \quad \text{Eq. 3}$$

That is, unless $n_3^2 = 1$ and assuming $\omega \neq 0$, the average at t_3 would change over time. Such a change over time seems to contradict our daily experience that a second exposure to a stimulus largely repeats the first sentiment we had at the first exposure to the same stimulus. Of course, this is not an exact contradiction statement. Moreover, our sentiments to a wild stimulus tend to calm down as more exposures to the same single stimulus are being accumulated and we habituate to it. An n_3^2 value close to 1 (i.e., $n_3^2 \approx 1$) seems appropriate to describe these daily experiences. Its closeness to 1 would prevent too wild repeated sentiments fluctuations whereas its small deviation from 1 would leave some flexibility to enable description of the sentiment change as repeated exposures to the same single stimulus are being accumulated.

Notice that if it is the emotional type of the stimulus by itself (i.e., its very objective sentimental valence grade) that really matters rather than the participant's actual emotional sentiment (in a subjective sense, due to the stimulus) that matters, an exact $n_3^2 = 1$ may be appropriate. In such a case one conceptually separates the participant's effective habituation (which can be attributed to that particular participant's nervous system adaptive state, that is, to the mind's substrate) from the (ontological) emotional type of the stimulus by itself, which can remain strictly constant over time, as is indeed the case if the stimulus is an enduring image. Metaphorically speaking, such an approach considers an ontological tendency (a propensity) as the analogue of a photon and the perceiving mind as an optical receiver. Mainstream physics regards the photon as an ontological quantum of certain potentialities (i.e., the electric potential and the magnetic vector potential) arranged as a 4-vector (Jackson, 1975, p. 549). The photon is assigned an ontological existence and is associated (within the QM's uncertainty constrains) with some direction of motion, frequency, angular momentum, and polarization. An optical receiver is a separate unit, ontologically distinguished from the incoming photon. If it detected the photon it is supposed to produce a notice of the detection, and consequently may generate various effects (say, musical tones). The receiver's reaction may be adaptively attenuated (say, by a built-in loop of automatic gain control). Due to this adaptation, similarly detected photons can generate varying loudness of the outcoming musical tones. This is a sort of habituation.

Implications of an $n_3^2 \neq 1$ Value on a True (i.e., Quantum) Uncertainty

The aforementioned initial density matrix represents a state of *ignorance*. In the QM's classification of states, a state of ignorance is sorted as a *mixed* state. That is, the participant cannot efficiently predict the stimulus type just because s/he does not know everything it is possible in principle to know about the case. The information about which stimulus type will appear is in principle available, yet it is not known to the participant until the stimulus appears. According to the partial information the participant has, it may come out either wild (denoted as (+1)) or mild (denoted as (-1)) with equal probabilities. As was explained before this participant's ignorance enforces at $t_1 > t_0$ a null average (i.e., $\langle \alpha_1(t_1) \rangle = 0$) by the *unitarity* of the time evolution operator $U(t_1, t_0)$, no matter what is the value of n_3^2 . Mathematically (Schiff, 1968, p. 380), this mixed nature is expressed by the fact that $\text{Tr}[(\rho(t_0))^2] = 0.5^2 + 0.5^2 = 0.5 < 1$.

In principle, QM permits an initial purer state. That is, a prepared *pure* superposi-

tion state (PSS) with $\text{Tr}[(\rho^{\text{PSS}}(t_0))^2] = 1$. In such a prepared initial PSS, participants know whatever can be known about the initial state, yet they cannot efficiently predict what stimulus type will appear due to an inherent *genuine* quantum uncertainty. Such a prepared initial PSS represents a superposition of *ontological tendencies* (propensities) for wild and mild stimuli. In a quantum superposition, both contradicting tendencies *coexist* as mere tendencies. An example density matrix of such a prepared state (i.e., $\rho^{\text{PSS}}(t_0)$) is given by a 2X2 matrix whose four elements are 0.5 each. Since according to QM the probability to get a value of (+1) in a state described by the density operator ρ at time t_1 is $p[1(t_1)] = \text{Tr}[\rho P_1^1(t_1)]$ (where $P_1^1(t_1)$ denotes the projection operator at time t_1 in the 2X2 Hilbert space onto the $|+1\rangle\langle +1|$ ray in that space, that in matrixial notation is represented in the 2X2 Hilbert space by a 2X2 diagonal matrix $\mathbf{P}_1^1(t_1)$ with values of 1 and 0 along the diagonal) the probabilities of seeing a wild image in this state is $p[1(t_1)] = \text{Tr}[\rho^{\text{PSS}} \mathbf{P}_1^1(t_1)] = 0.5$, and similarly the probability of seeing a mild image in this state is 0.5.

One way to prepare such an initial PSS is by passing half spins (say silver atoms) through a Stern-Gerlach (SG) apparatus (Gerlach & Stern, 1922). (Other methods to generate “true random numbers” exist but the advantage of this implementation of a SG apparatus is that it clearly ends up with the definite desired PSS density state.) It is known that the not homogeneous magnetic field generated by the magnets of this apparatus will separate the entering beam into two sub beams according to their spin direction relative to the direction of the magnetic field. Let us call this direction x . So, the atoms in one sub beam have positive spin relative to the x direction and the atoms in the second sub beam have negative spin relative to the x direction. Suppose that the atoms in the first sub beam are *not* detected at the exit of this first SG apparatus. Rather, these atoms are then entering (at t_0) another SG apparatus. The magnets of this second SG apparatus are oriented perpendicular to those of the first SG apparatus. Let us call this second direction the z direction. This second SG apparatus splits its entering sub beam into two sub-sub beams. The atoms in these sub-sub beams are then detected by two detectors. That is, one sub-sub beam will be detected by a detector that collects the positive spins relative to the z direction and the other sub-sub beam will be detected by a detector that collects the negative spins relative to the z direction. If the detector that collects the positive spins relative to the z direction (i.e., those described by the ray $|+1_z\rangle\langle +1_z| = (1, 0)^T (1, 0)$ where the T denotes a transposition) detected a silver atom a wild stimulus is presented to the participant. If the detector that collects the negative spins relative to the z direction (i.e., those represented by the ray $|-1_z\rangle\langle -1_z| = (0, 1)^T (0, 1)$) detected a silver atom a mild stimulus is presented to the participant.



The (spin) state of the silver atoms exiting the first SG apparatus in the sub beam with positive spin relative to the x direction is given (in a standard Hilbert spin space spanned by the eigenvectors of σ_z) by $|+1_x\rangle\langle +1_x| = (1/\sqrt{2}, 1/\sqrt{2})^\top (1/\sqrt{2}, 1/\sqrt{2})$. This is the 2X2 aforementioned matrix whose four elements are 0.5 each (i.e., $\rho^{\text{PSS}}(t_0)$).

In the lack of any asymmetry between the tendencies of this prepared initial PSS it is expected that future sentiments (i.e., $\alpha_1(t_1)$) would average to null at any t_1 as well. However, calculating $\langle \alpha_1(t_1) \rangle$ along the calculation lines in Levin (2023) with this initial $\rho^{\text{PSS}}(t_0)$ replacing Levin (2023)'s $\rho(t_0)$ one easily gets

$$\langle \alpha_1(t_1) \rangle = 2 \{n_1 n_3 \sin[\omega (t_1 - t_0)] - n_2 \cos[\omega (t_1 - t_0)]\} \sin[\omega (t_1 - t_0)]. \quad \text{Eq. 4}$$

Since $n_1^2 + n_2^2 + n_3^2 = 1$ by the fact that n_1, n_2 and n_3 are components of a unit vector, if $n_3^2 = 1$ then n_1 and n_2 must each be a null. In such a case one gets from this formula the expected average; $\langle \alpha_1(t_1) \rangle = 0$ at $t_1 > t_0$. (If, however, $n_3^2 < 1$ neither n_1 nor n_2 must be a null and assuming $\omega \neq 0$ the $\langle \alpha_1(t_1) \rangle$ average would fluctuate as t_1 changes.) The $\langle \alpha_1(t_1) \rangle$ average is a measurable quantity. So, starting with this prepared $\rho^{\text{PSS}}(t_0)$ one can be sure that indeed $n_3^2 = 1$.

Needless to say, according to OIQM the PSE is a retrospective result of the quantum reduction of the state accompanying the conscious observation. Hence it should appear with the PSS as well. In a series of tests in which a so chosen stimulus is presented to a participant $t_2 - t_0$ after that test's t_0 , it is easy to predict that starting with a PSS (since $n_3^2 = 1$) one should get from the idealized mathematical model $\langle \alpha_1(t_1) | \alpha_2(t_2)=1 \rangle - \langle \alpha_1(t_1) | \alpha_2(t_2)=-1 \rangle = 2$. That is, ideally one can expect a time symmetrical PSE. This clear theoretical prediction can be empirically checked. If, as I tend to believe, it would come wrong (that is, the usual short duration small PSE, rather than a longer duration PSE with comparable size to the post stimulus sentiment, would still be seen) it would indicate that the method's aforementioned poor discrimination ability between sentiments and the awakened positive feedback nervous loops after a stimulus presentation are responsible for the asymmetry of the PSE. If this would be the conclusion from the PSS case one can argue that this interpretation should apply in the ignorance (mixed state) case as well.

Conclusions

It seems that my (Levin, 2023)'s rough fit to some specific available presentiment curve was naïve and my theoretical model is an idealized and a very general one.

Therefore, application of this model to mundane experiments should be done more carefully and to take the limitations of the measurement method into account.

There seem to be good reasons to believe that in regular tests of PSE a value of $n_3^2 = 1$ (or at least $n_3^2 \approx 1$) holds. In principle, this can be verified empirically in experiments that are prepared to start with a PSS. It appears (at least approximately) a commonsensical value for reproducing daily experiences in repeated exposures to a stimulus. Reduction of a significant emotional sentiment under repeated exposures to a stimulus can be attributed to an adaptive feature of the mind's substrate (i.e., the nervous system).

With $n_3^2 = 1$ the theoretical (i.e., the idealized 'original') presentiment exactly mirrors the post stimulus sentiment. Such a symmetry (albeit to a lesser degree and a rough one) can frequently be identified in the empirical data. The exact theoretical symmetry apparently deteriorates if the poor discrimination ability of the method (such as EDA) from other, probably prevailing, previous, partially, or fully overlapping sentiments, shortly before the stimulus presentation and the mind-substrate's (i.e., nervous system's) positive feedback loops operation after the stimulus presentation are being taken into account. Hypothetical prevailing previous sentiments queued before the stimulus presentation most probably explain the finite duration of the PSE by masking it as well. It is proposed that studying the PSE in prepared PSS cases would help to show it by exploiting their unambiguous $n_3^2 = 1$ value.

With $n_3^2 = 1$ the value of ω does not matter for describing the PSE. The reason is the altogether vanishing of the fluctuating terms' amplitudes in the relevant expressions.

This does not preclude other n_3^2 values under peculiar tests' designs and peculiar participants. Unless being suppressed by other sentiments, such cases may apparently generate long duration considerable PSE correlations. Theoretically, sometimes they may exhibit fluctuating PSE correlations as well.

Declaration of interests: The author declares that there is no conflict of interest.

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Recent Publications of Note 6(1)¹

Etzel Cardeña

Lund University

Anomalous Experience

Aparicio-Terrés, R., López-Mochales, S., Díaz-Andreu, M., & Escera, C. (2025). The neurobiology of altered states of consciousness induced by drumming and other rhythmic sound patterns. *Annals of the New York Academy of Sciences*, 1550(1), 55–70. <https://doi.org/10.1111/nyas.15403>

A narrative review of an important topic marred, however, by a too broad lens and lack of consideration of the probable effects of experimental demand characteristics and individual differences. Nonetheless, it can lead researchers to important references.

Cardeña, E., Berkovich-Ohana, A., Valli, K., Barttfeld, P., Gomez-Marin, A., Greyson, B., Kumar, V. K., Laureys, S., Luhrmann, T. M., Newberg, A., Preller, K. H., Putnam, F. W., Tagliazucchi, E., Walsh, R., Carter, O., & Yaden, D. (2025). A consensus taxonomy of altered (nonordinary) states of consciousness: Bringing order to disarray. *Psychology of Consciousness: Theory, Research, and Practice*. Advance online publication. <https://doi.org/10.1037/cns0000431>

A multidisciplinary expert group presents a new taxonomy of altered (nonordinary) states of consciousness based on their experiential/behavioral cardinal aspects, rather than on induction procedures, as is common practice.

Greyson, B., & Pehlivanova, M. (2025). A neuroscientific model of near-death experiences reconsidered. *Psychology of Consciousness: Theory, Research, and Practice*. Advance online publication. <https://doi.org/10.1037/cns0000448>

This is a response to a recent paper in which a group of researchers (see below) pro-

¹ This regular feature summarizes critically recent papers of interest. If you want to recommend a paper, please send a note with bibliographic information to etzel.cardena@psy.lu.se.

posed a mostly physiological overarching model of near-death-experiences. Greyson and Pehlivanova conclude that the model is admirable yet fails to account for explanatory gaps and observations inconsistent with it. The original model is presented in: Martial, C., Fritz, P., Gosseries, O., Bonhomme, V., Kondziella, D., Nelson, K., & Lejeune, N. (2025). A neuroscientific model of near-death experiences. *Nature Reviews Neurology*, 21(6), 297–311. <https://doi.org/10.1038/s41582-025-01072-z>

Herrero, N. L., Corfdir, Y., Vázquez-Chenlo, A. A. Capurro, L., & Forcato, C. (2025). Exploratory study of non-ordinary states of consciousness during sleep show distinct electrophysiological features from wakefulness and canonical sleep stages. *Scientific Reports*, 15(33586) (2025). <https://doi.org/10.1038/s41598-025-18748-7>

This study compared the electrophysiology of lucid dreaming, sleep paralysis, out-of-body experiences (while asleep) and false awakenings, concluding that they share characteristics with S1 and REM sleep stages, but not wakefulness.

Lindsay, N., Tassell-Matamua, N., O’Sullivan, L., & Gibson, R. (2025). Trauma or transcendence? The relationship between near-death experiences and dreaming. *Dreaming*, 35(1), 1–17. <https://doi.org/10.1037/drm0000278>

The authors evaluated whether there is evidence of the often-claimed higher incidence of ostensible precognitive dreams and other unusual dream phenomena following a near-death-experience (NDE). The study compared NDErs, people who came close to dying but did not have an NDE, and a group of those who did not come close to dying. The first group differed from the other two on reporting more lucid, problem-solving, and precognitive dreams, as well as more out-of-body experiences. The authors speculate that NDEs may give access to expanded awareness while awake or asleep.

Anomalous Cognition

Greyson, B., Long, J., Holden, J. M., Jourdan, J-P., King, R. A., Mays, S., Mays, R., Rivas, T., Tassell-Matamua, N., van Lommel, P., Woollacott, M., & Tressoldi, P. (2025) The veridical Near-Death Experience Scale: Construction and a first validation with human and artificial raters. *Frontiers in Psychology*, 16:, 661390. doi: 10.3389/fpsyg.2025.1661390

A group of experts, led by the author of the most widely used Near-Death Experience (NDE) scale joined forces to create an instrument to evaluate the strength of evidence

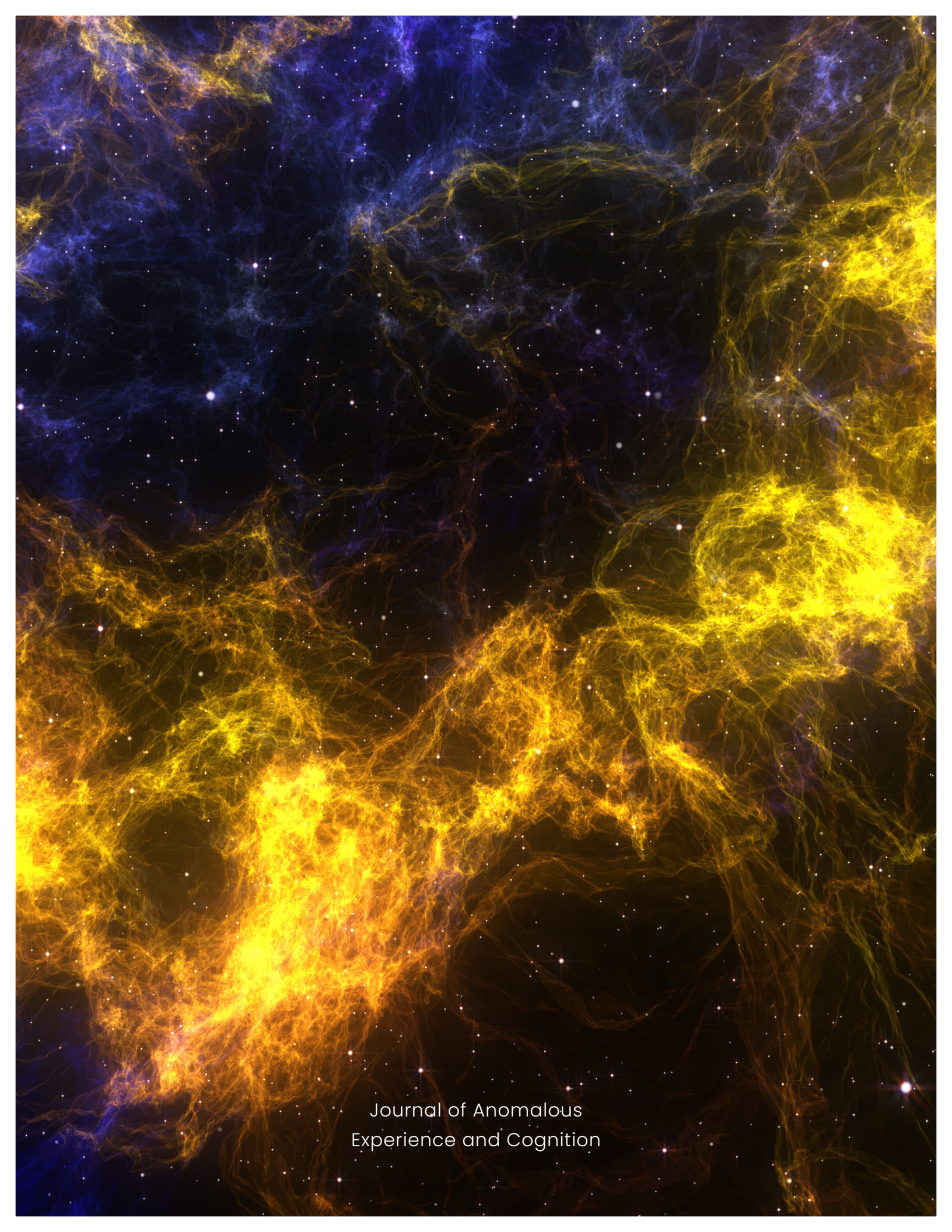
for reports of apparent anomalous cognition during NDEs. Eight topics (e.g., third-person verification, cardiac arrest or cessation of brain activity) comprise the scale. They also tested the agreement of human and artificial raters. The scale is published as an appendix. This is an important step forward in this area.

Wainstock BC, Gomide M, Silva J, Moreira-Almeida A. Investigation of mediumistic letter: A deceased son supposedly writes to his parents. *Transcultural Psychiatry*. 2025;0(0). doi:[10.1177/13634615251357998](https://doi.org/10.1177/13634615251357998)

I highlight this item for two reasons, one that it was published by a mainstream journal, the other that it is a later careful study like the ones that the Society for Psychical Research used to do a hundred years ago or so and which deserves revisiting.

Walleczek, J., von Stillfried, N., Schmidt, S., Wittmann, M., Kirmse, K. A., Moll, J., & Kekecs, Z. (2025). Metascientific replication project with the advanced meta-experimental protocol of the transparent psi project procedures for testing the precognitive effect claimed by Bem. *PLoS one*, 20(11), e0335330. <https://doi.org/10.1371/journal.pone.0335330>

This very large ($N = 420,472$) 3-parts study continues a recent pattern in which large studies have found null or mixed results using Daryl Bem's reverse priming paradigm. In this case, although the main effect was not supported, an effect in the opposite direction of that predicted was observed in study 1, replicated in confirmatory study 2, but not replicated in confirmatory study 3. Although the authors sought to control for confirmation bias in their study, they show their own biases. For instance, they write very arguable statements such as: "The results of Study 2 represent a rare example in psi research of the successful replication of an exploratory result," without providing evidence for their encompassing statement. They also write that if true psi "defies known physical laws," an idea that some eminent physicist in the past and the present would not agree with (see <https://psi-encyclopedia.spr.ac.uk/articles/eminant-people-interested-psi>).

A visualization of the cosmic web, showing a complex network of filaments and clusters of galaxies. The filaments are colored in shades of blue and yellow, with the yellow filaments being more prominent and dense. The background is dark, filled with numerous small, bright stars.

Journal of Anomalous
Experience and Cognition