RESEARCH ARTICLE

A New Approach to Veridicality in Dream Psi Studies

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Abstract—A problem in spontaneous dream psi studies is validation of purported psi elements. Dreams rarely have enough specificity to satisfy critics that they point to paranormal knowledge of a specific event. This creates evidential hurdles to overcome when evaluating whether a dream contains psi-derived information such as scenes of future events or physically distant locations. In this study, the goal is to arrive at a reasonable method to establish that information derived from spontaneous dream experiences can be established as veridical. To accomplish this, a method for finding the equivalent of a target within a spontaneous experience is used to fix a specific locale and time for comparison. Adverse scoring criteria are used to address complaints about confirmation bias. The result is a psi-adverse method for scoring spontaneous experiences that are anchored to a specific locale and time. This method regularly produced significant *p*-values when used to assess 20 consecutive dream records, comprising 598 individual line items. These records were taken as a sample from a group of 3,305 dream records made over the past 22 years by the author.

Keywords: dream—veridicality—out-of-body—precognition—psi—pre-
        sentiment—spontaneous psi

Introduction

Criticism of spontaneous cases of dream psi suggests that the number of uncontrolled variables is too great to generate a statistically valid means of evaluating their veridicality (Wiseman 2011:288). When elements of a psi experience do match a later event, they are sometimes criticized for being too generic to be reliably connected to the event in question. In both types of criticism, the problem is that there is no fixed target against which the purportedly psi dream elements may be compared. Laboratory experiments allow researchers to work with a known number of variables

by creating their own target sets, something that is theoretically impossible with spontaneous cases (Targ, Katra, Brown, & Wiegand 1995, Graff 2007, Bem 2011). Some researchers agree that spontaneous cases cannot be used effectively for evidential purposes:

> [Louisa Rhine] made no effort to corroborate the experiences or to obtain additional details. This was not because she wanted to emphasize the personal meaning of the experiences over the evidential; rather, the Rhines' position was that spontaneous cases could not prove the existence of psi, but if patterns in sufficient numbers were noted, they might tell us something about the psi process that could be used in experiments. (White 1992)

A two-pronged strategy is used to address these concerns. The first step is to establish an anchor against which dream elements may be compared. Second, adverse criteria are used for selection and evaluation of purportedly psi elements to assuage concerns that the study is influenced by confirmation bias or other subjective factors. The results indicate the presence of psi, despite the use of adverse criteria.

Study History

> A very important but little used approach is the longitudinal study in which the experiences of a single person or group of persons are studied over a period of time. This method has probably not been used much because it requires someone who has had several experiences over a time period. . . . (White 1992)

The present study is based on data collected over the past 22 years as part of an informal longitudinal study of my own dreams. The study originated in a desire to prove that my dreams did not exhibit signs of psi, as I was told they did. Instead, the records quickly demonstrated the opposite. As of this writing, there are 3,305 records contained in the 31 journals that make up the database. No fewer than 230 of the records have demonstrated veridicality. The original purpose of the dream journals was satisfied after the third dream journal (DJ3) was complete, but I continue recording my dreams to the present day. Active checking of dream veridicality ceased after DJ3 but verifications were recorded afterward if it was convenient to do so. Because active verification ceased after DJ3 was complete, DJ3 was selected as the best example of a group of dreams checked for veridicality. There are 80 records contained in DJ3, of which 42 are veridical (Table 1). These records were split into 4 groups of 20 consecutive records. Records 1–20 were randomly selected for the study.

TABLE 1
Number of Veridical Records

Records 1–20	Records 21–40	Records 41–60	Records 61–80	Total
12	7	16	7	42

The Journals. The variety of content in the 31 journals spans nearly the full range of psi experience. There are examples of OBE dreams, precognition, after-death communication, past life memories, psi training, healing, auras, telepathy, psychokinesis,[1] and less easily defined categories of a spiritual or religious nature. Although these more extraordinary dreams are numerous, they represent a minority of the dream records. At present count, approximately 10% of all records contain psi or other extraordinary content. The remaining dreams are not germane to this study, though examples do appear in the selection discussed here. Just as psi dreams do not easily suit expectations of critics who do not consider psi to be a plausible explanation for their content, the non-psi dreams recorded in these journals are in many ways unlike generally accepted theories about dream content.

Non-Veridical Content. Many dreams from the journal are not veridical but appear to be psi. The two most prominent categories that fit this description are after-death communication dreams that feature ghosts unknown to me or OBE dreams that similarly feature persons unknown to me. Another large category is dreams containing explicitly spiritual content. These dreams cannot be verified because they do not contain information related to physically connected events, or if they do, to events I have access to for verification purposes.

The remaining dreams are difficult to classify. They do not fit into any "normal" dream type easily but they do not appear to contain psi-derived information. These make up the bulk of the dream records in the journal and in this study. One popular theory is that most dreams are nothing more than "day residue."

In a study that examined dream reports from undergraduates, researchers found that for the dreams most tied to a real-life event, the event had occurred either recently (1–3 days prior) or about a week earlier (5–7 days prior). The authors suggested that recent memories (day-residues) may appear in dreams because they are still mediated by the hippocampus, whereas the delayed memories may be in the process of transfer to the neocortex (MacDuffie & Mashour 2010).

While theory and research specific to dreaming are lacking, reason dictates that one's beliefs about dreams may be reflective of their waking life experiences (King & DeCicco 2009).

These quotes reflect the commonsense wisdom that many or most dreams are a composite of recent events from the dreamer's life. This "residue" is an innocent act of remembering recent but past events from one's own life, sometimes with added fanciful features. While this may be commonsense, the records used in this study do not support the theory. Examples of dreams that might contain day residue are so rare that even if all of them were legitimate examples of day residue, they would be much less common than every other type of dream, including any sub-category of psi.[2] If anything, day residue is disproved as a factor by the records used here.

Spontaneous psi in Dreams

Some exotic dream types contain information unlikely to have been acquired normally, but this is not always the case (Krippner & Faith 2001). A creative dream may lead to a surprising insight or the solution to a problem without resort to psi. The same is true of lucid dreams, dreams within dreams, and initiation dreams. Precognitive dreams and out-of-body dreams (OBE dreams) must contain psi content in order to inform the dreamer of distant places or future events. The question whether genuine examples of these dream types exist is highly controversial (Wiseman 2011).

Spontaneous psi is frequently reported to occur in dreams. In a table provided by Dr. Ian Stevenson (Stevenson 1970:2), he shows the results of an international survey with 9,319 respondents. Of these, 64.6% of self-reported psi experiences were dream-related. This was the largest source of psi material. The second most numerous category was "Waking Impression or Intuitive Experiences," accounting for 25.8% of the results. If a methodology may be found to validate spontaneous psi in dreams, the number of viable cases increases while potentially enhancing the richness of the content for qualitative examination and analysis.

Definitions.

> Immediately I was in the spirit; and behold, a throne was standing in heaven. . . . Revelations 4:2 (Barker 1999)

If Biblical accounts of being "in the spirit" are counted as examples of an out-of-body experience (OBE), then historical OBE records date back thousands of years. Despite the history, there is no general agreement about what an OBE is (Alvarado 1989). Alvarado describes theories that

range from the purely biological, to full body/spirit separation as in the Biblical example above. He also references sources who consider an OBE as a type of dream. Robert Monroe differentiates his OBEs from dreams by describing them as a conscious experience, not a dream (Monroe 1977:26). Regardless of disputes regarding the true nature of an OBE, the term is used here to describe dreams of remote locations. This information is often veridical. When it is, it is a "veridical OBE" or an "OBE dream."

Remote Viewing (RV) is similar to an OBE dream. The difference is that RV is a conscious exercise that does not include the sensation of dissociation common to OBEs. Because the body is unconscious during an OBE dream, conscious control of the RV-related aspects of the experience is not assumed, as it would be for RV. In both types of experience, information about a remote location is acquired via non-physical means.

Precognitive dreams purport to contain veridical data of future events. Dreams of this type have been reported in spontaneously occurring cases for thousands of years and remain quite common today (Stevenson 1970). Forced-choice testing provides statistical evidence to support the argument that precognition is a genuine phenomenon (Honorton & Ferrari 1989), but this type of testing cannot be applied to spontaneous cases.

Laboratory Dream psi. The Maimonides Dream Research Laboratory in New York used forced-choice testing to test for dream psi (Krippner & Ullman 1970). In forced-choice tests, targets are generated or selected before or after a subject begins to dream. Results of the dream are then compared to the target for indications of telepathy,[3] RV, or precognition. By testing for dream psi in a laboratory, some of the problems associated with spontaneous cases could be eliminated. According to a meta-analysis of the Maimonides dream studies, the data are suggestive of psi (Radin 2009).

In a different experiment, "dream incubation" was used to try to manipulate dreams to match a desired goal. The goal was to dream about material that would be found on the first few pages of any of three newspapers published after the dream (Graff 2007). That experiment allows for more flexibility than in the Maimonides studies, but its forced-choice design impairs reliability in at least one important dimension: If the intention to dream of an image from a specific newspaper on a specific day cannot be consciously controlled by the subject, the desired effect may not occur. The subject may have a legitimate precognitive or veridical OBE dream, but because it is not related to the target it is not counted. If there is a way to evaluate spontaneous cases where intention is not an issue, this type of data loss may be avoided.

psi-Missing. "psi-Missing" is when there is a conflict between one's conscious objective and factors that inhibit its realization. This is generally

assumed to be unconscious and motivated by prior beliefs (Tart 2009). The concept is most commonly associated with the so-called "sheep–goat effect" where subjects who believe that psi is real (sheep) score higher than chance in psi tests, and those who do not believe in psi (goats) score below chance. In the context of this research, psi-missing includes the potential for a subject to miss a target due to an inability to consciously control a psi effect, regardless of beliefs regarding psi as an explanatory theory. This is important because forced-choice tests may suffer from this problem to a greater extent than is known, at least by this expanded definition. An example of this kind of psi-missing appears in record 12 of this study. In it, I went to sleep with the conscious intention of visiting an uncle of mine in an OBE. I did experience a veridical OBE that night, but not with the uncle I intended to visit. Instead I saw an acquaintance in a completely different part of the country. Another example occurs just after the 20 records used in the study. In it, I tried to visit a certain person in an OBE but failed. Instead, I had a very detailed dream that later proved to be precognitive. Spontaneous experiences should not have this problem because the conscious/unconscious dichotomy of forced choice testing does not exist. Instead, the unconsciously produced dream is compared directly to results, without regard for conscious goals.

Proposed Solution

The examples used in this study utilize methodological controls to mitigate or eliminate the type of problems most often associated with spontaneous cases. Table 2 lists 6 major problem types associated with the evaluation of spontaneous psi in dreams and the controls applied.

TABLE 2
Six Major Problem Types and the Controls Applied

Problem	No statistical baseline	Law of large numbers	Affirmative bias	Subjective judging	Dependence	Weak or absent documentation
Control	Anchors	Dilution	Nothing censored	Adverse scoring	Dependence and redundancy check	Dated written record

Records and Scenes. 20 records from DJ3 are used. A "record" comprises all of the notes taken for the previous night's dreams. Every item in the journal is written longhand and dated for the day of waking. These are transcribed later into digital format. Records are broken down into "scenes." A "scene" as defined here is described as a "dream" in other

contexts. Scene content is usually internally consistent, but is thematically or temporally disjointed from other scenes in the same record. Scene breaks are designated by the ">" symbol at the beginning of each scene in the original record. Sometimes this symbol is used to separate scenes prior to remembering a full scene. When that occurs, a note is made in the journal to connect scenes that would otherwise be considered separate. Scenes are broken down into "line items." Each line item is a short description of a person, place, thing, event, action, or characteristic of something in the dream. Table 3 shows a portion of one of the records used in this study to illustrate the difference between a record, a scene, and a line item.

TABLE 3
Part of One Record, to Illustrate Record, Scene, and Line Item

Record Number	Scene Number	Line Number	Line Item
5	4	1	Stepmother and Dad at a Quality Inn
5	4	2	Impression that I am at hotel on vacation
5	4	3	Mention that we are in or just north of San Francisco
5	4	4	Pink neon sign in shape of coffin floats just below water

This table shows a portion of the coded record for record 5, scene 4. In this example, it related to a trip my stepmother and father took to San Francisco from Maine. I did not know of the trip until I called to verify the dream, nor was I aware of any reason that would compel them to leave Maine or to visit San Francisco.

The date for each item is recorded. There are no missing days for the 20 records, which cover the period May 1, 1990, through May 17, 1990. There are three naps during the period, each of which is counted separately.

Validation. All validations are made on or shortly after the date of the record. One exception in this group was verified eleven years after the original record was written. Validations are noted in the margin of the original record along with the date the validation was made, the method, and the witness involved, if any. Validation entries are of two principal forms. The most common are notes made of telephone interviews with the subjects of various OBE types of dreams. These phone calls usually take place later in the same day the journal entry is made. If visual information in the form of drawings exists, they were sent by fax or as a copy by mail to the subject. The protocol for OBE validation calls was the same for all of the examples in this study. In each case, the following steps were followed:

1. Subject identified from journal
2. Written material faxed if appropriate (usually if drawings were involved)
3. Phone call to subject made
4. I identified myself and the purpose of the call as follows:
   a. "I have just awakened from a dream in which you played a part"
   b. "May I read the dream to you from my journal?"
5. After reading the dream, I asked the subject if any part of it sounded consistent with recent activities or events in their life.
   a. The most common result was that all confirmed elements related to the same day in the subject's life, and that it was recent. Most often, it was within 24 hours of the phone call.
6. The results of the call, whether verified, not verified, or denied, were recorded in the margin of the dream journal entry.

Precognition entries are made after I have encountered some event in waking life that reminds me of a specific dream. On returning home, I would review that one dream and was generally rewarded with multiple line item confirmations for various events from the same day.

Anchors. An anchor is a prominent line item from within the dream record. Like targets in forced-choice tests, line items from the dream record are compared against anchors for consistency. The number of items that match the anchor are counted as "successful" trials. Because the anchor is the statistical baseline, it is not counted as a trial. For example, in a record that contains four scenes, one of those scenes might have 15 line items. One of those line items is identified as an anchor, and the remaining 14 are compared to it. If it appears to be an OBE, the anchor is a person whom I will call for confirmation. For an item to be considered verified, it must be accepted by the subject as correct for a recent experience from their life. Each subsequent item must be consistent with the same event or events from the same day in the subject's life. In this way, each additional item compounds the complexity of the original verified item and successive items.

An example of an anchor is provided by record 4, scene 1, item 1; as shown in Table 4.

Precognitive anchors are a combination of a line item that matches a component of a specific event and the date it occurs on. Table 5 shows an example of a precognitive anchor.

Most dream records contain multiple scenes. Of these, some have multiple unrelated veridical scenes. When this happens, such as two OBE dreams involving two different people and locations, the record will contain more than one anchor, as shown in Table 6.

Record 5 has a total of 6 scenes, 3 of which contain enough items to be checked. Of these, 2 scenes contain veridical items. This is an example of

TABLE 4
An Example of an Anchor

Line Item from Journal	Line Item Description after Verification	Anchor	Explanation
Wake up in dream, returning from NYC from seeing Barbara F	NA	1	Barbara F can verify or disconfirm, NYC location dependent on prior knowledge

This table shows the line item description, that it is identified as an anchor, and why it was chosen as an anchor. The NYC location is combined with the name of the anchor because it is her city of residence, something that was known to me and therefore dependent.

TABLE 5
Example of a Precognitive Anchor

Anchor	Description from Journal	Description after Verification	Discrepancy Explanation
0	First name is like "Jean-Michel"	First name is "John"	"Jean" is French for "John" and sounds very similar.
1	Someone tells me his last name is like "Kittez"	Last name is "Kitses"	A very close match for a highly unusual name. When I heard this name, I thought of this dream, making it the anchor.

The anchor for this dream is the most striking element of the dream, as is often the case for precognition anchors. Like OBE anchors, these are not counted as verified, though doing so is usually more adverse in the case of precognition than an OBE dream.

TABLE 6
Records with More Than One Anchor

Record Number	Scene Number	Total Line Items	Possible Line Items	Anchors	Attempted Line Items	Verified Line Items	Verified Fidelity Value
5	1	17	15	1	15	13	10
5	2	1	0				
5	3	1	0				
5	4	7	7	1	5	3	3.75
5	5	1	0				
5	6	7	3	1	3	0	0

a record containing more than one anchor due to multiple veridical scenes. The anchors are two different people who were at that time about 350 miles apart (OBE anchors) and a trip to a museum (precognition anchor).

Base Probability Value (Adverse Correlation). Unadjusted or raw *p*-values are calculated based on an arbitrarily assigned Base Probability (BP). The purpose of the BP is to provide a probability estimate that is both extremely adverse and definitely wrong. If the *p*-value remains significant in favor of the psi hypothesis despite a BP that has a strong null hypothesis bias, it is unlikely that significant results are the result of affirmative bias. A range of BP values are used for each *p*-value, as a way to easily compare results and to test how robust each *p*-value is in different conditions.

In a binomial distribution test the exact probability is required to calculate a *p*-value. In spontaneous cases the actual probability is not only unknown, but cannot be known. This does not mean that nothing is known about the probability. If I have a dream about bee sting therapy (apitherapy) and my friend Ron on a specified date, as I did, it is fair to say that the probability he could verify the dream as pertinent to him on that date is not equivalent to a coin toss where only two options are possible. Therefore, a BP of .5 is adverse, wrong, and biased in favor of the null hypothesis. Despite that, this particular record (Record 13, scene 1) is significant at <.05 when the BP is set to .5. The *p*-value is significant at <.01 with a BP of .33. What is the probability that any specific person on a given day will have a meaningful connection to apitherapy? It would be difficult to estimate, but I can say that I'd never heard of it until my friend Ron confirmed the dream. To this day, over 21 years later, I have not encountered a second incident relevant to this subject in any context. With this in mind, it should be obvious that a BP of .5 is adverse, wrong, and strongly favors the null hypothesis. The fact that the resulting *p*-value remains significant in the direction of a psi explanation rather than the null hypothesis demonstrates how robust the data are in the face of adverse treatment. Table 7 shows the variables used to calculate three separate *p*-values for the scene, each of which uses a BP of .33.

Selection. To counter any concern about bias regarding selection, DJ3 was divided into 4 equal groups of 20 dream records and 1 was randomly selected for the study. Group 1 was selected. Significantly, group 3 contained more veridical records than group 1. Records numbered 1–20 here correspond to the first 20 consecutive records of DJ3. All line items are included, regardless of whether they have been verified. Line items are divided into four categories. They are:

Valid line items. The number of line items per scene, exclusive of redundant and anchor items is the number of valid line items. This is

TABLE 7

Variables Used to Calculate Three Separate *p*-Values for One Scene

Valid Line Items	Possible Line Items	Attempted Line Items	Verified Line Items	Verified Fidelity Value	Time Lag	BPV	*p*-Value Total Items	*p*-Value Possible Items	*p*-Value Attempted Items
10	8	8	8	6.25	1	0.33	1.86E-02	2.43E-03	2.43E-03

This table is an excerpt from record 13, scene 1. The dream concerns a friend who lived 2,900 miles away and bee venom therapy undergone by a friend of his on the day of the dream. It shows a total of 10 non-redundant, non-anchor items. 2 are not confirmed. The remaining 8 items are verified. The "verified fidelity value" is 6.25. This indicates that some items have been reduced in value due to discrepancies. The *p*-value is calculated based on the verified fidelity value rather than the number of verified items, to make the result more adverse.

equivalent to the number of trials in a binomial distribution.

Possible. Some line items literally cannot be verified. This can be for a number of reasons, but most come down to lack of access. If I have an OBE dream about the activities of a famous or unknown person, whether veridical or not, if I don't have access to that person for confirmation the item cannot be checked.

Attempted. Some line items are possible but are not attempted. This has a number of causes, but the most common is discomfort relative to the content. An example from the study is related to a dream I had about a gynecologist that was connected to my stepmother. She confirmed that she had started working for a gynecologist, but I did not ask about several of the details (an IUD that had to be surgically removed from a red-haired patient) because I was uncomfortable discussing the subject with my stepmother.

Verified. Line items that are possible to check, have been checked, and have been corroborated by a witness or myself are "verified."

Independence. Dependent and independent items occur in this study. To differentiate between them, items that are meaningfully dependent on another item are counted as redundant. Other items are dependent but not meaningfully so. This means that although one item may have caused the other, the causal event is not the only way the result could have happened. In a card selection task where the selected card is not replaced, subsequent draws are meaningfully affected by the missing card because that card may no longer be selected and its absence increases the likelihood that other cards will be selected. In the series of dreams discussed here this is much less likely to happen because of the nature of variables even when causal links exist.

Record 12, scene 1 describes a sequence of mutually dependent items. The sequence goes as follows:

1) A car with a smashed roof is described.
2) The roof was smashed by a tree branch.
3) The tree branch fell during a wind storm.
4) The car is one of two owned by the same person.
5) Both cars had their roofs crushed by tree branches.
6) The two cars were damaged in separate events.
7) Both events occurred in the same week.
8) Both events were instigated by separate wind storms on different days.

These items are not statistically dependent because:

1) Not all smashed auto roofs are smashed by tree branches.
2) Not all storms dislodge tree branches.
3) Not all dislodged branches strike cars.
4) The probability of any of these events happening again do not change after they have happened once.

An example of a statistically dependent item comes from the same record. It gives the name of the subject/anchor, Dr. David Ryback, and then in a separate item describes the location as Atlanta, Georgia. This is where Dr. Ryback resided at the time, so the location is associated with and dependent on the identification of the subject. For this reason, the location item was counted as redundant. Meaningfully, the dream described the events happening to someone known to Dr. Ryback but not Dr. Ryback himself. In other words, his car was unaffected by the same storms that affected those of his fellow tenant. If nothing else, this underlines the independence of the items listed in the dream.

Fidelity and verification.

> Rarely do perceptions of external events find representation in dreams; when they do, the perceptual element is usually a minor part of the dream. In addition, the stimulus is generally distorted in some fashion. (Krippner & Ullman 1970)

The purpose of this study is to show that psi dreams can survive adverse treatment. For that reason, serious distortions are counted as not verified and nothing is given the status of a symbol that can stand in for something else. Incomplete descriptions are not counted as wrong, but inaccurate descriptions are. Table 8 provides an example of a verified but incomplete series of line items.

Temporal. The lag time between the date of the dream and of the verified event was originally used as a multiplier to dilute *p*-values. However, this had no impact on the significance of results, so this factor was discarded as a criterion. The reason it did not have a meaningful effect is that the majority

TABLE 8
Example of a Verified but Incomplete Series of Line Items

Line Item Description from Journal	Line Item Description after Verification
Asked to pick up something called "Pahs" or "Paz" in exchange for papers.	This is Westmont College student newspaper *La Paz*.
"Pahs" or "Paz" is common item.	This newspaper is common at Westmont College.
Have to pick up "Pahs/Paz" in exchange for papers.	*La Paz* <u>is</u> the paper.

The description provided in the journal makes it clear that an unknown object (the "Pahz or Paz") is the subject. Although unidentified, its description was sufficient to obtain verification from the anchor subject of this dream scene, R. Anthony Askew. At the time of the dream I did not know how to contact Tony, that he had moved to Westmont College, or that there was a newspaper with this name anywhere in the world. The third item is counted as redundant, so it is subtracted from the group of verified items.

of items refer to the same day as the dream, yielding a multiplication factor of 1. When there is a difference, it is usually within a week of the dream. The precognitive dream from record 20, scene 1 was 4,136 days distant. That value would have seriously affected most records, but because there were 33.5 verified items out of 41 possible in that scene, the *p*-value was too small for the long lag time to affect significance.

Population. The estimated population of those who could conceivably verify line items is used to dilute the *p*-value. Table 9 shows 2001 population figures from a large study on world population (Demeny & McNicoll 2006). These were used as population values for dilution.

TABLE 9
2001 Population Figures

Population	Estimated
World	6.15E+09
Western	7.39E+08
US	2.85E+08
My contacts	2.50E+04

The key to deciding which figure is used is access to validation. It is not reasonable to assume that a person in Malaysia could without great effort verify a dream about an unknown resident of Santa Barbara. However, it is reasonable to expect that almost anyone in the world could confirm a dream about the World Trade Center collapse in 2001. For these reasons,

the first example would be assigned a population value of 25,000, meant to represent an exaggeration of my total number of contacts, but the World Trade Center dream is assigned the world figure of 6.15 billion. The *p*-value is multiplied by the population value to make it larger and thus closer to null significance. Record 20 has the largest date and population value of any record in this study but it also has the lowest *p*-value due to the large number of verified elements.

p-Value Calculation Method

For this study, actual probability is not known. For that reason a variable named "Base Probability" (BP) was used. The BP value is adverse. This means that the value is high enough that the assigned probability is expected to be both dramatically wrong and supportive of the null hypothesis. A range of BP values was used to test how robust the resulting *p*-values were. These ranged from .1 to .75.

The numbers of verified non-dependent items are counted as successful trials. *p*-values were calculated for the number of these items within a scene, per record, and in total across all scenes and records.

The number of trials is counted in three ways. These are: number of line items in total, number of possible line items, and number of attempted line items.

Table 10 shows a matrix of the variables used.

TABLE 10
Variables Used

Successful	# Trials	Base Probability
Per scene	Total	0.1
Per record	Possible	0.2
Total	Attempted	0.25
		0.33
		0.5
		0.6
		0.75

From this, a binomial distribution *p*-value was calculated in MS Excel 2010 using the following formula:

=1-(BINOMDIST(successful,trials,probability,TRUE))

Table 11 is excerpted from one of the records in the study to show how the *p*-value calculation is made.

TABLE 11

How a *p*-Value Calculation Is Made

Successful		Trials		Probability		*p*-Values	
Verified independent	Total	Possible	Attempt	Base	Total	Possible	Attempt
10	19	15	15	0.1	6.96E-08**	9.30E-09**	9.30E-09**
				0.2	7.56E-05**	1.25E-05**	1.25E-05**
				0.25	6.25E-04**	1.15E-04**	1.15E-04**
				0.33	7.36E-03**	1.65E-03**	1.65E-03**
				0.5	1.66E-01	5.92E-02	5.92E-02
				0.75	8.93E-01	6.86E-01	6.86E-01

Results

Binomial distribution-based *p*-values were calculated for each of the categories of data separately. A range of adverse BP values were used to identify at what level a record achieved significance according to the criteria of the study. When all line items ($n = 558$) are combined into a single group representing the total number of trials, including items that were never checked or were impossible to check, the *p*-value is significant at <.01 if the BP value is set to .1. If only possible items are included ($n = 315$), regardless of whether they were checked, the result is significant at <.01 with a BP of .25. In both cases, those trials are the equivalent of adding significant numbers of unrolled dice to a dice-rolling trial. If only checked items ($n = 256$) are used as the number of trials, the *p*-value is <.01 with a BP of .33.

Table 12 illustrates a range of BP values used and the resulting *p*-values, for each of these scenarios. These *p*-values remain significant regardless of the category checked (Tables 15 and 16 in the Appendix). At the record level, it is clear that some scenes contain no verified items and others contain almost all verified items (and some have nothing but verified items). This pattern shows that nothing like a random distribution of verified vs. unverified items is present. 71 of 93 scenes contain 0 possible verified items. The remaining 22 scenes contain varying numbers of verified items, as shown in Table 13. The mean number of veridical items per scene is 7.5, and 23.5 for total number of line items per scene. This is significant at p <.05 with a BP of .25, or 1:4. The most impressive result is scene 1 from record 20. This scene held up under extraordinarily harsh conditions.

TABLE 12
Range of BP Values Used and Resulting *p*-Values

	LINE ITEMS					DILUTION		
	Success	Trials	Probability	*p*-Value	Significance	World Pop	US Pop.	Significance
Total	112.5	558	0.5	1.00E+00	NS	6.15E+09	2.85E+08	NS
	112.5	558	0.33	1.00E+00	NS	6.15E+09	2.85E+08	NS
	112.5	558	0.25	9.96E-01	NS	6.13E+09	2.84E+08	NS
	112.5	558	0.2	4.58E-01	NS	2.82E+09	1.31E+08	NS
	112.5	558	0.1	4.07E-13	<.01	2.50E-03	1.16E-04	<.01
	112.5	558	0.05	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
	112.5	558	0.01	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
Possible	112.5	315	0.5	1.00E+00	NS	6.15E+09	2.85E+08	NS
	112.5	315	0.33	1.53E-01	NS	9.40E+08	4.36E+07	NS
	112.5	315	0.25	1.16E-05	<.01	7.16E+04	3.32E+03	NS
	112.5	315	0.2	4.47E-11	<.01	2.75E-01	1.28E-02	NS, <.05
	112.5	315	0.1	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
	112.5	315	0.05	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
	112.5	315	0.01	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
Attempted	112.5	256	0.5	9.74E-01	NS	5.99E+09	2.78E+08	NS
	112.5	256	0.33	1.32E-04	<.01	8.15E+05	3.78E+04	NS
	112.5	256	0.25	2.15E-11	<.01	1.32E-01	6.12E-03	NS, <.01
	112.5	256	0.2	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
	112.5	256	0.1	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
	112.5	256	0.05	0.00E+00	<.01	0.00E+00	0.00E+00	<.01
	112.5	256	0.01	0.00E+00	<.01	0.00E+00	0.00E+00	<.01

This table shows the effect of adverse base probability values. It also shows that the number of successful line items in this study is enough to overcome adverse base probability values and the unfair addition of trials not conducted. The sections of Total line items and Possible line items both contain large numbers of trials not conducted. This can be checked by referencing the section Attempted line items where the actual number of conducted trials is used.

TABLE 13
Verified Fidelity Value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	70	75.3	75.3	75.3
	0.75	3	3.2	3.2	78.5
	1	2	2.2	2.2	80.6
	1.5	2	2.2	2.2	82.8
	2	1	1.1	1.1	83.9
	2.25	1	1.1	1.1	84.9
	2.75	1	1.1	1.1	86
	3	2	2.2	2.2	88.2
	3.25	2	2.2	2.2	90.3
	3.5	1	1.1	1.1	91.4
	3.75	2	2.2	2.2	93.5
	6.25	2	2.2	2.2	95.7
	9	1	1.1	1.1	96.8
	9.75	1	1.1	1.1	97.8
	10	1	1.1	1.1	98.9
	33.5	1	1.1	1.1	100
Total		**93**	**100**	**100**	

75.3% of all scenes have 0 valid verified items. Adverse selection does reduce the verified fidelity value of individual items, but this cannot reduce a score to 0. If something is verified, not redundant, and not an anchor, it will receive a minimum fidelity value of .25.

The threshold between significance and non-significance for this scene is between a BP value of .71 and .72. At .5 it is significant at < .01, and at .34 it survives dilution against the US population. These results indicate that on an individual level, a group level (regardless of group type), and on average, these results do not support the null hypothesis. Table 14 details *p*-values for record 20, scene 1.

Discussion

This paper seeks to demonstrate that it is possible to judge veridicality of spontaneous dream experiences by directly linking all of the line items in a

TABLE 14
Record 20, Scene 1

LINE ITEMS					DILUTION			
Success	Trials	Probability	*p*-Value	Significance	World Pop	Significance	US Pop	Significance
33.5	41	0.71	6.04E-02	NS	3.71E+08	NS	1.72E+07	NS
33.5	41	0.7	4.58E-02	<.05	2.82E+08	NS	1.31E+07	NS
33.5	41	0.65	9.59E-03	<.05	5.90E+07	NS	2.73E+06	NS
33.5	41	0.34	1.60E-10	<.01	9.87E-01	NS	4.57E-02	<.05
33.5	41	0.32	2.49E-11	<.01	1.53E-01	NS	7.10E-03	<.01
33.5	41	0.3	3.37E-12	<.01	2.07E-02	<.05	9.61E-04	<.01
33.5	41	0.29	1.17E-12	<.01	7.20E-03	<.01	3.34E-04	<.01

Record 20, scene 1 is the most impressive of the group included in this study. The number of successful verifications is so high relative to the number of line item "trials" that only extremely severe treatment can reduce it to nonsignificance. Even if the number of successful trials is cut in half to 16.75, the result remains significant at $p < .01$ if the BP is reduced to a still severe .25.

given scene to an item identified as an anchor. Anchors allow a dream event to be fixed to a place and a time, or to a specific person and time. Once this is done, the robust nature of some spontaneous psi dreams is able to weather even the harshest treatment. Clearly, if such results can be regularly found within records of spontaneous events, they are worth a second look.

If it were true that spontaneous records cannot be reliably correlated with any specific event, then laboratory experiments would have to be used to test for veridicality. However, the methodology used in this study does control for the same concerns at issue in traditional experiments and have the added benefit of not imposing such an unreasonable level of control that results are misleading or prevent the inclusion of more interesting content in the literature.

It is hoped that by showing that spontaneous dreams can be studied quantitatively, greater confidence in the study of spontaneous cases may be justified. This in turn may lead to serious study of other factors in dreams that extend well beyond the question of whether a given example is or is not a genuine example of psi. What of dreams that combine veridical content and spiritual content? Should one be accepted and the other rejected completely? Or can the validity of the veridical portion of the dream add credibility to other parts of it as well? The question of veridicality as it applies to a small subset of dreams, once answered in the affirmative, invites further, more

interesting questions. If the use of anchors and adverse probability values can be applied successfully in other studies, dreams that were hitherto simple "anecdotes" suddenly become accessible for serious study.

Notes

[1] There is just one example of this, where an attempt to disrupt electricity within a dream was rewarded with a near-simultaneous local blackout.

[2] I intend to make a study on this subject later, but preliminary estimates are that potential examples of day residue exist in about 20 out of 3,305 records. If looked at from the scene level, it would be about 20 scenes out of approximately 12,000.

[3] The Maimonides description of dream telepathy could be interpreted as including what I refer to here as an "OBE dream." Because the purpose of this study is to suggest a methodology to evaluate psi content in spontaneous dreams, the difference between these definitions is less important than the fact that both are examples of psi.

Acknowledgments

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Appendix A

Table 15 is a partial record from record 12, scene 1 (for space reasons, the complete record of this scene is not included, but only the first ten items).

TABLE 15
Record 12, Scene 1: Falling Tree Branches, OBE Dream Example

Line Item #	Description from Journal	Description after Verification	Fidelity of Description	Verified Corrected for Fidelity	How Checked/ Verified
1	Dr. David Ryback	Correct ID	Identical	ANCHOR Not counted	Call to Dr. David Ryback
2	Ryback in Southern city, probably Atlanta	This is verified, but I knew Ryback lived in Atlanta, so give it redundant = 1, fidelity = 0, and verified = 0.	Identical	ANCHOR not counted	Call to Dr. David Ryback
3	A car with smashed roof	Correct	Identical	1.00	Call to Dr. David Ryback
4	Roof smashed by tree branch	The morning of the dream, Ryback has conversation with colleague at his office where he describes how his two cars had their roofs caved in by tree branches.	Identical	1.00	Call to Dr. David Ryback
5	Branch fell during wind storm	Correct	Identical	1.00	Call to Dr. David Ryback
6	This is second time it has happened to this car.	Second time happened to same man, but different cars, both in same week. First was his car, then his wife's, 2 different wind storms.	Similar	0.75	Call to Dr. David Ryback
7	David is in nearby building.	His office is adjacent to parking lot with damaged car.	Identical	1.00	Call to Dr. David Ryback
8	Woman with David, possibly an assistant. Name is something like Rita or Rhoda—she may be Hispanic.	No record of this item being verified.	Consistent	0.00	Call to Dr. David Ryback
9	David is talking to someone else.	Yes, owner of damaged cars.	Identical	1.00	Call to Dr. David Ryback
10	Car in parking lot belongs to man in room with David or David.	Yes.	Identical	1.00	Call to Dr. David Ryback

Table 16 is a continuation of the partial record from record 12, scene 1.

TABLE 16
Record 12, Scene 1: Veridicality and Dilution Values for Line Items

Record #	Scene	Line Item #	Date of Dream (Day I Wake Up)	Date Checked/ Verified	Date of Verified Event	Days between Dream & Event Checked	Anchor	Redun- dant	Verifica- tion Possible	Verifica- tion Attempt Made	Verified Items	Distance in Miles	Population Value
12	1	1	5/10/90	5/10/90	5/10/90	1	1	0	0	0	0	809	3.E+04
12	1	2	5/10/90	5/10/90	5/10/90	0	1	1	0	0	0	809	3.E+04
12	1	3	5/11/90	5/11/90	5/11/90	1	0	0	1	1	1	809	3.E+04
12	1	4	5/10/90	5/10/90	5/10/90	1	0	0	1	1	1	809	3.E+04
12	1	5	5/10/90	5/10/90	5/10/90	1	0	0	1	1	1	809	3.E+04
12	1	6	5/10/90	5/10/90	5/10/90	1	0	0	1	1	1	809	3.E+04
12	1	7	5/10/90	5/10/90	5/10/90	1	0	0	1	1	1	809	3.E+04
12	1	8	5/10/90	5/10/90	5/10/90	1	0	0	1	1	0	809	3.E+04
12	1	9	5/10/90	5/10/90	5/10/90	1	0	0	1	1	1	809	3.E+04
12	1	10	5/10/90	5/10/90	5/10/90	1	0	0	1	1	1	809	3.E+04

Record 20, Scene 1: 9/11 Precognition Example

The following paragraphs provide an abbreviated sketch of this very detailed dream. For a full account, readers are encouraged to download a report from https://sites.google.com/a/mundusvirtua.com/dreams/journals/written-journal-1 Of the several documents listed, it is the one named 911_dossier_lowRes.pdf The raw line item data used for this study is titled JSE_V26-3_Data.xlsx

Summary of Record 20, Scene 1

In 1989 I had a very powerful dream that I did not immediately record. In it, I was warned to move out of Manhattan or be killed in a disaster that would occur in my neighborhood in the southernmost tip of the city. My long dream of May 17, 1990, from this group referenced the 1989 dream, inspiring me to type an account of the earlier dream for my records at that time. There is one error in that document and one significant omission. The error is that I transposed an item from the May 17 dream, and the omission is

simply something that I never thought was important enough to write down: As I looked at the fallen skyscrapers where the World Trade Center should have stood, I heard the echo of jet engines fading in the air. This sound was never recorded in writing, but it was mentioned often when I described the dream to others. Regardless, like every other record, the written record is the only thing considered for this study. After the May 17 dream, I had two more that referenced it. In one, I was happy I'd left Manhattan because my apartment (which was in the disaster zone) had been demolished. In the second, I was asked to provide some information about the May 17 dream. As I tried to come up with something to say in response, two billiard balls fell from a shelf, the "9"and "11" balls, in that order. Eleven years later and only two weeks before the 9/11 disaster, I had a powerful waking premonition as I looked at a faux NYC skyline at Legoland in Carlsbad, California. For some reason the fact that they hadn't built the World Trade Center as part of the tableau grabbed my attention and I was suddenly sure that the May 17 dream of 1990 would come to pass shortly. I made the prediction to my wife and daughter and pulled the journal out of my closet when I got home to look it over. Two weeks later, the World Trade Center collapsed. The May 17 dream has four scenes. Two are not veridical. One is an OBE that I verified with a friend later that day. The other is a view of destruction in Lower Manhattan that correlates with only one incident in the history of that city: the 9/11 attacks.

This dream was so vivid and frightening that I sent a copy of it by post to the Amazing Kreskin, and descriptions to various friends. In 1998, I posted it to the Internet on an early version of my website. Ironically, a physicist friend who knew of it, described it to psi-debunker the Amazing Randi as an example of a failed precognitive dream. This was a few years before the dream was realized.

Based on the factors just described, this dream sounds like a perfect example of a veridical precognitive dream. It was recorded and dated on the day of the dream as were all other related dreams, it was communicated to other people by post, telephone, personal conversations, and even the Internet before it happened, and it has many line items to compare with the later event. It does not, however, provide the kind of details found in OBE dreams. There is no named person to call and verify this with, nor enough information to have prevented it. Instead, it is a view of a group of details that are consistent with the 9/11 attacks and no other event in the history of the United States. This is something easily recognized in retrospect, but knowing the details of this dream could not have prevented the attacks. One dream gave me a direct personal warning: to move or die in the attack. I followed the advice by moving to New Jersey, little realizing that this attack wouldn't arrive for 11 years.