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Presence of Daily Routine on Frequency of Bizarre Dreams, and Online Study

Kevin McGowan¹⁰

In the hopes to further our body of knowledge on the effects of daily routines on dream content, my study aimed to measure both bizarre content in dreams and the routineness of participants' day prior to dreaming. The method I am using to distinguish bizarre dreams from usual dreams was developed by Revonsou and Samilvalli (1995). Following this method, I first identified dream elements by categorized them into 14 categories; and then scored those dream elements for their bizarreness according to four types of bizarreness (Non-bizarre, Incongruous, Vague, or Discontinuous). I hypothesized that bizarre dreams would occur more frequently after a non-routine day than after a routine day. The results of my study were inconclusive due to a lack of participation. I received six dream submissions that all occurred after routine days, and zero dreams that occurred after non-routine days. I was able to perform the content analysis on the six submitted dreams, I identified 204 dream elements, categorize these elements into 12 of the 14 categories, and found that after participants had a routine day (31.86% of all elements were Incongruous, Vague, or Discontinuous; 68.14% were Non-bizarre). I also identified the most common content categories for all three bizarre types (31.25% of Incongruous bizarre elements were actions, 25% of vague bizarre elements were actions and 25% were events, and 23.53% of discontinuous bizarre elements were actions and 23.53% were places).

The idea behind this study came from my observation that my most bizarre dreams occurred after extraordinary days rather than after routine and usual days. After subsequent research, I was unable to find any past studies that looked into the events of a day as a whole before a recalled dream, then reflected on dream content, let alone bizarre dream content. I have developed this observation into my present research idea, where the purpose of my study was to determine if bizarre dreams occur more frequently after a routine day or after an extraordinary/unusual day. My hypothesis was that bizarre dreams would occur more frequently

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after unusual days, rather than after routine days.

What is a dream and when does it occur? According to Rock (2004) dreams can be described “as a mental experience during sleep that can be described during waking consciousness” (p. viii-ix). Dreams have proven to be very flexible in where and when they appear throughout sleep. Eugene Aserinsky was graduate student at the University of Chicago in 1953 when he discovered the rapid eye movement (REM) stage of sleep (Rock, 2004). This was the first time that researchers could prove that dreaming was actually occurring. Every time Aserinsky would wake his sleeping participants whilst in this REM stage they would be able to recall a dream. Not only were people remembering their dreams in this stage, but the brain waves emitted during this stage somewhat resembled waking consciousness. A large difference Rock (2004) points out between REM sleep and waking consciousness is the neurochemicals present during this stage were vastly different from waking consciousness. These neurochemical differences from waking to sleeping explain the amnesia most people experience when they say they don’t recall their dreams at night.

REM sleep is not the only time that dreams occur. Dan Margoliash a professor of Biology at University of Chicago found that rats rerun mazes and birds sing their species song during slow wave sleep, which is the type of sleep that shows up immediately after falling sleep (Rock, 2004). This finding has been found in humans as well. Slow wave sleep is now recognized as the stage where new learning tasks involving factual memory is repeated and practiced (Rock, 2004). On the other hand, REM sleep is critical for procedural learning, and was supported by the significant increase of REM sleep people experience after learning a new task. Furthermore, a decrease in performance and learning occurs if REM sleep is deprived from learners. Therefore, to date researcher have proven that dreams can occur at sleep onset and during REM sleep.

What is a routine? Previous research done by Grant and Schempp (2013) analyzed the routines of elite swimmer on competition day like the 2008 Beijing Olympics, and found an effective means to collecting daily routine data. To ensure they gathered all significant data Grant and Schempp stressed three important characteristics of a routine. These three characteristics included: the fact that all actions during a day would constitute as one routine day; all planned events for a day should be included; and the actual execution of most if not all events planned should take place (Grant & Schempp, 2013).

What is a dream log? According to Niederhoffer, Schler, Crutchley, Loveys, and Coppersmith (2017) dreams are often narrative and have characteristic details like setting, plot, characters, objects, feelings/emotions, sometimes tastes, smells, or old memories and these experiences can be similar or dissimilar to waking life. Therefore, it would make sense that when people describe their dream, it would be beneficial to do so in a narrative fashion.

Flannagin (2000) points out a major distinction between REM and NREM sleep. NREM sleep seems to produce bland and simple dreams, while REM sleep produces more complex and possibly bizarre dreams (Flannagin, 2000). Other researcher had found that this difference could possibly be due to the specific bizarre dream rating scales that different researchers use.

Past research on identifying typical dream content was done by Mathes, Schredl, and Görtizn (2014) who looked at 2853 of the most recent dreams provided by dreamers and identified 55 typical dream themes, some of which occurred very rarely. They found that the five most typical dreams of their participants include; flying, trying something again and again, being chased or pursued, sexual experiences, and school teachers and studying (Mathes et al., 2014). The authors call for future research that produce a quantitative analysis of big dream samples.

In 2008, 48 university students in Hong Kong were given the 34-theme list and asked to record which themes they had experienced before. They found that the five most common dream

themes in their eastern sample resembled the same five dream themes recorded in western samples (Yu, 2008). Griffith, Mijagi, and Tago (1958) gathered both American and Japanese college students to test if they had dreamt any of the 55 typical dream themes before in their life. The results found that both groups had the same top four most prominent dreams: being attacked or pursued; failing; trying to do something over and over again; school, teachers, studying (Yu, 2008). The results of these three studies support the idea that humans have universally typical dreams.

Niederhoffer et al. (2017) provided the first quantified study of the structure of the language of dreams, their linguistic style, and emotional content. In this study dreams were collected using the online platform “DreamsCloud.” DreamsCloud is an online social database where anyone can register to submit dreams for professional dream reflectors to comment on or for their dreams or to be used for research purposes. Rather than looking at dream themes like Mathes and colleagues, Neiderhoffer et al. (2017) studied, among other things, the frequencies of language style and dream topics that occurred in 9,678 dreams. The authors counted the occurrences of function words like how many pronouns, prepositions, articles, auxiliary verbs, and negations were used to explore a relationship between dream topics and language style. Their results revealed that the most common categorical dream topic is picturesque landscapes which includes the top words: walking, tree, small, area, forest, place, beautiful, hill, and little (Niederhoffer et al., 2017). These researchers concluded that with further dream analysis, the language of dreams could be used in the future to evaluate mental health. For example, language used in internet behavior and wearable sensory information can predict mental health today by identifying words most commonly used words by people with different mental disorders (Niederhoffer et al., 2017).

Revonsou and Samilvalli (1995) called into question the considerable variance in frequencies of bizarre elements in dreams, and the frequency of bizarre REM dreams compared to non-REM dreams (NREM). The authors accounted for this variability to possibly being the result of differences in rating scales used. To combat this problem Revonsou and Samilvalli (1995) Sought out to create a standardized scoring method for bizarreness in dreams. This scoring method identifies elements by categorizing them to 14 categories, and then scoring categorized elements to four different types (see Appendices A and G). The authors described bizarre dreams as most commonly involving characteristic details that are impossible, unlikely, and inconsistent to regular waking life experiences. With that in mind, these researchers scored dream bizarreness as being either incongruous (content is inconsistent with waking reality), vague (content is obscure or indeterminate), or discontinuous (content appears, disappears, and/or transforms) within the reported dream (Revonsou & Samilvalli, 1995). This older study also created 14 categories that dream elements could fall into (for bizarreness scoring and element identification and categorization done by Revonsuo & Salmivalli (1995) see Appendix A).

In my study I too was looking at the bizarreness of dream content, but specifically the presence of bizarre elements compared between two groups: people who experienced a routine prior to dreaming; and a non-routine group who did not experience a routine day before dreaming. In order to identify dream content elements, score them for bizarreness, and identify daily routines in participants I used a combination of Revonsou and Samilvalli (1995) dream content analysis, Niederhoffer et al. (2017) definition of a dream log, and the definition of daily routine provided by Grant and Schempp (2013).

Method

Participants

There were 14 participants who consented to this study and were recruited from Facebook. Participants could be recruited between the ages of 18 through 64, but my samples' ages ranged from 21 to 26 years old. Only five participants provided their age (mean age = 22.2 years, $SD = 2.17$). Six completed the survey in its entirety and their data was used in the study. Of these six participants three were male, two were female, one participant failed to answer the demographic questions, and all six participants identified themselves as dreamers with a daily routine prior to dreaming and reported an average daily routineness of 3.66 which is slightly above the median routine score of 3.5 from the reported range of 3-5 for routine scores.

Materials and Procedure

The present study used an online survey created using the online data collection program Qualtrics to anonymously collect data from participants recruited via Facebook. The survey asked for participants' consent, then asked seven questions total, and provided three definitions. The first question asked if participants recalled a dream to report. The second question asked for a narrative description of their dream, or a "dream log". The third question asked participants, with their routine in mind, if their day prior to their recalled dream was routine, yes or no. The fourth question was only asked if they answered "yes" to the last question, and requested on a scale of 1-5 how routine the day prior was ("1" being mostly routine and "5" being entirely routine). The fifth question asked for the participants age in years. The sixth question asked if they identified as male, female, or other. The seventh question asked, on a scale of 1-5 how bizarre they perceive their typical dreams as being. The three provided definitions each appeared before the question that the definition applied to. The first of these definitions told participants what a dream log was and how to write one, and was given before

they were asked for it in question two (for more dream log description and details see Appendix B). The second definition described how to account for routineness within ones' day, and was provided before question three (for more about daily routines see Appendix C). The third and final definition described what a bizarre dream is, and was provide before question seven (see Appendix D).

The link to the survey was posted to my Facebook page on March 6th 2018 and collection continued through April 13th. All possible participants were informed of the aggregated format of the data collection process and promised anonymity in their participation (see consent form in Appendix E. The recruitment of participants through this website was done with a recruitment post (see Appendix F). After completion of the survey a feedback statement was provided (see Appendix H)

Dream logs. The participants produced 6 dream logs total that were all reported after non-routine days. These dream logs had a total of 1,077 words. The average length of these six dream logs were 179.5 words ($SD = 170.44$, range 30-508). There were no dreams report for non-routine days.

Routine analysis. The online survey provided participants a definition of a daily routine created by Grant and Schempp (2013) (see Appendix C for definition of routine). With this definition, participants were asked if the day prior to their remembered dream included a daily routine. After participants answered if their day included a routine or not, those that answered "yes" were asked to rate that routineness 1-5, "1" being least routine possible and "5" being most routine possible. This method of routine analysis was used in relation to Grant and Schempp (2013) due to its strengths in acknowledging that 24 hr.(s) constitute a day for routineness, stating that all planned events for a day should be included; and the identification of execution of most events that were planned to take place.

Scoring procedure. Content analysis of bizarreness was completed in two parts. Part one is the identification by categorization of dream elements. Part two is the scoring of elements for bizarreness. These two parts were done by two independent scorers. I being one of these scorers and my assistant Ariel Page, practiced this content analysis of bizarreness method on online dream logs until we reached an 80% agreement on element identification categorizing, and bizarreness scoring. The example of this scoring method provided by Revonsuo and Samilvailli (1995) can be seen in Appendix A and my example of the scoring method using Appendix A can be seen in Appendix G.

As part one stated, elements were first identified within each dream log by two independent scorers. Elements were identified base on their belonging to one and only one of the following 14 categories created by Revonsuo and Samilvilli (1995). Once completed the scorers compared their scores and settled discrepancies by conversation.

1. **Self:** the subject who acts in or observes the dream world; the person or being from whose point of view the dream world is experienced and who appears in the first person in the dream report.
2. **Place:** the immediate surroundings and geographical location of the dream events or the dream self.
3. **Time:** the explicitly mentioned temporal context of the dream events.
4. **Persons:** the human or humanoid or other intelligent characters, and groups formed by such characters, perceived by the subject in the dream.
5. **Animals:** animate characters (other than Persons) perceived in the dream.
6. **Body Parts:** human and animal bodies and their parts perceived in the dream.
7. **Plants:** all kinds of vegetation perceived in the dream.
8. **Objects:** parts of the inanimate environment which are perceived in the dream.
9. **Events:** changes taking place in the inanimate environment or in animate objects which do not happen in consequence of the intentional actions of any (single) character.
10. **Actions:** intentional acts carried out by the animate characters in the dream and the behavior of devices directly controlled or assumed to be controlled by animate characters (e.g., vehicles).
11. **Language:** all linguistic messages or symbols in any form; e.g., utterances, writing.
12. **Cognition:** the internal intellectual and mental functions of the self.
13. **Emotions:** emotional states and feelings either experienced and expressed by the dreamer or observed to be expressed by other dream characters.
14. **Sensory Experiences:** sense experiences which occur independently of voluntary cognitive processes and which do not refer to objects outside of themselves (e.g., nausea, tickle).

As part two stated above, once each element had been identified and categorized (as seen in appendices A and G), elements were assigned a score for both their category (1-14 for self, place, time, persons, animals, body parts, plants, objects, events, actions, language, cognition, emotion, and sensory experience) and their bizarreness (1-4) independently by each member of the third party as done by Revonsuo and Salmivalli (1995). Therefore, scoring judges assign a compound score to describe both the element content category and its bizarreness score [content/bizarreness]. Just as before any discrepancies in scores were settled by conversation.

1. The number “1” representing a “non-bizarre element”.
2. The number “2” representing an incongruous element. Incongruous elements have at least one of the following properties:

- a. Elements that are contextually incongruous. Elements with features that don't belong in waking reality. Example: There is a white tiger in my back yard [Contextually Incongruous Animal, scored as (5/2)], or "There were holes in the white walls" [Contextually incongruous object, scored as (8/2)]
 - b. Exotic elements. These are elements that are highly unlikely, but are still possible. Example: I met the president of the United States in the Philips 66 gas station bathroom [Exotic Person, scored as (4/2)].
 - c. Impossible elements. This is an element impossible to occur in waking reality. Example: I began to fly like super man over the school [Impossible Action, scored as (10/2)].
3. The number "3" will be assigned to vague elements. "An element or a feature of an element whose identity or precise nature is indeterminate, unknown, or obscure in a way which does not occur in waking life" (Revonsuo & Salmivalli, 1995, p. 174). Example: I'm riding in a car with a character, but I can't quite recognize or remember who [vague person, scored as (4/3)].
 4. The number "4" will be used to describe a discontinuous element. This is an element which suddenly becomes visible, invisible, disappears, or transforms. Discontinuity is the only measure of bizarreness that is computable in addition with one of the other three bizarreness scores: non-bizarre (1), incongruity (2), vagueness (3). This is due to the fact that an element may be discontinuous in addition to being bizarre in a different way. "Thus, each element scored as Discontinuous also received another score indicating whether the element is Non-bizarre, Incongruous, or Vague (Revonsuo & Salmivalli, 1995, p. 175). Discontinuity is scored to an element only after the change occurs. Example: I'm at home, then I'm

suddenly at the grocery store [“Grocery store” is a Non-Bizarre Place and a Discontinuous Place, scored as (2/1) and separately as (2/4)].

This method of categorizing elements and scoring bizarreness was chosen due to its past success in categorizing all dream elements and explaining all bizarre elements previous researchers have come across. This success continued into my study for all of the 204 elements collected were categorized within just 12 of these 14 categories, and all bizarre elements were easily scored to one of the four types of bizarreness.

In this study participants identified themselves as either having a routine day or non-routine day prior to the dream they submitted. The independent variable was routineness of the day prior to a participants most recently recalled dream. This variable had two levels or conditions which were the routine condition and the non-routine condition. Participants fell into one of the two groups depending on their routine experience (yes or no) the day prior to their dream recall. The dependent variable was the scored proportion of bizarre elements to non-bizarre elements obtained from the participants dream log.

Due to only gathering enough data to support one of the groups (routine day), the data reported is all descriptive in nature. Following Revonsuo and Samilvallis’ protocol for dream content analysis, I used proportions of bizarre elements to non-bizarre elements within dreams to obtain a percentage of bizarreness for each dream log. I then took the average of the six dreams in the routine conditon bizarreness proportion to get an average proportion of bizarre elements to non-bizarre elements for the entire group. I also used percentages to identify which dream content category was most bizarre, and compared the distribution of my samples dream contents to that of Revonsuo and Samilvalli (1995) sample.

Results

The hypothesis was that bizarre dreams would occur more frequently after a non-routine day than a routine day. The collected data was inconclusive for I only had six participants who reported dreams after routine days and zero participants who reported dreams after a non-routine day. The proportions of six dream logs bizarre content to non-bizarre content were as follows (3/13, 21/22, 7/17, 6/26, 12/58, and 1/2). In total the dream logs in the routine group (31.86% of all elements were Incongruous, Vague, or Discontinuous; 68.14% were Non-bizarre). The routine group rated themselves an average of 4 out of 5 in question seven. This means that this routine group perceives their typical dreams as most commonly being bizarre. If I had data on the non-routine group, then I would provide their respective proportions of bizarre to non-bizarre and then compare their total bizarreness to that of the routine group by use of a Chi-Square analysis.

There were 204 dream elements, which were categorized into 12 of the 14 categories. Two categories were not used because none of the submitted dream logs contained elements that fell into the categories of plants or animals.

Figure 1 shows the distribution of my 204 dream elements through the 12 remaining categories that were used. It is clear that the dreams in my sample most often involves actions, places, and persons which sum to 56.37% of all dream content. Cognition and emotions make up almost 16.7% of the dreams contents. Interestingly body parts and self showed up the least and in sum were <5% of the total dream content, but appeared in nearly all dream logs. This leads me to infer that, although dreams are often experienced by the self, the actual purpose and function to dreams could be in the action, places and persons that fill it.

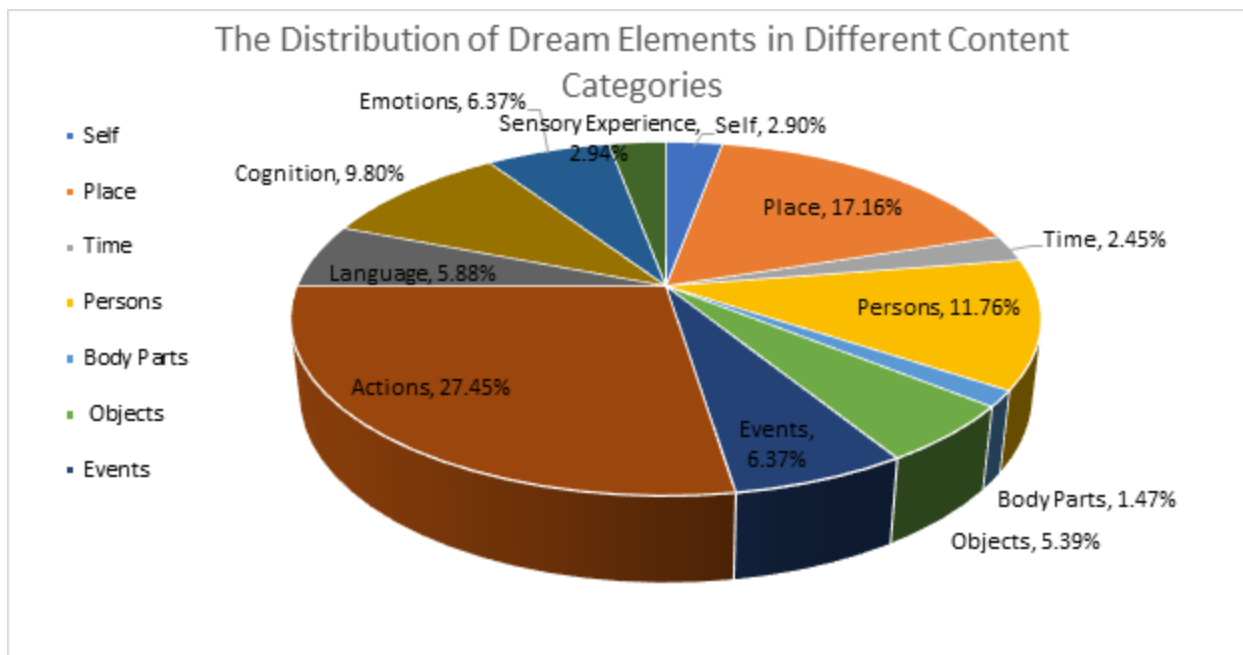


Fig. 1. Distribution of dream elements through dream categories.

Figure 2 compares the distribution of dream elements through content categories of my sample to that of Revonsuo and Salmivalli (1995). On the x-axis is the content categories that dream elements from both studies distributed (My study in blue, Revonsuo and Salmivalli(1995) in orange). The Y-axis is the percentage of total dream elements. In both my sample and Revonsuo and Salmivallis (1995) the top three most frequently occurring elements appear in the action, persons, and places categories.

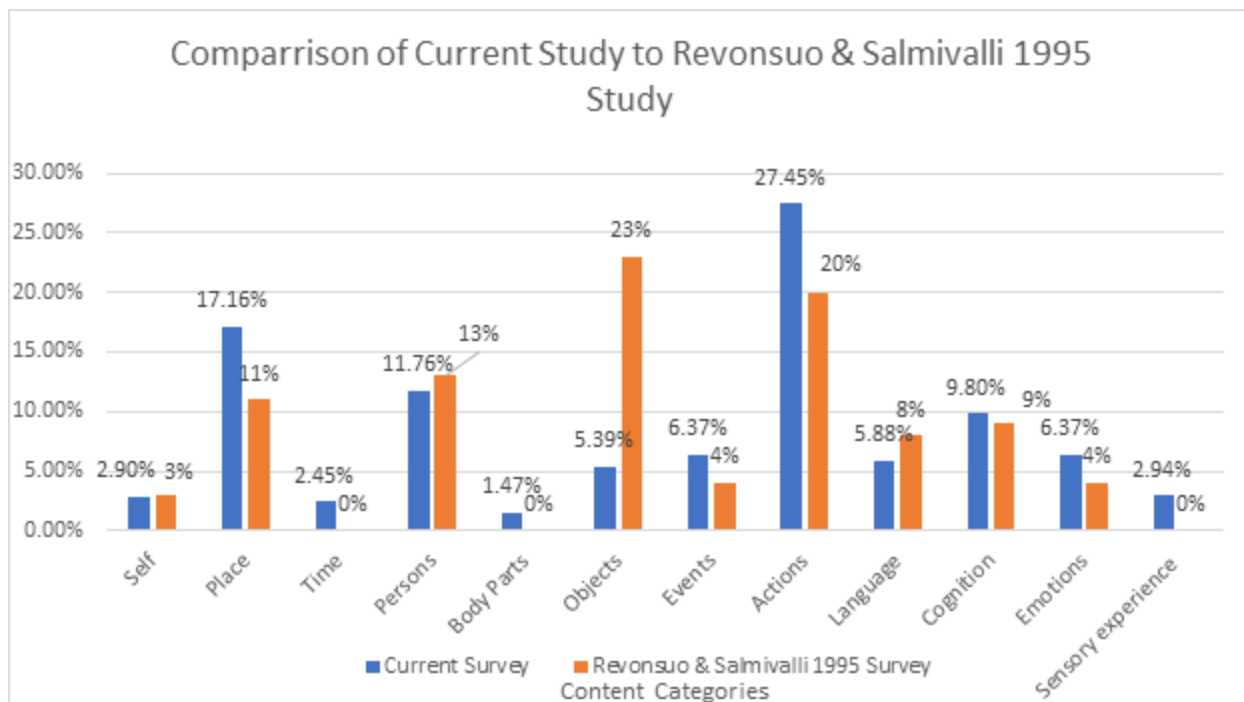


Fig. 2. The distribution of dream elements through content categories.

Figure 3 shows the percentage of incongruent bizarre elements across content categories.

Its clear that by far the most reported incongruent bizarre elements were seen in the action category.

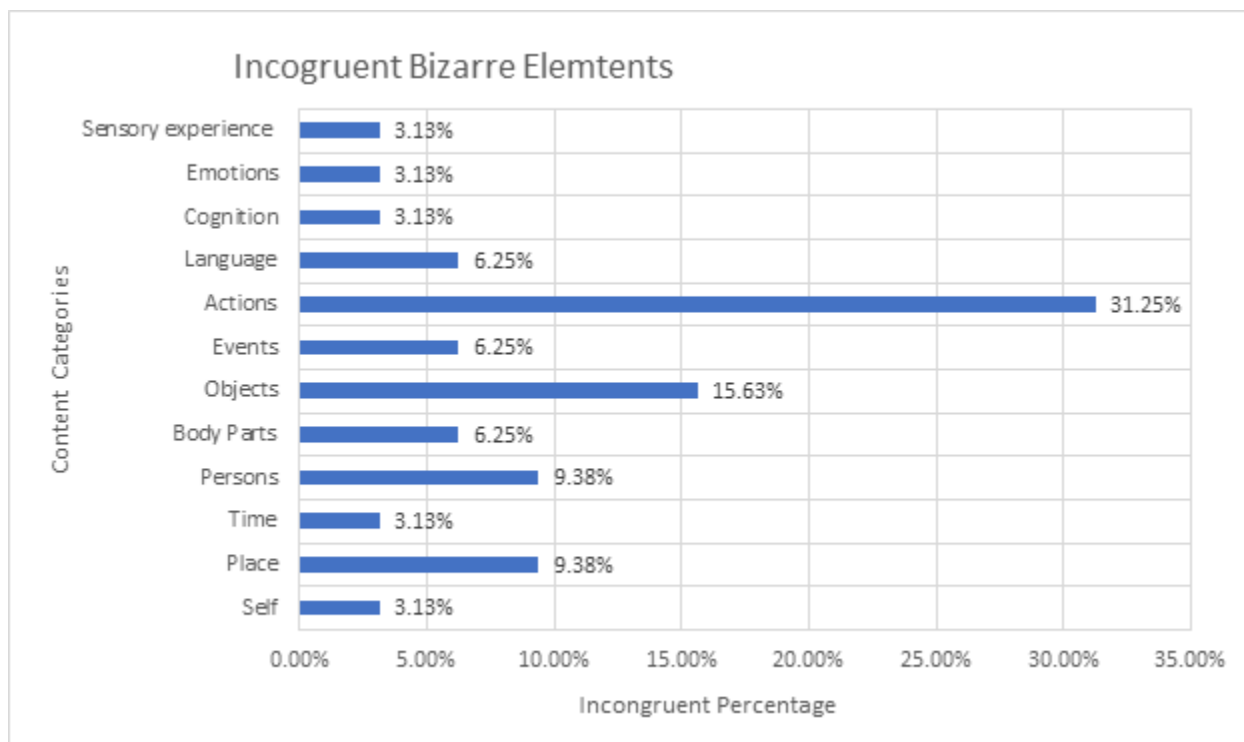


Fig. 3. Incongruent bizarre elements across content categories.

Figure 4 shows the distribution of vague bizarre elements across content categories. Both the actions and events category tied for highest distribution of vague bizarre elements. This is interesting for events only made up 6.37% of all dream contents, but makes up a quarter of all bizarre vague elements.

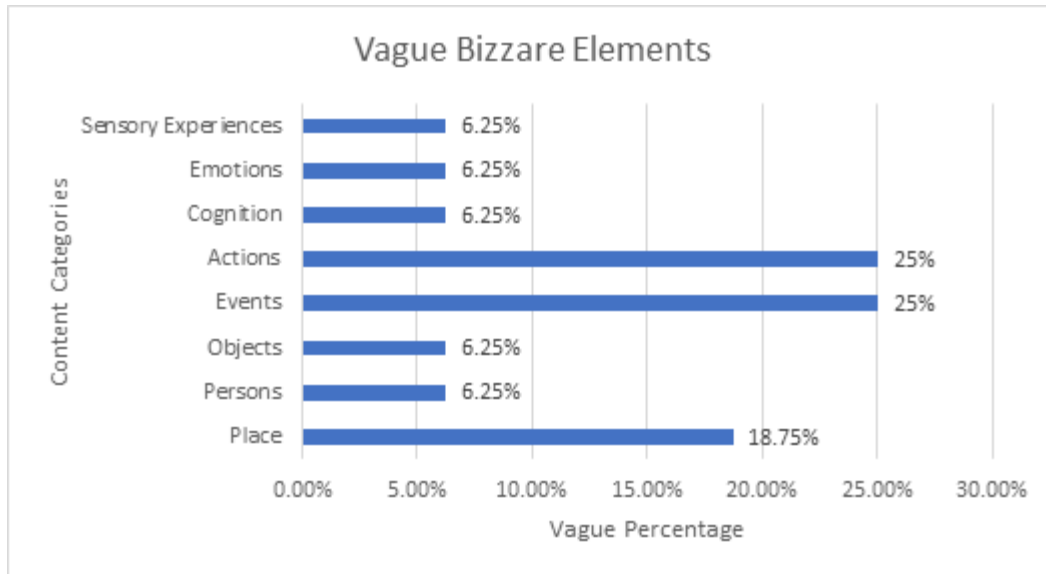


Fig. 4. Vague bizarre elements across content categories

Figure 5 shows the distribution of discontinuous bizarre elements across content categories. The categories place and action were the most common category for discontinuous elements and were expected with respects to the distribution of all dream content.

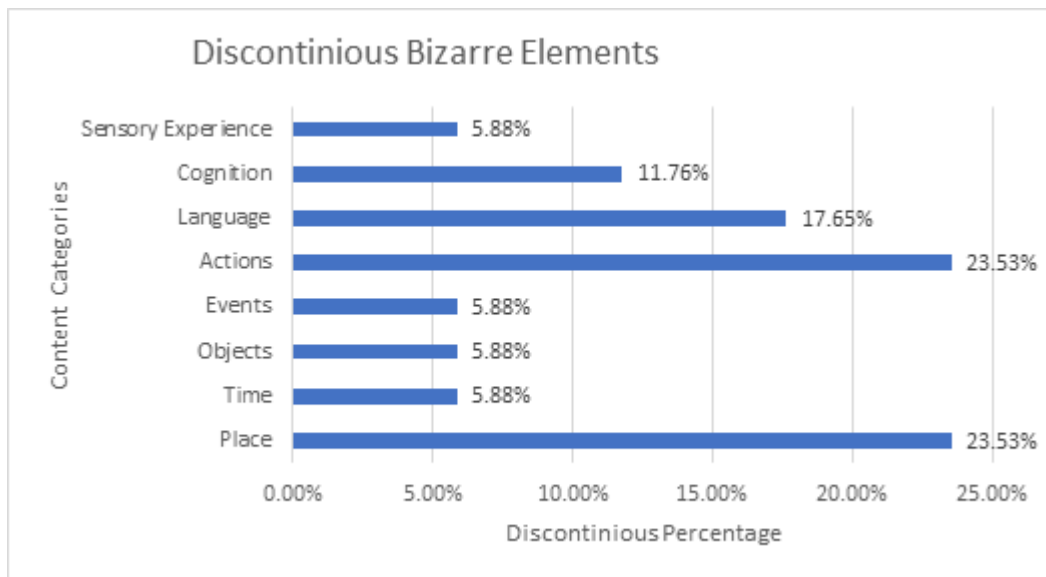


Fig. 5. Distribution of discontinuous bizarre elements across content categories.

Discussion

My hypothesis that bizarre dreams would occur more frequently after non-routine days than routine days was inconclusive. Without the acquiring of data for both levels of the independent variable I was unable to determine if bizarre dreams occur more frequently than non-bizarre dreams.

I was able to report a percentage of bizarre dreams to non-bizarre dreams for the routine group (31.86% bizarre elements and 68.14% non-bizarre elements). This is similar to the findings of Revonsuo and Salmivalli (1995), who identified (22.3% of all dream content as bizarre and 77.7% as non-bizarre). The statistical significance between my findings and that of Revonsuo and Salmivalli (1995) was not part of my original study, and analyzing this data further may provide insightful information.

The distribution of bizarre dream elements through content categories was another additional analysis performed due to my lack of results to report on my research hypothesis. I identified actions, actions and events, and actions and places as the most common category for incongruous, vague, and discontinuous elements. As mentioned before the event category only accounts for 6.37% of all dream contents, but makes up a 25% of all bizarre vague elements. This findings makes we wonder if vagueness can reveal something about our ability to process events while we sleep into long term memory. Vagueness by nature is missing pieces of information. The categories language, body parts, time, and self all account or 0% of bizarre vague elements. A look into these four categories and how they differ from events could reveal how the brain chooses what to remember in dreams.

The limitations of this study have occurred to me through out this study. Although my subjective experience of recalling bizarre dreams more frequently after non-routine days, as cited in Owen (2000), bizarre dreams seem to most commonly occur within the

REM stage of sleep. Being that my study was not conducted in a dream lab where strictly REM dreams could be collected, my results that 31.86% of elements recorded after a routine day were bizarre could possibly be attributed to the stage at which participants recalled their dream, rather than the type of day they experience prior. Picture this scenario, perhaps all of the dreams recalled by the routine group were from the REM stage of sleep and Owen (2000) was right that bizarre dreams occur most frequently during REM sleep rather than non-REM sleep, this scenario would attribute my results primarily to the stage of sleep participants were in when they recalled their dream rather than the nature of the day they had prior.

Another limitation was my sample size. I had a sample of six participants, a larger sample size would increase the likelihood of having a sample representative of the population for a couple of reasons. Most importantly, it would allow me the greater likelihood of having two even groups, non-routine and routine. A larger sample would also decrease the likelihood of one group primarily reporting non-REM dreams, for it has been found that most recalled dreams occur during REM cycles due to the close approach to waking consciousness at the end of this cycle. Thirdly a larger sample size would allow me to at least statistically compare my distribution of dream elements across dream categories to Revonsuo and Salmivalli (1995), which was not an original objective of my study, but could produce valuable data with more participants. Revonsuo and Salmivalli's (1995) sample size was ($n = 32$) and was entirely female.

For future research, a number of things could be changed. To increase the sample size, the survey could be posted to more websites, like Psi Chi and other social media platforms. A within-subject design could be used to test participants in both conditions for their dream bizarreness allow correlating statistical analysis. Furthermore, to avoid the REM to NREM dream content issue, having participants sleep in a lab so they could be awakened during their

REM cycle after both a routine and non-routine day would yield more accurate results for a number of reasons. By hosting this survey online, I must be aware of the participant's ability to lie and joke in submitting of their most recently recalled dream. This stands out as an issue to me for one of the submitted dream logs I received rhymed lyrically the whole way through. I predict that waking someone up during their REM cycle would be a situation that if someone consented to, would make them less likely to lie than someone who is just filling out my survey online at their home. There is also no way for me to know for sure which sleep cycle a recalled dream came from without the use of in lab observations at the least. This is an issue due to the support found by previous researchers that bizarre dreams most commonly occur during REM sleep rather than non-REM sleep. If I was able to acquire only REM sleep dreams from participants after either a routine day or a non routine day I could more accurately identify which routine style produced a higher frequency of bizarre dreams.

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Appendix A

Dream scenario from Revonsuo and Salmivallis' Appendix (1995). This Appendix shows both; the identified element as underlined, and the labeling of which of the 14 categories each element was assigned to was highlighted, along with the identification of bizarre elements which is also highlighted.

Content Analysis of Bizarreness

187

APPENDIX

An Example of a Dream Scored Using the Content Analysis of Bizarreness Scale

"THE APARTMENT"

My father, **person** my little sister **person** and I **self** were driving **action** to take a look at an apartment (for me). **Only I went in**, **incongruous action**. In the apartment **place** there was a girl, **person** who was doing her homework **action** at a table **object** (there were some papers **object** on the table. There was one room **place** and doors, **object** "There is a draft in here", **language** said the girl. I noticed that there were holes **incongruous object** in the white **object** walls, **object** It was indeed slightly cool there, **place** "It doesn't matter, I thought **incongruous cognition** , "the room is anyway wonderfully old-fashioned by its shape"(?) **incongruous cognition**. I opened **action** a door, **object** There was a wonderful **cognition** sauna, **object** Beside the sauna there was a fireplace, **object**, and when I was leaving, **action** I still noticed a bedroom, **object** My sister and father had left by car **incongruous cognition** . I was alone here, far away, **cognition** (I do not know the place where I was) **vague place** .) I called home, **action** Mother **person** said that father and sister had lost me and came home **language** . I became irritated **emotion** and I wondered why they did not wait for me, **cognition** . After all, they had come with me to see the apartment **cognition**.

Appendix C

Routine definition and then examples:

When reflecting on the routineness of your day prior to your recalled dream keep the following in mind. The entirety of your day directly before having the dream you just recorded on the Dream Recall Questionnaire should be accounted for routine. If this dream occurred after a nap, only the amount of time after your last sleeping cycle will be accounted for routine. A routine day is defined best with three main characteristics; the fact that all actions during a day would constitute as one routine day, should include the events planned for a day, and the actual execution of the almost all planned events (Grant & Schempp, 2013).

These are examples of both a routine and non-routine day:

An example of a routine day: Every Monday is the same; I wake up at 8 A.M., I get to work at 9 A.M., I arrive home at 5 P.M., then take my dog for a walk 5 P.M. to 6 P.M., I order take out for dinner, then I watch a movie, read a book, or watch the news till I fall asleep. I rarely see or do anything notable on these days, and today was no exception.

Below is just an example of what a routine Monday would **not** look like. This is an unusual day, because many planned events did not occur, and notable extraordinary events occurred too.

Routine Activities Planned	If Activity took place or not (yes or no). If activity did not take place, what happened?
wake up at 7am	yes
Work at desk 8am-11:30	yes
Lunch 11:30- 1pm	No, stuck in traffic in commute to favorite restaurant. Witnessed four car collision.
Work 1-4pm	No, skipped work and hanged out with old friends till four instead
Dinner prep: 5-6	No, went on walk to instead of prepping dinner, and ordered delivery.
Dinner then movies at home 6-9pm	yes
Prep for bed, sleep by 9:30	yes

Appendix D

Definition of bizarre dreams provided to participants.

Keep the following definition of Bizarreness in mind when answering the final question. Revonsou and Samilvalli (1995) described bizarre dreams as most commonly involving characteristic details that are impossible, unlikely, and inconsistent to regular waking life experiences. These researchers defined bizarreness as being either incongruous (content is inconsistent with waking reality), vague (content is obscure or indeterminate), or discontinuous (content appears, disappears, and/or transforms) within the reported dream.

Appendix E

Informed consent statement (participants will be required to agree to before any other actions on Qualtrics).

Online Informed Consent Statement

The researcher conducting this project is an undergraduate student at Lindenwood University who is enrolled in the PSY40400: Advanced Research Methods Psychology course. The primary purpose of my study is to determine if bizarre dreams occur more frequently after a routine day or after an extraordinary/unusual day. The findings of this project will be presented to the entire class in the form of a written report, as well as an oral report. Additionally, results could be presented at a conference, and non-personally identifiable results will be posted to Facebook (via Kevin McGowan's Facebook page).

Procedures

Upon the recall of a dream you will click the link on the Facebook posting or in my Facebook bio. This link will take you to Qualtrics, which is the hosting server of this study, and you will be asked to give consent to participate. Once consent is provided, you will have access to my online survey. Please provide all requested information about your dream and routine that you're comfortable sharing. I only ask for you to fill out three short questionnaires upon awakening from a remembered dream. These three forms will be presented and filled out in this order; Dream recall questionnaire, General Questionnaire, and a demographic questionnaire. These questionnaires should not take any more than 30 minutes of your time. A feedback letter will be presented following the completion of the questionnaires above, which will include contact information for results and questions. Remember, individual results will not be identifiable. I am only accepting one dream submission per participant.

Risks/Discomfort

The only foreseen risks of this study is the mental distress that might accompany the recalling of a nightmare, and the possibility of participants reporting personally identifiable data in their dream reports. In regards to the recall of a nightmare, if you do not feel comfortable reporting any part of your dreams, you are free to skip any questions or withdraw without penalty. All participants should remember not to report personally identifiable data by avoiding the use of full names of characters and settings. For example: "I dreamt I was working my usual shift at Bank of America with my best friend Maria Thomas." This is an example of providing too much personally identifiable information, rather "I dreamt I was working my usual shift at the bank with my best friend" is a much less personal and simpler explanation of the nature of what was occurring.

Compensation and Benefits

By taking part in this study you will gain experience in taking part in a psychological study and potentially learn more about the field. By seeing the results of my study, you can gain the knowledge of what produced the most bizarre dreams, a routine day or unusual day. There will be no financial or material compensation. If you are interested in learning more about this project or would like to learn about the results of this project once completed, please contact Kevin McGowan at kwm635@lindenwood.edu

Confidentiality

No personally identifying information will be collected, including your IP Address. All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and never reporting individual ones). All questionnaires will be concealed, and no one other than the researcher listed below will have access to individual questionnaires and surveys. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by the primary investigator.

Questions about the Research

If you have questions regarding this study, you may contact Kevin McGowan at kwm635@lindenwood.edu or direct your inquiries to the course professor, Dr. Nohara-LeClair at mnohara-leclair@lindenwood.edu or (636)949-4371.

ELECTRONIC CONSENT: Please select your choice below.
Clicking on the "I consent, begin study" button below indicates that:

- You have read the above information.
- You voluntarily agree to participate.
- You are at least 18 years of age
- You are not over 65 years of age

I consent, begin study

I do not consent; I do not wish to participate

Appendix F

Recruitment post on Kevin McGowan and Lindenwood Psychology Facebook Pages

I am conducting an online survey to find out if bizarre dreams occur more frequently after a routine day or after an unusual day. If you're interested in participating, and you remember your dreams fairly often, please click the link below to access the survey upon the recall of your newest and most recent dream. Additionally, one should be prepared to provide information on the presence of a routine the day prior to remembering your dream.

Any people under the age of 18 or over 65 are asked to not participate in the study. These two groups of people are being excluded, because they are considered to be a vulnerable population.

https://lindenwood.az1.qualtrics.com/jfe/form/SV_b2eggpZKOCBkLHf



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Appendix G

Below is an explanation and example of the element scoring for Category and Bizarreness using the same identified elements and categorization from the dream scenario in Appendix A.

Once each element has been identified and categorized (as seen in appendix B), elements will be assigned a score for both their category (1-14) and bizarreness (1-4) by each member of the third party independently. The scoring judges assign a compound score to describe both the element content category and its bizarreness score [content/bizarreness].

5. The number “1” representing a “non-bizarre element”.
6. The number “2” representing an incongruous element. Incongruous elements have at least one of the following properties:
 - a. Elements that are contextually incongruous. Elements with features that don’t belong in waking reality. Example: There is a white tiger in my back yard [Contextually Incongruous Animal, scored as (5/2)], or “There were holes in the white walls” [Contextually incongruous object, scored as (8/2)]
 - b. Exotic elements. These are elements that are highly unlikely, but are still possible. Example: I met the president of the United States in the Philips 66 gas station bathroom [Exotic Person, scored as (4/2)].
 - c. Impossible elements. This is an element impossible to occur in waking reality. Example: I began to fly like super man over the school [Impossible Action, scored as (10/2)].
7. The number “3” will be assigned to vague elements. “An element or a feature of an element whose identity or precise nature is indeterminate, unknown, or obscure in a way which does not occur in waking life” (Revonsuo & Salmivalli, 1995, p. 174). Example: I’m riding in a car with a character, but I can’t quite recognize or remember who [vague person, scored as (4/3)].
8. The number “4” will be used to describe a discontinuous element. This is an element which suddenly becomes visible, invisible, disappears, or transforms. Discontinuity is the only measure of bizarreness that is computable in addition with one of the other three bizarreness scores: non-bizarre (1), incongruity (2), vagueness (3). This is due to the fact that an element may be discontinuous in addition to being bizarre in a different way. “Thus, each element scored as Discontinuous also received another score indicating whether the element is Non-bizarre, Incongruous, or Vague (Revonsuo & Salmivalli, 1995, p. 175). Discontinuity is scored to an element only after the change occurs. Example: I’m at home, then I’m suddenly at the grocery store [“Grocery store” is a Non-Bizarre Place and a Discontinuous Place, scored as (2/1+4)].

Category	Content/element (1-14)	Non-bizarre or bizarre (1-4)
self	I	Non-bizarre
Place	<ol style="list-style-type: none"> 1. In the apartment (2/_) 2. one room (2/_), 3. Slightly cool there (2/_) 4. I did not know where I was (2/_) 	<ol style="list-style-type: none"> 1. Non-bizarre (2/1) 2. Non-bizarre (2/1) 3. Non-bizarre (2/1) 4. vague place (2/3)
Time		
Persons	<ol style="list-style-type: none"> 1. My father 2. My sister 3. A girl 4. Mother 	<ol style="list-style-type: none"> 1. Non-bizarre, 2. Non-bizarre 3. Non-bizarre 4. Non-bizarre
animals		
Body parts		
plants		
objects	<ol style="list-style-type: none"> 1. At a table (8/_) 2. there were papers (8/_) 3. doors (8/_) 4. holes (8/_) 5. white (8/_) 6. walls (8/_) 7. door (8/_) 8. sauna (8/_) 9. fireplace (8/_) 10. bedroom (8/_) 	<ol style="list-style-type: none"> 1. Non-bizarre (8/1) 2. non-bizarre (8/1) 3. non-bizarre (8/1) 4. contextually incongruent object (8/2) 5. non-bizarre (8/1) 6. non-bizarre (8/1) 7. non-bizarre (8/1) 8. non-bizarre (8/1) 9. non-bizarre (8/1) 10. non-bizarre (8/1)
events		

actions	<ol style="list-style-type: none"> 1. Driving (10/_) 2. Only I went in (10/_) 3. Doing homework (10/_) 4. I opened (10/_) 5. I was leaving (10/_) 6. I called home (10/_) 	<ol style="list-style-type: none"> 1. Non-bizarre (10/1) 2. Incongruent action (10/2) 3. Non-bizarre (10/1) 4. Non-bizarre (10/1) 5. Non-bizarre (10/1) 6. Non-bizarre (10/1)
language	<ol style="list-style-type: none"> 1. There is a draft in here 2. Said that father and sister had lost me and came home 	<ol style="list-style-type: none"> 1. Non-bizarre 2. Non-bizarre
cognition	<ol style="list-style-type: none"> 1. It doesn't matter I thought 2. The room is anyway wonderfully old-fashioned by its shape 3. There was a wonderful 4. My sister and father had left by car 5. I was alone here far away 6. I wondered why they did not wait for me, after all they had come to see the apartment with me 	<ol style="list-style-type: none"> 1. Non-bizarre (10/1) 2. Incongruent cognition by original study (10/2), but I'd score this as non-bizarre cognition (10/1) 3. Non-bizarre (10/1) 4. Non-bizarre (10/1) 5. Contextually incongruent cognition (10/2) 6. Non-bizarre (10/1)
emotions	I became irritated (13/_)	Non-bizarre (13/1)
Sensory experience		

Appendix H

Feedback letter

Thank you for taking the time to complete my Survey upon remembering your dream. The questions on this particular survey will allow me to find out how often bizarre dreams occur or do not occur with the presence of a daily routine.

I hypothesized that more bizarre dreams will occur after unusual days, rather than after routine days. In other words, someone who had a more unusual or extraordinary day would be more likely to experience a bizarre dream the following night or sleep cycle.

Although I cannot provide you with individual findings because this survey was conducted anonymously, I would be happy to answer any questions you may have about this study. Please feel free to contact us using the information below.

Thank you again for contributing data to my project!

Student Researcher
Kwm635@lindenwood.edu

Faculty Supervisor:
Dr. Michiko Nohara-LeClair
636-949-4371
mnohara-leclair@lindenwood.edu