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What Factors Make Us Dream?

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ABSTRACT

In this paper we sought to understand which internal and external factors influence our dreams. Past research has shown that environmental factors influence our dream contents, our belief and experiences with the paranormal is a factor behind lucid dreaming, and distress while conscious is a factor that leads to nightmares and sleep paralysis. In our correlational study, we tested the strength of these relationships by examining naturalistic daily changes in their variables longitudinally over a two-week period. The participants kept a dream journal and rated the variables and outcomes on one-to-five Likert scales every morning for two weeks. Our study found that paranormal experiences were strongly correlated with controllability/frequency of dreams, that there was a strong correlation between stress and sleep paralysis, but that the correlation between environmental exposure to activities and their representation in dream content was insignificant.

1. Introduction

1.1 Research Problem

The internal and external factors that influence us on how and why we dream are not completely understood. What is the influence behind dreaming in humans? Do our paranormal beliefs/experiences affect our ability and frequency to lucid dream? What causes sleep paralysis? It is important to solve these problems because dreaming affects us all.

1.2 Literature Review

Paranormal experience is directly correlated with the ability to lucid dream. In the study led by Drinkwater, Dagnall, and Denovan (2020), a group of 455 participants, each with experience in lucid dreaming, assessed their frequency and control of lucid dreaming on a 1 to 8 Likert scale. The experiment determined that there was a connection between paranormal experiences and lucid dreaming, but it is mentioned that this connection is likely due to the openness of the participants to lucid dreaming. It was also found that the participants who experienced auditory and visual hallucinations more often than others, were also more likely to experience lucid dreams more frequently. In this study, auditory and visual hallucinations were found to serve as a "significant positive predictor of lucid dreaming." Contrary to popular belief, it is addressed in this study that paranormal beliefs are not actually a

strong influence behind lucid dreams. In fact, it was mentioned in this study that the link between paranormal belief and lucid dreaming was found to be fairly weak.

Environmental factors have a large impact on the significance and contents of dreams. In the study led by Domhoff and Schneider (2020), dream journals from two participants, Izzy and Jasmine, were compared. The most frequently recorded characters in dreams were primarily the mothers of the participants. Izzy lived exclusively with her mother throughout the dream series, and she claims that the person who she thought of most frequently in her waking-life was her mother. Jasmine also had a close relationship with her mother during the dream series, and as someone who is partially blind, she relied on her mom heavily. It is mentioned in the study that Jasmine's mom is "the most important person in her life." Of all Izzy's dream reports, 34.9% included her mother; of Jasmine's reports, a substantial percentage of 55.6% included her own mother. In addition to the frequency of family members in both dream reports, general interests, daily thoughts and various fantasies played a large role in contributing to the contents of the dreams. For example, in the reports listed by both participants, Izzy's interests in visual media and horror depictions were recorded throughout the reports, as well as Jasmine's passion for music that could account for many of her dream reports. These results may explain the crucial role of environmental factors in the importance and forming of our dreams.

Distress while conscious can influence dreams and nightmares and even lead to sleep paralysis. In the 2007 study conducted by Otsuka et al. (2017), data was collected from 8099 adults across Japan. The sample for the survey was asked to state whether or not they had "been awakened by a nightmare during the previous month" and whether they had experienced sleep paralysis in the previous month (Otsuka et al. 2017). Other variables including the statuses of sleep duration, daytime sleepiness, distress, smoking, age, difficulty maintaining sleep, were recorded. Only 2% of the sample claimed to have recently suffered from sleep paralysis, and of that percentage, the study suggests that their sleep paralysis was "correlated with distress." It was also noted that a majority of the participants who suffered from sleep paralysis, both men and women, were between 20 and 30 years old. In addition, it was found in this study that although smoking had no association with nightmares, it did influence the presence of sleep paralysis. These results may demonstrate how disruptions in sleep and stress in waking life may be the causes behind sleep paralysis.

1.3 Hypotheses

Based on the literature review above, we predicted the following hypotheses:

- Hypothesis #1: If experiences with paranormal forces increase, then the frequency and ability to lucid dream will also increase.
- Hypothesis #2: If exposure to the environment is increased, then the influences that guide dreams will also increase.
- Hypothesis #3: If real-life stress and trauma increase, then the frequency and severity of sleep paralysis will also increase.

2. Methods

2.1 Participants

The two authors of this paper served as the participants in its studies. The participants are both 19 years of age and included a male and female. The participants were both undergraduate students at Camosun College who completed the current studies as an assignment for Psyc 110 ("experimental psychology") and were grouped together due to their mutual interest in dreams. One of the authors is a frequent lucid dreamer, whereas the other author had never lucid dreamt before this study.

2.2 Materials and Procedure

We performed a correlational study to test concurrently all of our hypotheses by examining naturalistic daily changes in their variables longitudinally. Each participant kept a study journal with them at all times over this study's two-week period in order to record self-observations of the following three variables: (1) paranormal experience, (2) environmental influences, (3) distress in waking-life, (4) dream contents and frequency.

The participants judged their experience with paranormal activity on a 1 to 100 Likert scale over a two-week period. The higher on the scale you go the more experience that day you had with "unexplainable occurrences", with 1 being a normal day, nothing out of the ordinary, and 100 would be a day with an extreme abundance of unexplainable occurrences.

A separate 1 to 100 scale was used to measure dream abundance, with 1 being blank to very limited dreams and 100 being a fully controlled lucid dream. This data was taken over a two-week period, with data of the previous night's sleep being recorded the next morning.

The participants made notes of daily environmental exposure by counting their daily activities and social interactions over a two-week period. A higher number of activities indicated a variety of environmental influences: travelling, social interactions, activities out of the ordinary, etc. The lower side of the scale indicated fewer environmental exposures: not leaving the house, no interactions with others, etc.

In a dream journal, the participants measured the content and frequency of their dreams on a 1 to 100 scale, over a two-week period. Lower values on the scale indicate blank or very few dreams, and 100 indicates many dreams with a variety of contents. This data was collected each morning over the two-week period, to recall the dreams of the previous night.

On a 1 to 100 Likert scale, the participants noted their experiences with daily stress and trauma over a two-week period. Lower values on the scale indicate little or no stress: feeling happy, no upsetting experiences, no anxiety, etc. Higher values on the scale indicate more stress or trauma, including experiences of anxiety, fear, pain, depression, etc.

The participants kept a dream journal and recorded the frequency and severity of potential sleep paralysis on a 1 to 100 scale, over a two-week period. To measure sleep paralysis, a 1 on this scale indicates zero experiences with sleep paralysis, and 100 indicates severe sleep paralysis. To measure sleep paralysis daily, we also included the inability to get out of bed in the morning and included the difficulty levels of this numerically on the 1 to 100 scale. This data was collected each morning over the two-week period, to best recall the previous night.

To assess the strength and statistical significance of associations between variables predicted by our three hypotheses, we performed Pearson product moment correlations of their predictor variables (paranormal beliefs, environmental

influences and distress in waking-life) with their outcome variable (dream contents and frequency). For Hypothesis #1, we correlated the number of experiences with paranormal forces and tracked their ability and frequency of having lucid dreams. To test Hypothesis #2, we counted daily activities and interactions and tracked the dream frequency and variety of dream content that followed. To test Hypothesis #3, we recorded daily stress on a 1-100 scale and tracked the severity of sleep paralysis that followed. We performed all of the above correlations separately for each participant as well as using data pooled across all of the participants. For the correlations using pooled data, in addition to using the raw data, we also performed correlations after we had first transformed the data from each participant into *z*-scores in order to standardize differences in averages and variability seen between the participants in their data and thus make them more comparable. A correlation coefficient was considered statistically significant if the probability of its random occurrence (p) was < 05 (i.e. less than 5% of the time expected by chance alone).

3. Results

The study showed that the correlation of paranormal beliefs involved with controllability and frequency of dreams was significant, that the correlation between stress/trauma and sleep paralysis was significant, but that the relationship between environmental exposure and dream frequency/variety proved insignificant (see Table 1). The association of paranormal experiences with controllability of dreams was significant using the pooled standardized data ($r = 0.67$, $p = 4.26E\text{-}05$; see Figure 1) and using the pooled raw data ($r = 0.86$, $p = 1.016E\text{-}10$). The association of paranormal experience with lucid dreaming was significant for both Participant #1 and Participant #2. The association of stress with sleep paralysis was significant using the pooled standardized data ($r = 0.42$, $p = 0.026418$; see Figure 2). The individual data suggests a strong correlation between stress and sleep paralysis for Participant #1 but not for Participant #2. The correlation between daily environmental influences and dream contents proved to be insignificant using the pooled raw data ($r = 0.28$, $p = 0.1575088$; see Figure 3) but the correlation was significant using the pooled standardized data ($r = 0.66$, $p = 7.349E\text{-}05$). The association of environmental factors with dream frequency was significant for Participant #2 but not for Participant #1. Based on the results of our pooled standardized data, it is evident that the strongest correlation was between paranormal experience and lucid dreaming, with the highest *r*-value of 0.67.

4. Discussion

4.1 Summary of Results

We tested three hypotheses: first, the association between paranormal experience and lucid dreaming; secondly, the association between environmental exposure and its recurrence in dream content; and finally, the association between trauma/stress and sleep paralysis. Our results supported all three of our hypotheses.

4.2 Relation of Results to Past Research

The strong correlation we found between daily stress and trauma and the frequency and severity of sleep paralysis is persistent with past research. In the study led by Otsuka et al. (2018), it was found that sleep paralysis was correlated with distress. In our

own research, we found that the severity of stress impacted the severity of sleep paralysis. The similarity between both conclusions was that real-life stress and trauma influence the severity of sleep paralysis.

The ability of our correlational study to predict dream frequency and controllability is related to paranormal experiences and beliefs shown in past research Drinkwater, Dagnall, and Denovan (2020). It was reported that participants' experience with the paranormal affected their sleep and their ability to lucid dream. As shown in our paper, paranormal experiences on a day-to-day basis were associated with the ability to lucid dream. This common outcome between studies, using two different methods, suggests a link of paranormal belief and our ability to have lucid dreams.

Our correlational study did not confirm the predicted association of environmental factors and dream content. In the study led by Domhoff et al. (2020), it was found that daily interactions influenced dream contents.

References

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Table 1

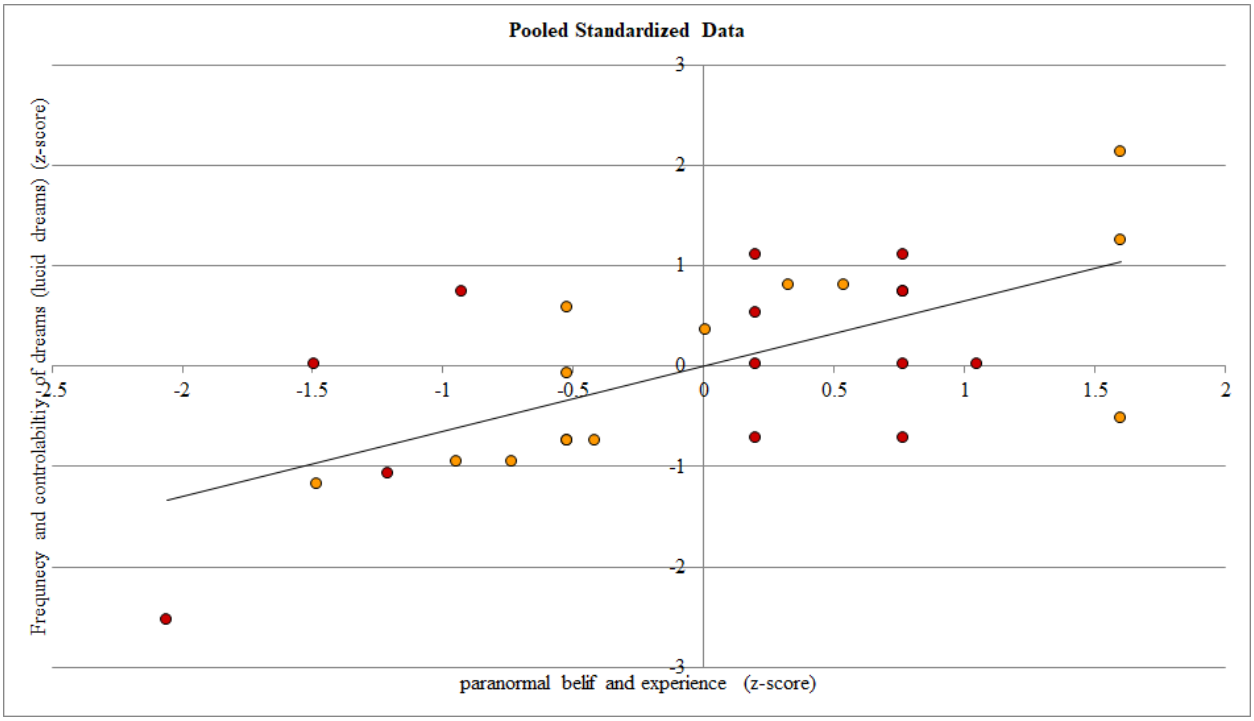
Correlation coefficient (r) values, with number of daily trials (n) per correlation in brackets.

Variables correlated	Participant #1	Participant #2	Pooled raw data	Pooled standardized data
Paranormal experience & dream controllability and frequency	*0.62*(*14*)*	*0.73(14)**	*0.86*(*28*)*	*0.67(28)**
Stress/trauma & Sleep Paralysis	*0.55*(*14*)*	0.*28*(*14*)	*0.82*(*28*)*	*0.42*(*28*)*
Environmental exposure & Dream frequency	*0.48*(*14*)	*0.84*(*14*)*	*0.28*(*28*)	*0.66*(*28*)*

* $p < .05$.

Figure 1

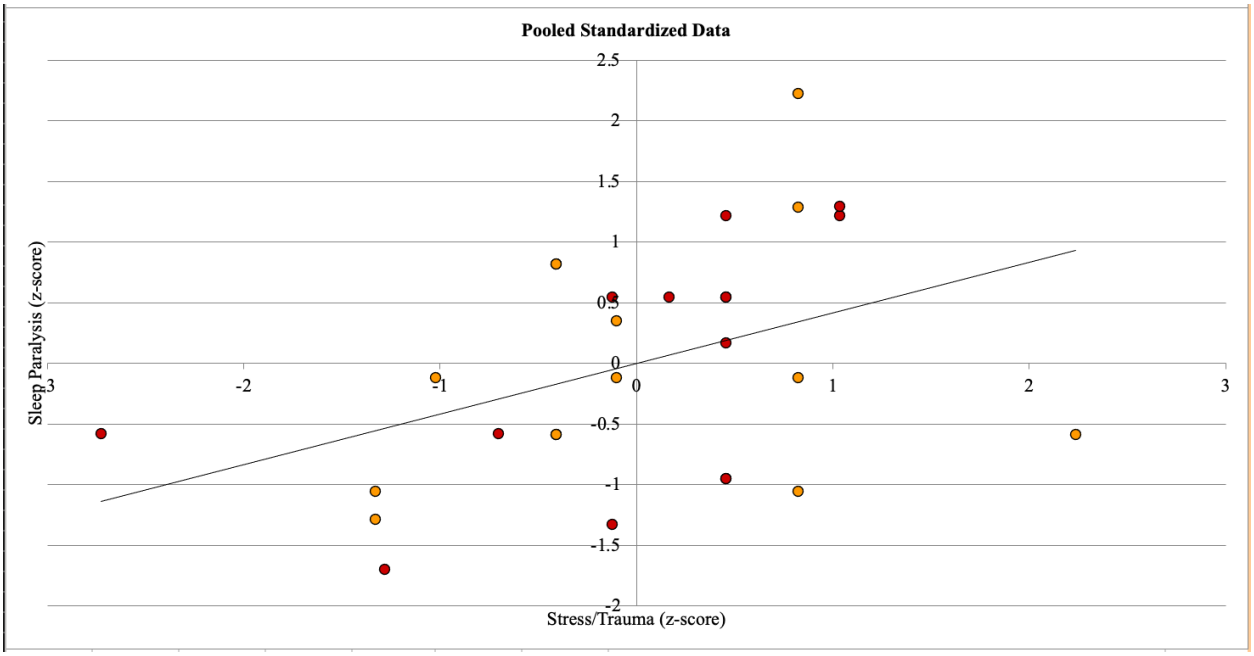
Scatterplot of paranormal beliefs/experiences and controllability/frequency of dreams using pooled standardized data across participants.



Marker color indicates which participant data is from: red = participant #1, orange = participant #2. Some data might not be visible in the figure due to overlapping markers.

Figure 2

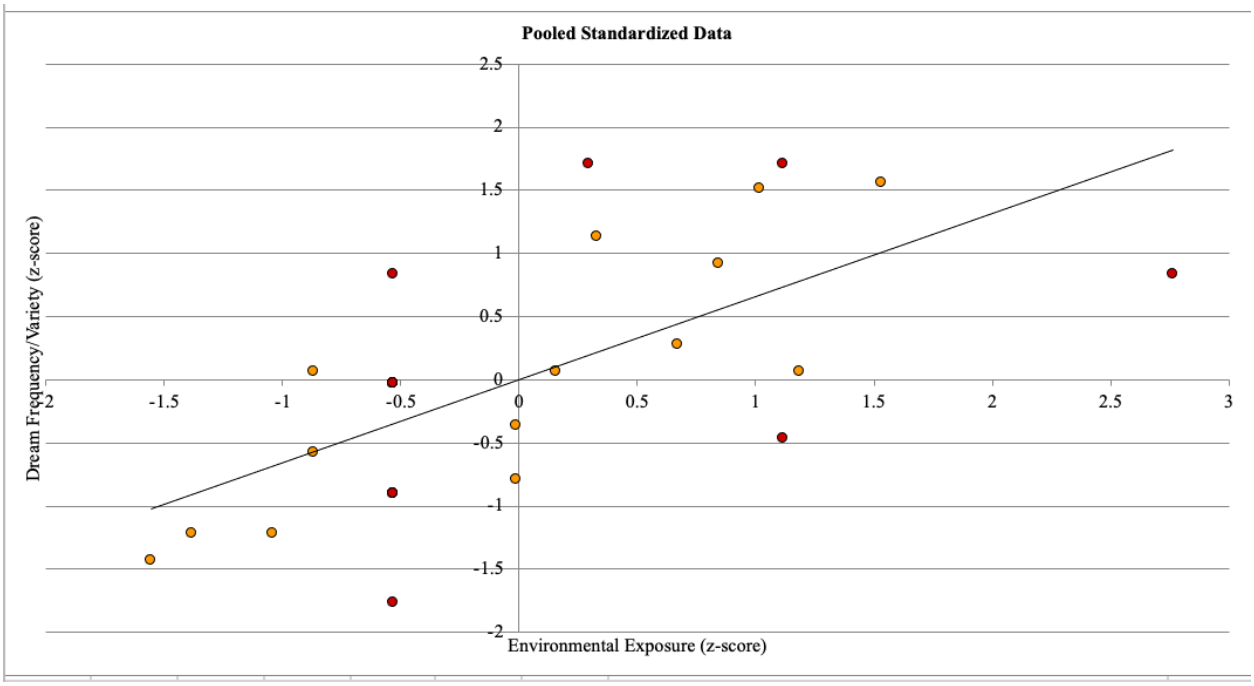
Scatterplot of stress/trauma and sleep paralysis using pooled standardized data across participants.



Marker color indicates which participant data is from: red = participant #1, orange = participant #2. Some data might not be visible in the figure due to overlapping markers.

Figure 3

Scatterplot of environmental exposure and dream frequency using pooled standardized data across participants.



Marker color indicates which participant data is from: red = participant #1, orange = participant #2. Some data might not be visible in the figure due to overlapping markers.