Personality and Individual Differences 87 (2015) 65–69

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Individual differences in prophetic dream belief and experience: Exploring demographic and sleep-related correlates☆

Milan Valášek *, Caroline Watt

Department of Psychology, University of Edinburgh, UK

ARTICLE INFO

Article history:
Received 13 March 2015
Received in revised form 17 July 2015
Accepted 18 July 2015
Available online xxxx

Keywords:
Individual differences
Paranormal belief
Precognitive dreams
Sleep characteristics

ABSTRACT

A large proportion of the general population believes that dreams can provide information about future events that could not have been obtained by any known means. The present study identifies several factors associated with prophetic (precognitive) dream belief and experience. Participants ($N = 672$) were measured on demographic variables, sleep characteristics, and precognitive dream (PD) belief, experience, and frequency. Three 'sleep clusters' were identified based on the analysis of the sleep-related variables. Women were more likely to believe in PDs as well as experience them. There was a positive relationship of PD belief and experience with age and a negative one with education. Most notably, we found that a high frequency of PD experiences was associated with erratic sleep patterns and sleep medication use. The present study provides a basis for the development of further models explaining the prevalent phenomena of precognitive dream belief and experience.

1. Introduction

Recent surveys show that a large proportion of the population believes that dreams can literally provide information about future events that could not have been obtained by any known means (e.g., rational inference, intuition) and is not merely coincidental. The belief in the reality of these so-called precognitive dreams (PD) was espoused by around 55–70% of participants in three representative samples of Britons, Icelanders, and Swedes, with about half as many reporting having had such a dream (Haraldsson, 1985). Given the high prevalence of PD belief and experience coupled with the inconsistent findings from controlled tests of dream precognition (e.g., Watt, Wiseman, & Vuillaume, 2015), it is important to investigate potential psychological factors that may account for these phenomena. The present study identifies several such factors.

Haraldsson (1985) found that women were more likely to both believe in the reality of PD and report having experienced them. Others, however, did not find such differences (Rattet & Bursik, 2001; Schredl, 2009). The present study will look at the relationship between gender and other demographic variables that have yielded similarly mixed findings (age, Haraldsson, 1981; Schredl, 2009; and education, see French & Stone, 2014) and PD belief and experience.

Some authors have considered various cognitive factors that might contribute to the misattribution of normal experiences as 'paranormal' (for a review, see Wiseman & Watt, 2006). Concerning PDs, these include implicit processing of subtle cues from the environment (Valášek et al., 2014), selective recall and propensity to perceive correspondences between randomly-paired stimuli (Watt, Ashley, Gillett, Halewood, & Hanson, 2014), and the incorporation of unconsciously perceived environmental stimuli into dreams (Watt et al., 2015). For example, if a person falls asleep within earshot of the television, a news item may get incorporated into the narrative of their dreams. When they later learn the news, they can think that their dream foretold the event in question (Alcock, 1981). Furthermore, both early and late sleep stages have been shown to be permeable to external stimuli (Hoelscher, Klinger, & Barta, 1981), so it is plausible that the more often one enters borderline sleep states, the higher the likelihood of putatively PD experiences will be. This study therefore examines the relationship between precognitive dream experience and various patterns of sleep-related behaviours (nap-taking, nocturnal wake-ups, dream recall and overall subjective sleep quality).

Closely related to the aforementioned topic is the issue of sleep medication use. The use of medication alters sleep patterns and certain drugs have been shown to interfere with REM sleep (Pagel & Parnes, 2001) as well as induce nightmares (Pagel & Helfter, 2003). This could affect both dream recall and the frequency of borderline sleep states. We thus include a measure of sleep medication use to explore its potential effects on PD experience.

To summarise, given the mixed results of the reviewed research, the study will firstly investigate the role of demographic variables: we hypothesise an effect of gender (H1), age (H2), and education (H3) on the belief in and experience of PDs. Secondly, based on the argument outlined above, we expect to find a relationship between individuals' patterns of sleep related behaviour characterised by sleep quality,

☆ This research was supported in part by grants from the Parapsychological Association and the Perrott–Warrick Fund.
* Corresponding author at: School of Philosophy, Psychology and Language Sciences, University of Edinburgh, 7 George Square, Edinburgh EH8 9JZ, UK.
E-mail address: s1153297@staffmail.ed.ac.uk (M. Valášek).

http://dx.doi.org/10.1016/j.paid.2015.07.028
0191-8869/

frequency of nocturnal awakening and diurnal naps, and dream recall and subjective PD experience (H4). And finally, the study will explore the relationship between sleep medication use and the experience of PDs (H5). Given the conflicting findings in the literature related to demographic characteristics as well as the exploratory nature of this study due to a lack of research on sleep behaviour and PDs, all the hypotheses stated above are non-directional.

2. Method

2.1. Participants

Participants were primarily recruited via online social networks and interest groups dedicated to various topics (psychology, dreams, scepticism, the paranormal). A total of 693 participants completed the study. Ten participants were younger than 18 years and were excluded from further analysis. Of the remaining participants, 279 were male (41.52%) and 393 (58.48%) female. Eleven participants (1.6%) did not identify as either, and their exclusion resulted in the final sample of 672 participants ($M_{age} = 31.47$ years, range = 18–75, $SD = 11.74$). There was no age difference between genders ($M_{male} = 31.45$, $SD = 12.67$, $M_{female} = 31.48$, $SD = 11.05$, $t(546.21) = 0.032$, $p = .974$).

2.2. Materials

A battery of questionnaires was administered in the following order. The wording of the items can be found in the supplement.

2.2.1. Demographic data

Standard demographic items including gender (including an additional non-binary response option), country of origin, age, and years of formal education completed were taken.

2.2.2. Sleep characteristics

Seven items related to sleep quality addressing usual sleep duration, frequency of day-time naps and night-time wake-ups, use of sleep medication, history of sleep disorders, usual dream recall, and overall subjective sleep quality were used. The items were adapted from the Pittsburg Sleep Quality Index (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989).

2.2.3. Precognitive dream belief and experiences

Belief in PDs was assessed using a 4-item Likert scale with response options ranging from 1 (*Completely disagree*) to 7 (*Completely agree*). Internal consistency of this scale was high, $\alpha = .92$.

PD experience was measured using two further items. The first was also a 7-point Likert item worded "I have had at least one dream that came true and which (I believe) was precognitive." The second item related to PD frequency ("Approximately how often you have had a precognitive dream over the last few years?") was included in the battery. PDs were defined as "dreams that foretell the future" and Bender's (1966) criteria for what constitutes a PD were included before the precognitive dream section of the questionnaire battery.

2.3. Procedure

The study was approved by [a UK university] Research Ethics Board. The battery of questionnaires was administered online. Participants read a description of the study and gave consent by proceeding with filling in the questionnaire. Upon completion, participants were thanked and debriefed. All analyses were conducted using the R software version 2.15.3 (R Core Team, 2012).

3. Results

3.1. Descriptive analysis

The mean number of completed years of formal education was 16.45 ($Mdn = 17$, $SD = 3.35$, range = 8–25). The majority of participants reported sleeping on average 7–8 h a day (62.7%) with only 4.5% of participants sleeping fewer than 5 or more than 10 h a day. The mean overall sleep quality, rated on a 7-point Likert scale from 1 (*Very bad*) to 7 (*Very good*), was 5.1 ($Mdn = 5$, MAD[1] $= 1.48$). Forty-two participants (6.9%) reported having been diagnosed with a sleep disorder. Items related to frequencies of daytime naps, night time waking up, use of sleep medication and dream recall are summarised in Table 1. Due to extremely skewed distribution of responses to the sleep medication item (80.1% reported no use), we dichotomised the variable for further analysis.

The mean score on the PD belief, derived from the four items measuring belief in the reality of PDs, was 3.5 ($Mdn = 3.5$, $SD = 2.01$). The median response to the item addressing PD experience was 2, with 39.2% of the sample having scored above the mid-point. Furthermore, 56.2% of participants reported no PD experience, 17.8% reported having PDs less often than once a year, 6.2% about once a year, 12.1% about once in six months, 5.2% reported having PDs about once a month, and 2.5% about once a week. Belief in PDs was strongly related to both PD experience ($r_s = .812$, 95% CI* [.780, .841], $p < 2 \times 10^{-16}$) and frequency ($r_s = .730$, 95% CI* [.692, .764], $p < 2 \times 10^{-16}$).

3.2. Hypothesis testing

3.2.1. Demographic variables and PD belief and experience

First, we explored the role of demographic variables in PD belief and experience (H1). A multiple linear regression predicting PD belief with gender, age and years of formal education was conducted[2] to assess the individual contributions of the predictor variables. The model accounted for 22.5% of the variance in precognitive dream experience, with all variables having a significant effect on PD belief (Table 2). This result was supportive of H1, H2, and H3: men exhibited lower PD belief, while age was positively related to the outcome variable. Furthermore, PD belief diminished with increasing number of years of formal education completed. Comparable results were obtained from a multiple ordinal regression of PD experience on the same predictor variables (see Table S1).

In order to explore the effect of demographic variables on the unique variance of PD belief and PD experience respectively, we added each variable in the model predicting the other. This resulted in age being the only significant predictor of PD belief, $b = 0.029$, $SE = 0.004$, $\beta = 0.047$, 95% CI* [0.033, 0.062], $p = 2 \times 10^{-12}$, $\Delta R^2 = .022$, and education being the only significant predictor of PD experience, $b = -0.088$, $SE = 0.027$, OR = 0.92, 95% CI [0.87, 0.96], $p < .001$.

3.2.2. PD frequency and sleep characteristics

To ascertain the relationship between PD experience and sleep characteristics (H3), a hierarchical cluster analysis using Ward's minimum variance method (Ward, 1963) was first conducted on the five standardised sleep variables (sleep duration, frequency of nocturnal awakenings and diurnal naps, dream recall frequency, and subjective overall sleep quality). Due to extremely small variance of the sleep medication variable as well as the binary nature of the sleep disorder variable, these were excluded from the cluster-analysed set. The aim of this analysis was to identify different sleep patterns in the sample. Three clusters of similar sizes were identified. The individual "sleep profiles" of these clusters are depicted in Fig. 1. Cluster 1 was characterised by an erratic sleep pattern with high frequency of both nocturnal

[1] Median absolute deviation.
[2] Predictors were added simultaneously in all regression models reported in this paper.