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Relation Between Waking Personality Factors and the Affective Nature of Dreaming Experience

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Abstract
Relatively few studies have assessed correlates for dreaming experience with regard to personality factors measured by psychometrically sound survey tools. Our study of personality factors of the dreamers with regard to dreaming affective experience tries to address this gap within the literature. The present study inquires whether personality factors relate to affective dreaming experiences. The hypothesis inferred on 232 participants ranging from 18 to 54 years is that high scorers on Emotionality, Agreeableness, and Honesty-Humility would tend to experience more negative and positive dreams, respectively. Data collection utilized HEXACO Personality Inventory-Revised and dream reports. Phi-coefficient correlations followed by chi-square tests between high/low scorer groups of personality scales and positive/negative dreaming affect revealed significant correlations except for the Altruism scale, revealing a substantial relationship between the variables in accordance with what was hypothesized. The results have been discussed in terms of future research directions and implications.

Key Words:
dreams, affect, personality

The present study sought to examine if personality factors can affect our dreaming affective experience. Consistent with this notion, people with negatively-oriented personalities are more likely to experience negative affect in waking life, and as the continuity hypothesis of dreaming would suggest, such waking experiences may reflect themselves in dreams (Schredl & Michael, 2003). Also consistent is the finding that some personality characteristics seem to be significantly correlated with people's tendency to experience positive or negative emotions in dreams (Gilchrist, Davidson & Shakespeare-Finch, 2007). A review has recently discussed the role of the neurobiological correlates of individual differences in dream recall and dream content (Blagrove & Pace-Schott, 2010). An important individual difference may be the emotional content of their dreams (Kallmeyer & Chang, 1998). Furthermore, the study and understanding of dreams is important because they have an important impact on our waking lives, even to the extent of affecting our daytime interactions with our partners (Selterman, Apetroaia, Riela, & Aron, 2013), hence the topic of our investigation.

Dreams are a series of thoughts, images, or affects that happen during sleep and may be associated with involuntary occurrence of visions, ideas, emotions, and sensations in mind. According to Schneider and Domhoff, (2014), it can also be seen as "a report of a memory of a cognitive experience that happens under the kinds of conditions that are most frequently produced in a state called 'sleep.'" Like one's personality, every individual's frequency of dream recall is diverse. They also differ in recalling different types of dreams, and the content of their dreams isn't similar either. When it comes into effect, it is described as the experience of feeling an emotion (Hogg, Abrams & Martin, 2010). Similarly, personality factors are composed of traits with characteristics indicating high and low levels of it. *Personality*

traits in turn can be described as "enduring personal characteristics that are revealed in a particular pattern of behavior in a variety of situations" (Ozer & Benet-Martinez, 2006; Ormel, Jeronimus, Kotov, Riese, Bos, & Hankin, 2013). The personality factors influence many aspects of our lives. In support of this, a study has found that Extraversion (E) and Neuroticism (N) are associated with individual differences in affective level and environmental responsivity (Corr, 2008; Revelle, 1995). The personality differences, in fact, have quite a lot of real life consequences (Ozer & Benet-Martinez, 2006; Ormel et al., 2013).

Behavioral patterns based on the Agreeableness, Honesty-Humility, and Emotionality dimensions were of the precise interest in this study. The six-dimensional model Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (HEXACO) of personality structure was preferred because of its higher predictive validity to both the Big Five and the FFM (Ashton, & Lee, 2008). Moreover, the factors of Agreeableness, Honesty-Humility, and Emotionality are distinctly diverse from their counterparts on the Five Factor Model (FFM). In the HEXACO model of personality structure, which is founded on conclusions from a series of lexical studies, Honesty-Humility, Emotionality, and Agreeableness were proposed to be measures of altruistic vs. antagonistic behavior. Honesty-Humility and Agreeableness both assess two different aspects of reciprocal altruism, high levels of which indicate a propensity for helping behavior and cooperation as opposed to the exploitation of others. The Honesty-Humility factor represents a person's tendency towards pro-social, unselfish, and altruistic behaviors, (Thalmayer, Saucier, & Eigenhuis, 2011) while Agreeableness indicates an individual's tendency towards forgiveness and tolerance. Emotionality is a measure of kin Altruism, that is, the tendency to show empathy and attachment to one's kin. And hence, for its significance, the measure of Altruism present in the HEXACO Personality Inventory-Revised (HEXACO-PI-R) was also taken into account along with Agreeableness, Honesty-Humility and Emotionality dimensions.

In spite of the differences, there was some relation of HEXACO personality structure model with its predecessors. Big Five Factors, for example, Agreeableness and Neuroticism, appeared to be similar to the Agreeableness and Emotionality factors of the HEXACO model – though they were not identical due to some marked differences in the factors content and represents some rotated variants of their Big Five counterparts. Furthermore, the Big Five factors happen to include some of the characteristics that belong to the Honesty-Humility in the HEXACO into the Big Five's Agreeableness factor.

Neuroticism, which closely resembles dimension of Emotionality of the HEXACO-PI-R is worth mentioning. High scorers on neuroticism are more likely than average to experience feelings of anxiety, anger, envy, guilt, and depressed mood (Matthews & Deary, 1998). They tend to respond poorly to stress, ordinary situations are more likely to be interpreted as threatening, which minor frustrations would be as hopelessly difficult, similar to those scoring high on Emotionality scale. Similarly, Agreeableness receives paramount importance to psychological well-being, which predicts mental health, positive effect, as well as good relations with others. Low Agreeableness may be associated with narcissistic and anti-social tendencies in the presence of mental illness (Costa & McCrae, 1992).

Reviews on the relationship between waking life characteristics and its effect on dreaming experience shows that it was Hartmann's (1991, 1998) contention that intense positive or negative emotions in dreams are a representation of emotions felt in the waking hours. Similarly, Schredl (2003) focusing on negative dreams, especially the effects of state and trait factors on the frequency of nightmare occurrence, reported that people who are stressed when awake are more likely to experience negative dreams and state factors are more relevant indicators of negative dreams than trait factors. Schredl's findings are again in line with the continuity hypothesis, that what we dream about is also what we think about or do while we are awake (Hall 1953, as cited in

Domhoff, 1996; p. 153). Another important study by Zadra and Domderi (2000) found people with lower self–reported measures of well–being are more likely to have bad dreams or nightmares. Similarly, St-Onge and colleagues (2005) reported on the incidence and valence of dream emotions and waking life satisfaction in their study, which compared women of young- and late-adulthood age groups, both home and laboratory dreams being included. Home dreams were found to cause greater negative emotions of higher intensities, however, they could not find any significant relationship between life satisfactions and dream emotions. The theoretical expectations of gender differences in dreaming (Schredl, 2007) and personality domains (Babarović, & Šverko, 2013), however, were found to be of significant importance.

It was predicted that there may be a relationship between waking personality factors and the affective nature of dreaming experience. We predict Emotionality and the affective nature of dreams to negatively and significantly correlate, such that greater Emotionality is associated with negative affect of dreams. A similar nature of correlation was predicted for Altruism dimension also. Additionally, it was predicted that there would be positive and significant correlation between the Agreeableness and affective nature of dreaming experience, such that greater Agreeableness is associated with positive affect of dreams. Similar anticipation was made for the Honesty-Humility dimension scale too. Additionally, it was tested whether there were significant sex differences on primary variables for the sample under study.

The previous research has mostly focused on the investigation of the correlates of the frequency of the dreams, such as nightmares and lucid dreams. Relatively few studies have assessed correlates for dreaming experience with regard to personality factors, psychometrically. This study looks at personality factors of the dreamers with regard to dreaming affective experience and tries to take our understanding further on this issue.

Method

Participants

Participants were recruited from the general population and no incentives were paid to them. However, they were assured that after the study is over they will be given their personality assessment reports. The researcher was particularly interested in gaining data from people having a wide range of diverse sociocultural and geopolitical backgrounds, spreading over a large geographical area and from a variety of communities. Participants were categorized by age into young adults (ages 18-35 years; n = 124), middle-aged adults (ages 36-54 years, n =108), and older adults (aged 55 years or older). The participants ranged in age from 18 years to 54 years of age (M = 36 years). Two hundred thirty eight dream reports were received, of these 6 dream reports were rejected, leaving a total of 232 participants (female n = 132; male n = 100) for this study.

Dreams of younger children and older adults were not taken into consideration because children's dreams were different from that of adult dreams (Foulkes, 1982). In case of older adults the nature of interactions and dreaming emotions change when compared with their younger counterparts (Waterman, 1991) and they often exhibit different cortisol circadian rhythms and sleep cycles. Participants with any psychiatric or physical disorders were excluded as some pathologies affect sleeping patterns, dreaming and result in cortisol dysfunction.

Materials and Measures

At the end of an instruction session where the study was explained in full, participants completed a personality characteristics and well-being questionnaire pack which consisted of the following:

HEXACO–PI-R (100 items). HEXACO is a self-report personality inventory based on the six-dimensional HEXACO personality model (Lee & Ashton, 2004, 2006) that measures six broad personality factors of Honesty-Humility (α=.83), Emotionality (α=.84), Extraversion (α=.85), Agreeableness (α=.84), conscientiousness (α=.82) and Openness to experience (α=.81). There is also an interstitial scale of Altruism

(α=.62). It also includes 24 facet scales that define the six HEXACO factors. All items use a 5-point response scale. It was intended to measure traits (relatively long-lasting characteristic, as being an anxious person), not states (a temporary condition, like feeling anxious at a given time).

Of these the four main scales that were taken into consideration under this study involved Honesty-Humility (e.g., "If I want something from a person I dislike, I will act very nicely toward that person in order to get it"), Emotionality (e.g., "I would feel afraid if I had to travel in bad weather conditions"), Agreeableness (e.g., "I rarely hold a grudge, even against people who have badly wronged me") and Altruism (e.g., "I have sympathy for people who are less fortunate than I am"). Many studies, using the HEXACO model, support the usefulness of the dimensions of Agreeableness, Emotionality and Honesty-Humility. The authors of the model acknowledged that the HEXACO model may have an advantage when the predictor variables are conceptually related to the Honesty-Humility factor, and that in many cases the modified FFM-plus-Honesty-Humility model produced similar results (Ashton, & Lee, 2008).

The psychometric properties of the HEXACO–PI scales in the English version are reported in Lee and Ashton (2004, 2006) and the descriptive scales have enclosed here in the appendix.

Dream report. The report consisted of a blank sheet of paper where the participants reported their most recent and prominent dream. It was mentioned in the instructions to include as many details as possible; with special reference to the dreamer's feelings during the dream and whether the overall dreaming experience was pleasant or unpleasant or neutral.

Procedure

Participants were asked to record their most recent dreams on a blank sheet of paper, noting about the dreaming affective experience. To safeguard confidentiality and to ensure impartiality in data processing, participants were given a code number. Every participant was required to undertake an instruction session during which each participant was introduced into the inventory and given instructions on how to fill the form. The queries related to the participation, and instructions were answered to reduce the chances of miscommunication between the researcher and the subjects. Participants then had to confirm that they were clear and interested in participating in the study. Those with positive confirmation (238 out of 250 attendees) were then asked to complete the HEXACO Personality Inventory-Revised. On completion of the inventory they were asked to write down the most recent dream which they could remember as descriptively as possible for which the participants were given 20 minutes to complete the procedure. Participants were asked to date the reported dream, along with the time of day.

Asking for a date and time prevented the dreamers from biased reporting of unusual and recurring nightmares and not the usual ones. Moreover, it helped in the elimination of those dream reports that were seen more than six months ago, hoping to get a representative sample of typical dreams. The positive and negative words, people used to describe their dream reports were counted, and the themes were noted for the purpose of the determining the emotional tonality of dreams. To assure the validity, research assistants were asked to read each dream report and rate it for being positive, negative or ambiguous as was adopted by Wiseman (2012) in his study. Additionally the participants were later verbally interviewed and were asked about their dreaming experience with special regard to its affective component. Almost none reported neutral ambiguously. This observation was in accordance with the fact that emotional events are recalled better in terms of much clarity and detail, unlike the neural events (Dobbs, 2008; Shergill, 2012).

Table 1
Descriptive statistics for all factors and gender differences

DIMENSION	Males (100)		Females (132)		Gender Diff
	MEDIAN	M(SD)	MEDIAN	M(SD)	
Emotionality	3.16	3.07 (0.37)	3.5	3.38 (0.50)	-5.43**
Agreeableness	3.09	3.11 (0.03)	2.81	2.8 (0.51)	6.97**
Honesty-Humility	3.28	3.26 (0.39)	3.5	3.5 (0.46)	-4.29**
Altruism	3.5	3.47 (0.49)	3.75	3.70 (0.58)	-3.27*

The study attempted to reduce the tendency to misreport dream contents, especially those which are embarrassing and shameful, by keeping data anonymous. Moreover, perceiving dreams not as a reflection of their self-image, but as something that happened to them also prevented many from making up stories. Most importantly, since the participation was voluntary, only those interested in reporting their dreams participated.

Those reports under 60 words and those which appeared fake were rejected. Out of 238, 6 dream reports were rejected and 232 reports were retained.

Studies in the past have shown that the "interest" and "motivation" in the matter of dreams have shown no correlation with personality and cognitive variables (Domhoff & Hall, 1996) leading to additional support to the general representation of the people who report dreams.

In response to this observation, dreamers were divided into two groups- those reported positive dreams and those with negative affective experiences. Participants were also divided into two groups based on their scores for each dimension scale- those who scored above median and those who did not, on the HEXACO-PI-R.

The collected data were then assessed for each participant. Statistical analyses were carried out using the phi-coefficient correlation, the significance of which was assessed by Pearson's chi-square test. The following calculations were two-tailed.

Results

Table 1 presents means, medians, and standard deviations for participants on the personality factors and shows that there is significant difference between the scores of males and females. Females scored somewhat higher than males in terms of Emotionality, Honesty and Altruism, while the males scored higher in terms of Agreeableness. Thus, owing to the significant difference between the sexes on personality factors, it was decided to treat the two sexes as different group for subsequent analyses.

Table 2
Chi-square between Emotionality Dimension and Reported Dreaming Affect for males and females

Emotionality scale	Frequency of Dreams Reported		PHI	X^2
	Negative	Positive		
Males				
Above median (n=34)	21	13	-0.26	6.76*
Below median (n=66)	23	43		
Females				
Above median (n=69)	21	13	-0.26	6.76*
Below median (n=63)	23	43		

Note. *p<. 01. N=100 males and 132 females.

Table 3
Chi-Square between Agreeableness Dimension and Reported Dreaming Affect for males and females

Agreeableness	Frequency of Dreams Reported		PHI	X^2
	Negative	Positive		
Males				
Above median (n=48)	13	35	0.33	10.89*
Below median (n=52)	31	21		
Females				
Above median (n=69)	21	48	0.36	17.11*
Below median (n=63)	42	21		

Note. *p<. 01.

To determine whether the personality factors are related to dreaming affective experiences, participants were divided in two groups using the median of the sample under study as the dividing point on the respective scales for the subsequent analysis.

The phi coefficient correlation was computed between each factor and affective nature of the dreams experienced. The subsequently chi-square was done to test the difference between the correlations. According to Cohen (1988, 1992) for the social sciences: small effect size (r= 0.1 – 0.23); medium (r= 0.24 – 0.36); large (r= 0.37 or larger). The results were interpreted accordingly.

The fourfold contingency table for the dimension of Emotionality is presented in Table 2. Results indicated that, for males, the phi coefficient is -0.26; $X^2(1)=6.76$. It shows that the computed chi-square was higher than the critical X^2. 01; so, the computed PHI is significantly below the 0.01 level. The computed chi-square for females was higher than the critical, X^2=01; so, the computed PHI is significantly below the 0.01 level. Thus, for both male and female there is a medium, but significant negative relation between Emotionality scores and affective dreaming experience. The higher the score on Emotionality, the less frequent experiences of positive dreams.

The fourfold contingency table for the dimension of Agreeableness is presented in Table 3. Results indicated that for males the phi coefficient is +0.33, $X^2(1)=10.89$. It shows that the computed chi-square was higher than the critical X^2=.001; so, the computed PHI is significantly below the 0.001 level. Similarly in Table 3, the result indicated that the phi coefficient is +0.36, $X^2(1)$=17. 11. Thus the computed Chi square for females was higher than the critical X^2=.001; so, the computed PHI is significantly below the 0.001 level. Thus, for both male and female there is a medium, but significant positive relation between Agreeableness scores and affective dreaming experience. The higher the score on Agreeableness scale, the more frequently participants experienced positive dreams.

Table 4
Chi-Square between Honesty-Humility Dimension and Reported Dreaming Affect for males and females

Honesty-Humility	Frequency of Dreams Reported		PHI	X^2
	Negative	Positive		
Males				
Above median (n=46)	12	34	0.39	15.21*
Below median (n=54)	35	19		
Females				
Above median (n=66)	24	42	0.32	13.50*
Below median (n=66)	45	21		

Note. *p<. 01.

Table 5
Chi-Square Correlations between Altruism Dimension and Reported Dreaming Affect for males and females

Altruism	Frequency of Dreams Reported		PHI	X^2
	Negative	Positive		
Males				
Above median (n=51)	30	21	-0.12	1.9
Below median (n=49)	23	26		
Females				
Above median (n=57)	33	24	-0.10	1.32
Below median (n=75)	36	39		

Note. *p<. 01.

The fourfold contingency table for the dimension of Honesty-Humility is presented in Table 4. Result indicated that for males the phi coefficient is +0.39, $X^2(1)=15.21$. It shows that the computed chi-square was higher than the critical X^2.=01; so, the computed PHI is significantly below the 0.01 level. For females the results indicate that the phi coefficient +0.32, $X^2(1)=13.5$. Thus the computed chi-square for females was higher than the critical X^2.01; so, the computed PHI is significantly below the 0.01 level. Table 4 shows that for males the relation between Honesty-humility and affective dreaming is high, whereas for females it is of medium strength. For both males and females there is a significant positive relation between Honesty-Humility scores and affective dreaming experience. Therefore, the higher the score on Honesty-Humility scale, the greater tendency to experience positive dreams.

The fourfold contingency table for the dimension of Altruism is presented in Table 5. Results indicate that for males the phi coefficient is -0.12, $X^2(1)=1.9$, whereas for females, the phi coefficient -0.1, $X^2(1)=1.32$. The relation between Altruism and affective dreaming is however not significant.

In summary, we had two main goals in the analyses to be reported. First, we tested whether there was significant sex differences in personality. Second, we sought to determine the relation between personality factors of the dreamer and reported positive or negative dreaming affect. Statistically, this was addressed using 2 x 2 contingency table for the test of association followed by chi-square to test the significance of the phi.

Discussion

Altogether, our results confirmed the relationship between personality factors and affective nature (positive or negative) of dreaming experience. Results also indicated that there was a significant sex difference in personality factors. The females scored more than males in terms of Emotionality, Honesty and Altruism; whereas, the males scored more in terms of Agreeableness which in accordance with those of Babarović and Šverko (2013).

Additionally, it was interesting to note that around 52% of females reported negative dreams. On the other hand, in contrast, approximately 40% of males reported negative dreams in this study. This can be supplemented by the study that women tend to report more negative affect than men (Fujita, Diener & Sandvik, 1991). The results of the correlation are found to be in accordance largely with our expected hypothesis.

Medium, but significant, negative correlation between Emotionality dimension scale and dreaming affective experience both for males and females was found. Thus, high scorers on the Emotionality factor scale, representing those who experience fear, anxiety, a need for emotional support in response to dangers, and stresses with empathetic and sentimental bonding, are more likely to experience negative dreams. The opposite is true for low scorers on the scale.

Similarly, a medium significant positive correlation between scores on the Agreeableness dimension scale and dreaming affective experience for males and females was found.

Thus, high scorers on the scale, which represents people who forgive easily, are lenient in judgment, are compromising and cooperating, and can control their temper with ease, are more likely to have positive dreams. There was a large positive correlation between scores on Honesty-Humility factor scale and dreaming affective experience for men, whereas for females the correlation was of medium size. Thus, high scorers on the scale which represent people who avoid manipulating others, feel lesser impulses to break rules, are not interested in luxuries, and does not feel privileged to elevated social status, which is likely to promote general well-being (Kelly, 2012), are more likely to encounter positive dreams. The opposite is true for low scorers on Agreeableness and Honesty-Humility factors. However, no significant correlation between Altruism scale and dreaming affective experience was found in males and females.

The nature of the findings can be supplemented with the fact that those scoring high on Emotionality scale, which is similar to the dimension of neuroticism from NEO-PI-R is more, likely on average to experience feelings of anxiety, anger, envy, guilt, and depressed mood (Matthews & Deary 1998). They also tend to respond more poorly to stress. Similarly, Agreeableness has been considered fundamentally important to psychological well-being, predicting mental health, positive affect, and good relations with others. Low scorers on this scale have been associated with narcissistic and anti-social tendencies (Costa & McCrae, 1992). To conclude, those who score high on the Emotionality dimension scale, low on Agreeableness scale and low on Honesty-Humility scale face more stresses in their waking life internally or externally. As Schredl (2003) reported, people suffering waking stress are more likely to experience negative dreams. Additionally, this group of people experience more negative emotions in their waking life and thus, the observation was also substantiated by the proposition of Hartmann (1991, 1998) who saw intense dreaming emotion as the representation of emotion in waking life, be it negative or positive. Lastly, the stresses and negative emotions in the waking life are likely to reduce the general wellbeing of one's life and that may further make them prone to have negative dreams (Zadra & Donderi, 2000).

Dreams which are probably a by-product of memory consolidation occurring during REM (Kavanau, 2000), may also reflect a biological process of long-term memory consolidation, serving to strengthen the neural traces of recent events, to integrate these new traces with older memories and previously stored knowledge, and to maintain the stability of existing memory representations in the face of subsequent experience (Winson, 1985, 2002, 2004; Kali & Dayan, 2004).

The connection between the personality factors and the affective nature of dreaming experience established in this study may thus point towards the possibility that our personalities influence the type of information being consolidated, which then influences the affective nature of dreams remembered. This possibility of personalities influencing the type of information being consolidated in turn makes it likely that a person with a negatively oriented personality factor(s) while dreaming may skew the waking time information towards a negative form during the consolidation process which in turn may lead to the selective storage of negative memories. This is likely to affect the person's cognitive and behavioral processes and can actually increase the negative life experiences, during waking life; including social interactions, as was observed by Selterman, Apetroaia, Riela, and Aron (2013). These negative experiences may cause distress and these information getting fuelled by the personality factor while consolidation and thus further exacerbating the vicious cycle.

Personality traits continue to change in middle and old age (Roberts, Helson, & Klohnen, 2002; Roberts, Walton, & Viechtbauer, 2006). It has been observed that people become more socially dominant, conscientious, and emotionally stable as they age. So, by putting our findings in this 'maturity principle' it can be predicted that with age as our personality orientation turns toward the more positive side the negative dreaming experience shows a relative decline. One study substantiates the

prediction, stating 'as age increases, anxiety in dreams decreases' (Winget, & Kramer, 1979).

This study was primarily limited by its sample size. Moreover, a large sample with more diversity would have benefitted our results. The study could have been expanded by including transgender persons (not just males and females). While on one hand we can interpret the relationship between personality factors and the affective nature of dreaming experience by saying that the personality factors significantly influenced the person's dreaming affective experience; on the other hand, it can be said that the personality factors of the individuals influenced the participant's choice of reporting the nature of the dream. Furthermore, it can also be said that the factors influenced participants' memory of pleasant or unpleasant dreams. So, further research in resolving the nature of the observed relationship is needed.

A great depth of information may have been obtained by studying the dreams of the participants over a period of time. This could have added important data and greater insight into the participants' dreaming experiences. Another possible modification of the study could have been taking into consideration individual life experiences of participants that could, in turn, have given us insight into how those experiences interact with the personality to influence dreaming affect. Further research may move in the direction of physiology, imaging techniques, and psychology of dreaming, which can expand our understanding of dreaming and whether dreams are regulated.

The significance of dreams and its influence in our waking lives cannot be overlooked. Specific dream content variables (such as number of characters appearing in early morning dreams) have been shown to have significant links with daytime mood (Kramer, 1993). Often the emotions associated with a dream persist throughout the day, thereby exerting their effects on mood and behavior during waking life (Kuiken&Sikora, 1993). From another perspective, many new ideas are based upon previously stored information. The fragments, or pieces and patches of the information that we acquire during our waking hours, consolidate while we are asleep and are bonded into representations that we later use to recall our personal experiences and helps us understand and act in the world. The probable influence of the orientation of personality factors, on the consolidation process while dreaming, can lead to the formation of organized patterns of thought or behavior we would be using in waking life the next day.

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