Effects of dreams on daytime mood: Socio-demographic and personality factors

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Summary. The continuity hypothesis of dreaming states that dreams reflect waking life, however, research has also shown that dreams can affect waking life, e.g., creativity, daytime mood. So far, factors that are associated with the effect of dreams on waking life have been rarely studied. Overall, 2492 persons (1437 woman, 1055 men) with a mean age of 47.75 ± 14.41 years participated in the study. The findings indicate that there is a continuity from dreaming to waking life, roughly 11% of the remembered dreams affect daytime mood. A variety of variables affected this effect of dreams on daytime mood: Nightmare frequency, attitude towards dreams, dream recall frequency, neuroticism, openness to experience used as a proxy for boundary thinness, gender, and age. This line of research can help to develop a descriptive model of how thematic content and emotions between dream consciousness and waking consciousness are linked – expanding the original continuity hypothesis. In addition to the further the understanding of the link between waking life and dreaming, more research into the question what individuals (females, high neuroticism scores) might suffer in a clinically significant way from their dreams affecting their waking life is needed.

Keywords: Dreaming, daytime mood, openness to experience, nightmare frequency, attitude towards dreams, continuity hypothesis

1. Introduction

The continuity hypothesis of dreaming states that dreams reflect waking life (Schredl, 2003). A large number of empirical studies support this notion that waking life is affecting dream content (overviews: Domhoff, 2022; Schredl, 2018), for example, music students dream more often about music than psychology students (Kern et al., 2014), sports students more about sports compared to psychology students (Erlacher & Schredl, 2004; Schredl & Erlacher, 2008), and dog owners dream more often about dogs that persons who never had a dog (Schredl, Bailer, Weigel, & Welt, 2020). Even though there are still a lot of unanswered questions, e.g., why do we have bizarre dreams, e.g., flying dreams (Hobson & Schredl, 2011), the empirical research shows that topics relevant to the dreamer in his or her waking life show up in subsequent dreams (Schredl, 2018).

If waking life affects dreams, the question naturally arises as to whether and how dreams influence waking life. And, indeed, research has shown that dreams can stimulate waking-life creativity (Barrett, 2001; Pagel & Kwiatkowski, 2003; Schredl & Erlacher, 2007), inform decisions in waking life (Olsen, Schredl, & Carlsson, 2020), encourage to contact a person in waking life one has dreamed about (Schredl & Göritz, 2022), and even can have very profound effects (life-changing) on the person's life (Hoss & Smith, 2017). This last type of dreams are also called "impactful" (Kuiken, Lee, & Northcott, 2023) and include existential dreams (e.g., increasing sensitivity to aspects of life usually ignored) or transcendent dreams (e.g., awakened spiritual potential).

The most frequently reported effect of dreams on waking life is their effect on daytime mood: Surveys indicate that 44% to 77% of the participants stated that dreams affected their mood at least twice a year (Kuiken & Sikora, 1993; Pagel & Vann, 1992; Schredl, 2000, 2009). Diary studies (Schredl & Reinhard, 2009-2010; Wasserman & Ballif, 1984) found that 11% to 35% of all remembered dreams can affect mood the next day. The most obvious factor explaining the effect of dreams on daytime mood is emotional intensity, that is, the more intense dreams are the more likely their effect on daytime mood (Barnes, Watkins, & Klotz, 2021; Mallett et al., 2021; Nixon, Robidoux, Dale, & De Koninck, 2017; Saez-Uribarri & Oberst, 2020; Schredl & Reinhard, 2009-2010; Sikka, Engelbrektsson, Zhang, & Gross, 2022). This can be seen for nightmares – defined as intense and distressing dreams – which can exhibit a very strong effect on waking life, e.g., affecting not only mood but also concentration and thoughts in general (Köthe & Pietrowsky, 2001; Pietrowsky & Köthe, 2003). If these negative effects on waking life are clinically relevant it can lead to the diagnosis of a nightmare disorder (American Academy of Sleep Medicine, 2023). A very specific effect of dreams on subsequent waking life was reported by Selterman, Apetroaia, Riela, and Aron (2014); romantic partners who dreamed of infidelity and/or jealousy experience less intimate feelings towards their partner the following day. Overall, research indicates that there is a continuity between waking life and dreaming in both directions, that is, waking life is reflected in dreams and dreams can affect waking life (Schredl & Reinhard, 2009-2010).

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Submitted for publication: January 2026
Accepted for publication: January 2026
DOI: 10.11588/ijodr.2026.1.114974

A research question that is also of clinical importance is whether there are inter-individual differences regarding the effect of dreams on waking life – in addition to the effect of emotional intensity of the dream. In the context of nightmares, Pietrowsky and Köthe (2003) reported that having thin boundaries correlated with the item measuring how strong daytime mood was affected by the nightmare. The boundary construct was formulated by Hartmann (1991) doing clinical work with nightmare sufferers; persons with thin boundaries are creative, sensitive, trust other persons too easily (thin interpersonal boundaries) but also show thin boundaries regarding different states of consciousness, e.g., experience more often in-between states, daydreaming and déjà vu. Therefore, the hypothesis that dreams might have a stronger effect on daytime emotions in persons with thin boundaries compared to persons with thick boundaries seems plausible. Indeed, this association was found for a scale measuring the general effect of dreams on daytime mood (Schredl, 2009). In addition a second personality dimension was identified, individuals with high neuroticism scores reported higher nightmare distress – even if nightmare frequency which is also related to neuroticism is statistically controlled – then individuals with low neuroticism scores (Schredl, 2021; Schredl & Göritz, 2019). The hypothesis is that persons who are already stressed in their waking life are more susceptible to the effects of dreams, especially negatively toned ones, on their daytime mood (Carr, Heymann, Lisson, Werne, & Schredl, 2022).

The study of Schredl (2009) found additional factors like dream recall frequency, nightmare frequency, and attitude towards dreams that were also related to the frequency of how often dreams affect daytime emotions. The effect of dream recall frequency on the frequency of dreams affecting daytime mood seems very plausible, as you have to recall dreams so they can affect daytime mood (otherwise morning mood could not attributed to dreams). The association with nightmare frequency is based on the above mentioned effect of emotionally intense dreams on daytime mood (Köthe & Pietrowsky, 2001). The association between attitude towards dreams and the frequency of how often dreams affect daytime emotions seems to be more complex. One might speculate that persons who are highly interested in dreams also think about possible meanings their dreams might have for them and try to understand them, thus dreams can have stronger effects on daytime mood in this persons (Schredl, 2009). However, research regarding inter-individual differences regarding the continuity of dreams affecting waking life with the exception of the Schredl (2009) study who investigated psychology students is still scarce.

The first aim of this study was to replicate the findings of Schredl (2009) in a population-bases sample that the frequency of dreams affecting daytime mood is associated with thin boundaries. As openness to experience is closely related to boundary thinness (r = .66 for the sum scores measuring these constructs; McCrae, 1994), we hypothesized that openness to experience is related to the frequency of dreams affecting daytime mood. Based on the nightmare research, we also hypothesized that neuroticism is related to the frequency of dreams affecting daytime mood as individuals with high neuroticism scores are more prone to the effects of negatively-toned dreams on their waking life (Carr et al., 2022). Exploratory analyses were carried out to test whether the other three Big Five personality traits (extraversion, agreeableness, and conscientiousness) might be related to the continuity between dreams and waking life.

2. Method

2.1. Participants

Overall, 2492 persons (1437 woman, 1055 men) participated in the study. The mean age of the sample was 47.75 ± 14.41 years (range: 17 to 93 years). Concerning educational level, 0.8% had no degree, 10.47% had 9 years of schooling, 28.33% had O-level (middle degree, "Realschule", about 10 years), 26.00% A-level ("Abitur"), 31.7% obtained a University degree, and 2.69% had a doctorate.

2.2. Research Instruments

Several items of the MADRE questionnaire (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014a) were included in this analyses. For eliciting dream frequency, a 7-point scale (coded as 0 = never, 1 = less than once a month, 2 = about once a month, 3 = about 2 to 3 times a month, 4 = about once a week, 5 = several times a week, 6 = almost every morning) was presented. The retest reliability of the scale was r = .85 (Schredl, 2004). In order to obtain units of mornings per week, the scale was recoded using the class means (0 → 0, 1 → 0.125, 2 → 0.25, 3 → 0.625, 4 → 1.0, 5 → 3.5, 6 → 6.5).

The overall emotional intensity was measured on a five-point scale (0= Not at all intense, 1 = Not that intense, 2 = Somewhat intense, 3 = Quite intense, 4 = Very intense). Five categories (-2 = Very negative, - 1 = Somewhat negative, 0 = Neutral, +1 = Somewhat positive, +2 = Very positive) were presented for measuring the general emotional tone of dreams. The retest reliability indices were r = .704 (emotional intensity) and r = .617 (overall emotional tone) (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014b). Attitude towards dreams was measured by six items; the items have a five-point format, e. g., "I think that dreaming is in general a very interesting phenomenon. (0 = Not at all, 1 = Not that much, 2 = Partly, 3 = Somewhat, and 4 = Totally). The attitude towards dreams score was derived as the mean of all six items. The inter-item consistency (Cronbach's alpha) was high: r = .910; the retest reliability also: r = .842 (Schredl et al., 2014b).

For eliciting nightmare frequency, an eight-point rating scale was presented ("How often did you experience nightmares recently (in the past several months)?") 0 = never, 1 = less than once a year, 2 = about once a year, 3 = about two to four times a year, 4 = about once a month, 5 = two to three times a month, 6 = about once a week, 7 = several times a week). The following definition was presented: "Nightmares are dreams with strong negative emotions that result in awakening from the dreams. The dream plot can be recalled very vividly upon awakening." The retest reliability of this scale was r = .765 (Schredl et al., 2014b). The "How often do your dreams affect your mood during the day?" item was of a similar eight-point format as the nightmare frequency scale with retest reliability of r = .729 (Schredl et al., 2014b). In order to obtain units in frequency-per-month, the scale was re-recoded using the class means (0 → 0, 1 → 0.042, 2 → 0.083, 3 → 0.25, 4 → 1.0, 5 → 2.5, 6 → 4.0, 7 → 12.0). The recoded values of the scale were solely for descriptive purposes and were not statistically analyzed.

Table 1. Dream recall frequency (N = 2,492)

Category	Frequency	Percent
Almost every morning	211	8.47%
Several times a week	638	25.60%
About once a week	498	19.98%
About 2 to 3 times a month	363	14.57%
About once a month	225	9.03%
Less than once a month	379	15.21%
Never	178	7.14%

The big five personality factors were measured with the German version of the NEO-FFI-30, which includes 30 Items (Körner, Drapeau, et al., 2008). Each personality factor (neuroticism, extraversion, openness to experience, agreeableness and conscientiousness) were computed as the sum score of the six corresponding items. The internal consistencies (Cronbach's alpha) of the five scales of the 30 item version were comparable to those of the 60 item version of the NEO-FFI and ranged from r = .67 (openness to experience) to r = .81 (neuroticism) (Körner, Geyer, et al., 2008).

2.3. Procedure

The participants completed the online survey between March 23, 2015 and April 8, 2015. The link of the study was posted on the online panel www.wisopanel.net. Within this panel, persons with an interest in online studies and with heterogenic demographic backgrounds are registered.

Statistical procedures were carried out with the SAS 9.4 software package for Windows. An ordinal regression was used for analyzing the effect of different predictors (the Big Five personality dimensions, several dream-related variables) on the frequency of how often dreams affect mood during the day controlled for age, sex and education. The variables were entered simultaneously. Effect sizes were computed based on formula published by Cohen (1988) using the website of Lenhard and Lenhard (2016).

3. Results

The distribution of the dream recall frequency scale is depicted in Table 1. More than 50% recalled dreams at least once a month. The averaged intensity of dream emotions was 2.21 ± 1.01 (N = 2,489). The mean emotional tone of dreams was balanced: -0.05 ± 0.76 (N = 2,488). The attitude towards dreams score was on average 2.40 ± 0.94 (N = 2,490). The distribution of nightmare frequency was as follows: Several times a week (3.53%), about once a week (5.14%), two or three times a month (9.43%), about once a month (12.56%), about two or four times a year (20.55%), about once a year (11.88%), less than once a year (17.50%), and never (19.42%).

In the analysis of the frequency of how often dreams affect daytime mood, participants with no dream recall (N = 178) were excluded. The distribution of this variable is shown in Table 2. About 8% of the participants reported frequent effects (once a week or more often) whereas the majority reported no or very rare (once a year or less often) effects of dreams on their daytime mood. The rough estimate of the percentage of dreams affecting daytime mood was derived as quotient between the mean frequency of how often dreams affect daytime mood per month (0.93 ± 2.21 per month; re-coded scale) in relation to the average number of recalled dreams per week (1.92 ± 1.96 per week, re-coded scale) and resulted in 11.15%.

Table 2. Frequency of how often dreams affect daytime mood (N = 2314)

Category	Frequency	Percent
Several times a week	69	2.98%
About once a week	114	4.93%
two or three times a month	205	8.86%
About once a month	239	10.33%
About two or four times a year	379	16.03%
About once a year	172	7.43%
Less than once a year	342	14.78%
Never	802	34.66%

The ordinal regression indicates that a variety of variables affect the frequency of how often dreams affect daytime mood (see Table 3). Nightmare frequency was the factor with the strongest association (medium effect size). Similar, the attitude towards dreams was related to the frequency of how often dreams affect daytime mood. As expected, dream recall frequency was a factor, that is, the more often a person recalls a dream the more likely it can affect daytime mood. Whereas intensity of dreams were related to the frequency of how often dreams affect daytime mood, the overall emotional tone was not (but one has to keep in mind that nightmare frequency was statistically controlled by entering it simultaneously into the regression equation). Younger persons and females reported higher frequencies of how often dreams affect daytime mood. Of the Big Five personality dimensions, neuroticism was most strongly related to the frequency of how often dreams affect daytime mood (small to medium effect size). Openness to experience and low conscientiousness showed also associations but with quite small effect sizes (see Table 3).

Table 3. Ordinal regression for the frequency of how often dreams affect daytime mood

Variable	SE	χ^2	p	Effect size
Age	-.0969	17.4	<.0001	0.175
Gender	.1016	19.0	<.0001	0.182
Education	.0186	0.7	.4027	0.035
Dream recall frequency	.1659	39.7	<.0001	0.265
Emotional intensity	.0798	9.0	.0028	0.125
Overall emotional tone	.0278	1.3	.2539	0.048
Attitude towards dreams	.3205	135.1	<.0001	0.499
Nightmare frequency	.3715	171.2	<.0001	0.568
Neuroticism	.2518	77.0	<.0001	0.372
Extraversion	.0031	0.0	.8988	0.006
Openness to experience	.0936	14.5	.0001	0.159
Agreeableness	-.0362	2.3	.1293	0.063
Conscientiousness	-.0598	6.1	.0136	0.103
	N = 2,303, R^2 = .4339			

Note. SE = Standardized estimates

4. Discussion

First, the findings indicate that dreams do affect daytime mood – as reported previously (Barnes et al., 2021; Mallett et al., 2021; Nixon et al., 2017; Saez-Uribarri & Oberst, 2020; Sikka et al., 2022), even though the percentage of persons whose waking mood is frequently affected by dreams is relatively small.

As predicted, openness to experience was related to the frequency of how often dreams affect daytime mood – comparable to the findings of Schredl (2009) using the boundary questionnaire. One has to keep in mind that this association was controlled for a variety of possible confounding factors, e.g., dream recall frequency which is related to openness to experience (Schredl & Göritz, 2017) and nightmare frequency which is also related to openness to experience (Schredl & Göritz, 2019). Even though the association was rather small, the question arises what mechanisms might underlie this relationship. One candidate might be the functionality of the default mode network as this functionality differs between high and low dream recallers with higher functionality is persons with high dream recall (Vallat, Nicolas, & Ruby, 2020). Default mode network functionality seems also be linked to openness to experience (Abu Raya et al., 2023). Future research applying brain-imaging techniques might be able to confirm the hypothesis that stronger effects of dreams on waking life might have a neurobiological basis. Interestingly, there is some evidence supporting the idea that boundary thinness modulates also the incorporation of waking-life events into dreams (Schredl, Kleinferchner, & Gell, 1996). Thus, studying boundary thinness and/or personality dimension closely related to boundary thinness like openness to experience within the context of the continuity hypothesis of dreaming and the effects of dreams on daytime mood seems very promising.

The second personality factor that was related to the frequency of dreams affecting daytime mood was neuroticism; this was predicted based on the hypothesis that individuals with stressful lives are more prone to the negative effects of dreams on their waking mood (Carr et al., 2022). One has to keep in mind that link between neuroticism and the frequency of dreams affecting daytime mood cannot simply explained by nightmare frequency which is higher in individuals with high neuroticism scores (Roland & Goossens, 2025) as nightmare frequency was statistically controlled. It seems more likely that dreams, especially negatively toned dreams, affect persons with emotional instability (being part of the neuroticism dimension) more strongly than persons with high emotional stability do.

The exploratory analysis showed that extraversion and agreeableness were not related to the frequency of how often dreams affect daytime mood. The small but significant negative correlation between the frequency of how often dreams affect daytime mood and conscientiousness might be explained by the thin boundary hypothesis as conscientiousness was negatively related with creativity in the meta-analysis of Feist (1998). Thus, it will be interesting to include trait creativity measures in future studies investigating the effect of dreams on waking life.

Similar to Schredl (2009), nightmare frequency and – to a lesser extend – the emotional intensity of dreams were related to the frequency of how often dreams affect daytime mood. This fits in with the previous findings (Barnes et al., 2021; Köthe & Pietrowsky, 2001; Mallett et al., 2021; Nixon et al., 2017; Saez-Uribarri & Oberst, 2020; Schredl & Reinhard, 2009-2010; Sikka et al., 2022). Given the strong association between the frequency of how often dreams affect daytime mood, nightmare frequency, emotional intensity, but also dream recall frequency underlines the importance of statistically controlling for these factors when studying the relationship between basic personality dimensions and dreams affecting daytime mood.

Another strong factor that was related to the frequency of how often dreams affect daytime mood was attitude towards dreams – again replicating the findings of Schredl (2009). One might speculate whether persons who are interested in the meaning of their dreams and taking their dreams more seriously than others are more susceptible for the effects of their dreams on their daytime mood. This would fit in the findings that specific beliefs about nightmares like “Nightmares contain clues to unconscious fears” are associated with increased nightmare distress (Schredl, Holyba, Köllmer, Körfer, & Proß, 2019), that is, in these persons nightmares exert a stronger effect on the distress associated with nightmares in waking life.

Lastly, two socio-demographic variables were also associated with the frequency of how often dreams affect daytime mood – after controlling for the big five personality dimensions, nightmare frequency, dream recall frequency and so on. Women tend to report higher frequencies regarding the effect of dreams on daytime mood; this would be in line with the finding that women are more distressed by their nightmares than men (Schredl et al., 2019). Explaining this gender effect warrants more sophisticated studies as variables that are associated with the frequency of how often dreams affect daytime mood and show gender differences like dream recall frequency which is higher in women (Schredl & Reinhard, 2008), nightmare frequency which is higher in women (Schredl & Reinhard, 2011), attitude towards dreams (Schredl et al., 2014b), and neuroticism which is also higher in women (Lynn & Martin, 1997) were statistically controlled in the present analysis. One possible variable might be the interest in dream interpretation which is more pronounced in women (Schredl, 2010; Schredl & Piel, 2008), that is, women tend to attach more meaning to their dreams than men.

The age effect is not easily explained as so many age-related dream variables, e.g., attitude towards dreams, dream recall frequency, and nightmare frequency (Schredl et al., 2014b), were statistically controlled. As for the gender difference regarding the frequency of how often dreams affect daytime mood, variables like attaching importance to dreams might play a role.

5. Limitations

First, it has to be noted that the present sample included persons with higher dream recall on average compared to representative samples (see Table 1 in Schredl et al., 2014b). As dream recall frequency was associated with the frequency of how often dreams affect daytime mood, one would expect a lower frequency of dreams affecting daytime mood in a representative sample. However, the full range of the scale values from never to several times a week were reported by the participants, and, thus, one can assume that the regression analysis results were not affected by the slight shift towards higher dream recall in the present sample. Another methodological issue is related to the retrospective measurement of the frequency of how often dreams affect daytime mood, that is, participants had to recall how often

dreams affect daytime mood – even if the dreams occurred some time ago. However, the rough estimate of 11% of remembered dreams that effect daytime mood is within the range reported by diary studies (Schredl & Reinhard, 2009-2010; Wasserman & Ballif, 1984). As it is on the lower side of this range, this might be interpreted as a possible underestimation of the frequency of how often dreams affect daytime mood. On the other hand, an enhancing effect of keeping a diary was reported for dream recall in general (Aspy, Delfabbro, & Proeve, 2015) and nightmare frequency (Zunker et al., 2015), thus, one might argue, that diary studies (Schredl & Reinhard, 2009-2010; Wasserman & Ballif, 1984) can overestimate the effect of dreams on daytime emotions. Methodological studies using questionnaires and diaries within the same sample might shed more light on the topic of under- and overestimation of dream variables, especially the frequency of how often dreams affect daytime mood.

6. Conclusion

The findings of the present study clearly implicate dreams affect daytime mood and, thus, can help to develop a descriptive model of how dream consciousness and waking consciousness are linked – expanding the original continuity hypothesis that only focused on the effect of waking life on dreams (Schredl, 2003). Schredl and Reinhard (2009-2010), for example, reported a second-order continuity effects, that is, dreams that were affected by waking life (rated by the dreamers themselves) are more likely to affect the mood of the next day; a finding that highlights the interaction between the two states of consciousness.

The present findings also indicate that that the frequency of how often dreams affect daytime mood is affected by personality factors like neuroticism and openness to experience – as a proxy for thin boundaries. On the one hand, this is important for developing a comprehensive model for understanding the continuity between waking consciousness and dream consciousness and, on the other hand, this also has clinical implications as some individuals, e.g., persons with thin boundaries or with high neuroticism scores, are more likely to suffer from a nightmare disorder with nightmares affecting waking life in a clinically significant way (American Academy of Sleep Medicine, 2023).

The association between dream recall frequency and the frequency of how often dreams affect daytime mood seems plausible, as low dream recall reduces that chance that remembered dreams can affect daytime mood (Schredl, 2009). Even though, one might speculate whether “white dreams” (Schredl & Basak, 2020), that is, the impression of heaving dreamed but not able to recall any explicit dream content might also effect daytime mood, however, empirical research in this area is lacking. The small effect of the intensity of dream emotions on the frequency of how often dreams affect daytime mood seems also plausible (cf. Schredl & Reinhard, 2009-2010), as stronger emotions can have a stronger after-effect. Interestingly, the overall emotional tone (a retrospective estimate) was not related to the frequency of how often dreams affect daytime mood, this underscores that positive and negative dreams can affect daytime mood (Schredl & Reinhard, 2009-2010).

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