

# Effect of Dreams on Daytime Mood: The Effects of Gender and Personality

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Even though dreams quite often affect subsequent waking life, the factors which might modulate this type of continuity are poorly understood. Overall, the findings in a sample of 444 participants showed that dream effects on daytime mood were reported by almost all persons to some extent (about 18% of the dreams affected daytime mood) and – as expected – the most influential factors were dream recall frequency, nightmare frequency, and the intensity of positive and negative dream emotions. In addition, thin boundaries and introversion were related to heightened frequency of dream effects on daytime mood. Longitudinal studies using dream diaries might shed light on the question as to whether and how dreams that affect daytime mood are processed by the waking mind (e.g., sharing the dream, thinking about the meaning of the dream) and whether it is beneficial for the dreamer to initiate such processes, even if the mood was negatively affected in the first place. (**Sleep and Hypnosis 2009;11(2):51-57**)

**Key words:** Dream content, daytime mood, dream recall frequency, thin boundaries, introversion

## INTRODUCTION

A large variety of studies in dream research focused solely on the effect of waking life on dream content (overviews: (1-3)), even though several studies (4-8) indicate that the reverse relationship, i.e., dreams affecting subsequent waking life, can also be encountered frequently. Similar to the findings supporting the continuity hypothesis of dreaming (9) which states that

waking life is reflected in subsequent dreams, these studies indicate that there is also a continuity between dreams and subsequent waking life. However, factors which might modulate this type of continuity are poorly understood.

The findings that nightmares exert a strong effect on waking life (10) might imply that dreams that are toned especially negatively affect waking life. The studies of Wasserman and Ballif (4) and Schredl and Reinhard (11), however, found that the effects of positive and negative emotions on daytime mood are equally pronounced. Wasserman and Ballif (4) and Pagel and Vann (5) found that women reported effects of dreams on daytime mood more often. Since dream recall frequency is also higher in

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women compared to men (12), these findings might simply be attributed to differences in dream recall. Indeed, in the study of Schredl (7) the significant gender difference in the frequency of dreams affecting daytime mood disappeared if dream recall frequency was introduced as a covariate. Similarly, the findings of heightened effects of dreams on daytime emotions in creative persons (13) might be an effect of dream recall which was also higher in this group (but not controlled for statistically).

Pietrowsky and Köthe (14) reported that nightmare sufferers with thin boundaries estimate the effect of nightmares on their daytime mood as being larger than do patients with thick boundaries. The large number of non-significant correlations and the small sample size limit the generalizability of this finding. Belicki (15) formulated the hypothesis that persons with poor adjustment are more distressed by their nightmares regardless their intensity. Schredl, Landgraf and Zeiler (16), however, found - as been previously reported - a strong relationship between neuroticism and nightmare frequency but not for the estimated effect of a single nightmare on daytime mood. I.e., persons with high neuroticism scores did not exaggerate the effect of the nightmare but simply experience nightmares more often. Overall, the research carried out hitherto did not answer the question as to what factors (gender, creativity, personality traits) might moderate the effect of dreams on waking mood.

The aim of the present study was to fill this gap and study the effects of gender, personality traits, creativity, current stressors, and intensity of dream emotions on the frequency of dream effects on daytime mood. It was predicted that dream recall frequency and the intensity of dream emotions would be positively related to the frequency of dream effects on daytime mood.

## METHOD

### Measurement instruments

#### Frequency of dream sharing and dream recall frequency

An eight-point rating scale to measure the frequency of dream effects on daytime mood was presented within a self-developed dream questionnaire ("How often do your dreams affect your daytime mood?" 0 = never, 1 = less than once a year, 2 = about once a year, 3 = about 2 to 4 times a year, 4 = about once a month, 5 = about 2 to 3 times a month, 6 = about once a week, 7 = several times a week). A similar eight-point scale ("How often do you experience nightmares?") was utilized to measure nightmare frequency. A specific definition for "nightmares" was not given to the participants. In order to obtain units in frequency-per-month, the scales were 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 scales were solely for descriptive purposes and were not entered into the statistical analysis.

Overall dream recall frequency was measured using a seven-point rating scale (0 = never, 1 = less than once a month, 2 = about once a month, 3 = twice or three times a month, 4 = about once a week, 5 = several times a week and 6 = almost every morning). The retest reliability of this scale for an average interval of 55 days is  $r = .85$  ( $n = 198$ ; (17)). 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).

#### Attitude towards dreams scale

The questionnaire measuring attitude towards dreams includes 25 five-point Likert items and was adopted from Schredl, Nürnberg and Weiler (18) and Schredl and Doll (19). A factor analysis was carried out in order to extract two factors: Items with direct

relationship to dream recall and items which measure general attitudes towards dreams (20). The internal consistency of the ten-item positive-attitude-towards-dreams scale was  $r = .784$  (20).

### Personality measures

The German version of the NEO-PI-R (21) comprises 240 five-point items (coded: 0 to 4) measuring the Big Five personality measures (neuroticism, extraversion, openness to experience, agreeableness and conscientiousness). The sum scores (48 items) can range from 0 to 192. The internal consistencies of the scales are high ( $r = .89$  to  $.92$ ) and confirmatory Multitrait-Multimethod analyses have replicated the findings of the English version (21).

The Absorption scale (subscale of Tellegen and Atkinson's personality inventory; (22)) consists of 34 Yes/No-items which measure the capacity for becoming absorptively involved in imaginative and aesthetic experience, e. g. "I can be greatly moved by eloquent or poetic language." Sum scores were computed. Since all absorption items were scored in one direction (Yes-answers), 32 unrelated items measuring other personality dimensions were included in the questionnaire (as was done in previous studies: e. g., (23)). The internal consistency of the German version amounted to  $r = .854$  ( $N = 51$ ; (24)).

The Boundary Questionnaire (25) which was translated into German by the Institute of Psychology, University of Zürich, Switzerland, includes 145 five-point scales covering 12 areas (e.g., sleep/dreams, unusual experiences, thought/feeling/mood, interpersonal relationships). The total score, reflective of boundary thinness, was derived by summing the ratings (ranging from 0 to 4) of 138 items, with item reversals when appropriate. The internal consistency of the German scale was  $r = .93$  ( $N = 152$ ), the same as reported by Hartmann (25) for the English version ( $r = .93$ ,  $N = 966$ ).

### Creativity/Fantasy

For measuring visual imagination, a subtest of the "Erfassungssystem Veränderter Bewusstseinszustände" (Test battery for altered states of consciousness; (26)) was applied. The internal consistency of the 18 five-point items is high ( $r = .92$ ; (26)). The scale assessing attitude towards creativity was developed by Schredl (27) and comprises 12 five-point Likert items. The internal consistency was  $r = .668$  (27). In addition, the participants were asked whether they are engaged in creative activities such as painting, playing an instrument, and/or doing needlework/handicraft in their leisure time. The items were included in the analyses as dichotomous variables (Yes/No). Lastly, a five-point Likert scale (1 to 5) for the subjective estimate of one's creativity was presented.

### Stress measures

Three instruments have been applied to measure the current stressors experienced by the subjects. The ATE-36 (28) assesses the occurrence of 19 negative events which are part of daily hassles, e.g., forgetting an important date during the last seven days. The second instrument (EBF-72/3; (29)) comprises 42 seven-point items which measure stress that may be present in several areas such as social interactions, emotional stress, etc. during the last three days. The global stress score was derived as the mean of the items. The Symptom-Checklist (SCL-90-R; (30)) with a retrospective interval of seven days was the third instrument of the present study. The General Severity Index (mean of all 90 four-point items) was included in the analyses. Sufficient reliability and validity for these measures have been demonstrated by the test authors (28-30).

### Dream diary

The participants kept dream diaries over a two-week period. If one or more dreams were

recalled in the morning, the participants were asked to record them as completely as possible and estimate the intensity of positive and negative dream emotions on two four-point scales (0 = none, 1 = mild, 2 = moderate, 3 = strong). Medians per diary were computed for up to five mornings with explicit dream recall since the participants were instructed to record their dreams for a maximum of five mornings.

### Procedure and Participants

Participants were recruited at the universities of Mannheim, Heidelberg and Landau for a study entitled "Sleep, dreams, and personality". They were paid for participating. Firstly, the three memory tasks were carried out. Then the questionnaires and the dream diary were given to the participants who completed the questionnaires and the diary over a two-week period and were then returned to one of the experimenters. Of 457 participants, 444 persons returned their materials. The sample thus included 444 persons whose mean age was  $23.5 \pm 5.7$  years. There were 376 women and 68 men who were mainly psychology students. The statistical analyses were carried out using the SAS 9.1 software package for Windows.

## RESULTS

### Frequency of dream effects on daytime mood

In Table 1, the frequency of the effect of dreams on daytime mood is depicted for the total sample. As a crude measure for estimating the percentage of dreams with an effect on daytime mood, the scales were recoded (see method section): dream recall: 2.80 mornings per week and 2.14 mornings per month for dreams that affect daytime mood. Thus, about 17.8% of the dreams had an effect on daytime mood. A significant gender difference of the dream effect on

**Table 1. Frequency of dream effects on daytime mood (N= 440)**

	Frequency	Percentage
never	38	8.6%
less than once a year	27	6.1%
about once a year	37	8.4%
about 2 to 4 times a year	83	18.9%
about once a month	94	21.4%
about 2 to 3 times a month	67	15.2%
about once a week	59	13.4%
several times a week	35	8.0%

daytime mood was found (women:  $3.91 \pm 1.93$  vs. men:  $3.01 \pm 1.92$ ,  $d = 0.48$ ,  $t = 3.5$ ,  $p = .0005$ ). Expressed in percentage of all recalled dreams, women reported that 18.7% of their dreams affected daytime mood, whereas the percentage for men was much smaller (11.9%).

### Correlations between dream effects on daytime mood and other variables

Gender and the dream variables like dream recall frequency, attitude towards dreams, nightmare frequency, intensity of positive and negative dream emotions were positively related to the frequency of dream effects on daytime mood (see Table 2). Neuroticism, openness to experience, thin boundaries, absorption, and imagination were also positively related whereas extraversion and conscientiousness were negatively correlated. Two of the five creativity measures were also related to the frequency of dream effects on daytime mood. The three stress indices were associated with heightened frequency of dream effects on daytime mood. Partialling out dream recall frequency yielded only small effects on the correlation coefficients.

### Regression analysis of dream effects on daytime mood

Overall, the regression analysis of the variables depicted in Table 2 (all entered simultaneously) explained 30.5% of the variance ( $R^2_{adj} = 0.305$ ,  $F = 8.7$ ,  $p < .0001$ ). Taking into account the intercorrelations

**Table 2. Correlations between influencing factors and dream effects on daytime mood**

	Dream effect frequency r=	Dream effect frequency (DRF) <sup>1</sup> r=	Regression analysis <sup>2</sup> t=
Gender (1 = f, 0 = m)	.165***	.139**	0.5
Age (yrs.)	-.092	-.047	-0.6
Dream recall frequency	.342***	---	3.8***
Attitude towards dreams	.370***	.315***	4.4***
Nightmare frequency	.375***	.301***	3.9***
Positive dream emotions	.098*	.057	2.5*
Negative dream emotions	.242***	.256***	2.6**
Neuroticism	.303***	.284***	0.3
Extraversion	-.110*	-.130**	-2.0*
Openness to experience	.208***	.143**	-0.6
Agreeableness	-.018	-.009	-1.3
Conscientiousness	-.138**	-.120*	-0.9
Thin boundaries	.368***	.320***	2.1*
Absorption	.290***	.243***	0.6
Imagination	.201***	.144**	-0.2
Attitude towards creativity	.095*	.090	0.3
Painting (Yes/No)	.111*	.086	0.5
Music (Yes/No)	.022	.014	-0.4
Handicraft (Yes/No)	.056	.043	0.6
Creativity (Self-rating)	.075	.070	0.1
Negative Events (ATE)	.258***	.276***	1.8
Global stress score (EBF)	.243***	.239***	0.0
Global stress (SCL-90R)	.244***	.261***	-0.8

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .00$ , <sup>1</sup>Dream recall frequency (DRF) partialled out  
<sup>2</sup>t-value of the statistical test of the regression coefficient is depicted.

between the influencing factors, the pattern of effects changed markedly compared to the simple correlations or partial correlations. All dream variables did show still a significant effect whereas only two of the other measures, introversion and thin boundaries were associated with dream effects on daytime mood.

## DISCUSSION

Overall, the findings showed that dream effects on daytime mood were reported by almost all persons to some extent and – as expected – the most influential factors were dream recall frequency, nightmare frequency, and the intensity of positive and negative dream emotions. In addition, thin boundaries and introversion were related to heightened frequency of dream effects on daytime mood.

The crude measure derived from the

frequency scales indicating that about 18% of the dreams affect daytime mood fits with the findings of diary studies (4, 11). Thus, the questionnaire scale approach used in the present study seems to be reliable and valid.

The balanced effects of positive and negative emotions on daytime mood are also in line with previous research (4, 11) but the present study also showed that nightmares – in contrast to “normal” dreams – have a strong effect on daytime mood (10). This seems plausible because nightmares are accompanied by awakening from sleep and very strong negatively toned emotions (31). The negative effect of current stress levels on the frequency of dream effects on daytime mood – seen in the simple correlations – is likely mediated by nightmare frequency (32) and thus no longer significant if nightmare frequency is statistically controlled (regression analysis).

The effect of dream recall frequency on the

frequency of dream effects on daytime mood is easy to understand: If no dreams are recalled there will be no effect. Interestingly, the data set indicates that there is a strong relationship between a positive attitude towards dreams and the effect of dreams on daytime mood. Since the attitude scale included items like "If I am very moved by a dream, I try to make sense of it." (20), one might speculate that persons try to figure out the meaning of dreams, especially when they affect daytime mood. It would be very interesting to study whether the persons who profess to this kind of thinking about dreams are helped in coping with the negative effects of nightmares (see above).

Similar to the study of Schredl (7), gender was not related to the frequency of dream effects on daytime mood if other variables were statistically controlled. The same was true for the influence of creativity measures, indicating that previous findings (5, 13) about the effects of gender and creativity should be interpreted with caution since dream recall frequency and other factors were not controlled.

Although most of the personality measures were related to the frequency of dream effects on daytime mood, the two most important ones - when taking into account the intercorrelations between all the measures in the regression analysis - are thin boundaries and introversion. This confirms the findings of Pietrowsky and Köthe (14) who reported that persons with thin

boundaries reported stronger effects of nightmares on daytime mood. The non-significant finding regarding neuroticism (regression analysis), on the other hand, support the hypothesis of Schredl, Landgraf and Zeiler (16) that persons with high neuroticism scores did not simply exaggerate the effects of their dreams on their waking life. The relationship between neuroticism and dream effects on daytime mood is again mediated by nightmare frequency (32). Interestingly, introversion is related to the frequency of dream effects on daytime mood whereas extraversion is related to the frequency of dream sharing (33). It would be interesting to study how often dreams that had affected daytime mood were shared with significant others and whether this has a beneficial effect for the dreamer.

To summarize, dreams often affect daytime mood in positive and negative ways. Longitudinal studies using dream diaries might shed light on the question as to whether and how dreams that affect daytime mood are processed by the waking mind (e.g., sharing the dream, thinking about the meaning of the dream) and whether it is beneficial for the dreamer to initiate such processes, even if the mood is affected negatively in the first place.

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