

# DREAMS and DREAMING

## The Effect of Dreams on Waking Life

Michael Schredl, Ph.D.

Although many studies have investigated the effects of waking experience on dream content, research on the effects of dreams on waking life is scarce. Similar to previous studies, a questionnaire approach was chosen. Overall, eighty-five participants were included in the study. The findings indicate that such effects, e.g. dreams influence daytime mood, dreams help to solve personal problems, occurred quite often. A factor analysis yielded three factors: a general factor including most items measuring the effect of dreams on waking life, a spontaneous reminiscence and a "social" factor (item "seeking contact to a person dreamed of"). Previously reported gender differences may be due to differences in dream recall frequency as found in the present study. Future studies should use diary measures to elicit the concrete dreams and their effect on waking life. (*Sleep and Hypnosis* 2000;5:263-267)

**Key words:** *continuity hypothesis, dream effects, gender differences*

### INTRODUCTION

Many studies have investigated the effect of waking experience, e.g., pre-sleep stimuli, stress, major life events, traumata, on dream content and have supported the so-called continuity hypothesis of dreaming, i. e. waking experience is reflected in dreams (Overviews: 1-3). On the other hand, systematic research on the effects of dreams on subsequent waking life is scarce, although a considerable amount of anecdotal evidence (4) indicates that dreams stimulate creativity in areas such as literature (e.g., Robert Louis Stevenson, Edgar Allan Poe, Steven Spielberg), art (e.g., Salvadore Dali, Henri Rousseau), music (e.g., Guiseppe Tartini) and science (e.g., Elias Howe, Nils Bohr). Nightmare research has shown that dreams with strong negative emotions affect daytime mood and can cause anxiety about falling asleep (e. g. [5]). In the following, empirical studies which have investigated the effects of dreams on waking life are reviewed.

Wasserman and Ballif (6) have investigated the causes which may influence morning mood. Fifty subjects kept a diary over 28 days. Forty percent of the sample

stated at least once that a dream was the major cause of the morning mood. The emotional tone produced in this way was balanced, i.e., dreams affected negative as well as positive emotions in the morning. The findings of Schredl and Doll (7), however, indicated that negative dream emotions affect morning mood to a larger extent than positive dream emotions.

A questionnaire survey (8) including 265 patients of a family practice medical clinic elicited different possible effects of dreaming on awake behavior (e.g., dreams affect emotions, dreams affect waking activity, dreams used for creativity). The percentages of persons who stated that the effect was experienced sometimes, often or always ranged from 19.3% (dreams affect decisions) to 33.2% (dreams affect waking life). A factor analysis of 9 items, which was not explained in detail, led to a reduction to 7 items (loading on one factor) and, thus, implicated the existence of a general factor. Pagel and Vann (8) pointed out that gender differences were present in their data, i.e., women reported dream effects more often than men. These comparisons, however, were not controlled for dream recall frequency which was also elevated for women. It seems obvious that the frequency of dream effects is strongly related to dream recall frequency. The correlation coefficients in this study (9) ranged from  $r = .12$  (dreams affect work) to  $r = .32$  (dreams affect emotions). Similar, the findings that dream use is more pronounced in filmmakers (10) must be interpreted with caution since dream recall fre-

From the Sleep laboratory, Central Institute of Mental Health, Mannheim, Germany.

Address reprint requests to: Michael Schredl, Ph. D., Sleep laboratory, Central Institute of Mental Health, P. O. Box 122120, 68072 Mannheim, Germany

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quency was higher in this group in comparison to the original sample ( $N = 265$ ) and this variable was not statistically controlled.

A factor analytic study (11) of 16 items measuring dream effects on waking thought and feelings revealed three factors: spontaneous reminiscence (e.g., dreams that remind one of the past), affective insight (e.g., dreams that influence daytime mood) and transcendent awareness (e.g. occurrence of precognitive dreams). To summarize, the findings clearly indicate that effects of dreams on subsequent waking life can be found in the normal population.

The present study investigated the frequency of dream effects on waking life in a normal population in order to compare these findings to the previous study of Kuiken and Sikora (11). The hypothesis was that effects of dreams on waking life occur quite often in a normal sample and that their frequencies are strongly related to dream recall frequency. Second, gender differences were tested with dream recall frequency statistically controlled. It was hypothesized that gender differences in dream effects will be not present if dream recall frequency is taken into consideration.

## METHODS

### Participants

The sample included 85 persons whose mean age was 30.0 – 11.5 yr. There were 53 women and 32 men who were students ( $N = 37$ ), employees ( $N = 32$ ) and trainees ( $N = 14$ ). There was a significant age difference ( $t = 2.0$ ,  $p = .0463$ ) between women (28.1 – 10.6 yr.) and men (33.2 – 12.4 yr.)

### Dream Questionnaire

The dream questionnaire is comprised of socio-demographic items (age, gender, occupation) and 19 items eliciting different aspects of dream experience.

**Table 1: Dream questionnaire items (frequency > twice a year)**

Variable	Kuiken & Sikora (1993)	Present study	Effect size $d =$
Something in the day reminds of your dream	64 %	72 %	-0.17
Deja vu experiences	76 %	49 %	0.57**
Dreams that change the way of life	29 %	24 %	0.11
Dreams that remind of the past	70 %	61 %	0.19
Dreams that make sensitive to previously ignored aspects of reality	44 %	44 %	0.00
Dreams that influence daytime mood	44 %	77 %	-0.69**
Precognitive dreams	45 %	20 %	0.54**
Seeking contact to a person dreamed of	31 %	39 %	-0.17
Dreams of a deceased person	35 %	21 %	0.31*
Dreams that help to solve a personal problem	32 %	44 %	-0.25
Dreams that give an artistic idea	20 %	28 %	-0.29*
Dreams that trigger an action in waking life	---	47 %	---
Talking about dreams	---	71 %	---

\*  $p < .05$ , \*\*  $p < .01$  (two-tailed)

Seven-point scales (0 = never, 1 = less than once a month, 2 = about once a month, 3 = twice or three times a month, 4 = about once a month, 5 = several times a week, 6 = almost every morning) were used to measure dream recall frequency, nightmare frequency and the frequency of how often dreams affect daytime mood. The other items regarding dream effects on waking life (cf. Table 1) were designed as six-point scales (0 = never, 1 = less than once a year, 2 = about once a year, 3 = twice to four times a year, 4 = about once a month, 5 = more than once a month). In addition, the overall emotional tone of dreaming (-1 = predominantly negative, 0 = balanced, +1 = predominantly positive), the emotional intensity of dreams (1 = not intense to 5 = very intense) and the subjective meaning of dreams (0 = low, 1 = medium, 2 = large) were elicited.

### Procedure

Participants were recruited on the campus or from the author's work setting. Participation was voluntary and unpaid. Since the scales were ordinal, either non-parametric procedures (e.g., Spearman-Rank-correlation) were applied or ranks were included in the analysis. To ensure simplicity in depiction, means and effect sizes (cf. [12]) were computed for the gender comparisons, although these coefficients were an approximation. To account for effects of covariates, covariate analyses (ANCOVA) with ranked data were carried out. The statistical comparison of effect sizes derived from percentages is described in Cohen (12).

## RESULTS

### General Aspects

In Table 1, the frequencies of the items measuring dream effects on waking life are depicted. A notable portion of the sample indicated that such effects were experienced at least twice a year; in particular the influ-

**Table 2: Factor analysis of items about dream effect**

Variable	Factor 1	Factor 2	Factor 3	Correlation to dream recall
Something in the day reminds of your dream	.40	.54	-.16	.496***
Deja vu experiences	.49	.34	-.41	.378***
Dreams that change the way of life	.78	.20	.04	.390***
Dreams that remind of the past	.26	.76	-.07	.401***
Dreams that make sensitive to previously ignored aspects of reality	.43	.69	.06	.449***
Dreams that influence daytime mood	.78	.06	.33	.520***
Precognitive dreams	.47	.31	.37	.306**
Seeking contact to a person dreamed of	.36	.06	.76	.323**
Dreams of a deceased person	-.12	.74	.39	.163
Dreams that help to solve a personal problem	.66	.27	-.05	.426***
Dreams that give an artistic idea	.78	.14	.14	.435***
Dreams that trigger an action in waking life	.79	.26	.13	.498***
Talking about dreams	.54	.30	.12	.647***

\* p < .05, \*\* p < .01, \*\*\* p < .001 (two-tailed)

**Table 3: Gender differences**

Variable	Women (N = 53)	Men (N = 32)	Effect size	ANCOVA 1
Dream recall frequency	4.34 – 1.51	3.28 – 1.42	0.72	F = 10.2**
Nightmare frequency	1.55 – 1.31	1.03 – 1.20	0.41	F = 4.0*
Overall emotional tone of dreams	0.00 – 0.81	-0.13 – 0.71	0.17	F = 0.3
Intensity of dream emotions	4.23 – 0.83	3.28 – 1.08	0.99	F = 16.3***
Meaningfulness of dreams	1.25 – 0.73	0.75 – 0.84	0.63	F = 7.4**
Something in the day reminds of your dream	3.53 – 1.45	2.47 – 1.68	0.68	F = 7.6**
Deja vu experiences	2.63 – 1.47	2.03 – 1.71	0.38	F = 1.3
Dreams that change the way of life	1.53 – 1.50	1.09 – 1.09	0.34	F = 0.9
Dreams that remind of the past	3.04 – 1.51	2.34 – 1.68	0.44	F = 3.4
Dreams that make sensitive to previously ignored aspects of reality	2.36 – 1.68	1.53 – 1.39	0.54	F = 6.1*
Dreams that influence daytime mood	2.55 – 1.79	1.34 – 1.62	0.71	F = 8.6**
Precognitive dreams	1.15 – 1.54	0.72 – 1.02	0.33	F = 0.1
Seeking contact to a person dreamed of	2.04 – 1.81	1.00 – 1.37	0.65	F = 5.4*
Dreams of a deceased person	1.43 – 1.42	1.06 – 1.22	0.28	F = 2.6
Dreams that help to solve a personal problem	2.43 – 1.91	1.59 – 1.50	0.49	F = 3.1
Dreams that give an artistic idea	1.53 – 1.55	1.41 – 1.52	0.08	F = 0.0
Dreams that trigger an action in waking life	2.47 – 1.79	1.81 – 1.65	0.38	F = 2.3
Talking about dreams	4.23 – 1.27	3.38 – 1.56	0.60	F = 7.9**

\* p < .05, \*\* p < .01, \*\*\* p < .001 (two-tailed); 1 ANCOVA (covariate age); 2 ANCOVA (covariates age, dream recall frequency)

ence on daytime mood (39% more than once a month) and talking about dreams (49% more than once a month) was often mentioned. Statistical comparisons with the findings of Kuiken and Sikora (11) revealed some differences. One has to consider, however, that the two samples were quite different regarding age distribution and occupation. The young adults in the earlier study reported *deja vu* experiences, precognitive dreams and dreams of a deceased person more often, whereas the present data showed a higher rate of persons who experienced dreams that affect daytime mood and dreams that inspire an artistic idea. Despite these differences, the overall pattern (e.g., dreams that change your life, dreams that make one more sensitive to previously ignored aspects of reality, dreams that remind one of the past) is comparable between the two studies.

**Factor Analysis**

The factor analysis (varimax rotation, eigen value > 1 criteria) of the items depicted in Table 1 yielded — similar to the results of Kuiken and Sikora's (11) study — a three-factor solution explaining 60.2% of the total variance (see Table 2). The first factor (32.5% explained variance) can be labeled as a general factor since all items which measure the effect of dreams on waking life (except "seeking contact to a person dreamed of") loaded high on this factor. The second factor (18.5%) can be labeled spontaneous reminiscence (like one factor of the Kuiken and Sikora study) since the items with high loadings measure remembering of something previously experienced. The last factor (9.3%) consisted of the item "seeking contact to a person dreamed of" and may be labeled as social aspect of dreaming. All items, except for the item "dreams of a deceased person", correlated substantially with dream recall frequency (see Table 2).

## Gender Differences

In the present sample, dream recall frequency differed considerably between women and men (see Table 3). Similarly, the majority of the other items showed higher averages for females, although some differences failed to reach significance. The effect sizes which were used as a rough estimate (see method section) ranged from about 0.5 (medium) to above 0.8 (large), except for the measures of emotional tone and effects of dreams on creativity. Since mean age was different for women and men (see participants section), age was statistically controlled to test gender differences. However, if controlled for dream recall frequency, the gender differences were no longer significant, merely the difference regarding emotional intensity of dreaming was still marked.

## DISCUSSION

The findings of the present study indicate that dreams affect waking life, not only in extraordinary and gifted artists and scientists (see introduction), but also in a normal population. The most frequent type of effect was the influence on daytime mood and the items of the factor "spontaneous reminiscence". One has to take into account that neither the sample of Kuiken and Sikora (11) nor the present sample was representative and, therefore, these findings can not be generalized in respect of frequencies of the dream effects on waking life. In contrast to the factor analysis of Kuiken and Sikora (11), the present analysis did not yield two factors (affective insight and transcendent awareness), but there was one general factor with high loadings of almost all items measuring dream effects and, therefore, combines the two separate factors. This seems to be comparable to the results of Pagel and Vann (8). The second factor "spontaneous reminiscence" found by Kuiken and Sikora (11) could be replicated. However, the items of these factor did not fit within a strict definition of dream effect on waking life. The third factor "social aspects of dreaming" is difficult to interpret and warrants further research. Overall, the findings of the factor analysis indicate the existence of a general factor

of dream effects and it will be very interesting to investigate the relationship of such a factor to personality measures such as thin boundaries (13) or openness to experience (14).

The gender differences found in the present data set were almost completely explained by the difference in dream recall frequency. I.e., the results of Pagel and Vann (8) and Pagel et al. (9) may also explained by differences in dream recall and, therefore, did not reflect a differing pattern in dream use. The relationships between dream recall frequency and the dream effect items were considerably stronger than those reported by Pagel and Vann (9). This may be explained by the use of relative categories (rarely, sometimes, often, always) in the earlier which are less exact than categories explicitly measuring frequency. The assumption of a gender specific pattern of dream effects was not supported by the present study. The finding that women reported higher levels of emotional intensity of dreaming was discussed controversially in the literature (cf. [15]), especially if dream content analysis methods were applied.

The questionnaire approach did not allow a very detailed determination of the dream effects on waking life which actually occurred. The next step will be diary studies carried out over several months at least which elicit the concrete effects of dreams on waking life (including the particular dream and the subsequent waking experience which was affected). In the view that dreams affect subsequent waking life to a considerable extent, the methods of dream incubation (e. g. [16]) or lucid dreaming (e. g. [17]) could gain in significance. By deliberate alteration of dream content (more positive dreams, dreams including solutions of personal problems), a positive effect on waking life should be achieved. The interesting question whether dreams are more efficient in stimulating waking behavior, e.g., creativity and problem solving, can be investigated by studies which compare the effects of dreams on waking experience following nights with dream recall with the effects elicited by short stories selected by the experimenter or something comparable. The research area addressed in the present article is still in its infancy.

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