

# Most recent dreams vs. diary dreams: A methodological note

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**Summary.** Dream content analytic studies rely on dream reports that can be obtained via different collection methods, e.g., REM sleep awakenings in the sleep lab, diaries, and eliciting the most recent dream. Whereas differences between lab and home dreams have been documented, systematic research regarding the differences between most recent dreams and diary dreams is scarce. The present analyses compared 169 most recent dreams and 410 diary dreams collected in independent samples with similar background (psychology students). The results clearly indicate that most recent dreams are more bizarre and include more intense negative emotions when compared to diary dreams. More research is warranted to increase the understanding what factors might contribute to the differences between most recent dreams and diary dreams.

**Keywords:** Most recent dreams, diary dreams, dream content analysis, dream emotions, bizarreness

## 1. Introduction

In order to conduct dream content analytic studies, researchers have to collect dream reports (Schredl, 2010). As there are different methods used to collect dream reports, the important methodological question is whether or not the specific collection method affects the characteristics and contents of dream reports and, thus, the findings of the study. After REM sleep was discovered (Aserinsky & Kleitman, 1953), the gold standard for collecting dream reports was to awaken individuals from REM sleep (or NREM sleep) and directly ask for any mentation that had occurred prior to the awakening; the recall rates are very high (more than 90% of the awakenings yielded dream report in young adults) and the experimental situation is very standardized – ideal conditions for research (Schredl, 2018). However, the findings indicated that this method also has its downsides as it affects dream content: 19.4% of laboratory dreams ( $N = 2464$  dreams) included references to the lab (lab setting, experimenter, electrodes, etc.) (Schredl, 2008) and, thus, do not reflect the typical home dream life of the participant. Moreover, laboratory dreams contained fewer aggressive and sexual interactions compared to home dreams (B. Domhoff & Kamiya, 1964; Weisz & Foulkes, 1970) and are overall less dramatic (Hall, 1966). This might be explained by effects of the lab setting itself, i.e., the participant knows s/he is monitored by another person (most often unfamiliar) sitting in the adjacent room and will be asked for dream reports several times throughout the night. This area of research was summarized as “home dreams are better” (B. Domhoff, 1969) if typical dream contents of individuals are

to be studied. However, carrying out dream diary studies in large samples requires a lot of resources, so G. W. Domhoff (1996) advocated the so-called “Most recent dream” approach: The participants are asked to report their most recent dream whether it was from the last night, the last week, or last month (see Appendix C). The advantages of this approach are obvious: the dream experience itself is not affected by the study procedures since the dreamer did not know at the time of the dream that s/he would be asked about it and, second, it is easy to obtain large dream samples in brief periods of time. On the other hand, the participant has to remember the dream – ideally as completely as possible. Research (Cipolli, Bolzani, Cornoldi, De Beni, & Fagioli, 1993; Meier, Ruef, Ziegler, & Hall, 1968; Trinder & Kramer, 1971), however, indicated that more intense and more bizarre dreams are more likely to be recalled a second time (first recall directly after awakening), i.e., findings based on most recent dreams might be biased. So far, systematic studies looking at differences in the characteristics of most recent dreams versus diary dreams are lacking.

The purpose of the present study was to compare most recent dream and diary dreams from two independent studies carried out in similar samples regarding emotional intensity and bizarreness. It was expected that most recent dreams would show more intense positive and/or negative emotions and would also be more bizarre.

## 2. Method

### 2.1. Participants

The most recent dream sample consisted of 169 individuals (125 women, 44 men) who were mainly psychology students with several exceptions (personal contacts of the experimenters). The mean age of the sample was  $22.72 \pm 5.97$  yrs. The diary sample is a subgroup of previously published studies (e.g., König & Schredl, 2019) and included 410 individuals (348 men, 62 men), also mainly psychology students with a few additional persons recruited by the experimenters separately. The mean age of this group was  $23.20 \pm 4.84$  yrs.

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## 2.2. Most recent dream form

The most recent dream form is a German translation of the instructions formulated by G. W. Domhoff (1996; Appendix C). First, the participant was asked to record the date of the dream which allowed computing the number of days between having had the dream and recording it. The dream was to be described as exactly and fully as possible, including the setting, the people including their sex and familiarity, the emotions, and the dream actions.

## 2.3. Dream diary

The dream diary should be kept for 14 consecutive days. If the participant was able to recall at least one dream, she or he was asked to record his or her dream(s) as completely as possible. To minimize the workload for high dream recallers, participants were asked to record their dreams only on the first five mornings with successful dream recall. If more nights with dream recall occurred, they were asked to complete the checklist just eliciting whether they had recalled a dream or not without recording the dream(s).

## 2.4. Dream content analysis

The dream content analytic scales used in this study were adopted from Schredl, Paul, Lahl, and Göritz (2010-2011): realism/bizarreness (1 = realistic to 4 = two or more bizarre elements within the dream) and positive and negative emotions (two four-point scales: 0 = none, 1 = mild, 2 = moderate, 3 = strong). The interrater reliabilities of these scales were satisfactory,  $r = .765$  (realism/bizarreness),  $r = .642$  (positive emotions), and  $r = .825$  (negative emotions) (Schredl, Burchert, & Grabatin, 2004).

## 2.5. Procedure

Within the two independent studies, participants completed the most recent dream forms or the dream diaries, i.e., the samples do not overlap. The dream reports were typewritten, randomized, and coded by an external judge regarding the scales described in the "Dream content analysis" section. All mornings with multiple dream reports per night were excluded, reducing the sample size slightly compared to previous studies with this sample. Moreover, for the present analysis, only the first dreams recorded by the participants in the diary were included as there was a decrease of dream length (measured as word count) even within the two-week period.

Statistical procedures were carried out using the SAS software package 9.4 for Windows. Parametric and ordinal regressions were used to analyze the effect of the dream

collection method. Age and gender were included as possible confounders. The word count variable was transformed (square root transformation) and used as an additional variable in the regression analyses of the dream content analytic variables.

## 3. Results

The means and standard deviations of the dream variables for each group are depicted in Table 1. The average number of days between recording the most recent dream and its occurrence was  $17.10 \pm 66.79$  days (range: 0 to 600 days). There was a significant increase in the intensity of negative emotions with time, i.e., less recent dreams were more negative. The intensity of positive emotions decreased with time, however, only marginally significantly.

The parametric regression analysis for word count (transformed values were analyzed) showed no age effect ( $\beta = -.0612$ ;  $t = -1.5$ ;  $p = .1433$ ) and a significant gender effect ( $\beta = .1023$ ;  $t = 2.4$ ;  $p = .0153$ ) with women reporting longer dreams than men. Moreover, diary dreams were longer (marginally significant) than most recent dreams ( $\beta = -.0734$ ;  $t = -1.8$ ;  $p = .0783$ ; effect size = 0.248). Most recent dreams were more bizarre (effect size = 0.234) and included more intense negative emotions (effect size = 0.552) than diary dreams; no difference was found for the intensity of positive emotions (see Table 2). All dream content analytic variables were associated with dream length, i.e., longer dreams were more bizarre and included more emotions. Men reported more bizarre dreams than women. In an exploratory analysis, only the 31 most recent dreams that occurred in the morning of the collection (time interval = 0) were compared regarding the intensity of negative dream emotions with diary dreams (similar regression analysis as depicted in Table 2); the difference was also significant (standardized estimate = .1343,  $\chi^2 = 7.6$ ,  $p = .0057$ ).

## 4. Discussion

Overall, the findings clearly demonstrated that dream reports elicited using the most recent dream approach differ from diary dreams, i.e., the most recent dreams were more bizarre and included more negative emotions.

The strength of the study was that both samples – even though independently recruited – were very similar regarding their background (psychology students, predominantly female, age range). One could argue that a cross-over design (all participants keeping a diary and reporting a most recent dream) might be problematic as the recording within one approach might affect the recording within the second approach, i.e., individuals that kept a diary might be tempt-

Table 1. Dream variables for the most recent dream sample and the diary sample

Variable	Most recent dream sample (N = 169)	Dream diary sample (N = 410)	Correlation to time interval between dream occurrence and dream recording <sup>1</sup> (N = 158)
Dream length (word count)	117.39 ± 104.40	138.25 ± 112.19	-.093 (p = .2774)
Bizarreness	2.27 ± 0.93	2.10 ± 0.73	.077 (p = .1685 <sup>2</sup> )
Positive dream emotions	0.60 ± 0.88	0.54 ± 0.81	-.132 (p = .9502 <sup>2</sup> )
Negative dream emotions	1.49 ± 0.98	1.02 ± 0.89	.157 (p = .0242 <sup>2</sup> )

<sup>1</sup>Spearman Rank correlations, <sup>2</sup>one-tailed

ed to record one of the diary dreams as most recent dream because the dream recording improved the memory for this dream.

Most recent dreams are more bizarre and include more intense negative emotions than diary dreams – this would be expected according to classical memory theory (Baddeley, Eysenck, & Anderson, 2020). Interestingly, the effect of negative dream emotions were also found for dreams from the previous night; recording a dream immediately upon awakening seems different to recording a dream later during the day – as only emotionally intense dreams might “survive”. This line of thinking was supported by the correlation between time interval and intensity of negative emotions, i.e., the longer ago the dream was, the more intense are its negative emotions. The lack of effect regarding the intensity of positive emotions might be explained by methodological issues as externally rated emotions based only on the dream report tend to underestimate the emotions the dreamer experienced subjectively, especially the positive ones (Röver & Schredl, 2017; Schredl & Doll, 1998; Sikka, Valli, & Revonsuo, 2014). Another explanation might be that keeping a dream diary might increase dream recall (Aspy, 2016; Schredl, 2002), especially recall of more mundane dreams.

An interesting aspect is the question as to whether the most recent dream was previously shared with another person, e.g., partner, or recorded – within samples of psychology students almost every individual had shared dreams (Schredl & Schawinski, 2010) and almost 50% had already recorded dreams (unpublished data of the author). One might speculate that these dreams are more easily recalled in the experimental situation asking retrospectively for dream reports. As dream sharing is governed by different motivations, e.g., relief in case of nightmares, entertainment in case of unusual, bizarre dreams (Curci & Rime, 2008; Ijams & Miller, 2000), one might speculate that reporting dreams already shared as most recent dreams might contribute to the difference between most recent dreams and diary dreams.

To summarize, the methodological study indicates that most recent dreams differ from diary dreams regarding bizarreness (small effect size) and intensity of negative emotions (medium effect size). That is, results obtained from most recent dream studies, e.g., regarding the ratio of positive and negative dream emotions (cf. Schredl & Doll, 1998), should be viewed with caution. More research is warranted to increase the understanding what factors might contribute to the differences between most recent dreams and diary dreams.

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Table 2. Ordinal regression for dream content analytic variables

Variable	Dream bizarreness			Positive dream emotions			Negative dream emotions		
	SE	χ <sup>2</sup>	p	SE	χ <sup>2</sup>	p	SE	χ <sup>2</sup>	p
Age	.0101	0.1	.8190	.0175	0.1	.7074	.0283	0.4	.5073
Gender (1 = f, 0 = m)	-.1118	6.2	.0130	-.0539	1.3	.2465	.0352	0.7	.7164
Word count (SQRT)	.5033	104.1	<.0001	.1223	7.1	.0079	.2439	31.1	<.0001
Most recent dreams vs diary dreams	.1242	7.8	.0027 <sup>1</sup>	.0343	0.5	.2308 <sup>1</sup>	.2650	36.9	<.0001 <sup>1</sup>

SE = Standardized estimates , <sup>1</sup>one-tailed

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