

Nightmare frequency and nightmare topics in a representative German sample

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Abstract Nightmares are defined as disturbing mental experiences that generally occur during REM sleep and often result in awakening. Whereas the number of publications addressing nightmare frequency and psychopathology, nightmare etiology and treatment is increasing rapidly in the last few years, nightmare content has been studied very rarely in a systematic way, especially in adults. The present study investigated nightmare frequency and the frequency of various nightmare topics in a representative German sample. The five most common themes were falling, being chased, paralyzed, being late, and the deaths of close persons. Even though several effects can be explained by the continuity hypothesis of dreaming, further research is needed to investigate the possible metaphoric relationship between nightmare topics like falling or being chased and waking-life stressors.

Keywords Nightmares · Gender differences · Continuity hypothesis

Introduction

Nightmares are defined as disturbing mental experiences that generally occur during REM sleep and often result in awakening (ICSD-2; AASM [1]). Whereas earlier classification systems focused on fear as the predominant affect in nightmares (DSM-VI, APA [2]), several studies [6, 20, 36] indicated that fear is present in most nightmares (about 80–85%) but other emotions like anger, rage, embarrassment,

disgust, and sadness are also important. Nightmare complaints are quite frequent in the normal population: In representative samples, about 5% of the adults stated that they suffer from nightmares [4, 14, 19, 32]. Whereas there has been a considerable amount of studies correlating nightmare frequency with various measures of psychopathology (overview: [31]), theoretical papers addressing nightmare etiology [17, 30], and clinical trials for evaluating nightmare treatment strategies [16], nightmare content has been studied very rarely in a systematic way, especially in adults. For children, Garfield [8] analyzing 158 nightmares reported that the most common themes were: being chased (49%), sensing something scary (18%), injury/death (17%), losing something (5%), falling (3%). In another content analytic study ($N = 381$ dreams), Schredl and Pallmer [26] obtained comparable results: being chased (42%), sensing something scary (20%), deaths/injuries of significant others (20%), and falling (11%). Other topics like examinations (3%), natural disasters (4%), or war (5%) occurred less often.

For adults, three studies [6, 13, 15] elicited nightmare content in small clinical samples (sample sizes varied from 30 to 38, the mean ages of the samples were about 35 years). The four most prominent themes in the Kales et al. study were fear of attack (73%), fear of falling (73%), fear of death (60%), and choking/suffocation (30%). The nightmare topics in the sample of Dunn and Barrett [6] were distributed as follows: being chased (72%), deaths of family/friends (64%), falling (53%), own death (39%), threatening animals/monsters (33%), and violent destruction scenes like war, natural disasters (24%). The nightmare sufferers in the Hearne [13] study reported other themes to be most prominent in their nightmares: witnessing horror/violence (32%), experiencing attack/danger (29%), flight (13%), sinister presence (13%), being late (5%), suffocation (3%), hallucinated creatures (3%), and

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being paralyzed (3%). The most detailed study was carried out by Zadra et al. [35] analyzing 125 nightmares reported by 125 women (mean age: 32 years) who kept a dream diary, one dream per participant. The thematic analyses yielded the following distribution of nightmare topics: physical aggression (26%), ominous mood (12%), failure/helplessness (10%), interpersonal conflicts (9%), and being ignored or rejected (6%). Other themes occurring 5% or less included being chased but not caught, presence of demons, frightening insects or spiders, health problems or concerns, being stuck or trapped, and accidents.

Summarizing the results while keeping in mind that the methodological approaches and samples have been very different, the main topics seem to be being chased, injury/death of others, falling, and witnessing violence. Due to small sample sizes and limited age ranges, systematic studies of age and gender effects have not been carried out for adult nightmare topics.

The aim of the present study was to fill this gap and to investigate the frequency of various nightmare topics—in addition to nightmare frequency—in a representative sample. Furthermore, the effects of socio-demographic factors like age, gender, educational level, socio-economic status, and marital status on nightmare frequency and the frequency of the different nightmare topics were studied. As the study is mainly descriptive in nature, no specific hypotheses were formulated.

Method

Measurement instruments

For eliciting nightmare frequency, a seven-point frequency scale (coded from 0 = never, 1 = very rarely, 2 = several times a year, 3 = about once a month, 4 = about once in 2 weeks, 5 = about once a week, 6 = several times a week) was used in the study. The following nightmare definition was given: strongly negatively toned dreams with fear or panic resulting in immediate awakening.

A subsample (persons who reported nightmares and negatively toned dreams at least several times per year) was asked whether specific nightmare topics have occurred repeatedly (multiple answers were possible). The introduction to the question was as follows: “Most people can remember their dreams. If you think about your own dreams which of the following topics have you experienced within your own dreams repeatedly”. The order of the list with 23 topics (cf. Table 3) was random, i.e., each participant had a differently ordered list. The following socio-demographic variables were included in the study: age, gender, education (five levels: “Hauptschule” (9 years), “Hauptschule und abgeschlossene Berufsausbildung”

(9 years plus apprenticeship), “Realschule” (10 years), “Abitur” (13 years). “Abitur mit abgeschlossenem Studium” (13 years plus university degree)), social class (5 levels based on the total income of the household, the educational level, and the profession of the head of the household), and marital status (married/living with partner, single/living without partner).

Participants and procedure

Overall, a representative sample of 2,019 persons (1,135 women, 884 men) was drawn from German households that include persons over 14 years of age. The study was carried out by GfK Marktforschung, Nürnberg, Germany and financed by Wort & Bild Verlag, München, Germany. The quota sample was representative for the German population. About 500 interviewers in different locations all over Germany (representative for the 16 German counties and the variety of place of residence sizes) received a list of randomly generated combinations of the several stratification criteria (age, gender, marital status, and occupation of the head of the household). The participants were selected by the interviewer. For a detailed discussion of the pro and cons of this sampling method see Noelle-Neumann and Petersen [18]. The nightmare questions were part of a multi-topic survey mainly focused on the evaluation of consumer products of different brands.

The mean age of the sample was 46.4 years ($SD = 16.9$). The range varied from 14 years to 92 years. The age group of persons younger than 35 years comprised 25.1% of the sample and 17.6% of the participants were 65 years old or older. There are 1,274 participants who were married or living with a partner, 745 were single or living without partner. Participants were interviewed at home, filling out the questionnaire on a computer after being instructed by the interviewer.

Results

Nightmare frequency

The distribution of the nightmare frequency scale results is depicted in Table 1. Overall, 2.4% of the participants reported a frequency of one nightmare per week or more often. Adding the participants reporting nightmares every 2 weeks, the percentage increased to 4.7%. The large majority of the sample (80%) stated that nightmares occur very rarely or never. Of the socio-demographic variables included in the logistic regression analysis simultaneously, only gender was significantly associated with nightmare frequency, i.e., women reported higher nightmare frequencies than men (see Table 2).

Table 1 Frequency of nightmares ($N = 2,019$)

Categories	Frequency	Percentage (%)
Never	851	42.2
Very rarely	769	38.1
Several times a year	217	10.8
About once a month	87	4.3
About every other week	46	2.3
About once a week	37	1.8
Several times a week	12	0.6

Table 2 Logistic regression of nightmare frequency ($N = 2,019$)

Variable	χ^2	Prob.
Age	0.0	.9230
Gender	19.9	<.0001
Social status (married vs. single)	0.9	.3441
Education	1.0	.3119
Socio-economic status	1.5	.2155

Nightmare topics

The frequency of the nightmare topics are presented in Table 3. This table is based on a subsample of participants reporting nightmares and negatively toned dreams at least several times per year (1,022 persons: 623 women, 399 men). The mean age was 45.9 ± 17.1 years. The five most common themes were falling, being chased, paralyzed, being late, and death of close persons.

For the effects of socio-demographic factors on the occurrence of nightmare topics, several strong effects were found for age, some for gender, and very little or none for education level, social status, and social class (see Table 3). Several topics, including horror films, examinations, disgracing oneself, quarreling/separation (spouse), loss of job, sexual harassment, and being late, decreased with age. Women tended to report nightmare topics such as sexual harassment, close persons disappearing/dying, and teeth/hair falling out more often, whereas physical aggression, loss of job, and war/terror were reported less often in comparison with men (see Table 4). Interestingly, the occurrence of examination dreams was associated with higher education levels.

Discussion

Overall, the findings of the present study indicate that frequent nightmares were reported by about 5% of the participants; a figure which is comparable to other representative studies [4, 14, 32]. Since these studies asked about suffering from nightmares, one might estimate the

frequency cutoff of nightmares occurring every 2 weeks to be experienced as distressing. Whereas age effects (decline of nightmare frequency with age) were reported by Franke [7] and Salvio et al. [21], age was not related to nightmare frequency in this representative sample. From a methodological view point, the present study had the advantage that the concept of nightmare was clearly defined (distressing dreams with awakening) and thus differentiated from bad dreams without awaking (cf. [34]). It cannot be ruled out, however, that the given definition which not included explicitly the recall criteria might be interpreted by the participants in a way to include night terrors (NREM parasomnia that is rare in adults; [1]). In a recent large-scaled study, Schredl et al. [25] using self-ratings and parental questionnaires found that a possible confusion of these two parasomnias did not strongly affect the prevalence rates of nightmares (bias less than 10% of the prevalence rate). The generally formulated question did not differentiate between idiopathic and posttraumatic nightmares. Since Schredl and Piel [29] reported that war-related dreams are still common in Germans older than 65 years due to World War II experiences, this might be an explanation that no decrease of nightmare frequency with age was found in this sample. To clarify this hypothesis, future surveys should elicit frequency of posttraumatic nightmares separately. As diary studies yielded higher prevalence rates for nightmares in student samples the retrospective estimates of nightmare frequency [34], it will be very interesting to use daily logs in a representative sample. The gender difference that women report more nightmares than men has been often reported in the literature [17]. Another methodological issue is the sampling technique of the present study. It was not a randomly selected sample but as the main focus was not on nightmares one might assume that persons prone to nightmares are not overrepresented. Using this technique it is not possible to give rejection rates because the interviewers selected the participants individually. If someone rejected to participate, it seems very unlikely that it was because of not wanting to be questioned about nightmares. Additional large-scale studies are necessary to determine the effect of socio-demographic variables on nightmare frequency.

Regarding nightmare topics, the findings of the present study support previous findings that falling, being chased, and the dying of close persons are common nightmare themes. But the variety of topics is very large. The present findings, however, should be complemented by a content analytic study because, in the present study, the participants were asked for recurrent nightmare topics and the distribution might be different if single nightmare reports stemming from a large sample and, preferably, a long data collection period were analyzed. One might hypothesize that the frequency of falling dreams which reflect very

Table 3 Nightmare topics and effects of socio-demographic variables (logistic regression analyses)

Dream themes	Total (%) (<i>n</i> = 1,022)	Age effect	Gender effect	Education	Social status	Social class
Falling	39.5					*
Being chased	25.7					
Paralyzed	25.3					*
Being late (important event)	24.0	—*				—*
Close persons disappear/die	20.9		*			
Horror films	18.9	—***				
Unable to complete a task	17.3					
Examination	12.7	—***		**		
Threatening surroundings	12.5					
Being attacked physically	12.1		—*			
Disgracing oneself	11.1	—***				
Quarrel/separation (spouse)	10.5	—***				
Car or plane crash	10.4					
Threatening animals	10.1					*
Disaster (earth quake, tidal wave)	9.9					
Dying	8.0					
Workplace bullying	7.5					
Loss of job	7.5	—***	—*			
Teeth/hair falling out	7.4		**			
War/Terror	6.9		—*			
Offended by boss	6.1					
Sexual harassment	3.5	—***	**	—*		
Children taken away	3.5					

* $P < .05$, ** $P < .01$, *** $P < .001$, — (opposite direction)

Logistic regression with socio-demographic variables (depicted) and nightmare topics

intense anxiety might be overrated if retrospectively elicited. A considerable bias of retrospective measures eliciting dream content has been reported, especially for low dream recallers [3, 22]. A diary study that also measured the time of the night the nightmare occurred will help to differentiate whether some “nightmare” topics such as falling or being paralyzed are related to other sleep phenomena like sleep-onset jerks (myoclonia) or sleep paralysis [1] even if it is presumably a very rarely occurring confusion because these phenomena are rarely attributed as “dreams”.

Whereas nightmare frequency is clearly related to the occurrence of current stressors in daily life (cf. [5, 23]), the question as to whether specific nightmare topics correspond to specific waking-life stressors has not been addressed in a systematic way. Based on the continuity hypothesis of dreaming which states that dreams reflect waking life [24], Schredl et al. [27] found that adolescents with high examination anxiety scores reported more often that examination dreams are their worst nightmares. Several of the gender differences and age effects of the present study also seem plausible in view of the continuity between waking and dreaming. For example, the decrease of

examination dreams or loss of job dreams with age can be expected as older persons do not take exams very often any longer and have permanent jobs more often. Several of the gender differences, i.e., men reporting more physical aggression, more war topics, and work-related topics fit in with previous dream studies [9, 26, 28]. Schredl and Piel [28] found that women reported dreams of deceased persons more often and related this difference to the importance women generally attribute to interpersonal relationships in waking life. This might also be reflected in higher percentage in women of nightmares where close persons die or disappear. The decrease of war-related dream topics in representative samples obtained in Germany from 1956 (20%) to 2000 (10%) also supports the continuity hypothesis since the percentage of persons without war experiences steadily increases [29]. The effect of waking life on nightmares can also be observed in trauma-related nightmares in patients suffering from post-traumatic stress disorder [33].

Whereas the framework of the continuity hypothesis offers plausible interpretations of some effects found in this study, other nightmare topics like falling, being chased, or

Table 4 Nightmare topics and effects of socio-demographic variables (logistic regression analyses)

Dream themes	Women (%) (n = 623)	Men (%) (n = 399)	Gender effect
Falling	41.3	36.8	
Being chased	26.7	24.3	
Paralyzed	25.7	24.8	
Being late (important event)	24.7	22.8	
Close persons disappear/die	23.9	16.3	*
Horror films	19.1	18.6	
Unable to complete a task	18.8	15.0	
Examination	12.8	12.5	
Threatening surroundings	11.5	14.0	
Being attacked physically	10.4	14.8	—*
Disgracing oneself	11.2	10.8	
Quarrel/separation (spouse)	11.2	9.3	
Car or plane crash	9.3	12.0	
Threatening animals	10.4	9.5	
Disaster (earth quake, tidal wave)	9.6	10.3	
Dying	8.5	7.3	
Workplace bullying	8.2	6.5	
Loss of job	6.1	9.8	—*
Teeth/hair falling out	9.6	4.0	**
War/terror	5.5	9.0	—*
Offended by boss	5.5	7.0	
Sexual harassment	5.0	1.3	**
Children taken away	4.5	2.0	

* $P < .05$, ** $P < .01$,
 *** $P < .001$, — (opposite
 direction)

Logistic regression with socio-demographic variables age, gender, level of education, social status, and social class (gender depicted) and nightmare topics

being paralyzed (the three most common themes) do not have direct correspondences to waking-life experiences. Harris [10], for example, associated the occurrence of falling dreams with the fear over loss of love or support during childhood. Garfield [8] listed such metaphorical analogies for several nightmare topics (see Table 5). These correspondences are based on the idea that a dream does not merely reflect the images of waking life but also focus on the waking-life emotions and even exaggerate them. For example, a monster chasing you in a dream might reflect a daytime fear of a particular task lying ahead and that one wishes to avoid. Hartmann et al. [12] reported dreams of tidal waves (corresponding to the feeling of being overwhelmed) more often in persons who recently experienced a trauma. Currently, the suggestions of Garfield [8] are working hypotheses that can be—and that is their advantage—tested empirically. In addition to eliciting nightmare content, the participants should be asked about the occurrence and nature of current waking-life stressors, especially the experienced emotions. In view of the large variety of nightmare topics, it is necessary to study a large sample. Keeping in mind that nightmare frequency is not only affected by stress but also by personality dimensions like neuroticism [23] or thin boundaries [11], the studies should included personality measures as well because there might

Table 5 Analogy between nightmare themes and waking-life stressors (adapted from Garfield [8])

Dream theme	Waking-life stressor
Chase and attack	Feeling pressure from within or outside
Injury or death	Feeling emotionally hurt or destroyed
Being lost	Feeling abandoned
Being paralyzed	Feeling trapped
Falling	Feeling insecure
Taking a test	Feeling unprepared
Natural catastrophes	Feeling overwhelmed
Accidents (car crash)	Feeling out of control
Arriving late	Feeling of regret over missed opportunity
Being nude in public	Feeling overexposed

be an interaction between the nature of current stressors and personality variables regarding the occurrence of particular nightmare topics.

To summarize, the present study elicited nightmare frequency and common nightmare topics in a representative sample. Even though several effects can be explained by the continuity hypothesis of dreaming [24], further research is needed to investigate the relationship between nightmare topics like falling or being chased and waking-life stressors.

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