The Mannheim Dream questionnaire (MADRE): Retest reliability, age and gender effects

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Summary. Although dreaming is a genuinely subjective experience occurring in the inner world of the person while sleeping there are quite a few aspects regarding dreaming that are worth being measured and investigated. Over the years several dream questionnaires have been developed but not often used very widely. The present questionnaire was designed to elicit some form of dream history including dream recall, nightmares, lucid dreaming, attitude towards dreams, and the effects of dreams on waking life. Using an online questionnaire, a retest study was performed. The findings regarding the psychometric properties of the MADRE questionnaire seem very promising. One of the next steps will be to evaluate the English version of the MADRE and its application in different samples (e.g., nightmare sufferers, patients with sleep disorders and/or mental disorders) and different contexts (e.g., personality research) by research groups all over the world would be the best way to demonstrate the usefulness of this comprehensive dream questionnaire.

Keywords: Dream recall, nightmares, lucid dreaming, attitude towards dreams, age effects, gender differences, retest reliability

1. Introduction

Dreaming is a subjective experience occurring during sleep (Schredl, 2010a) and, thus, a very personal experience that is only accessible if the dreamer recalls the dream experience upon awakening. Therefore, studying dream recall is a major topic in dream research, for example, measuring home dream recall frequency using questionnaires and/or dream diaries (Schredl, 2002) or to increase dream recall by awakenings from REM sleep in the sleep laboratory (Nielsen, 2000).

In addition to dream recall, there are many other aspects such as attitude towards dreams, frequency of telling dreams, reading dream literature, the effects of dreaming on subsequent waking life and, of course, general dream characteristics and dream content. In general, there are three main paradigms for assessing dreams and dreaming-related variables: 1) retrospective measures (questionnaires, interviews), 2) dream diaries, and 3) laboratory awakenings. It seems obvious to study dream reports using dream content analysis techniques in order to get more knowledge on dream content (Hall & Van de Castle, 1966; Schredl, 2010b) but Schredl (1998) pointed out that 15 or more dream reports per participant are needed to measure interindividual differences reliably. In order to carry out empirical investigations with reasonable expenditure, questionnaires addressing dream themes, general dream characteristics (like colors and sounds) and specific dream elements (like aggression and friendliness) have been developed (Aumann, Lahl, & Pietrowsky, 2012; Bernstein & Roberts, 1995; Bruni, Lo Reto, Recine, Ottaviano, & Guidetti, 1999; Gruber, 1988; Kallmeyer & Chang, 1997; Kroth, Gilbert, Guichard, & Quatman, 1999; Takeuchi, Ogilvie, Ferrelli, Murphy, & Belicki, 2001; Yu, 2008a, 2012). Although most of these questionnaires showed adequate reliability, e.g., measured as internal consistency of composite scores derived from factor analyses or in terms of retest reliability, the question as to how valid these questionnaire measures of dream content are is still an open question. Bernstein and Belicki (1995) and Schredl (2002) provided data showing the correlations between questionnaire measures of dream content and measures derived from dream content analysis of dream reports are very low, especially for low dream recallers. Within this area, more research is needed to evaluate the psychometric quality of questionnaires aimed at eliciting dream content.

For measuring dream recall frequency, the use of dream diaries seems to have a serious disadvantage: especially in low recallers, dream recall frequency can increase dramatically because the participants' attention of is directed towards their dreams (Schredl, 2002) and, thus, affect interindividual differences in home dream recall frequency. Moreover, motivational effects keeping a narrative dream log, e.g., recording the recalled dreams, might interfere with dream recall frequency (Zadra & Robert, 2012) as dream recall decreases in the second week keeping a dream diary (Schredl, Wittmann, Ciric, & Götz, 2003). A similar effect has been reported for measuring nightmare frequency: i.e., marked higher figures for diary measures as compared with retrospective questionnaire measures (Robert & Zadra, 2008). Whereas Robert and Zadra (2008) argued that the retrospective measurement is inadequate due to recall errors, one can also speculate that a dream diary can increase nightmare frequency by increasing overall dream recall fre-

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quency. Even though the issue as to what measurement technique is more appropriate in a given situation than another one, there seems to be evidence that some aspects of dreaming might be best measured by using dream questionnaires. Single scales measuring dream recall frequency, nightmare frequency, and lucid dream frequency showed high retest reliability (Schredl, 2004a; Stumbrys, Erlacher, & Schredl, 2013), supporting this idea.

Over time, quite a number of dream questionnaires have been developed and used in research: The multidimensional dream inventory (Kallmeyer & Chang, 1997), Dream Content Questionnaire (DCQ) (Bernstein, Belicki, & Gonzales, 1995), Dream Content Questionnaire for Children (ChDCQ) (Bruni et al., 1999), Dream style questionnaire (Gruber, 1988), the Van Dream Anxiety Scale (VDAS) (Agargün et al., 1999), the KJP dream inventory (Kroth et al., 1999), the Dream Property Scale (Takeuchi et al., 2001), Dream motif scale (Yu, 2012), and the Düsseldorf Dream Inventory (DDI) (Aumann et al., 2012). Most of these questionnaires showed high internal consistency of composite scores derived from factor analysis, and also confirmatory factor analysis were carried out (Yu, 2009). In addition, if determined retest reliabilities were relatively high (Agargün et al., 1999; Bernstein et al., 1995; Kroth et al., 1999). Several questionnaires addressing attitude towards dreaming and the effects of dreams on waking life (Domino, 1982; Kuiken & Sikora, 1993; Pagel & Vann, 1992; Schredl, 2000) have not been analyzed with respect to the psychometric properties of the questionnaire. An exception is a ten-item attitude scale (Schredl, Brenner, & Faul, 2002) showing high internal consistency (Cronbach's alpha = .905, retest reliability [four weeks] = .73). Despite the large variety of questionnaires covering a broad area of dream-related aspects such as recall, intensity, and the effects of dreaming on waking life, they are not widely used by different research groups. One of the rare exceptions is the Typical Dream Questionnaire (developed by the group of Tony Zadra and Tore Nielsen) that have been applied in three different countries (Nielsen et al., 2003; Schredl, Ciric, Götz, & Wittmann, 2004; Yu, 2008b). This comprehensive review indicates that there is a need for a dream questionnaire assessing basic characteristics of dream-related variables in a reliable way.

The aim of the study is to develop a questionnaire measuring aspects of recall, different dream types (nightmares, lucid dreaming), attitude towards dreaming, what dreamers do with their dreams (telling the dream, recording the dream), and effects of dreams on waking life (creative dreams, problem solving dreams, déjà vu experiences based on dreams) – comparable to taking a comprehensive dream history (by also including nightmare frequency in childhood or age at lucid dream onset). The focus, therefore, is to compile the most relevant aspects and develop reliable items for their measurement.

2. Method

2.1. Research instrument

The MADRE questionnaire is available in full length in the supplementary files of this article (a German version and an English version). 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 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).

Eight-point scales were used for measuring nightmare frequency, lucid dreaming frequency, and most of the dream variables eliciting utilization of dreams (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, and 7 = several times a week). For the nightmare item, a definition for nightmares based on the ICSD-3 (American Academy of Sleep Medicine, 2014): "Nightmares are dreams with strong negative emotions that result in awakening from the dreams. The dream plot can be recalled very vividly upon awakening." Similarly, a definition adopted from Schredl and Erlacher (2004) was presented for the lucid dreaming item: "In a lucid dream, one is aware that one is dreaming during the dream. Thus it is possible to wake up deliberately, or to influence the action of the dream actively, or to observe the course of the dream passively."

Nightmare distress was measured using a five-point scale (0 = Not at all distressing, 1 = Not that distressing, 2 = Somewhat distressing, 3 = Quite distressing, and 4 = Very distressing). In addition, the participants were asked whether they experienced recurrent nightmares related to a waking-life situation (Yes/No) and how many of their nightmares are recurrent ones (in percent). Additional questions elicited nightmare frequency during childhood, common topics of childhood nightmares, and the age of lucid dreaming onset.

Attitude towards dreams were measured by six items that were modified from a previous study (Schredl et al., 2002); the original scale showed high internal consistency (r = .905) and high retest reliability (r = .73) but was specifically designed for students (e.g., the value of dreams within psychology studies). 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). In addition, an item with a similar format was constructed to measure the personal meaning of one's own dreams and an item concerning the impression that dreams provide impulses or pointers for waking life – also with a five-point format.

In addition to items eliciting frequency of dream sharing, recording dreams, dreams affecting day-time mood, creative dreams, problem-solving dreams, and déjà vu experiences based on dreams (eight-point format), the participants were asked whether they ever read something on the topic of dreams (0 = No, 1 = One to two times, 2 = several times). If they read something about dreams, the participants were asked whether the literature about dreaming/dream interpretation helped them better understand their dreams (0 = Not at all, 1 = Not that much, 2 = Somewhat, 3 = Quite, and 4 = Very much).

2.2. Procedure and Participants

Overall, 2929 persons (1742 women, 1187 men) completed the online survey between April 18, 2014 and April 29, 2014. The mean age of the sample was 45.88 ± 14.38 years (range: 16 to 92 years). The link for the study was posted on the online panel www.wisopanel.net. Within this panel

Table 1. Dream recall frequency

Category	Online sample (N = 2929)	Representative samples (N = 1841)
Almost every morning	10.69%	3.53%
Several times a week	28.85%	9.67%
About once a week	19.22%	10.05%
About 2 to 3 times a month	14.41%	12.76%
About once a month	7.61%	9.40%
Less than once a month	12.94%	23.30%
Never	6.28%	31.29%

persons with an interest in online studies and with heterogenic demographic backgrounds are registered. For some surveys, prizes or money are offered for study participation, but this study was completely voluntary and unpaid. Of the total sample, 2297 persons (1330 women, 967 men) completed the questionnaire a second time after the average interval of 14.34 ± 2.31 days (range: 4 to 23 days). The mean age of the retest sample was 46.54 ± 14.24 yrs. (range: 17 to 90 yrs.).

For the purpose of comparison, two representative samples (Schredl, 2008, 2013) of those who completed the dream recall frequency scale were included in the analyses. The mean age of the 1841 participants (993 women, 848 men) was 48.01 ± 18.36 yrs. (range: 14 to 95 yrs.). The response rates were 67.9% in the first study (Schredl, 2008) and 67.8% in the second study (Schredl, 2013).

Statistical procedures were carried out with the SAS 9.4 software package for Windows. Ordinal regressions (cumulative logit analyses) were used for analyzing the effect of different predictors on dream variables. For interval scales, linear regression analyses have been computed. For determining retest reliability, three indices were used: exact agreement for binary items, Spearman Rank correlations for ordinal scales, and Pearson correlation for interval scales.

3. Results

The distributions for the dream recall frequency scale for the online sample and the representative samples are depicted in Table 1. The ordinal regression analysis indicated that there was a significant group difference (standardized estimate: .4241, chi^2 = 779.6, p < .0001) with higher dream recall in the online sample, a significant decline with age (standardized estimate: -.1135, chi^2 = 62.8, p < .0001), and a significant gender difference (standardized estimate: .1029, chi^2 = 51.9, p < .0001); i.e., women tended to report higher dream recall than men. The gender difference in dream recall frequency (effect size) was comparable in both data sets (online sample: d = 0.242; representative samples: d = 0.223). The decline of dream recall frequency with age was also quite similar (online sample: r = -.139, p < .0001; representative samples: r = -.109, p < .0001).

The averaged emotional intensity for the total sample was 2.54 ± 1.03, and the emotional tone of the dreams was balanced, mean: 0.04 ± 0.83. The distributions for the current nightmare frequency and nightmare frequency in childhood are depicted in Table 2; their inter-correlation was r = .471 (p < .0001). The difference was statistically significant (Sign rank test: S = -446140, p < .0001) with more frequent nightmares in childhood. The mean nightmare distress was 1.53 ± 1.16 (N = 2258); nightmare distress and nightmare frequency were highly correlated (r = .551, p < .0001). Of the total sample, 21.65% of the participants reported recurrent nightmares that are associated with a situation in waking life. About 16.88 ± 26.46% (N = 2893) of all nightmares were recurrent.

The distribution of lucid dreaming frequency is shown in Table 2. The mean age of the first lucid dreams was 19.52 ± 12.25 years (N = 1474). About 60% of the participants answering the question indicated that lucid dreaming started before or at the age of 18 years.

The average of the subjective meaning item was 1.43 ± 1.05 whereas the mean for the item eliciting the impression of dreams providing impulses or pointers for waking life was 1.93 ± 1.09. The attitude towards dream scale comprised 6 statements of item 12 (excluding the meaningfulness and the impulses impression); the mean was 2.48 ± 0.92. The inter-item consistency was high: r = .910 (Cronbach's alpha). The correlation with the total score of the attitude scale and dream recall frequency was r = .357 (p < .0001).

For the six scales measuring different aspects of dreaming, the distributions are depicted in Table 3. Whereas telling dreams to others is quite common, a very small percentage of the participants recorded their dreams regularly. A marked proportion of the sample reported that dreams affect their daytime mood; in addition, creative dreams, problems solving dreams, and déjà vu experiences based on dreams were also reported quite frequently (see Table 3).

Table 2. Current nightmare frequency, childhood nightmare frequency, and lucid dreaming frequency (N = 2929)

Category	Current nightmares	Childhood nightmares	Lucid dreaming
Almost every morning	3.52%	7.34%	3.24%
About once a week	5.22%	9.05%	3.62%
Two to three times a month	9.66%	13.69%	7.89%
About once a month	12.77%	14.07%	10.45%
About two to four times a year	21.78%	19.53%	15.43%
About once a year	9.32%	8.71%	8.47%
Less than once a year	14.61%	11.74%	12.39%
Never	23.11%	15.88%	38.53%

Table 3. Frequency distribution of different dream variables (N = 2929)

Category	Telling dreams	Recording dreams	Daytime mood affected	Creative dreams	Problem solving dreams	Déjà vu experiences
Almost every morning	3.31%	0.65%	4.03%	1.13%	0.99%	1.50%
About once a week	7.27%	1.02%	4.51%	1.78%	2.46%	3.65%
Two to three times a month	10.45%	1.57%	9.08%	4.98%	5.12%	8.16%
About once a month	15.33%	1.40%	10.04%	7.07%	7.75%	11.10%
About two to four times a year	21.88%	3.79%	16.42%	15.84%	15.16%	25.67%
About once a year	8.88%	2.42%	7.89%	10.72%	11.13%	13.72%
Less than once a year	13.83%	5.84%	12.36%	17.04%	15.98%	17.92%
Never	19.05%	83.30%	35.68%	41.45%	41.41%	18.27%

Regarding dream literature, 16.25% of the sample reported reading several books or magazine articles about dreaming, 32.40% one or two books or magazine articles, whereas 51.35% of the participants reported that they had never read anything about dreams. Of those who read something about dreaming (N = 1420), the benefit was rated as follows: very helpful (3.24%), quite helpful (15.85%), somewhat helpful (39.30%), not that much helpful (30.21%), and not at all helpful (11.41%).

The age and gender effects of the first set of dream variables are depicted in Table 4. Almost all dream variables showed a negative correlation with age, except for nightmare distress, age of lucid dreaming onset, and the occurrence of recurrent nightmares. Women tended to report more dreams, more intense dreams, more nightmares, more nightmare distress, more childhood nightmares, and more recurrent nightmares than men. No significant gender difference was found for lucid dreaming frequency and age of lucid dreaming onset, and women tend to report more negatively toned dreams. As there was a strong correlation between nightmare frequency and nightmare distress (r = .551), nightmare frequency was added into the regression analyses for nightmare distress. As expected, the effect of nightmare frequency was high (standardized estimate: .6951, chi^2 = 713.6, p < .0001). The gender effect was still significant (standardized estimate: .1675, chi^2 = 55.5, p < .0001) and the age effect was significantly positive (standardized estimate: .0751, chi^2 = 11.2, p = .0008). I.e., in addition to nightmare frequency as the main cause for nightmare distress, women and older persons rate their nightmare distress higher than men or younger persons.

For the second set of dream variables that depend more or less on dream recall frequency, e.g., telling or recording dreams, dream recall frequency was added as a covariate into the regression analyses (see Table 5). Even though the age-related decline of dream recall frequency was statistically controlled, most of the dream variables showed an additional decline, with the exception of reading literature about dreams and the benefit of reading dream literature. Again, as the gender difference in dream recall frequency is statistically controlled, the findings showed additional gender differences in almost every dream variable, except for déjà vu experiences, the benefit of reading dream literature, and creative dreams. I.e., women tended to tell their dreams

Table 4. Regression analyses and retest reliability for dream variables

Variable	Effect of age			Effect of Gender			Retest reliability
	β	χ^2/t	p	β	χ^2/t	p	
Dream recall frequency[1]	-.1167	39.8	<.0001	.0891	23.4	<.0001	.756[3]
Emotional intensity[1]	-.0722	14.4	.0001	.2478	162.2	<.0001	.704[3]
Overall emotional tone[1]	.0215	1.3	.2631	-.0642	11.9	.0009	.617[3]
Nightmare frequency (current)[1]	-.2496	174.4	<.0001	.1307	49.4	<.0001	.751[3]
Nightmare frequency (childhood)[1]	-.2124	130.5	<.0001	.0725	15.7	<.0001	.791[3]
Nightmare distress[1]	-.0393	3.4	.0663	.2239	105.5	<.0001	.673[3]
Recurring nightmares (Yes/No)[1]	.0188	0.5	.4584	.0633	6.1	.0136	83.15%[4]
Percentage of recurring nightmares[2]	-.0341	-1.8	.0722	.0753	4.0	<.0001	.585[5]
Lucid dreaming freqency[1]	-.1154	37.6	<.0001	.0365	3.8	.0512	.717[3]
Age of first lucid dream[2]	.4276	17.8	<.0001	.0222	0.9	.3560	.710[5]

β = Standardized estimates, [1]ordinal regression (χ^2 values), [2]linear regression (t values), [3]Spearman Rank correlation, [4]exact agreement, [5]Pearson correlation

Table 5. Regression analyses and retest reliability for dream variables

Variable	Effect of age			Effect of Gender			Effect of dream recall frequency			Retest reliability
	β	χ^2/t	p	β	χ^2/t	p	β	χ^2/t	p	
Meaningfulness[1]	-.0922	22.6	<.0001	.2206	126.5	<.0001	.4344	444.4	<.0001	.733[3]
Attitudes towards dreams[2]	-.0900	-5.2	<.0001	.1423	8.3	<.0001	.3555	20.9	<.0001	.842[4]
Telling dreams[1]	-.1928	102.7	<.0001	.1292	47.1	<.0001	.6097	818.2	<.0001	.800[3]
Recording dreams[1]	-.1261	18.7	<.0001	.0927	9.7	.0019	.2995	81.4	<.0001	.765[3]
Dreams affecting daytime mood[1]	-.1771	82.5	<.0001	.1753	81.0	<.0001	.4701	492.6	<.0001	.729[3]
Creative dreams[1]	-.1119	33.2	<.0001	-.0479	6.1	.0133	.3818	338.0	<.0001	.709[3]
Problem solving dreams[1]	-.0976	25.0	<.0001	.0867	19.7	<.0001	.4288	406.3	<.0001	.702[3]
Déjà vu experiences[1]	-.2346	151.5	<.0001	-.0041	0.0	.8256	.3683	358.5	<.0001	.698[3]
Reading about dreams[1]	.0044	0.0	.8290	.2220	112.1	<.0001	.2411	129.0	<.0001	.756[3]
Helpful dream literature[1]	.0130	0.2	.6392	.0301	1.2	.2749	.1571	33.4	<.0001	.683[3]

β = Standardized estimates, [1]ordinal regression (χ^2 values), [2]linear regression (t values), [3]Spearman Rank correlation, [4]Pearson correlation

more often, record them more often and indicated a more positive attitude towards dreams. Interestingly, men reported creative dreams more often than women – if dream recall frequency is statistically controlled.

The reliability indices are shown in Tables 4 and 5. Most of the indices ranged from about .700 to .800, with the lowest values of r = .585 (percentage of recurrent nightmares) and r = .617 (overall emotional tone of dreams). The retest coefficient of the total attitude towards dreams score was the highest (r = .842).

4. Discussion

Overall, the items of the MADRE questionnaire showed high retest reliability. For the seven-point dream frequency scale and the eight-point nightmare frequency scale the coefficients were comparable to those of previous studies (Schredl, 2004a; Stumbrys et al., 2013) with values about t = .75. The retest reliability of the lucid dreaming frequency scale (r = .717) was lower than the retest coefficient reported in a sample of students (r = .89; Stumbrys et al., 2013). The six-items scale for measuring attitude towards dreams showed high internal consistency (r = .910) and high retest reliability (r = .842), again comparable to a previous study using a 10-item scale (Schredl et al., 2002). As reliability indices of about .80 (or for single item scales between .70 and .80 are considered as adequate (Groth-Marnat, 2009), most of the MADRE items are reliable. For some items, e.g., percentage of recurrent nightmares, more precise wording of the item may be necessary. The reliability of the item regarding themes of the childhood nightmares will be presented in a future publication, as a more extensive content analysis is necessary. In addition, the frequency distribution of the items indicate that they are suited for measuring inter-individual differences as the whole range of categories were used by the participants, i.e., in each category there was a sizeable number of responses.

Compared to two representative samples, the analysis clearly indicates that the present online sample is self-selected regarding their interest in dreams and their dream recall frequency, respectively, because the statistical significance is marked. Nevertheless, age and gender effects on dream recall frequency were comparable in the online sample and the representative samples, supporting the idea of analyzing gender and age effects for the other dream variables as well.

Similar to dream recall frequency, nightmare frequency (current and childhood) and lucid dreaming frequency also declined with age. As shown above for dream recall frequency, nightmare frequency (Schredl, 2013) and lucid dreaming frequency (Schredl & Erlacher, 2011) also decline in a similar magnitude in representative samples. Interestingly, nightmare distress was positively related to age if nightmare frequency was statistically controlled, i.e., older participants were more bothered by the same amount of nightmares when compared to younger persons. It is also interesting to see that the age of onset of the first lucid dream is positively correlated with age; one might speculate that lucid dreams that were experienced a long time previously have been forgotten since studies (Schredl, Henley-Einion, & Blagrove, 2012; Voss, Frenzel, Koppehele-Gossel, & Hobson, 2012) indicate that lucid dreams are quite common in childhood and adolescence. For variables of dream use (e.g., creative dreams and the attitude towards dreams scale), the frequencies decline with age – even if the decline of dream recall frequency with age is statistically controlled. Schredl (2004b) argued that this might reflect cohort effects as attitudes towards dreams may have changed over the years. Longitudinal studies are necessary to test whether the age decline of dream variables is explained by decreases within a person's lifetime.

The gender differences regarding dream recall frequency and nightmare frequency are in line with previous meta-analyses (Schredl & Reinhard, 2008, 2011). The finding of more negative overall emotional tone of dreams reported by women fits in this context of experiencing more nightmares. Nightmare distress is also higher in women compared to men – even if nightmare frequency is statistically controlled, i.e., women tend to be more distressed by the same number of nightmares. They also reported more recurrent and

posttraumatic nightmares. That women tend to tell dreams more often, attribute more often meaning to dreams, and have more positive attitudes towards dreaming – even if dream recall frequency is statistically controlled – confirms previous findings (Schredl, 2000; Schredl & Schawinski, 2010). Interestingly, men reported slightly more often that their dreams are creative, again controlled for overall dream recall frequency. This finding is in line with a previous finding (Schredl & Erlacher, 2007) that the frequency of creative dreams did not differ between the sexes, even though dream recall frequency was higher in women since dream recall frequency was not statistically controlled. Women tend to read more about dreams than men (Schredl, 2010c, 2011) but did not differ regarding the benefit obtained from reading about dreams.

To summarize, the first findings regarding the psychometric properties of the MADRE questionnaire seem very promising. One of the next steps will be to evaluate the English version of the MADRE, as all the results reported above were obtained by using the German version. It would also be highly desirable to investigate large representative samples in order to obtain norms as the present figures are shifted to the upper end of the scales. It also will be interesting to study the correlations between the scales, e.g., by carrying out a factor analysis. Most of all, application of the MADRE in different samples (e.g., nightmare sufferers, patients with sleep disorders and/or mental disorders) and different contexts (e.g., personality research) by research groups all over the world would be the best way to demonstrate the usefulness of this comprehensive dream questionnaire.

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