Evaluating the Japanese version of the Mannheim Dream questionnaire (MADRE) in adults: Age and gender effects

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Summary. This study aimed to develop and evaluate the Japanese version of the Mannheim Dream questionnaire (MADRE) and to examine the effects of age and gender on its variables. A total of 282 Japanese-speaking adults completed the MADRE online, and 122 participants completed a retest approximately three weeks later. The Japanese version demonstrated acceptable retest reliability and high internal consistency for the attitudes toward dreams scale. Age and gender were found to be associated with several MADRE variables: for example, women tended to report stronger attitudes toward dreams and greater emotional intensity. Some items, such as recording dreams and the influence of dreams on daytime mood, showed a decrease with age. These findings are generally consistent with previous studies using MADRE in other countries. The Japanese version of MADRE is a useful instrument for measuring various aspects of dreaming and is expected to facilitate future international and cross-cultural dream research.

Keywords: Mannheim Dream Questionnaire, Japanese version, dream recall frequency, age effects, gender effects, retest reliability

1. Introduction

Dreaming is a universal human phenomenon, and its mechanisms and functions have been the subject of inquiry since ancient times. In contemporary psychology, dreams are studied as biological and psychological processes related to memory consolidation, emotional regulation, and unconscious processing (Malinowski & Horton, 2014; Zhang et al., 2024). However, a comprehensive understanding of these mechanisms, including individual differences and cultural influences, remains insufficient. Therefore, gathering multifaceted information about dreams is essential for advancing research in this field.

Dreaming encompasses various aspects, among which dream recall frequency (DRF) is one of the most commonly studied. DRF is a key measure of dream experiences and is widely used as a fundamental indicator in dream research. Several methods have been developed to assess DRF. Schredl (2004) demonstrated that the 7-point dream recall frequency scale is a reliable measure of individual differences in dream recall. In addition, Ribeiro et al. (2018) identified two common methods for measuring DRF: the logbook estimation and the retrospective estimation. In the logbook method, individuals are instructed to record their dreams each morning over a specified number of days. In the retrospective method, individuals estimate their typical or recent dream recall frequency based on memory. The retrospective method allows for the relatively easy collection of large-scale data. Therefore, self-report questionnaires employing retrospective estimation are commonly used in dream-related research.

In addition to dream recall frequency, various other aspects of dreaming—such as the emotional characteristics of dreams and the frequency of nightmares—have been shown in numerous studies to be closely related to personality traits, mental health status, and daily life experiences. For example, high dream recall frequency has been associated with high openness to experience, one of the Big Five personality traits (Schredl & Göritz, 2017), as well as with high creativity and greater connectivity within the default mode network (Vallat et al., 2022). Moreover, higher nightmare recall frequency has been associated with lower levels of well-being (Zadra & Donderi, 2000). According to Blagrove & Fisher (2009), thin boundaries, overall symptom severity on checklist measures, life adversity, and childhood adversity are all related to the frequency of nightmare recall. These findings suggest that assessing various aspects of dreaming beyond recall frequency is useful for gaining insights into an individual's personality and psychological state.

Against this background, numerous instruments have been developed to assess various aspects of dreaming. Among them, the Mannheim Dream questionnaire (MADRE; Schredl et al., 2014) is widely recognized as a useful tool for collecting comprehensive information about dream experiences. The MADRE questionnaire, initially developed in German and English, the questionnaire has since been

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translated and adapted into several languages, including Persian (Shahabian et al., 2017), French (Scapin et al., 2018), Italian (Settineri et al., 2019), Spanish (Mediano et al., 2022), and Malay (Nordin et al., 2022). The MADRE questionnaire covers key dimensions of dreaming, such as dream recall frequency, emotional aspects of dreams, nightmares, lucid dreams, attitudes toward dreams, the relationship between dreams and waking life, and sources of information about dreams. It has also demonstrated high retest reliability (Schredl et al., 2014). The MADRE questionnaire, consisting of 20 items, provides an efficient means of collecting fundamental data on dreaming and is widely used by researchers and clinicians around the world.

In order to evaluate the Japanese version of the MADRE, it is important to review how the questionnaire has been adapted and validated in other linguistic and cultural contexts. To date, the MADRE questionnaire has been adapted into several languages, and these adaptation studies have employed rigorous procedures to ensure both linguistic accuracy and psychometric validity. Shahabian et al. (2017) evaluated the reliability and validity of a shortened Persian version of the MADRE in a sample of 38 university students in Mashhad, Iran (76.3% male, 23.7% female; M_{age} = 32.65 years, age range = 20–45 years). Two experts conducted forward and backward translations from the English version, and consistency with the original was verified. Following translation, face validation was conducted by 10 psychologists, and minor modifications were made. Content validity was then assessed by 15 experts using content validity ratio and content validity index, both of which indicated good validity. Internal consistency was acceptable (Cronbach's α = .75), and test-retest reliability over a three-week interval was also confirmed in a subsample of 10 participants.

Scapin et al. (2018) validated the French version of the MADRE using a sample of 357 Belgian adults aged 18 to 81 (mean age = 32.02 years; 74.8% female), who completed an online survey. The questionnaire was translated from the English version. Test-retest reliability was assessed with 90 participants over an interval of 48 to 115 days. Similar to the original version, analyses included descriptive statistics, effects of age, gender, and dream recall frequency, and internal consistency of the attitude toward dreams scale. The internal consistency was high. However, overall test-retest reliability was relatively low. Age was negatively associated with attitudes toward dreams and dream impact, while women were more likely to find meaning in dreams and to share them. Dream recall frequency had a significant effect on many dream variables.

Settineri et al. (2019) developed and validated the Italian version of the MADRE. The questionnaire was translated from English by one of the authors and back-translated by another researcher to ensure equivalence with the original. Using snowball sampling, a total of 623 participants aged 12 to 87 years (mean age = 38.26 years; 43% male, 57% female) voluntarily completed a paper-based survey. Analyses included descriptive statistics and the effects of age, gender, and dream recall frequency. Age and gender influenced dream recall frequency, nightmare frequency, emotional intensity, and other related factors.

Mediano et al. (2022) evaluated the Spanish version of the MADRE in a sample of 87 Spanish-speaking young adults aged 20 to 35 (mean age = 25.78 years; 49 women, 38 men). The translation was conducted in accordance with the International Test Commission guidelines, and the content was identical to the original. Participants completed the MADRE twice, with a test-retest interval of 21 to 28 days. The study also examined the association between self-reported dream recall frequency and dream diary records. Although age and gender effects were not analyzed, the test-retest reliability was moderate to high for most items (r = .60–.80).

Nordin et al. (2022) developed the Malay version of the MADRE based on the English-translated Persian version. Two experts translated the questionnaire into Malay and merged their translations into a single consensus version. A third expert, who was blind to the original, conducted a back-translation. The final version was reviewed for content validity, as well as face, semantic, and criterion validity by experts. A pre-test was conducted with 31 participants, and revisions were made based on feedback. A total of 412 participants were recruited via convenience and snowball sampling, and 40 participants completed the questionnaire again after 14 days. Analyses included descriptive statistics, exploratory and confirmatory factor analyses, internal consistency (Cronbach's α), and test-retest reliability. A three-factor structure comprising 21 items was found to fit the data well, and the final model showed satisfactory fit indices, acceptable internal consistency, and high test-retest reliability.

Dream research holds significant value in cross-cultural contexts as well. Prior studies have shown that typical dream themes, frequency, and emotional characteristics can vary across cultural and social backgrounds (Griffith et al., 1958; Mazandarani et al., 2013; Yoshioka, 2023). To investigate such cultural differences in dreaming, it is essential to use standardized dream questionnaires that are applicable across diverse linguistic and cultural groups.

To the best of our knowledge, a complete Japanese version of the MADRE has not yet been developed. However, some studies have utilized partial translations of the questionnaire. For example, Okuyama et al. (2025) created and validated a Japanese scale to assess attitudes toward dreams as part of a study examining factors associated with dream attitudes in Japanese individuals. In their study, 42 items were compiled from four existing scales, including eight items derived from the Attitude toward Dreams subscale of the MADRE. Items were translated into Japanese and standardized on a seven-point Likert scale. Through exploratory and confirmatory factor analyses, the authors developed a new two-factor structure consisting of five items each for "meaningfulness of dreams" and "dreams as meaningless." However, this remains a partial translation of the MADRE. Additionally, in some previous Japanese studies (Yoshioka, 2023, 2024), selected MADRE items were used to investigate dream-related variables, but these translations were only partial, did not follow formal translation procedures, and lacked data such as reliability indices.

In addition, previous studies have demonstrated that age and gender play important roles in influencing dreaming. For example, dream recall frequency has been found to decrease with age (Nielsen, 2012; Salvio et al., 1992; Schredl, 2008), and gender differences have also been reported (Georgi et al., 2012; Schredl, 2002). Investigating the influence of age and gender on dreaming among Japanese individuals, and comparing the findings with data from other countries, would provide valuable insights into potential cross-cultural differences. Therefore, the present study has three main objectives. The first is to evaluate the Japanese

version of the Mannheim Dream questionnaire (MADRE). The second is to examine the effects of age, gender, and dream recall frequency on the variables assessed by the MADRE in the Japanese population. Through this study, we aim to establish a foundation for international comparative research on various aspects of dreaming and to contribute to the advancement of dream research within Japan. The third was to explore the relationships among dream characteristics assessed by the MADRE, emotional ratings of participants' Most Recent Dream reports, and alexithymia levels. However, this objective was secondary in scope, and the results are not reported in the present article. They will be presented in a separate manuscript.

2. Method

2.1. Research Instrument

To develop the Japanese version of the Mannheim Dream questionnaire (MADRE), a professional translator first conducted a forward translation of all items and response options from the original English version (Schredl et al., 2014) into Japanese. Another expert then reviewed the translation to check for any errors or omissions. Subsequently, a different professional translator, who had no access to the original English version, performed a back-translation from Japanese to English. This back-translation was reviewed by another expert to ensure accuracy and completeness.

Following this, two independent experts in dream research and one graduate student specializing in clinical psychology who conducts research on dreams reviewed both the Japanese version and the back-translated version of the MADRE. Based on their feedback and discussions, the Japanese version was revised to ensure that the meaning of the original English items was faithfully preserved while making the wording natural and comprehensible in Japanese.

Finally, a pilot test of the Japanese version of the MADRE was conducted with eight participants, all of whom were graduate students majoring in clinical psychology. Feedback was collected regarding the naturalness of the wording and the ease of answering the items, and further refinements were made accordingly. The finalized Japanese version of the MADRE is presented in the Appendix of this paper.

The scoring of each item follows the original English version. Dream recall frequency was measured on a 7-point Likert-type scale (0 = *never*, 1 = less than once a month, 2 = *about once a month*, 3 = *two or three times a month*, 4 = *about once a week*, 5 = *several times a week*, 6 = *almost every morning*), emotional intensity was measured on a 5-point Likert-type scale (0 = *not strong at all intense*, 1 = *not that intense*, 2 = *somewhat intense*, 3 = *quite intense*, 4 = *very intense*), overall emotional tone was measured on a 5-point Likert scale (-2 = *very negative*, -1 = *somewhat negative*, 0 = *neutral*, +1 = *somewhat positive*, +2 = *very positive*), nightmare frequency, nightmare frequency during childhood, lucid dreaming frequency were measured on a 8-point Likert-type scale (0 = *never*, 1 = *less than once a year*, 2 = *about once a year*, 3 = *about two to four times a year*, 4 = *about once a month*, 5 = *two to three times a month*, 6 = *about once a week*, 7 = *several times a week*). Nightmare distress was measured on a 5-point Likert-type scale (0 = *Not at all distressing*, 1 = *Not that distressing*, 2 = *Somewhat distressing*, 3 = *Quite distressing*, 4 = *Very distressing*). In addition, participants were asked whether they experienced recurrent nightmares related to a situation in their waking life (Yes/No), what percentage of their nightmares were recurrent, and to list the topics of nightmares they experienced during childhood, if participants had experienced lucid dreams, they were asked at what age they first experienced them.

Attitude towards dreams were measured by six items, the 5-point Likert scales are used (0 = *Not at all*, 1 = *Not that much*, 2 = *Partly*, 3 = *Somewhat*, and 4 = *Totally*).

Telling dreams, recording dreams, dreams affecting daytime mood, creative dreams, problem solving dreams and déjà vu experiences were measured on a 8-point Likert scale (0 = *never*, 1 = *less than once a year*, 2 = about once a year, 3 = *about two to four times a year*, 4 = *about once a month*, 5 = *two to three times a month*, 6 = *about once a week*, 7 = *several times a week*).

Participants were asked whether they had read anything on the topic of dreams (e.g., books or magazine articles), which was measured using a 3-point scale (0 = *No*, 1 = One *to two times*, 2 = *Several times*). Additionally, they were asked how much literature about dreams helped them understand their dreams, which was measured using a 5-point Likert scale (0 = *Not at all*, 1 = *Not that much*, 2 = Somewhat, 3 = *Quite*, 4 = *Very much*).

In addition to the Japanese version of the MADRE, this study also included assessments of participants' Most Recent Dream, the emotions experienced within that dream, and their level of alexithymia. Participants were instructed to write down their most recently recalled dream in detail, following the Most Recent Dream method commonly used in dream content research (Domhoff & Schneider, 2008). Based on the procedure of Gilchrist et al. (2007), participants were asked to rate the intensity of emotions they experienced in their dream across four positive categories (joy/happiness, love, satisfaction, interest/excitement) and four negative categories (anger, anxiety/fear, sadness, confusion/shock), using an 8-point scale (1 = *not at all* to 8 = *intense*).Alexithymia was measured using the Japanese version of the 20-item Toronto Alexithymia Scale (TAS-20; Komaki et al., 2003). As the primary objective of this study is to evaluate the Japanese version of the MADRE, the results related to alexithymia and the Most Recent Dream will be reported in a separate publication. Therefore, detailed findings regarding these measures are not presented in the current paper.

2.2. Participants and Procedure

A total of 282 Japanese-speaking adults participated in the study, ranging in age from 21 to 76 years (M = 42.52, SD = 10.38). The sample included 123 women (43.62%) and 159 men (56.38%). Participants were recruited through a Japanese crowdsourcing platform. The initial survey was conducted in December 2024, and those who completed the questionnaire received a reward of 200 yen.

Of the total sample, 252 participants completed the second administration of the questionnaire, and data from 122 participants were used to examine retest reliability. The retest was conducted approximately three weeks after the initial survey, specifically with an interval of 21 to 25 days, in January 2025. Participants who completed the second questionnaire received a reward of 150 yen. The retest sample ranged in age from 21 to 76 years (M = 43.27, SD = 11.23), and consisted of 60 women (49.18%) and 62 men (50.82%).

Table 1. Dream recall frequency.

Category	Percentage
Almost every morning	6.03%
Several times a week	34.75%
About once a week	20.21%
About 2 to 3 times a month	18.44%
About once a month	9.22%
Less than once a month	9.93%
Never	1.42%

Both the first and second surveys were conducted anonymously. Responses to the second questionnaire were collected via the same crowdsourcing platform. Therefore, to match participants across the two time points, data on gender, age, and occupation were used. Prior to the second survey, participants were instructed to enter the exact same responses for these demographic items as they did in the first survey. Participants whose responses did not perfectly match on all three variables, or whose matching status was unclear, were excluded from the analysis of retest reliability. Matching was conducted based on this procedure prior to analysis.

This study was approved by the Ethics Committee for Clinical Psychology Research at Kyoto University (Approval No.: 24042). Ethical considerations were carefully addressed. At the beginning of the survey, participants were provided with a written explanation stating that participation was voluntary, that they could discontinue participation at any time by closing the browser, that there would be no disadvantages resulting from non-participation or withdrawal other than not receiving the reward, and that individuals would not be personally identifiable. Only those who gave informed consent proceeded to complete the survey. The statistical analyses were performed using HAD (Shimizu, 2016).

3. Results

The distribution for the dream recall frequency (N=282) is presented in Table 1.

The average of emotional intensity (N=282) was 1.6±0.8, and the emotional tone (N=282) was slightly negative, -0.4±0.9. The distribution for the current nightmares frequency and the nightmares frequency of childhood (N=282) are shown in Table 2.The mean nightmare distress (N=282) was 1.81±0.90. The correlation between nightmare distress and nightmare frequency was .223 (p<.001). Among the participants, 24.82% of the participants reported recurrent nightmares that are associated with a situation in waking life, and 15.38±20.47 % (N=282) of all nightmares were recurrent.

Table 2. Current Nightmare Frequency, Childhood Nightmare Frequency, and Lucid Dreaming Frequency.

Category	Current nightmares	Childhood nightmares	Lucid dreaming
Almost every morning	4.96%	4.26%	2.48%
About once a week	10.64%	6.38%	2.13%
Two to three times a month	16.67%	13.83%	3.90%
About once a month	15.60%	15.96%	7.80%
About two to four times a year	23.05%	22.34%	10.99%
About once a year	10.28%	10.28%	8.16%
Less than once a year	10.64%	19.15%	12.41%
Never	8.16%	7.80%	52.13%

The distribution of lucid dreaming frequency is shown in Table 2. The mean age of the first lucid dreams was 14.64±5.58 years (N = 109).

The average of subjective meaning of dreams item was 1.80±1.06, and the average of the item eliciting the impression of dreams providing impulses or pointers for waking life was 1.71±1.07. The attitude towards dreams scale consists of six statements from item 12 (specifically, items 12.2 to 12.7). The average of attitude towards dreams was 2.25±0.78. The inter-item consistency was high: r = .86 (Cronbach's α). The correlation between the total score of the attitude towards dreams scale and dream recall frequency was .343 (p<.001).

The results for the six scales measuring different aspects of the influence of dreams on waking life are presented in Table 3. In our sample, telling about dreams and dreams affecting daytime mood were common occurrences. in contrast, the frequency of recording dreams was very low. Although creative dreams, problem solving dreams, and déjà vu experiences were not frequent, they were not considered rare either.

Table 3. Frequency Distribution of Different Dream Variables.

Category	Telling dreams	Recording dreams	Daytime mood affected	Creative dreams	Problem solving dreams	Déjà vu experiences
Almost every morning	0.71%	1.06%	0%	0%	0%	0%
About once a week	4.61%	1.42%	4.96%	1.42%	1.06%	0.35%
Two to three times a month	4.96%	2.84%	8.51%	1.77%	1.06%	3.19%
About once a month	9.57%	3.19%	11.35%	5.67%	2.48%	1.77%
About two to four times a year	15.60%	3.90%	19.86%	14.18%	6.74%	17.38%
About once a year	15.96%	3.55%	12.41%	11.35%	10.28%	17.02%
Less than once a year	24.11%	8.51%	20.57%	20.92%	22.70%	29.79%
Never	24.47%	75.53%	22.34%	44.68%	55.67%	30.50%

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]	.0568	0.80	.3716	.0748	1.63	.2020	.553[3]
Emotional intensity[1]	-.0268	0.19	.6649	.1352	4.70	.0301	.676[3]
Overall emotional tone[1]	-.0006	0.00	.9922	-.0285	0.21	.6430	.637[3]
Nightmare frequency (current)[1]	-.0156	0.06	.8044	.0135	0.06	.8107	.709[3]
Nightmare frequency (childhood)[1]	-.1216	4.44	.0350	-.0279	0.23	.6336	.784[3]
Nightmare distress[1]	-.0023	0.00	.9708	.1594	7.02	.0081	.672[3]
Recurring nightmares (Yes/No)[1]	.1617	4.86	.0275	-.0820	1.19	.2751	80.33%[4]
Percentage of recurring nightmares[2]	-.0288	-0.50	.6150	.0223	0.38	.7068	.535[5]
Lucid dreaming freqency[1]	-.0438	0.41	.5226	.0162	0.07	.7948	.716[3]
Age of first lucid dream[2]	.0934	0.94	.3334	.0353	0.35	.7388	.503[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

About dream literature, 20.21% of the participants reported that they have already read books or magazines several times, and 47.52% one or two times. But 32.27% of the participants have never read something about dreams. Regarding the helpfulness of such literature, 19.86% of the participants reported it was not at all helpful, 42.20% reported it was not that much helpful, 35.46% reported it was somewhat helpful, 2.48 % reported it was quite helpful, 0.0 % reported it was very helpful.

The age and gender effects of the first set are shown in Table4. Regarding of age, nightmare frequency of childhood showed a negative correlation with age, and recurring nightmares showed a positive correlation with age.

Regarding of gender, emotional intensity and nightmare distress showed correlation, women tend to report more emotional intensity of dreams and nightmare distress. Consistent with the findings of Schredl et al. (2014), Scapin et al. (2018), and Settineri et al. (2019), there was no significant difference between men and women in our sample with regard to lucid dreaming frequency and lucid dreaming onset.

The age, gender, and dream recall frequency effects for the second set of dream variables that are influenced by dream recall frequency are shown in Table 5. Dream recall frequency has been shown in previous studies to be closely associated with various aspects of dreaming, including attitudes toward dreams. Following prior studies on the translation and development of the MADRE in other countries (Scapin et al., 2018; Schredl et al., 2014; Settineri et al., 2019), dream recall frequency was also included as a predictor variable in the present study. As a result, dream recall

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]	-.0223	0.15	.7010	.1897	10.55	.0012	.2270	14.29	.0002	.508[3]
Attitudes towards dreams[2]	-.0693	-1.17	.2412	.1607	2.93	.0034	.3348	5.75	<.0001	.795[4]
Impression dream impulse[1]	-.1502	6.74	.0094	.1415	6.02	.0141	.2316	15.37	.0001	.444[3]
Telling dreams[1]	-.0559	0.79	.3748	.2414	17.87	<.0001	.2806	28.31	<.0001	.843[3]
Recording dreams[1]	-.1981	7.38	.0066	-.1156	2.17	.1407	.2587	10.54	.0012	.660[3]
Dreams affecting daytime mood[1]	-.1335	4.81	.0283	.1161	4.71	.0301	.3438	40.75	<.0001	.700[3]
Creative dreams[1]	-.0416	0.49	.4829	.0055	0.01	.9264	.2680	19.14	<.0001	.555[3]
Problem solving dreams[1]	-.0110	0.03	.8569	.0829	1.79	.1809	.2654	19.44	<.0001	.451[3]
Déjà vu experiences[1]	-.1417	5.01	.0253	-.0109	0.04	.8462	.2697	21.40	<.0001	.689[3]
Reading about dreams[1]	.0008	0.00	.9900	.0487	0.62	.4309	.1225	3.55	.0596	.496[3]
Helpful dream literature[1]	-.0815	1.79	.1803	.1845	8.95	.0028	.2075	13.10	.0003	.592[3]

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

frequency had a significant effect on most dream variables, except for reading about dreams. Individuals with higher dream recall frequency tended to attribute greater meaning to dreams and to engage more actively with dreams in their daily lives. These findings are also consistent with the original study by Schredl et al. (2014).

Regarding of age, three items, impression dream impulse, recording dreams and dreams affecting daytime mood showed a negative correlation with age. One item, déjà vu experiences showed a positive correlation with age.

Regarding gender, six items showed significant associations. Women tended to show more positive attitudes toward dreams in terms of meaningfulness, attitudes towards dreams, and impression dream impulse. They also reported higher frequencies of telling dreams and dreams affecting daytime mood, and more often found helpful dream literature.

Table 5 shows the retest reliability indices. All items showed positive correlations. However, among all items, 14 items did not reach .700, while 6 items exceeded .700. The lowest value was r = .444 (impression dream impulse), and the highest value was r = .843 (telling dreams).

4. Discussion

The purpose of this study was to evaluate the Japanese version of the MADRE and to examine the effects of age and gender on its variables. In the following discussion, we interpret the results of this study in comparison with previous research on the evaluation of the MADRE, with particular attention to age differences, gender differences, the influence of dream recall frequency, and the utility of the questionnaire as a research instrument.

In our sample, impression dream impulse, recording dreams, and dreams affecting daytime mood, as well as the frequency of childhood nightmares, were found to decrease with age. In contrast, recurring nightmares and déjà vu experiences were found to increase with age.

Previous studies have suggested that dream recall frequency and nightmare recall frequency decrease with age (Nielsen, 2012; Salvio et al., 1992; Schredl, 2008). Similar trends have been observed in samples from Germany, Belgium, and Italy using the MADRE (Schredl et al., 2014; Scapin et al., 2018; Settineri et al., 2019). However, in our Japanese sample, these frequencies did not decrease with age. The observed decrease in the frequency of childhood nightmares may be due to the natural fading of early memories over time, leading individuals to forget that they used to have nightmares during childhood.

In addition, recording dreams and dreams affecting daytime mood were found to decrease with age. This finding is consistent with previous studies showing that attitudes towards dreams and the influence of dreams on waking life tend to decline with age (Schredl et al., 2014; Scapin et al., 2018; Settineri et al., 2019). With regard to dreams affecting daytime mood, it is possible that as individuals grow older, their emotional regulation abilities improve (Carstensen et al., 2000; Nakagawa, 2018), making them less susceptible to the emotional impact of dreams on daytime mood—even when experiencing emotionally intense dreams.

As for recording dreams, it remains unclear whether the lower frequency among older adults is a direct result of aging or due to cohort effects, as suggested by Schredl et al. (2014). The age-related decline in dream recording may be related to the general decrease in dream recall frequency with age (Mangiaruga et al., 2018; Schredl, 2008), or to age-related reductions in memory capacity, which might result in dreams not being retained clearly enough to be recorded, even when recalled.

Alternatively, cohort effects may also play a role. For example, younger individuals may record dreams more frequently because they have easier access to digital devices, such as smartphones, that allow for convenient note-taking. In contrast, older individuals may rely on analog methods such as handwritten diaries, which may pose a higher barrier to recording dreams.

The frequency of recurring nightmares related to situations encountered in waking life was found to increase with age. This may be influenced by the cumulative exposure to stress and traumatic events that tend to accompany aging. As individuals grow older, they are more likely to experience stressful life events, such as the death of family members, health problems, and work-related issues. In particular, traumatic events are more likely to be reflected in nightmares, which may contribute to this trend (Nielsen & Levin, 2007; Secrist et al., 2000).

The frequency of déjà vu experiences also increased with age. Generally, the frequency of déjà vu experiences is known to decline with age (Brown et al., 2003), and in a non-clinical Japanese sample, individuals who reported experiencing déjà vu were younger than those who had never experienced it (Adachi et al., 2003). Thus, this is an intriguing finding. A study that asked a similar question to the MADRE—"How often do you find yourself in a situation that you have already dreamed in a similar way (déjà vu)?"—which assesses how often individuals are convinced they are re-experiencing a dream in real life, also reported an age-related decline in the frequency of déjà vu experiences (Funkhouser & Schredl, 2010).

Several explanations may be considered for the present finding. One possibility is that with age-related declines in memory function, the distinction between previously experienced and novel situations becomes less clear, potentially leading to an increase in déjà vu experiences. Additionally, if memories of dreams are vague, the content of those dreams may be mistakenly encoded as real-life memories.

Women reported greater emotional intensity in dreams and more distress associated with nightmares. This finding is consistent with previous research (Schredl et al., 2014; Scapin et al., 2018). However, no gender differences were found in dream recall frequency, negative emotional tone of dreams, or nightmare recall frequency. Prior studies have reported that women tend to show higher frequencies and more negative tone in these variables (Schredl et al., 2014; Scapin et al., 2018). In contrast, no such gender differences were observed in the present Japanese sample.

Even when controlling for dream recall frequency, women showed more positive attitudes toward dreams, reporting higher levels of meaningfulness, attitudes towards dreams, and impression dream impulse. They also reported higher frequencies of telling dreams, dreams affecting daytime mood, and helpful dream literature. In Schredl et al. (2014), women were found to tell about dreams more frequently, record them more often, and hold more positive attitudes toward dreams, while men reported experiencing more creative dreams. In Scapin et al. (2018), women were more likely to attribute meaning to dreams and talk about them, whereas men were more likely to record their dreams and report creative dreams. Similarly, Settineri et al. (2019) found

gender differences in the perceived meaning of dreams, attitudes toward dreams, frequency of talking about dreams, frequency of mood being influenced by dreams, frequency of reading about dreams, and perceived helpfulness of such reading. Overall, the findings of the present study are largely consistent with those of previous studies. However, while Schredl et al. (2014) and Scapin et al. (2018) reported that men experienced creative dreams more frequently than women, no such gender difference was observed in the current study.

Positive associations were found between dream recall frequency and several variables. Individuals with higher dream recall frequency tended to attribute greater meaning to their dreams and to engage with them more actively in daily life. These findings also support the original study by Schredl et al. (2014). Thus, dream recall frequency appears to strongly influence how people utilize dreams, talk about them, record them, and express interest in them. This may be because individuals with higher dream recall frequency are more interested in dreams and are more likely to engage in behaviors such as discussing and recording the dreams they recall.

Regarding retest reliability, the results were within an acceptable range, though somewhat lower compared to previous studies by Schredl et al. (2014), Scapin et al. (2018), Mediano et al. (2022), and Nordin et al. (2022). Following the criterion of .700 used by Scapin et al. (2018), 14 items fell below the .700 threshold, while 6 items exceeded it. In the Spanish version developed by Mediano et al. (2022), a retest was conducted after 21–28 days, and most items showed reliability coefficients ranging from .600 to .800. In the Malay version developed by Nordin et al. (2022), the second administration was conducted after 14 days, and the intraclass correlation coefficient was calculated, with an overall value of 0.96, indicating very high stability. However, even the lowest value was .444, which indicates a moderate positive correlation and is not considered problematic.

There are two possible reasons why the retest reliability scores in this study were relatively low. First, the present study recruited participants from a Japanese crowdsourcing platform. In contrast, Schredl et al. (2014) used a platform specifically targeting individuals interested in online studies, and Scapin et al. (2018) surveyed participants with backgrounds in psychology. Although Japanese crowdsourcing platforms are often used in psychological research, the participants are not necessarily interested in psychology or research. As a result, some participants may not have had a strong interest in the content of the MADRE or in dreams in general, and may not have remembered their previous responses. However, it should be noted that both Mediano et al. (2022) and Nordin et al. (2022) used snowball sampling methods and administered their surveys online, similar to the present study, which suggests that participant characteristics may not fully account for the differences in reliability. Furthermore, the interval between the first and second surveys in the present study was not particularly long in comparison to those in other studies, and thus is unlikely to have significantly impacted the results.

Second, it is possible that the process of matching participants between the first and second surveys was not fully successful. The matching was based on complete agreement across three variables: age, gender, and occupation. If any of these variables differed between the two responses, even slightly, the data were excluded from the retest reliability analysis. Although participants were instructed to enter the exact same information for these variables in the second survey, some may have provided inconsistent responses, resulting in incorrect matching. This limitation stems from the design of the present study, and it would be desirable in future research to adopt a more reliable method for participant matching in order to more accurately assess retest reliability.

The six-item scale measuring attitudes toward dreams demonstrated high internal consistency, with a Cronbach's α of r = .86. This result is consistent with those reported by Schredl et al. (2014) and Scapin et al. (2018). The present study also confirmed the high internal consistency of the attitudes toward dreams scale.

Regarding the frequency distributions of the items, for most items, participants selected response options across the full range. However, for dreams affecting daytime mood, creative dreams, problem solving dreams, and déjà vu experiences, no participants selected "Almost every morning." This may reflect a characteristic specific to the Japanese sample. It is possible that individuals who truly experience these phenomena almost every morning are extremely rare, or that participants in the present Japanese sample were less likely to choose this response option.

In conclusion, this study developed and evaluated the Japanese version of the MADRE. Until now, no Japanese version existed for a globally used questionnaire that assesses various aspects of dreaming. With the development of the Japanese version of the MADRE, research on dreams may become more active in Japan.

Using this tool for cross-cultural comparisons would also be valuable. While the present study primarily discussed findings in comparison with German and Belgian samples, comparing data from a wider range of cultural contexts could provide deeper insights into cultural differences in dreaming.

One limitation of the present study is the potential sampling bias resulting from the use of participants registered on a crowdsourcing platform. Future studies may benefit from including a more diverse and representative sample, or by focusing on specific age groups or subpopulations. In addition, it would be valuable to strengthen the participant matching process and re-examine the retest reliability.

In addition, it is desirable to use the Japanese version of the MADRE to examine the relationship between dreaming and other psychological characteristics. Dreaming is influenced by a variety of factors, including personality traits and psychological states. Investigating these relationships could help clarify how dreaming is associated with such factors, including various mental disorders and levels of psychological stress.

5. Conclusion

This study developed and evaluated the Japanese version of the Mannheim Dream Questionnaire (MADRE), a widely used tool for assessing various aspects of dreaming. The results indicate that the Japanese version demonstrates acceptable psychometric properties, including internal consistency and retest reliability, although the latter was somewhat lower than in previous validations conducted in other languages. Age-related differences were observed in several variables, such as a decline in dream-related behaviors (e.g., recording dreams and dream-induced mood changes) and an increase in recurring nightmares and déjà vu expe-

riences. Gender differences were also found, with women reporting greater emotional intensity in dreams and stronger positive attitudes toward dreaming, while no gender differences were observed for some dream content variables. In addition, dream recall frequency was positively associated with engagement in dream-related behaviors and attitudes.

The Japanese MADRE is a useful tool for assessing dream experiences and attitudes in Japanese populations. It enables cross-cultural comparisons and may contribute to a deeper understanding of psychological and cultural factors in dreaming. Future studies should further improve reliability and explore links between dreams and psychological traits.

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APPENDIX

Mannheim Dream Questionnaire (MADRE) 日本語版

このアンケートは、夢見の様々な側面についての概要を把握することを目的としています。回答には約5分から10分かかります。時間をかけて、すべての質問に注意深くかつ記入漏れがないように回答してください。

年齢：_____ 歳
性別 ：_____
職業/専攻分野（学生の場合）：_____

1. 最近（過去数ヶ月間）、どのくらいの頻度で夢を思い出しましたか？

◯ほぼ毎朝
◯週に数回
◯週に1回くらい
◯月に2、3回
◯月に1回くらい
◯月に1回より少ない
◯まったくない

2. あなたは夢でどのくらい強く感情を体験しますか？

まったく強くない	それほど強くない	やや強い	かなり強い	非常に強い
◯	◯	◯	◯	◯

3. あなたの夢の感情的なトーンは、平均してどのようなものですか？

とてもネガティブ	どちらかといえばネガティブ	どちらともいえない	どちらかといえばポジティブ	とてもポジティブ
◯	◯	◯	◯	◯

4. 最近（過去数ヶ月間）、どのくらいの頻度で悪夢をみましたか？

定義：悪夢とは、夢から覚めるくらい強いネガティブ感情を伴う夢のことです。 夢のあらすじは、目覚めたときに非常に鮮明に思い出すことができます。

◯週に数回　　◯年に2〜4回
◯週に1回くらい　　◯年に1回くらい
◯月に2、3回　　◯年に1回より少ない
◯月に1回くらい　　◯まったくない

5. もしあなたが現在、悪夢を経験されている場合、そのような夢を見ることはあなたにとってどの程度苦痛を伴うものですか？

まったく苦痛ではない	それほど苦痛ではない	やや苦痛である	かなり苦痛である	非常に苦痛である
○	○	○	○	○

6. 目覚めているときの生活の中で経験した状況に関連する悪夢を繰り返し経験しますか？

○はい　○いいえ

7. あなたの悪夢のうち、繰り返し見る悪夢はどのくらいの割合を占めていますか？
（パーセントでお答えください）

_____%

8. 子どもの頃（6 才から 12 才まで）に、どのくらいの頻度で悪夢を経験しましたか？

○週に数回　○年に 2〜4 回
○週に 1 回くらい　○年に 1 回くらい
○月に 2、3 回　○年に 1 回より少ない
○月に 1 回くらい　○まったくない

9. 子どもの頃に見た悪夢のテーマ（主題）を列挙してください。

_____

10. いわゆる明晰夢（定義を参照してください）をどのくらいの頻度で体験しますか？

定義： 明晰夢では、夢の中で自分が夢を見ていることに気づいています。したがって、意図的に目を覚ましたり、夢での行動に積極的に影響を与えたり、夢の流れに逆らわずに観察したりすることが可能です。

○週に数回　○年に 2〜4 回
○週に 1 回くらい　○年に 1 回くらい
○月に 2、3 回　○年に 1 回より少ない
○月に 1 回くらい　○まったくない

11. 明晰夢を経験したことがある場合、初めて明晰夢を見たのは何歳のときでしたか?

_____ 歳

12. 夢への態度

	まったくない	それほどでもない	どちらともいえない	ある程度そうである	完全にそうである
あなたは自分が見た夢にどの程度意味づけしますか？	○	○	○	○	○
夢への関心はどの程度強いですか？	○	○	○	○	○
夢には意味があると思う。	○	○	○	○	○
夢についてもっと知りたい。	○	○	○	○	○
もし誰かが自分の夢を思い出し、解釈することができれば、その人の人生は豊かになるだろう。	○	○	○	○	○
夢を見ることは、一般的に非常に興味深い現象だと思う。	○	○	○	○	○
自分の夢を振り返る人は、確実に自分自身についてより深く学ぶことができる。	○	○	○	○	○
夢が覚醒時の生活に刺激、もしくは指針を与えてくれるような印象がありますか？	○	○	○	○	○

13. あなたはどのくらいの頻度で自分の夢を他者に話しますか？

○週に数回　　○年に 2〜4 回
○週に 1 回くらい　　○年に 1 回くらい
○月に 2、3 回　　○年に 1 回より少ない
○月に 1 回くらい　　○まったくない

14. あなたはどのくらいの頻度で自分の夢を記録しますか？

○週に数回　　○年に 2〜4 回
○週に 1 回くらい　　○年に 1 回くらい
○月に 2、3 回　　○年に 1 回より少ない
○月に 1 回くらい　　○まったくない

15. あなたの夢はどのくらいの頻度で日中の気分に影響を与えますか？

○週に数回　　○年に 2〜4 回
○週に 1 回くらい　　○年に 1 回くらい
○月に 2、3 回　　○年に 1 回より少ない
○月に 1 回くらい　　○まったくない

16. あなたは夢からどのくらいの頻度で創造的な発想を得ることがありますか？

○週に数回　　○年に 2〜4 回
○週に 1 回くらい　　○年に 1 回くらい
○月に 2、3 回　　○年に 1 回より少ない
○月に 1 回くらい　　○まったくない

17. 夢があなたの問題を特定し解決するのに役立つ頻度はどのくらいありますか？

◯週に数回　　◯年に 2〜4 回
◯週に 1 回くらい　　◯年に 1 回くらい
◯月に 2、3 回　　◯年に 1 回より少ない
◯月に 1 回くらい　　◯まったくない

18. デジャヴ（定義を参照してください）をどのくらいの頻度で体験しますか？

定義：デジャヴ体験の間、夢の中ですでに経験した状況を、実生活で追体験していると確信しています。

◯週に数回　　◯年に 2〜4 回
◯週に 1 回くらい　　◯年に 1 回くらい
◯月に 2、3 回　　◯年に 1 回より少ない
◯月に 1 回くらい　　◯まったくない

19. 夢というトピックについて何か読んだことがありますか？（書籍または雑誌記事）

◯いいえ
◯1〜2 回
◯数回

20. 夢や夢解釈に関する文献は、自分の夢をよりよく理解するのに役立ちましたか？

まったく役立たなかった	あまり役立たなかった	やや役立った	かなり役立った	非常に役立った
◯	◯	◯	◯	◯