Assessing Attitudes Toward Dream Incubation: A New Scale

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This study aims to develop the Dream Incubation Attitude Scale for assessing attitudes toward dream incubation. The Dream Incubation Attitude Scale underwent psychometric testing based on responses drawn from 109 Hong Kong participants. This resulted in a three-factor structure comprising self-efficacy, skepticism, and challenge, each exhibiting strong internal consistency with Cronbach's α values ranging from .72 to .89. Concurrent validity was established through small to moderate correlations with the Dream Attitude Scale.

Keywords: attitude toward dream, attitude toward dream incubation, dream incubation, factor analysis, scale development

The dreaming mind can provide insights into the challenges we face in waking life, while the analysis of dream content upon awakening may deepen our understanding of subconscious issues (Ng et al., 2024). Dream incubation is the practice of setting an intention prior to sleep to influence the content of one's dreams (Solomonova & Carr, 2022). This technique has ancient roots, with cultures around the world employing dream incubation for both religious (Graf, 2014) and medical purposes (Pachis, 2014). In contemporary contexts, dream incubation has been utilized as a problem-solving tool (e.g., Barrett, 1993; Cartwright, 1974; White & Taytroe, 2003) and as a means to enhance creativity (Horowitz et al., 2023).

Whether or not dream incubation effectively generates solutions, the practice of priming—suggesting dream themes or scenarios before sleep—seems to be promising. Saredi et al. (1997) demonstrated that cognitive priming can increase the likelihood of waking concerns appearing in dream narratives. In their study, almost all

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dream reports (98.1%) referenced at least one waking issue, with these concerns primarily reflected directly (70.7%) and sometimes in a transformed form (26.3%). Similarly, Barrett (1993) employed Dement's (1974) dream incubation method, which involves a focused 15-min period of contemplating the problem before sleep. She found that nearly half of the participants' dreams (49%) incorporated elements related to their presleep thoughts, and over a third (34%) suggested potential solutions to their problems. This evidence highlights the profound impact of waking concerns on dream content and indicates that intentional presleep incubation can enhance the integration of these issues into dreams.

Contemporary research into dream induction protocols has diversified the techniques used to explore the role of dreaming in cognitive processes, ranging from simple presleep suggestions to more intricate methods involving sensory prompts and environmental adjustments. Studies examining the effects of presleep suggestion on the likelihood of dreaming about specific thoughts can be categorized into two primary groups. The first group posits that an attempt to suppress a particular thought before sleep increases the chances of dreaming about that thought (e.g., Bryant et al., 2011; Kröner-Borowik et al., 2013; Malinowski et al., 2019; Taylor & Bryant, 2007; Wang et al., 2022; Wegner et al., 2004). Conversely, the second group suggests that deliberately focusing on a thought prior to sleep similarly elevates the likelihood of dreaming about it (e.g., Nikles et al., 1998; Wang et al., 2022).

Building on these earlier techniques, Horowitz et al. (2020, 2023) developed Targeted Dream Incubation, a method that combines mental focus with sensory cues during the hypnagogic state to incubate specific ideas, themes, or problems into one's dreams. To facilitate Targeted Dream Incubation, Horowitz et al. designed a wearable electronic glove called Dormio, which monitors physiological indicators to detect the onset of hypnagogia. Once this sleep stage is recognized, Dormio delivers auditory stimuli to influence dream content and aids in the collection and documentation of dream narratives. Following this, Bellaiche et al. (2024) devised Dormio Light, a software-based tool that can remotely cue and index hypnagogic dream content.

Despite the evidence supporting the feasibility of prompting dream content, the effectiveness of dream incubation probably varies among individuals. This variability may stem, in part, from differences in susceptibility to suggestions. Another probable factor influencing the success of dream incubation is individuals' attitudes toward dreams and dreaming. Olsen et al. (2020) found that those with positive attitudes toward dreams not only recall their dreams more frequently but also tend to experience dreams with more positive emotional tones and vice versa. This evidence underscores the significant impact that personal beliefs and attitudes about dreams can have on dream experiences and, potentially, on the effectiveness of dream incubation techniques.

Dement (1974) conducted an experiment with 500 undergraduate students who were presented with three brain teaser problems to ponder before sleeping. The students were instructed to document any relevant solutions that emerged in their dreams. One student, tasked with deciphering the sequence "HIJKLMNO," repeatedly dreamed of scenarios involving water but mistakenly identified "alphabet" as the solution, failing to recognize that the sequence represented "H_2O" or water. This example not only demonstrates the capacity of dreams to engage with complex cognitive tasks but also highlights how individual receptiveness and interpretation can significantly determine the utility of insights gained from dreams.

It appears that cultivating a positive attitude toward dreams and dream incubation could enhance the effectiveness of interventions that leverage dreams for creative problem solving and decision making in waking life. However, existing measures of dream attitudes, such as the Dream Attitude Scale (DAS; Schredl et al., 2019, 2020), do not specifically address this aspect of dream incubation. Currently, there is no scale designed to assess attitudes toward dream incubation itself. Success rates for incubating dreams vary significantly across studies, and the methods employed by researchers for dream incubation differ widely. Studies indicate that attitudes toward dreams play a crucial role in dream recall (Schredl & Göritz, 2017; Schredl et al., 2003), the experience of lucid dreams (Doll et al., 2009), and dream interpretation (Askari et al., 2022; Hill & Knox, 2010). Like other dream-related interventions, dream incubation may be influenced by individuals' attitudes toward the practice.

Therefore, developing a scale to measure attitudes toward dream incubation could facilitate future research and practice aimed at manipulating dream content. The primary objective of the study presented here was to create a scale for assessing individual variations in attitudes toward dream incubation. The DAS (Schredl et al., 2019, 2020), which evaluates general attitudes toward dreams, was used to test the concurrent validity of this new scale.

Method

Participants

Convenient sampling was employed, targeting postsecondary school students in Hong Kong. A total of 109 participants were recruited, with 77 (70.6%) males and 32 (29.4%) females. They completed the questionnaire via Google Form. The mean age was 22.04 years old ($SD = 1.72$, range = 18–26). This study was approved by the departmental research subcommittee of the Department of Counselling and Psychology at the Hong Kong Shue Yan University. All participants provided informed consent before participation.

Instruments

Dream Incubation Attitude Scale (DIAS)

DIAS (see Appendices A and B) was developed to assess participants' attitude toward dream incubation, with reference to the existing measures of general attitudes toward dreams in the literature (e.g., Cernovsky, 1984; Hill, 2004; Schredl et al., 2019, 2020). The scale comprises 20 items written in traditional Chinese. Participants rated each item on a 5-point Likert scale ranging from 0 (*totally disagree*) to 4 (*totally agree*). A pilot study involving 18 participants was performed to ensure the readability of the 20 items.

DAS

The DAS (Schredl et al., 2019, 2020) was used to measure the positive and negative attitudes toward dream on a 5-point Likert scale (0 = *totally disagree*, 4 = *totally agree*). The scale, which includes six items adopted from the Mannheim Dream Questionnaire (Schredl et al., 2014) and 16 additional items eliciting positive or

negative attitudes toward dreams, was translated into traditional Chinese. In the present study, Cronbach's α coefficient was .927 for the positive attitude scale and .891 for the negative attitude scale.

Analytical Approach

Exploratory factor analysis (EFA; principal axis factoring) with direct oblimin rotation was used to identify latent factors in the DIAS. The number of factors was determined using a combination of the Kaiser criterion and the scree plot. Items were retained or removed based on their factor loadings. Cronbach's α was used to assess the reliability of each subscale. The concurrent validity of the DIAS was assessed by examining its correlation with the DAS. Gender variations in DIAS and DAS subscales were analyzed using independent *t* tests. The DIAS and DAS scores were compared using their mean item scores.

Results

Table 1 shows the descriptive statistics for the DIAS items. All items were fairly normally distributed with reasonable skewness values within −1 and 1 and kurtosis values within −2 and 2. An EFA was conducted on the newly developed DIAS to examine its dimensional structure (see Table 2). Factors were generated based on the Kaiser criterion (eigenvalue > 1) and scree plot inspection (see Figure 1). The initial analysis produced a four-factor solution, with Factor 1 (eigenvalue = 8.83, explaining 44.14% of the variance) comprising items such as 17 ("Dream incubation could be easy for me") and 3 ("I believe dream incubation can improve my emotional status"). These items emphasized beliefs in one's ability to incubate dreams and the potential benefits of doing so for emotional well-being. Factor 2 (eigenvalue = 1.49,

Table 1
Means and Standard Deviations of Dream Incubation Attitude Scale (N = 109)

DIAS items	*M*	*SD*
19. I think I may encounter obstacles while attempting dream incubation.	2.88	0.910
4. I am interested in dream incubation.	2.47	1.159
20. I believe that through manipulating my dreams, I can enhance my well-being.	2.31	1.230
13. I think dream incubation is a real phenomenon.	2.29	1.212
6. I do not think I can incubate a dream.	2.29	1.286
14. I think it is impossible for me to incubate a dream.	2.27	1.259
1. I believe dream incubation is possible.	2.19	1.228
12. I may give up on attempting dream incubation.	2.19	1.251
7. I think dream incubation is practical.	2.15	1.145
3. I believe dream incubation can improve my emotional well-being.	2.06	1.177
18. I doubt that dream incubation can really aid my mental health.	1.96	1.154
8. I will try my best to incubate a dream.	1.93	1.274
16. Practicing dream incubation is a waste of time.	1.74	1.158
9. Dream incubation is a myth.	1.73	1.222
11. Dream incubation is useless for me.	1.68	1.170
5. I think dream incubation is ridiculous.	1.61	1.290
2. I believe I can incubate a dream.	1.54	1.135
15. I believe I can solve problems through dream incubation.	1.53	1.076
17. Dream incubation could be easy for me.	1.31	1.144
10. I can manipulate my dreams.	1.23	1.024

Note. DIAS = Dream Incubation Attitude Scale.

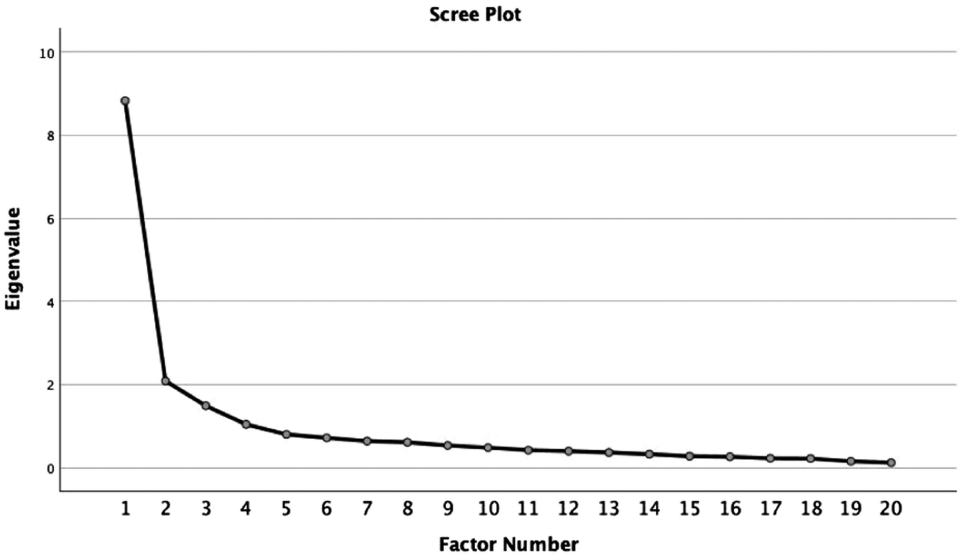
Table 2
Factor Loadings for the 20-Item Dream Incubation Attitude Scale (N = 109)

Item	Factor 1	2	3	4
2. I believe I can incubate a dream.	**.706**	−.363	−.023	.073
17. Dream incubation could be easy for me.	**.678**	−.263	.276	−.094
8. I will try my best to incubate a dream.	**.666**	−.191	.039	−.079
10. I can manipulate my dream.	**.634**	−.113	−.043	.050
13. I think dream incubation is real.	**.580**	.111	−.557	.041
1. I believe dream incubation is possible.	**.570**	.082	−.430	−.060
15. I believe I can solve problem through dream incubation.	**.555**	−.046	−.199	−.048
3. I believe dream incubation can improve my emotional status.	**.541**	.115	.003	−.439
7. I think dream incubation is practical.	**.527**	.178	−.138	−.404
19. I think I may have obstacles while attempting dream incubation.	−.011	**.628**	.033	.080
6. I do not think I can incubate a dream.	−.142	**.597**	−.051	−.028
14. I think it is impossible for me to incubate a dream.	−.148	**.551**	.215	.018
12. I may give up attempting dream incubation.	−.010	**.510**	.128	.135
5. I think dream incubation is ridiculous.	−.019	.231	**.902**	−.050
9. Dream incubation is a myth.	.093	.088	**.686**	.121
4. I am interested in dream incubation.	.378	.120	**−.418**	−.182
11. Dream incubation is useless for me.	−.191	−.015	**.401**	.387
18. I do not think dream incubation can really aid my mental health.	.065	.217	−.025	**.658**
16. Practicing dream incubation is wasting time.	−.062	.169	.363	**.475**
20. I believe through manipulating my dream, I can enhance my well-being.	.410	.178	−.137	**−.416**

Note. Factor loading for variables loading on each factor is bolded.

explaining 7.45% of the variance) reflected concerns about the obstacles one might face in attempting dream incubation, including items such as 19 ("I think I may have obstacles while attempting dream incubation") and 6 ("I do not think I can incubate a dream"), highlighting how logistical or personal challenges might discourage

Figure 1
Scree Plot From the Exploratory Factor Analysis of Dream Incubation Attitude Scale



dream incubation practice. Factors 3 (eigenvalue = 2.09, explaining 10.43% of the variance) and 4 featured items reflecting doubts about dream incubation, though they approached this negative viewpoint from slightly different angles. Factor 3 items, exemplified by Item 5 ("I think dream incubation is ridiculous") and Item 9 ("Dream incubation is a myth"), questioned the legitimacy and plausibility of dream incubation. Factor 4 similarly captured a reluctance to endorse dream incubation because of perceived inefficacy or the notion that it might be a waste of time, although its items overlapped considerably with those from Factor 2 in indicating an overall skeptical stance.

Following an initial exploratory analysis of the DIAS, it was observed that Items 1, 3, 4, 7, 11, 13, 16, and 20 exhibited considerable cross-loadings across factors. To obtain a more efficient factor solution, these items were removed from further analysis. An EFA was conducted on the 12-item version of the DIAS (see Table 3). Principal axis factoring was employed with direct oblimin rotation and Kaiser normalization. The analysis revealed a three-factor solution. The first factor was composed of Items 10 ("I can manipulate my dream"), 15 ("I believe I can solve problems through dream incubation"), 17 ("Dream incubation could be easy for me"), 8 ("I will try my best to incubate a dream"), and 2 ("I believe I can incubate a dream"), with loadings ranging from −.750 to −.595. The second factor was represented by Items 9 ("Dream incubation is a myth") and 5 ("I think dream incubation is ridiculous"), with loadings of .858 and .686, respectively. The third factor comprised Items 19 ("I think I may have obstacles while attempting dream incubation"), 14 ("I think it is impossible for me to incubate a dream"), 6 ("I do not think I can incubate a dream"), and 12 ("I may give up attempting dream incubation"), with loadings spanning between .596 and .634. Internal consistency indicated by Cronbach's α coefficients was .856 for Factor 1, .813 for Factor 2, and .720 for Factor 3.

In order to further examine the underlying dimensionality of the DIAS, a second-stage EFA was conducted on the subscale scores derived from the three factors. This analysis again utilized principal axis factoring with direct oblimin rotation. After extraction, the sums of squared loadings for the single-factor solution yielded an eigenvalue of 1.446, corresponding to 48.214% of the variance explained. These findings suggest that the three dimensions of the refined DIAS can be effectively

Table 3
Factor Loadings for the 12-Item Dream Incubation Attitude Scale (N = 109)

Item	Factor		
	1	2	3
10. I can manipulate my dream.	−.750	−.064	.079
15. I believe I can solve problem through dream incubation.	−.708	−.281	.123
17. Dream incubation could be easy for me.	−.695	.228	−.178
8. I will try my best to incubate a dream.	−.648	.036	−.175
2. I believe I can incubate a dream.	−.595	.054	−.356
9. Dream incubation is a myth.	.026	.858	.036
5. I think dream incubation is ridiculous.	.081	.686	.262
19. I think I may have obstacles while attempting dream incubation.	−.019	.009	.634
14. I think it is impossible for me to incubate a dream.	.068	.171	.620
6. I do not think I can incubate a dream.	.071	−.138	.599
12. I may give up attempting dream incubation.	−.029	.101	.596
18. I do not think dream incubation can really aid my mental health.	.109	.125	.309

integrated into a unidimensional construct. Moreover, when the items corresponding to the three factors were recoded and combined, the overall reliability of the composite measure was supported by a Cronbach's α coefficient of .704.

As a result, the scale was conceptualized as a two-tier, three-factor model. Factor 1 was labeled self-efficacy, indicating an individual's conviction in the ease and utility of dream incubation. Factor 2 was labeled as skepticism, encompassing disbelief, ridicule, and doubts about the practical value of dream incubation. Factor 3 was labeled as challenge, indicating perceived obstacles or hindrances that may undermine an individual's motivation or capacity to engage in dream incubation. This refined three-factor structure highlights how individuals hold beliefs about their capacity to incubate dreams, maintain broader skepticism about dream incubation's validity, and perceive practical challenges that could hinder successful dream incubation efforts. Each subscale exhibited good internal consistency, with the self-efficacy subscale achieving a Cronbach's α of .856, the skepticism subscale attaining .720, and the challenge subscale reaching .813.

Scores for each subscale were calculated by summing the respective items. Correlations between DIAS subscales and DAS subscales provided evidence of concurrent validity. Table 4 shows the correlation matrix of the DAS and DIAS. Within the DAS, the negative dream attitude scale displayed moderate negative correlations with the positive dream attitude scale ($r = -.635, p < .001$). The self-efficacy subscale of DIAS was significantly positively associated with the DAS positive attitude subscale ($r = .562$, $p < .001$), while its association with the DAS negative attitude subscale was negative but not statistically significant ($r = –.186$). In contrast, the DIAS skepticism subscale demonstrated a significant positive correlation with the DAS negative attitude subscale ($r = .278$, $p < .01$) and a significant negative correlation with the DAS positive attitude subscale ($r = –.309, p < .01$). Similarly, the DIAS challenge subscale was positively correlated with the DAS negative attitude subscale ($r = .567$, $p < .001$) and exhibited a negative correlation with the DAS positive attitude subscale ($r = –.504$, $p < .001$). In addition to the cross-scale correlations, significant interrelationships were observed among the DIAS subscales themselves. The self-efficacy subscale was significantly negatively correlated with both the skepticism ($r = –.584$, $p < .001$) and challenge ($r = –.392$, $p < .001$) subscales, whereas the skepticism and challenge subscales were significantly positively correlated ($r = .414$, $p < .001$).

The average item scores, instead of the total scale scores, were used for comparing mean differences between the DIAS and DAS. The mean positive attitude item score (2.51) of the DAS was significantly larger than that of the DIAS (1.51), $t = 13.36$, $p < .001$, Cohen's $d = .781$. On the other hand, the mean negative attitude item score (1.31) of the DAS was significantly smaller than that of the DIAS

Table 4
Correlations Matrix for Dream Attitude Scale and Dream Incubation Attitude Scale

Scales	1	2	3	4	5
Dream Attitude Scale					
1. Negative attitude	—				
2. Positive attitude	−.635***	—			
Dream Incubation Attitude Scale					
3. Self-efficacy	−.186	.562***	—		
4. Skepticism	.278**	−.309**	−.584***	—	
5. Challenge	.567***	−.504***	−.392***	.414***	—

** $p < .01$. *** $p < .001$.

(2.13), $t = -9.62$, $p < .001$, Cohen's $d = .900$. Independent t tests revealed no significant gender differences across any DIAS or the DAS subscales. The lack of observed differences suggests that gender does not play a substantial role in influencing attitudes toward dream incubation or dream attitudes in this sample.

Discussion

The present study aimed to validate a new scale for assessing attitudes toward dream incubation, known as the DIAS. We explored the factorial structure, internal consistency, and concurrent validity of the DIAS within a sample of Hong Kong Chinese participants. Our findings indicate that the DIAS is characterized by a three-factor structure and exhibits satisfactory psychometric properties.

Factor analyses revealed that the items on the DIAS are best organized into three distinct factors. The self-efficacy subscale reflects individuals' positive beliefs in their ability to engage in and benefit from dream incubation. The skepticism subscale captures doubts or disbelief regarding the validity and utility of dream incubation practices. The challenge subscale pertains to perceived obstacles and difficulties associated with implementing dream incubation. The three-factor model of the DIAS demonstrated strong internal consistency, as evidenced by high Cronbach's α values. Together, these subscales provide valuable insights into an individual's motivation and perceived competence in utilizing dream incubation techniques while also addressing potential skepticism and identifying barriers that may impede the effective application of these strategies.

The present study found a significant moderate positive correlation between the self-efficacy subscale of the DIAS and the positive dream attitude scale of the DAS. In other words, individuals who strongly believe in their ability to engage in and benefit from dream incubation tend to also maintain generally positive attitudes toward dreams. Conversely, those who hold negative views of dreams are more likely to express skepticism about dream incubation and perceive greater obstacles and challenges associated with it. This theoretical alignment supports the convergent validity of the DIAS. Although the DIAS and DAS may measure related phenomena, they do not appear to be redundant. This is further evidenced by findings showing that participants expressed significantly more positive and less negative attitudes toward dreaming in general compared to dream incubation, as measured by the DAS and DIAS, respectively. Overall, the DIAS emerges as a reliable, valid, and distinct measure for assessing attitudes toward dream incubation.

However, the findings of this study do have limitations. For instance, the sample was confined to participants from Hong Kong, which may limit the generalizability of the results to other cultural contexts. Moreover, only the DAS was used for validity testing. Future research should aim to replicate these findings across diverse cultural settings and other DASs to enhance the external validity of the DIAS and explore related potential experiments or interventions.

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Appendix A

Dream Incubation Attitude Scale—English Version (In the Following Items, Please Circle the Number that Best Applies.)

DIAS items	*Strongly disagree*	*Disagree*	*Neutral*	*Agree*	*Strong agree*
1. I believe dream incubation is possible.	0	1	2	3	4
2. I believe I can incubate a dream.	0	1	2	3	4
3. I believe dream incubation can improve my emotional well-being.	0	1	2	3	4
4. I am interested in dream incubation.	0	1	2	3	4
5. I think dream incubation is ridiculous.	0	1	2	3	4
6. I do not think I can incubate a dream.	0	1	2	3	4
7. I think dream incubation is practical.	0	1	2	3	4
8. I will try my best to incubate a dream.	0	1	2	3	4
9. Dream incubation is a myth.	0	1	2	3	4
10. I can manipulate my dreams.	0	1	2	3	4
11. Dream incubation is useless for me.	0	1	2	3	4
12. I may give up on attempting dream incubation.	0	1	2	3	4
13. I think dream incubation is a real phenomenon.	0	1	2	3	4
14. I think it is impossible for me to incubate a dream.	0	1	2	3	4
15. I believe I can solve problems through dream incubation.	0	1	2	3	4
16. Practicing dream incubation is a waste of time.	0	1	2	3	4
17. Dream incubation could be easy for me.	0	1	2	3	4
18. I doubt that dream incubation can really aid my mental health.	0	1	2	3	4
19. I think I may encounter obstacles while attempting dream incubation.	0	1	2	3	4
20. I believe that through manipulating my dreams, I can enhance my well-being.	0	1	2	3	4

Note. DIAS = Dream Incubation Attitude Scale.

(*Appendices continue*)

Appendix B

Dream Incubation Attitude Scale—Traditional Chinese Version (孵夢態度量表。請選擇並圈出最合適的數字去作答下列問題。**)**

DIAS items	非常不同意	不同意	中立	同意	非常同意
1. 我相信孵夢是能夠實現的。	0	1	2	3	4
2. 我相信我可以成功孵夢。	0	1	2	3	4
3. 我認為孵夢能夠改善我的情緒。	0	1	2	3	4
4. 我對孵夢感興趣。	0	1	2	3	4
5. 我認為孵夢是無稽之談。	0	1	2	3	4
6. 我不認為我能夠成功孵夢。	0	1	2	3	4
7. 我認為孵夢是實用的。	0	1	2	3	4
8. 我會盡我所能去孵一個夢。	0	1	2	3	4
9. 孵夢是虛構的。	0	1	2	3	4
10. 我能夠操控自己所發的夢。	0	1	2	3	4
11. 對我而言，孵夢是沒有用的。	0	1	2	3	4
12. 我或許會放棄嘗試去孵夢。	0	1	2	3	4
13. 我認為孵夢是真有其事。	0	1	2	3	4
14. 對我而言，孵夢是不可能的。	0	1	2	3	4
15. 我認為我能夠透過孵夢去解決問題。	0	1	2	3	4
16. 練習孵夢是浪費時間的。	0	1	2	3	4
17. 或許對我來說，實踐孵夢會比較預期簡單。	0	1	2	3	4
18. 我不認為孵夢真的會對我的精神健康帶來幫助。	0	1	2	3	4
19. 我認為我會在嘗試孵夢的時候有所障礙。	0	1	2	3	4
20. 我相信透過操控自己的夢，可以提高自身的幸福感。	0	1	2	3	4

Note. DIAS = Dream Incubation Attitude Scale.