Developing the "Metacognition about Focused Attention in Social Anxiety Questionnaire"

Nozomi Tomita, Ayumi Minamide, and Hiroaki Kumano

Waseda University

Author Note

Nozomi Tomita, Faculty of Human Sciences, Waseda University, Saitama, Japan; Ayumi Minamide, Graduate School of Human Sciences, Waseda University, Saitama, Japan; Hiroaki Kumano, Faculty of Human Sciences, Waseda University, Saitama, Japan.

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Correspondence concerning this article should be addressed to Nozomi Tomita, Faculty of Human Sciences, Waseda University, 2-579-15, Mikajima, Tokorozawa, Saitama, 359-1192, Japan. TEL: +81-4-2947-6985. FAX: +81-4-2947-6759. E-mail: n-tomita@aoni.waseda.jp

Abstract

Extant research has demonstrated that people with social anxiety exhibit attentional bias grounded in their metacognitive strategies when they are faced with internal and external threat stimuli. Based on this finding, the current study developed the Metacognition about Focused Attention in Social Anxiety Questionnaire (MFAQ) and investigated its reliability and validity. The MFAQ consists of positive and negative metacognitive beliefs for both self-focused attention and attention bias. A total of 253 undergraduates completed the MFAQ as well as several questionnaires measuring social anxiety, internal and external attention bias, and metacognitive beliefs. Exploratory and confirmatory factor analyses were performed to extract factors and to demonstrate structural validity, and Cronbach's alpha was calculated to examine internal consistency and reliability was verified through the test-retest method within a 2-week intervening period. Correlation analyses were conducted and these indicated criterion-related validity and construct validity. Consequently, factor analyses extracted the four factors indicated above from 16 items. Good internal consistency and reliability were demonstrated. Criterion-related and construct validities were indicated except for the validity of "positive metacognition for self-focused attention." Future research should use the MFAQ to assess the relationship between self-focused attention and attentional bias in social anxiety.

Keywords: social anxiety; self-focused attention; other-focused attention, metacognitive therapy; metacognitive beliefs

Introduction

Social anxiety disorder (SAD) is characterized by a marked fear of social and performance situations in which the individual is scrutinized by others (American Psychiatric Association, 2013). Cognitive-behavioral models of social anxiety have proposed that attentional bias to social threats is central to this perceptible fear (Clark and Wells, 1995; Rapee and Heimberg, 1997). Two critical attentional processes have been identified in individuals with SAD: self-focused attention (SFA), which refers to a person's attention to inner cues like negative thoughts, negative self-imagery, and bodily sensations; and other-focused attention (OFA), or the addressing of environmental threats such as negative evaluations by others.

These excessive attention to the internal and external threats are expressed as "attention bias" and they have been observed in social anxiety as well as other anxiety and mood disorders. Previous studies have focused on automatic attention bias used through the use of cognitive tasks such as "emotional Stroop tasks." Attention bias has been considered an involuntary and largely automatic mechanism (Williams, Watts, MacLeod, & Mathews, 1988). Automaticity indicates that "start and end are involuntary," "little or no attention resources are required for processing," and the attribute of "not processing consciously" (Wells, 2009). However, Wells and Matthews (1994) proposed metacognitive therapy (MCT) and viewed attention bias as a reflection of strategic processing. They established that "Cognitive Attentional Syndrome (CAS)" is responsible for psychological disorders. The CAS consists of perseverative thought in the form of worry/rumination, attentional strategies of threat monitoring (attention bias), and coping behaviors that fail to provide corrective learning experiences and contribute to failures of self-regulation. According to MCT, the intervention target is the metacognition and attentional function that controls the CAS. Metacognition plays a role in controlling, monitoring, and evaluating thought, in which the

aspect of “metacognitive beliefs” is particularly important. These beliefs may be positive (e.g., worrying helps me cope) or negative (e.g., when I start worrying, I cannot stop; my worrying is dangerous for me) (Wells & Cartwright-Hatton, 2004). The activation of these metacognitive beliefs in MCT strategically or intentionally causes CAS. Therapists must modify metacognitive beliefs in order to decrease these maintenance factors including attention bias. Several studies have evidenced that attention bias is strategically executed (Wells & Matthews, 1997).

Attention bias training (Amir, Beard, & Taylor, 2009) is known to promote automatic (bottom-up) attention to neutral stimuli and has been developed as a treatment for SFA and OFA. However, in clinical psychological interventions, the top-down method of controlling attention in a flexible manner tends to be emphasized more than the bottom-up technique. Understanding attention bias from a strategic point of view can help to widen its treatment alternatives. For instance, if a patient with SAD deliberately detects a threat based on the metacognitive belief that “watching a person’s reaction helps self-assessment” or “I cannot stop worrying about blushing,” SFA and OFA may efficiently be reduced by interventions that focus on attention strategies being counterproductive and that train patients to control attention.

Studies conducted in the past have elucidated that therapists should assess whether a patient with SAD has metacognitive beliefs about SFA and OFA before engaging in any intervention (Wells, 2007). However, it is difficult to perform an intervention on metacognitive beliefs on the basis of a quantitative assessment and to confirm its effect because a questionnaire that can measure these beliefs has not been created. Therefore, this study purposed to develop the Metacognition about Focused Attention in Social Anxiety Questionnaire (MFAQ) and to investigate its reliability and validity.

Method

Participants and procedure

Application forms for participation in the experiment were handed to university students in 2016, and 253 adults (123 women, 123 men, 7 unknown), aged 19.90±2.77, were ultimately recruited. Informed consent was obtained from all participants. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (the Ethics Review Committee on Research with Human Subjects, 2015-196; 2017-HN007) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Self-report measures

Metacognition about Focused Attention in Social Anxiety Questionnaire (MFAQ). Items that included positive as well as negative metacognitive beliefs for both SFA and OFA were devised. Then, it comprised positive metacognition for SFA (4 items; called P-SFA), negative metacognition for SFA (5 items; called N-SFA), positive metacognition for OFA (5 items; called P-OFA), and negative metacognition for SFA (3 items; called N-OFA). Participants rated their responses to each statement using a 6-point Likert scale ranging from 1 (*not at all*) to 6 (*totally*). A clinical psychologist crafted the items and introductory instructions. Thereafter, a professor of clinical psychology confirmed the content validity of each item.

Japanese Version of the Social Phobia Scale (SPS: Kanai et al., 2004). The SPS is a 20 item measure of the fear of being scrutinized while performing an act in the presence of others and determines the severity of social anxiety. Participants rated their agreement with each statement on a 5-point Likert scale from 0 (*not at all*) to 4 (*totally*). The total score of the items can range from 0 to 80. The Japanese version of SPS exhibits high validity and reliability.

Short Version of Fear of Negative Evaluation Scale for Japanese (SFNE; Sasagawa et al., 2004). The study used the short version of the Fear of Negative Evaluation Scale for Japanese (SFNE; Sasagawa et al., 2004) to measure the participants' fear of negative evaluation. The questionnaire contained 12 items and participants rated each statement on a 5-point Likert scale from 0 (*not at all*) to 4 (*totally*). The total score of the items can range from 12 to 48. The Japanese version of SFNE demonstrates high validity and reliability.

Focused Attention Scale (FAS: Yamada, Sekiguchi, Ito, and Nedate, 2002). The FAS was developed based on the Focused Attention Questionnaire. (FAQ; Chambless and Glass, 1984) It comprises nine original items as well as three items translated from the FAQ. The FAS encompasses two subscales: FAS-self (6 items), which measures the degree to which participants attend to their body sensations; and FAS-others (6 items), which measures the degree to which participants attend to the behavior of others. The answers were measured on a 5-point Likert scale from 1 (*not at all*) to 5 (*totally*). The scoring range of each subscale is 6 to 30. The validity and reliability of the FAS have been tested as suitable (Yamada et al., 2002).

The Japanese version of Metacognitive questionnaire-30 (MCQ-30: Yamada, Tsujihira, 2007). The MCQ-30 measures metacognitive beliefs about worry. The subscales of "positive beliefs" and "uncontrollability and danger" were used to measure positive and negative metacognition for the variable "worry." The scale included 12 items that were rated on a 5-point Likert scale from 1 (*not at all*) to 4 (*totally*). The scores of each subscale can range from 6 to 24. The Japanese version of MCQ-30 shows high validity and reliability.

Data preparation and analysis

Structural validity Exploratory factor analyses with promax rotation were performed on the items for SFA or OFA each, separately. Then, confirmatory factor analyses were performed to confirm structural validity as a whole scale.

Internal consistency and reliability Cronbach's alpha was calculated to examine internal consistency. Reliability was verified by the test-retest method within a 2-week intervening period.

Criterion-related validity Correlation analyses were conducted between each subscale of MFAQ and SPS and SFNE to investigate whether MFAQ was positively correlated with SPS and SFNE within a range spanning faintly to moderately.

Construct validity Correlation analyses were conducted between each subscale of MFAQ and FAS and MCQ-30. Convergent validity was investigated through the relationship a)-b) and discriminatory validity was determined by the relationship c)-d).

a) P-SFA and N-SFA were moderately positively correlated with FAS-self, whereas P-OFA and N-OFA were moderately positively correlated with FAS-others.

b) P-SFA and P-OFA were weakly correlated with positive beliefs of MCQ-30, whereas N-SFA and N-OFA were weakly correlated with uncontrollability and danger of MCQ-30.

c) The correlation coefficient between P-SFA, N-SFA and FAS-others, and the correlation coefficient between P-OFA, N-OFA, and FAS-self were smaller than the correlation coefficient of a).

d) The correlation coefficient between P-SFA, P-OFA and positive beliefs of MCQ-30, and the correlation coefficient between N-SFA, N-OFA, and uncontrollability and danger of MCQ-30 were smaller than the correlation coefficient of b).

Results

Structural validity

Factor analyses on the items for SFA or OFA each extracted two factors from 8 items respectively (Table 1, Table 2). With regard to SFA, Factor 1 contained metacognitive beliefs relating to negative metacognition for SFA (5 items), and was labeled “Negative metacognition for self-focused attention (N-SFA).” Factor 2 contained metacognitive beliefs relating to positive metacognition for SFA (3 items), and was labeled “Positive metacognition for self-focused attention (P-SFA).” In terms of OFA, Factor 1 involved metacognitive beliefs relating to positive metacognition for OFA (5 items), and was labeled “Positive metacognition for other-focused attention (P-OFA).” Factor 2 included metacognitive beliefs relating to negative metacognition for OFA (3 items), and was labeled “Negative metacognition for other-focused attention (N-OFA).” In the confirmatory factor analyses, all path coefficients were significant (GFI = .90, AGFI = .84, CFI = .90, TLI = .87, RMSEA = .098; Figure 1). Thus, the structural validity of the use of MFAQ as one measure with four subscales was established.

Internal consistency and reliability

The alpha scores of each factor demonstrated sound internal consistency (Table 1, 2).The MFAQ also confirmed fair to excellent test-retest reliability (ICC (2,1): intraclass correlation coefficients of N-SFA = .50; P-SFA = .67, P-OFA = .61, N-OFA = .78).

Criterion-related validity and construct validity

Table 3 showed the mean scores and standard deviation for each measurement, and Table 4 showed the correlations between MFAQ and other measures.

Criterion-related validity P-SFA was not correlated with SFNE nor SPS, whereas N-SFA was marginally positively correlated with SPS and moderately positively correlated with SFNE. P-OFA and N-OFA were weakly to strongly positively correlated with SPS and SFNE.

Convergent validity P-SFA was weakly positively correlated with FAS-self and "positive beliefs" variables of MCQ-30, while N-SFA was weakly to moderately positively correlated with FAS-self and "positive beliefs" items of MCQ-30. P-OFA weakly to moderately positively correlated with FAS-others and "positive beliefs" of MCQ-30, and N-OFA was also weakly to moderately positively correlated with FAS-others and "uncontrollability and danger" of MCQ-30.

Discriminatory validity P-SFA was marginally positively correlated with FAS-others, while N-SFA was weakly positively correlated with FAS-others, in which the correlation coefficient between N-SFA and FAS-others was larger than that between N-SFA and FAS-self. N-SFA was very weakly correlated with "positive beliefs", and P-SFA was weakly correlated with "uncontrollability and danger" of the MCQ-30, in which the correlation coefficient between P-SFA and uncontrollability and danger of MCQ-30 was larger than that between P-SFA and positive beliefs of MCQ-30. P-OFA and N-OFA were very weakly correlated with FAS-self. P-OFA was very weakly correlated with uncontrollability and danger of MCQ-30, whereas N-OFA was very weakly correlated with positive beliefs.

Discussion

The present study aimed to develop the Metacognition about Focused Attention in Social Anxiety Questionnaire (MFAQ) and to investigate its reliability and validity. A questionnaire of 16 items was created and the conducted tests evinced adequate reliability and validity for "positive metacognition for other-focused attention" (P-OFA) and "negative metacognition for other-focused attention" (N-OFA). In contrast, the criteria-related validity and construct validity of "positive metacognition for self-focused attention" (P-SFA), and the

discrimination validity of "negative metacognition for self-focused attention" (N-SFA) were insufficient.

In terms of the factor structure of each scale of SFA and OFA, eight items and two factors were extracted respectively, after which the model fit was also sufficient as one measure. The internal consistency was adequate as evinced by the α coefficient of.75 to.85. The test-retest reliability was also fair to excellent. With regard to criteria-related validity and construct validity, there was no significant correlation between P-SFA and social anxiety symptoms (SPS, SFNE), and the weak correlation between P-SFA, FAS-Self, and positive beliefs of MCQ-30. Therefore, the criteria-related validity and construct validity of P-SFA were somewhat deficient. Although these results may be attributed to the fact that positive metacognitive belief is less pathological than negative metacognitive belief (Wells, 2009), the item "observe body sensation" may be interpreted as adaptive behavior. In addition, SFA includes attention to thoughts, moods, physical sensations, and the "observer perspective," which is a mental attitude that regards the self from the perspective of others. It has been suggested that observer perspective is especially pathogenic in social anxiety. However, the factor analysis yielded no item for measuring positive metacognitive beliefs with regard to the observer perspective. Therefore, the correlation pattern was not evinced according to the hypothesis. Future research will need to add items so that positive metacognitive beliefs about self-focusing can be comprehensively measured, and will have to reexamine their validity.

On the other hand, N-SFA, P-OFA, and N-OFA demonstrated adequate reliability and validity, except for the discriminatory legitimacy of N-SFA. SFA and OFA have been explored in relative isolation, providing limited opportunities for the examination of a possible covariant relationship (Choi, Shin, Ku, and Kim, 2016; Schultz and Heimberg, 2008). It is possible to examine the relationship between the SFA and OFA by using this

questionnaire. Furthermore, the MFAQ may be an effective measure for the examination of the effects of an intervention on metacognitive beliefs. Since the subjects of this study were university students, it is necessary to verify whether similar results can be demonstrated when targeting SAD patients in the future.

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Table 1 Results of Factor Analysis of the Self-focused Attention Items of the Metacognition about Focused Attention in Social Anxiety Questionnaire

	Items	Factor loadings	
		I	II
I：Negative metacognition for self-focused attention (*α* = .79)			
1	I cannot stop feeling my body sensations	**.81**	−.01
2	I cannot stop thinking about my body	**.72**	.03
3	I cannot help attending to my body even if I do not intend to do so	**.70**	.03
4	I cannot help seeing myself through the eyes of others	**.59**	−.06
5	I will be crazy if I always care about myself	**.41**	.12
II：Positive metacognition for self-focused attention (*α* = .75)			
6	I can understand my situation correctly by observing the reaction of my body	−.10	**.98**
7	By paying attention to my physical senses, I can feel exactly how nervous I am now	.05	**.69**
8	I can be safe by checking my feelings and body sensation	.24	**.41**

Factor correlation	I	II
I	—	
II	.44	—

Table 2 Results of Factor Analysis of the Attention Bias Items of the Metacognition about Focused Attention in Social Anxiety Questionnaire

	Items	Factor loadings	
		I	II
I：Positive metacognition for other-focused attention (*α* = .85)			
1	Watching a person's reaction helps me to see if I am behaving properly	**.84**	−.08
2	I can modify my behavior by thinking about how others see me	**.83**	−.03
3	I need to pay attention to people's reactions because people's reactions reflect my behavior	**.74**	.03
4	It is important to check people ’s reactions to see if I am strange to them	**.65**	.07
5	By seeing people's reactions, I can prevent my failing	**.46**	.23
II： Negative metacognition for other-focused attention (*α* = .75)			
6	My gaze spontaneously turns to people	−.07	**.90**
7	I see people's complexions spontaneously	.11	**.72**
8	Once I start to worry about a person's reaction, it cannot be stopped	.01	**.50**
Factor correlation		I	II
I		—	
II		.60	—

Table 3 Mean Scores, Standard Deviations for Each Measurement

Variable	Mean	SD
P-SFA	10.62	2.78
N-SFA	17.05	4.80
P-OFA	22.00	4.31
N-OFA	12.00	3.16
SPS	16.58	10.72
SFNE	43.82	8.61
FAS-self	13.80	4.50
FAS-others	21.97	4.71
MCQ-30 positive beliefs	16.04	3.57
MCQ-30 uncontrollability and danger	14.13	4.06

Note. P-SFA = Positive metacognition for self-focused attention; N-SFA = Negative metacognition for self-focused attention; P-OFA =Positive metacognition for other-focused attention; N-OFA = Negative metacognition for other-focused attention; SPS = Social Phobia Scale; SFNE = Short Fear of Negative Evaluation Scale; FAS = Focused Attention Scale; MCQ-30 = A short form of the Metacognitive questionnaire

Table 4 Correlations between MFAQ and Other Measures

			FAS		MCQ-30	
	SPS	SFNE	FAS-self	FAS-others	positive beliefs	uncontrollability and danger
SFA						
P-SFA	.11	.07	.25***	.12†	.18**	.21***
N-SFA	.25†	.47***	.33***	.36***	.16**	.49***
OFA						
P-OFA	.29*	.42***	.18**	.60***	.21**	.18**
N-OFA	.31*	.65***	.30***	.58***	.18**	.36***

***p <.001, **p <.01, *p <.05, †p <.10

Note. SFA = Self-focused attention; OFA = Other-focused attention; P-SFA = Positive metacognition for self-focused attention; N-SFA = Negative metacognition for self-focused attention; P-OFA =Positive metacognition for other-focused attention; N-OFA = Negative metacognition for other-focused attention; SPS = Social Phobia Scale; SFNE = Short Fear of Negative Evaluation scale; FAS = Focused Attention Scale; MCQ-30 = A short form of the Metacognitive questionnaire

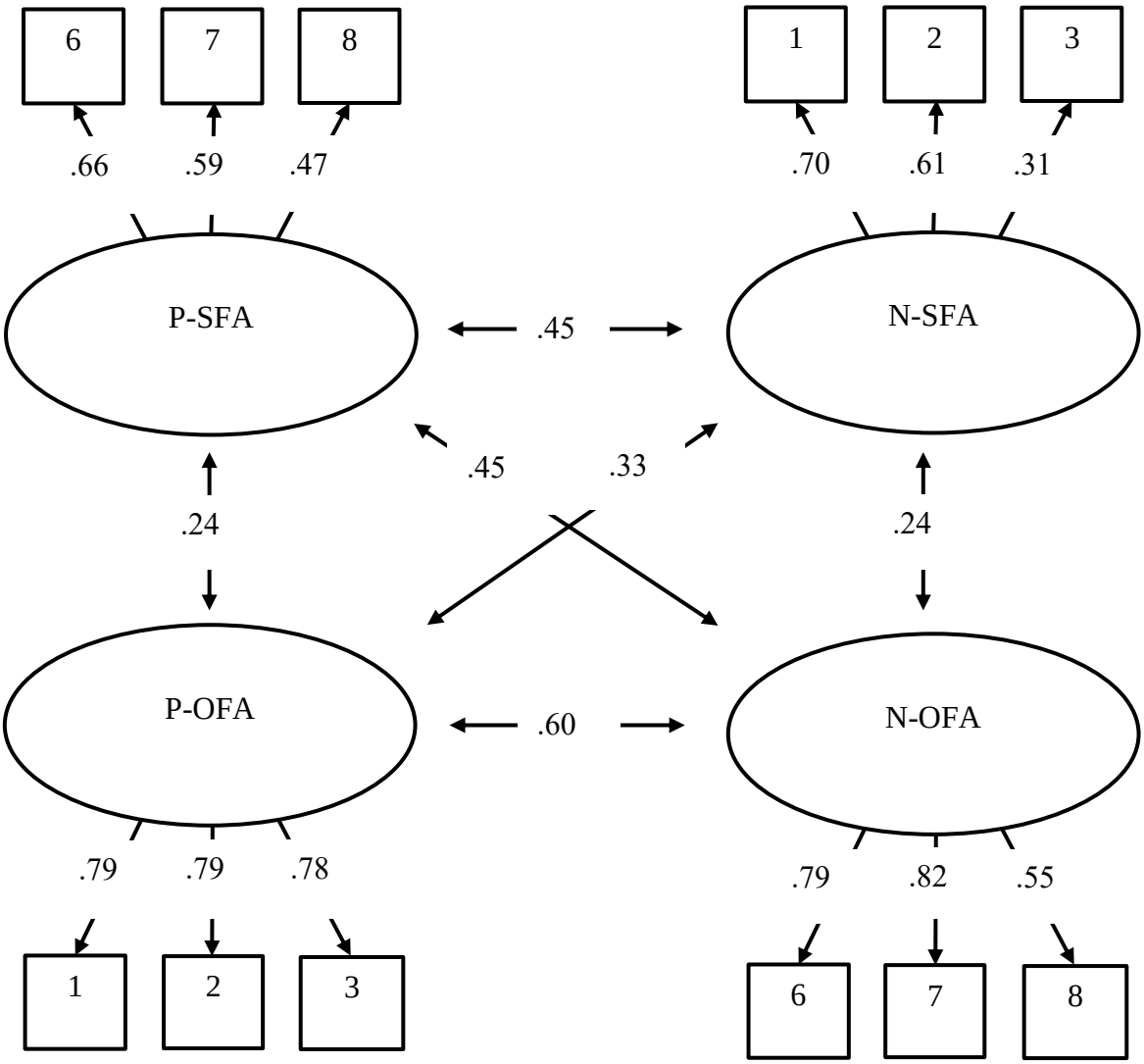

Figure 1 Path Diagram of the Metacognition about Focused Attention in Social Anxiety Questionnaire

Note: P-SFA = Positive metacognition for self-focused attention; N-SFA = Negative metacognition for self-focused attention; P-OFA = Positive metacognition for other-focused attention; N-OFA = Negative metacognition for other-focused attention

Appendix

When people are experiencing social situations (such as speaking in front of people, working while being seen by others), it is said that people often pay attention to the reactions of others (e.g., facial expressions, statements) and their own reactions (e.g., thoughts, body sensation such as heartbeat and sweat).

This questionnaire shows the cognition related to such attention. How well does the content of each item match your thoughts? Please circle the numbers that you think are applicable.

	Not at all	Not so much	Somewhat not much	Somewhat applicable	applicable	totally
1. Watching a person's reaction helps me to see if I am behaving properly	1	2	3	4	5	6
2. I need to pay attention to people's reactions because people's reactions reflect my behavior	1	2	3	4	5	6
3. I can modify my behavior by thinking about how others see me	1	2	3	4	5	6
4. It is important to check people’s reactions to see if I am strange to them	1	2	3	4	5	6
5. By seeing people's reactions, I can prevent my failing	1	2	3	4	5	6
6. I see people's complexions spontaneously	1	2	3	4	5	6
7. My gaze spontaneously turns to people	1	2	3	4	5	6
8. Once I start to worry about a person’s reacton, it cannot be stopped	1	2	3	4	5	6
9. By paying attention to my physical senses, I can feel exactly how nervous I am now	1	2	3	4	5	6
10. I can understand my situation correctly by observing the reaction of my body	1	2	3	4	5	6
11. I can be safe by checking my feelings and body sensation	1	2	3	4	5	6
12. I cannot stop feeling my body sensations	1	2	3	4	5	6
13. I cannot help attending to my body even if I do not intend to do so	1	2	3	4	5	6
14. I cannot help seeing myself through the eyes of others	1	2	3	4	5	6
15. I will be crazy if I always care about myself	1	2	3	4	5	6
16. I cannot stop thinking about my body	1	2	3	4	5	6