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## Belief and Experience of Memory Recovery<sup>1</sup>

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<sup>1</sup> Correspondence should be addressed to Makiko Naka, Department of Psychology, Graduate School of Letters, Hokkaido University. E-mail should be sent to the first author (mnaka@psych.let.hokudai.ac.jp). This manuscript is dedicated to Beth Loftus. In 1995, Lawyer Ichinose planned a trip to China. He invited Beth and other psychologists to join. During the trip, the first author became aware of the repressed memory syndrome, and was presented a book *the Myth of Repressed Memory : False Memories and Allegations of Sexual Abuse* (Loftus & Ketcham, 1994). The authors of the present manuscript are very grateful for Beth's encouragement of our research and work in this field. Without her support, we could not have established the Japanese society for Law and Psychology. The authors also thank Dr. Harlene Hayne and two anonymous reviewers for valuable comments on the earlier version of this manuscript. The study was conducted with the support of Grant-in-Aid for Scientific Research (C)(2)13610094 and (B)17330149 from Japan Society for the Promotion of Science (JSPS) awarded to the first author.

### Abstract

A number of large-scale surveys have shown that many adults, particularly university students, believe that traumatic memories can be repressed and then recovered at a later point in time. How do ordinary people like students, most of whom may not have experiences of repression or recovery of traumatic events, come to believe in such phenomenon? Such belief may be associated with daily experiences of forgetting and remembering. We asked 111 undergraduates to rate how likely they would think a person (in daily life) would remember what she/he had completely forgotten, and to write down such experiences, if they had any. Also we asked them to rate 39 statements on memory including repression and recovery of memory, and traumatic memory. Overall, 71% of participants thought that it was likely that one would remember what she/he had completely forgotten; 70% of participants reported that they actually had such experiences. Although most of the episodes that students reported reflected normal forgetting and remembering in daily life, the number of episodes as well as the belief and experience of such forgetting and remembering were correlated with their belief measures on repression and recovery of traumatic memories. Belief and experience of daily memory phenomenon may have something to do with creation and/or maintenance of belief in repressed/recovered memory.

The following is a brief description of what happened in court when the first author took the stand as an expert witness.<sup>2</sup>

Ann and Bob were arrested under suspicion of murdering X. Bob denied the allegation and Ann said she had no memory for murdering X. However, during a four-month detention period during which she participated in more than 100 intensive interviews, Ann came to think that she might have repressed her memory for the murder. She practiced some techniques such as image elaboration, utilized “cues” given by interrogators, and she finally “recovered” the memory of murdering X with Bob. At the end of her trial, she was sentenced to life in prison. In Bob's trial, however, the first author of the present paper questioned that Ann's memory might be a “false memory.” Then, Ann retracted her previous statement saying she actually remembered murdering X all the time. She said she pretended to have repressed the memory because she did not want to be seen as denying the charge when she was first arrested (an honest confession is important in order to receive leniency). But the first author was struck by the fact that all of the judges and prosecutors had believed Ann’s story of repression and memory recovery during her trial.

There is growing evidence that members of the general public hold strong beliefs about the reality of repressed and recovered memories. For example, Garry, Loftus and Brown (1994) showed that the majority of university students believe in repression and recovery of memory. Similarly, Golding, Sanchez and Segó (1996) showed that students thought recovered memories should be admitted in court. Furthermore, in many studies, mock jurors favored a plaintiff who claimed to have repressed her memory of being abused (Golding, Segó, Sanchez & Hasemann, 1995; Loftus, Weingardt & Hoffman, 1993; Schutte, 1994). In light of the dearth of empirical evidence for the validity of repression and recovery, where does the widespread belief in these phenomenon come from? How do ordinary people like judges, prosecutors and students, most of whom may not have experience of repression or recovery of traumatic events, come to believe in such phenomenon?

Familiarity with, or base rates of such events may have something to do with it. In Loftus, Weingardt and Hoffman (1993), mock jurors were presented with either Roberta's case or Nancy's case. In Roberta's case, she repressed her memory of being abused by her father for ten years whereas in Nancy's case, she did not tell about her memory of abuse until she was 23-years old and began psychotherapy. Although jurors believed both Roberta and Nancy, they showed higher belief in Nancy's story than in Roberta's. They apparently thought that keeping a memory of being abused secret is more likely to happen than recovering a repressed memory. Along the same lines,

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<sup>2</sup> The case is known as Honjo case, which was documented in a book by Bob's defense lawyer Takashi Takano (Takano, 2004).

in Van Wallendaël (1999), participants expressed greater belief in memories that were recovered spontaneously than those recovered through hypnotherapy or with the help of self-help book. They were also more likely to believe in memories of being lost in a shopping mall than those of childhood sexual abuse and satanic rituals (see also Golding, Segó, Sanchez & Hasemann, 1993; Schutte, 1994). It seems that people show greater belief in memory experiences that are less dramatic, and are more likely to happen in their daily lives. A daily occurrence that is similar to memory repression would be everyday forgetting and remembering (e.g., Reason, 2000; Yapko, 1994). Because people in general may not have clinical experiences, the belief in repressed/recovered memories might come from common occurrences of forgetting and remembering.

In the present study, we first asked participants how likely they thought such memory phenomena are to occur, and how often they had personally experienced a given memory phenomenon. Second, we asked participants to rate the extent to which they agreed with statements on memory such as unconscious memory, repression and recovery of memory, and traumatic memory. Finally, we calculated correlations between participants' prior experience with daily forgetting and remembering and their belief ratings about the same phenomenon. We predicted that participants who exhibit a high score on daily forgetting and remembering would show greater belief in repressed/recovered memory.

In addition, we examined the characteristics of "remembering what one has completely forgotten" by asking participants to write down their experiences. Typically, repression is thought to occur for memory of a traumatic event and the memory would presumably be recovered through hypnosis or therapy (Loftus & Ketcham, 1994). For example, in Golding et al. (1996), 69 out of 99 episodes of "recovered memory" involved traumatic events such as sexual assault, nonsexual assault, and violence. Furthermore, 12% of Golding et al.'s participant reported that they had recovered their repressed memory in the course of therapy. In order to make a comparison between daily forgetting/remembering and repression/recovery, we explored what was remembered and if anything, how it was remembered in the daily life.<sup>3</sup>

The final variable that we examined was gender. Studies have shown that women hold stronger beliefs regarding repressed memory than do men (Golding et al., 1995, 1996; Key et al., 1996; Schutte, 1994). In the present study, we examined whether women have greater belief in or experience with both repressed/recovered memories and also forgetting and remembering in the course of daily life.

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<sup>3</sup> That is to make sure that daily forgetting/remembering is not similar to so-called repression/recovery, which is considered to occur for traumatic (episodic) memories and remembered intentionally. If what they report as daily forgetting/remembering is just like the repression/recovery of memories, there is no point in looking at correlations between daily forgetting/remembering and repressed/recovered memories.

## Methods

*Participants.* A total of 111 undergraduate students (56 men, 53 women, two unknown) participated in the study.

*Procedure.* Each participant completed a questionnaire. The questionnaire was administered in an Introductory Psychology class. Participants were given course credit for their participation.

The questionnaire consisted of two parts. In part 1, a story was introduced in order to draw participants' attention to their daily experiences with forgetting and remembering. The abstract of this story was as follows. "A is a student. When she found she could not finish her report by the due date, she asked her friend B to let her copy his report. One day, professor called A and said he found that her report and B's were very alike. But A said she didn't remember copying B's report. Another day A met B. B said he told professor that he let her copy his report. A few days later, A was called by the professor again. A decided to admit that she copied B's report but she did not want the professor to think she told a lie. She said 'Well, now I remember I copied B's report but when I saw you last time, I just could not remember it. I had completely forgotten it at that time.'"

Following the story, participants were asked four questions:

Q1: *Is the excuse cogent enough to convince professor that A didn't mean to lie?*

Q2: *How likely would you be to give such an explanation if you were in A's situation?*

Q3: *How likely do you think it is that one remembers what she/he has completely forgotten?*

Q4: *How often have you had a similar experience?*

Participants responded using a 7-point Likert-type scale (1: strongly negative/not at all - 7: strongly affirmative/quite frequently). In addition, participants were asked to write down up to three episodes in which they remember something that they had completely forgotten (Q5). The episodes could describe either their own experience, others' experience, or an imaginary experience but they had to specify the source. We added the last alternative (imaginary) because we wanted participants to report any experience/knowledge about repressed/ recovered memories even though they were not sure about the source.

In part 2, participants were asked to rate 12 statements about memory (e.g., A1: *Memory can be remembered if one tries hard.* A2: *Memory can be remembered if one tries to remember repeatedly.*), 20 statements on memory in general (e.g., B1: *Memory reflects what really happened.* B2: *What really happened is not necessarily remembered.*), and seven statements on traumatic memory (e.g., C1: *Traumatic memory (TM) can be encoded precisely.* C2: *TM can be repressed.*) A 5-point Likert-type scale was used (1: strongly disagree - 5: strongly agree.) Statements are shown in Table 1.

## Results and Discussion

*Part I.* In the story, the protagonist told a professor that she could not tell the truth because she did not remember the event. Only 4% of 101 participants affirmed (i.e., rated 5, 6 or 7 on a 7-point Likert-type scale) that the excuse was cogent enough to convince the professor (Q1)<sup>4</sup> Also, only 32% said that they would give a similar explanation if they were in A's situation (Q2). On the other hand, 71% said that it was possible for someone to remember what she/he had completely forgotten (Q3), and 70% said that they themselves had previously had such an experience (Q4). Thus, although the majority of the participants were against the use of a "memory defense" as an excuse, they believed that people can remember what they had completely forgotten and admitted that they themselves had had such experiences.

As for Q5 (free writing), 72% of the participants described one or more episodes of forgetting and subsequent remembering. A total of 133 episodes were obtained, of which 115 described the participants' experiences, 2 described others' experiences, and 15 were imaginary.<sup>5</sup> Two episodes (one from participants' and the other from others') were discarded because they were irrelevant. Although we did not give any specific instructions, most of participants reported *what* was remembered and *how* it was remembered. Typical answers were as follows:

- I thought I never said that but as I heard my friend describe the situation, I remembered I actually said that.
- When I got home, I could not remember the soundtrack of a film that I watched. I tried to remember, and then I remembered it in the middle of night.
- No sooner than I got out of an examination room, an answer to the question popped up.

As discussed earlier, memory repression would typically occur for a traumatic event (episodic memory) and recovery would occur with effort (intentionally). In order to see whether this was the case for daily remembering and forgetting, we coded the episodes that participants provided in terms of *what* was remembered and *how* it was remembered. We created subcategories as needed, and *what* was remembered was categorized into either *episodic*, *semantic*, *prospective*, or *unspecified*. *How* it was remembered was categorized into either *cued*, *intentional*, *spontaneous*, *later*, or *unspecified*.<sup>6</sup>

Of 131 episodes, 61% of *what* were *episodic*, 30% were *semantic*, and 5% were *prospective*, and 59% of *how* were *cued*, 9% were *spontaneous*, 4% were *later*, and 5% were *intentional*, suggesting that daily forgetting and remembering is not similar to so-called repression/recovery of

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<sup>4</sup> Data from ten participants were excluded from quantitative analyses due to incompleteness of questionnaire.

<sup>5</sup> This qualitative analysis includes all the entry from 111 participants.

<sup>6</sup> Inter-coder agreement between two coders for *what*, the subcategories of *what*, *how*, and subcategories of *how* were .97, .95, .92 and .95, respectively.

memories, which is thought to occur for traumatic episodic events and is to be recovered through effort. Furthermore, most of the episodes were neutral. Only three episodes were associated with negative emotions: "I had forgotten an event that I was hurt. The memory came back and I remembered it in detail" (own episode), "I had forgotten something bad happened to me but I was reminded of that by others." (imaginary), and "There was an event I was hurt, and I wanted to repress it but I remembered it when a similar event occurred" (imaginary). The last one was the only episode that included the word "repress." No emotional words were used, though there were three more episodes (imaginary) that could be associated with negative emotions (two injuries, one disaster). Therefore, we conclude that everyday forgetting and remembering are not like typical repression and recovery. The differences could be due to the nature of the story presented to participants. If a more traumatic story had been used, participants may have provided more traumatic episodes.

In order to examine potential gender differences, we applied an ANOVA on the ratings of Q1, Q2, Q3 and Q4, and on the number of episodes.<sup>7</sup> No main effect was found except for Q4 (How often have you had a similar experience?) ( $F(1, 98) = 5.26, p = .02$ ) (men 4.09, women 4.76). In response to this question, women reported that they would remember what they had completely forgotten more often than men.

*Part II.* The percentage of participants who agreed with each statement (i.e., rated 4 or 5 on a 5-point Likert-type scale) is shown in Table 1. It seems that participants hold strong beliefs that *memory remains permanently* and that *memory is imperfect and constructive*. Although 90% of participants agreed that *memory can be remembered if a cue is given* (A4), 94% also agreed *what really happened is not necessarily remembered* (B2) and 82% agreed *despite the effort what is remembered may be only a part of memory* (B18). Also, although 82% agreed that *false memory can be created from photos and/or suggestions* (B19) and 81% agreed that *a feeling of reliving may occur even for what didn't happen* (B6), 81% agreed *some memories remain in unconsciousness* (B10) and 85% agreed *traumatic memory may creep into mind as anxiety* (C4).

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Insert Table 1 about here

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In contrast to these beliefs, the participants did not appear to believe that memory is repressible. Only 2 % agreed that *one may forget an event if she/he is directed "to forget, not to remember" by someone* (B7) and 10% agreed that *one may forget an event if she/he tries "to forget, not to remember"* (B9). Furthermore, only 7% agreed that *memory can be remembered when a confidential person listens to you hard* (A9), and 6% agreed that *if there's a part of memory you*

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<sup>7</sup> Because there was one missing value for gender, ANOVAs including gender were conducted on 100 cases (53 men, 47 women).



cannot remember, it can be a traumatic memory (C5).

Our next step was to group the statements to uncover simple patterns in the interrelations among them. To do this, we conducted a factor analysis on 39 statements. This factor analysis produced 12 factors with eigenvalues greater than one, but the scree test suggested that only five of these should be rotated. The five factors rotated to a varimax solution accounted for 40.81% of total variance. Factor loadings, eigenvalues and percent of variance explained are shown in Table 1. Factor 1 was related to statements such as memory can be remembered if one tries hard (A1) and memory can be remembered if one tries to remember repeatedly (A2). Thus, this factor was referred to as recovery. Factor 2 was related to statements such as false memory can be created from photos and/or suggestions (B19) and a realistic image can be created even for what did not happen (B12). This factor was referred to as false memory. Factor 3 was related to if one experiences something, the memory remains permanently (B15) and when something is not remembered, it is because the information is not accessed but actually it is stored in memory (B16). This factor was referred to as preservation. Factor 4 was related to one may forget an event if she/he is directed "to forget, not to remember" by someone (B7) and one may forget an event if she/he tries "to forget, not to remember" (B9). This factor was referred to as repression. Finally, factor 5 was related with some memories remain in unconsciousness (B10) and memory can be stored in body if not in consciousness (B3). This factor was referred to as unconsciousness. As shown in Table 1, the number of statement with factor loadings above .40 were 12, 5, 4, 3, and 7 for F1, F2, F3, F4, and F5, respectively. Each scale score was calculated. Statements on traumatic memory (C1, C3, C5, C6, C7) were not related to any of these factors. Therefore, these statements were analyzed separately.

We conducted a 2 (gender) x 5 (scale scores) ANOVA with gender as a between-subject variable and scale scores as a within-subject variable. The main effects of gender and scale scores were significant ( $F(1, 98) = 8.62, p < .01$ ;  $F(4, 392) = 126.25, p < .01$ ). Tukey HSD tests showed that scores were greater for women (3.26) than for men (3.08) ( $p < .01$ ). As for the scale scores, scores for F2 false memory (3.91) and F5 unconsciousness (3.78) were greater than those for F1 recovery (2.92), F3 preservation (3.13), and F4 repression (2.10.) The score for F4 was smaller than other scores ( $< p .01$ ).

As in previous research (Golding et al., 1995, 1996; Key et al., 1996; Schutte, 1994), men were more skeptical about the statements than were women. A possible explanation of skepticism may be, as Golding et al. (1996) argued, that men were in general not willing to believe in occurrence of traumatic events like sexual abuse in the first place. However, women had greater belief not only in repressed/recovered memory but also in the occurrence of remembering what one had completely forgotten (Q4). Therefore, another explanation might be that women are more likely to be focused on their mental processes or internal state. Girls are known to acquire words

that represent internal states and emotions faster than boys (Dunn, Bretherton & Munn, 1987; Dunn, Brown & Beardsall, 1991) and they use them in conversations more often than boys (Fivush & Kuebli, 1997.) The more sensitive one is to her/his own internal state, the more likely one would be to notice her/his forgetting and remembering, which might lead to the conception of repression and recovery.

As for the scale scores, it is worth noting that the score for repression was lower than for the western data. In the present study, the average scale score for F4 (Memory repression) was 2.10 on 5-point Likert-type scale (1: strongly disagree - 5: strongly agree), which suggest the majority of participants do not believe memory can be repressed. On the other hand, in Garry et al. (1994), the average score was 4.24 on a similar 5-point scale, and in Golding et al. (1996), it was 6.31 on a 10-point scale, suggesting that participants do believe memory can be repressed. We do not have an immediate answer to this question. If participants were prompted with a story of a traumatic event, they might have rated higher on repression statements. The questions might not be clear enough because in our society of Japan, false memory cases are rare.<sup>8</sup> It is suggested that the degree of belief varies with psychological training (Van Wallendael, 1999; Yapko, 1994) and the amount of media coverage on the topic (Golding et al., 1996). If the belief in repressed/recovered memory comes from such experiences, rather than the real nature of human memory, it may also be affected by culture. For example, Westerners may be more familiar to the Freudian theory than Asians. Cross-cultural studies are necessary to answer the question.

Correlations. The main purpose of this study was to see whether or not participants who rated high on everyday forgetting and remembering, and who reported more episodes have greater belief in memory repression and recovery. We looked at the correlations between the scores for belief (Q3), experience (Q4) and the numbers of episodes (Q5), and each scale score. As shown in Table 2, belief, experience and the number of episodes were correlated with F1: recovery. Also, belief was correlated with F4: repression, and belief and experience were correlated with F5: unconsciousness. The statement C2: TM can be repressed and C6: TM can be recovered were correlated with belief and the number of episodes. Although the coefficients were moderate, belief and experience of everyday forgetting and remembering were significantly correlated with the scale scores of recovery, repression, and unconsciousness, as well as those on repression and recovery of traumatic memory. It should be noted that this was the case despite the fact that few participants reported negative events. Superficially similar experiences of everyday forgetting and remembering may be associated with the creation and/or maintenance of belief in repression and

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<sup>8</sup> Personally I have never heard of such cases except for Ann's, which, however, turned out that she actually did not repress nor recover memories. I have heard a clinician say the book (Loftus & Ketcham, 1996) might have prevented excessive therapies.

recovery.

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Insert Table 2 about here.  
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An important aspect of belief is that it is difficult to amend. In a comment to Yapko (1994), Loftus et al. (1994) argued some beliefs are similar to a "misconception" in physics, in which students think horizontally thrown objects would travel in curved paths even when there were no external forces. Such misconception may be formed from their experiences of throwing an object but once formed, physics classes do not help to correct it. Similarly, once ideas of repression and recovery are created, they might be sustained or furthered by daily experiences of forgetting and remembering, even though such experiences do not have anything to do with trauma. Perhaps the boundaries between the conception of forgetting and repression, and those between remembering and recovery are ambiguous.

It is important to note that the present data is correlational. We do not know whether participants who had more experiences of everyday remembering came to hold a strong belief in memory recovery, or on the contrary, those who held strong beliefs in memory recovery were more sensitive to their own experiences in their everyday memory experiences. Further studies are necessary to determine which direction the relationship might be. For now, as Yapko (1994) noted, "we do not know how to characterize the differences between repression and merely forgetting."

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Table 1: Statements and the factor loadings

Facto r	No	Statement	Percentage agreed(%)*	F1	F2	F3	F4	F5
1	A1	Memory can be remembered if one tries hard.	22.8	0.69				
1	A2	Memory can be remembered if one tries to remember repeatedly.	23.8	0.73				
1	A3	Memory can be remembered fragmentally.	54.5	0.48				
1	A4	Memory can be remembered if a cue is given.	90.1	0.41				
1	A5	Memory can be remembered if it was a real event.	23.8	0.63				
1	A6	Memory can be remembered if one reinstates the context or the conversation one might have.	64.4	0.58				
1	A7	Memory comes down from the air or springs up in the air.	66.3	0.44				
1	A8	Memory can be remembered when one is relaxed.	23.8	0.50				
1	A9	Memory can be remembered when a confidential person listens to you hard.	7.9	0.60				
1	A10	Memory can be remembered when one is alone.	42.6	0.55				
1	A11	Memory can be remembered when on thinks about it hard.	24.8	0.56				
5	A12	Memory can be remembered when one is doing something not related to the event.	62.4					0.44
2	B1**	Memory reflects what really happened.	13.9		-0.59			
1	B2**	What really happened is not necessarily remembered.	94.1	-0.40				
5	B3	Memory can be stored in body if not in consciousness.	76.2					0.55
5	B4	Memory with visual image reflects what really happened.	37.6					0.51
	B5	Memory for what really happened is accompanied with visual image.	60.4			0.41		0.41
2	B6	A feeling of reliving may occur even for what in reality didn't happen.	81.2		0.66			
4	B7	One may forget an event if she/he is directed "to forget, not to remember" by someone.	2				0.80	
5	B8	If someone believes what you remember, the memory becomes to be more realistic.	73.3					0.41
4	B9	One may forget an event if she/he tries "to forget, not to remember."	9.9				0.76	
5	B10	Some memories remain in unconsciousness.	81.2					0.63
	B11	A memory can be recovered even if it had been forgotten completely.	45.5	0.48		0.41		
2	B12	A realistic image can be created even for what did not happen.	67.3		0.70			
	B13	A memory for what really happened is qualitatively different from the one for what didn't happen.	37.6					
2	B14*	One cannot mistake what really happened for what did not happen.	10.9		-0.74			
3	B15	If one experiences something, the memory remains permanently.	22			0.79		
3	B16	When something is not remembered, it is because the information is not accessed but actually it is stored in memory	54.5			0.78		
5	B17	Memory can fall off deciduously.	70.3					0.45
5	B18	Despite the effort what is remembered may be only a part of memory (e.g., one can see a wagon but cannot see the inside.)	82.2					0.50
2	B19	A "false memory" can be created from photos and/or suggestions.	82.2		0.81			
3	B20	Memory never falls off deciduously unless one had head injury or was dead-drunk.	20.8			0.57		
	C1	TM (traumatic memory) can be encoded precisely.	36.6					
4	C2	TM can be repressed.	21.8				0.57	
	C3	TM can be forgotten entirely.	24.8					
3	C4	TM may creep into mind as anxiety.	85.1			0.46		
	C5	If there's a part of memory you cannot remember, it can be a TM.	6.9					
	C6	TM you have completely forgotten can be recovered.	51.5					
	C7	TM is never completely forgotten.	60.4					
		Variance		4.64	3.00	2.85	2.33	3.09
				0.12	0.08	0.07	0.06	0.08

\* Percentage of participants who rated 4 or 5 to a statement on 1-5 Likert-type scale.

\*\*B1, B2, and B14 were negatively correlated with Factor 2. Thus, in calculation of scale score, the value, 6 - the score, was used.

Table 2. Correlations between "forgetting and remembering" and statements on traumatic memories (TM) and scale scores.

Statement	Belief(Q1)	Experience(Q2)	Number of episodes(Q3)***
C1 TM can be encoded precisely.			
C2 TM can be repressed.	.22*		.21*
C3 TM can be forgotten entirely.			
C4 TM may creep into mind as anxiety.			
C5 If there's a part of memory you cannot remember, it can be a TM.			
C6 TM you have completely forgotten can be recovered.	.2*		.20*
C7 TM is never completely forgotten.			
F1 Recovery	.47**	.43**	.39**
F2 False memory			
F3 Preservation			
F4 Repression	.21*		
F5 Unconsciousness	.31**	.38**	

\* p &lt;.05

\*\* p &lt;.01

\*\*\* Note. The correlations are based on the number of episodes of one's own.