



Toward a memory perspective on eating psychopathology: An investigation of the types of childhood and adolescence memories that are associated with eating disorder symptoms

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ABSTRACT

The cognitive mechanisms through which specific life events affect the development and maintenance of eating disorders (ED) have received limited attention in the scientific literature. The present research aims to address this gap by adopting a memory perspective to explore the type of life events associated with eating psychopathology and how these events are encoded and reconstructed as memories. Two studies ($n = 208$ and $n = 193$) were conducted to investigate the relationship between specific memories and eating disorder psychopathology. Study 1 focused on parent-related memories, while Study 2 examined childhood/adolescence memories. Results from both studies revealed that need thwarting and shame in memories were associated with eating disorder symptoms, but only when individuals drew symbolic connections between these memories and food or eating behavior. Moreover, need thwarting and shame in such memories were associated with other eating and body image outcomes, including uncontrolled eating and body esteem. These results also held after controlling for a host of known predictors of eating disorder psychopathology, such as BMI, perfectionism, or thin ideal internalization. Overall, the present findings suggest that the reprocessing of memories symbolically and idiosyncratically linked to food and eating behavior might be a fruitful clinical intervention.

1. Introduction

1.1. Specific life events and eating disorder (ED)

During the late 1970s and early 1980s, several studies reported that stressful life events often preceded the onset of ED (e.g., Beumont et al., 1978; Strober, 1984). More recent research has also unveiled significant correlations between stressful life events and ED relapse following treatment (Grilo et al., 2012). Furthermore, individuals with ED are more likely to report traumatic childhood events, specifically instances of sexual abuse, compared to those without ED (e.g., Mercado et al., 2008). Interestingly, Lejonclou et al. (2014) found that individuals with ED reported a higher frequency of sexual and emotional abuse than did non-ED individuals. Conversely, non-ED individuals reported having experienced more non-interpersonal traumatic events (e.g., natural disasters, accidents) compared to ED groups. This highlights that there

could be specific types of events remembered or forgotten by people with ED and that they may draw a symbolic connection between their memory of a specific event and their body perceptions or eating behaviors.

However, these studies examining the frequency of stressful life events have not considered the specific meaning of the events for the person, the context in which these events occurred, or how they were subjectively and idiosyncratically experienced (Troop & Treasure, 1997). In light of these limitations, we propose that adopting a memory perspective, which explores how particular life events have been encoded and reconstructed as memories, including the types of events involved and the characteristics of these memories, may yield more insightful findings. This research has the potential to shed light on the cognitive mechanisms underlying the association between stressful life events and ED psychopathology. Additionally, the results may inform the development of novel treatment strategies targeting the memories of

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these events.

1.2. A memory perspective on eating disorder

Life events that inform us of significant threats or benefits are typically encoded in long-term memory as episodic and autobiographical memories. These memories play a vital role in shaping our identity and sense of self (Conway & Pleydell-Pearce, 2000). Memories remain accessible when they are tied to such self-knowledge or linked to personal concerns, issues, or goals that are important to us (Conway, 2009). When we experience a specific life event, it can lead to the formulation of a particular goal or the development of a specific concern. This event then becomes encoded in memory and remains associated with that goal or concern. Alternatively, a specific goal or concern can activate a corresponding memory in our memory system, which then serves as a representation and anchor for that goal or concern (Chua et al., 2021; Conway et al., 2004). In both cases, these memories not only reflect a person's goal, concern, or sense of self but also actively direct behavior and affect mental health over time. They can guide behavior whenever they are triggered by external cues or deliberately recalled (Mace & Unlu, 2020; Philippe et al., 2012; Pillemer, 2003). Through repeated activations, these memories have been shown to significantly impact mental health (Philippe & Bernard-Desrosiers, 2017; Philippe et al., 2012) and functioning in various areas of life (Philippe et al., 2013, 2019). Within the context of ED, we expect that certain specific memories of past life events could become associated with body and eating concerns and continue directing behavior accordingly over time. Such memories may therefore be more likely to lead to disordered eating and body image concerns.

Although little research has been conducted on the relationship between memories and ED (but see Conti et al., 2016; Rasmussen et al., 2017), some studies have directly investigated specific memories, their encoding, and how they relate to ED psychopathology. Traumatic characteristics and centrality of childhood and adolescence memories of shame have been associated with eating psychopathology (Ferreira et al., 2014; Matos et al., 2015) and body shame (Duarte & Pinto-Gouveia, 2017).

Significant memories can be characterized by other aspects than shame, such as our psychological needs. Self-determination theory specifies three important psychological needs, autonomy, competence, and relatedness. The satisfaction of these needs is associated with well-being and thriving, whereas their thwarting or frustration is linked to psychopathology (Ryan & Deci, 2017). Autonomy refers to the need to feel volitional and authentic in one's actions. Competence is defined as the need to feel effective and capable. Relatedness pertains to the need to feel connected and cared for by others, as well as to care for others. Memory research has highlighted that these needs are a key experiential component of episodic and autobiographical memories (Philippe et al., 2011) and one that is importantly involved in the prediction of future mental health outcomes (Philippe & Bernard-Desrosiers, 2017; Philippe et al., 2012; Philippe & Houle, 2020). Therefore, childhood and adolescent memories encoded as need thwarting, but not necessarily as shameful, may also contribute to the development of future eating psychopathology. For instance, research has shown that memories reflecting a lack of warmth and safety from caregivers or peers were associated with ED psychopathology (Mendes et al., 2017; Oliveira, Ferreira, & Mendes, 2016).

1.3. The present research

The primary objective of the present research was to examine whether shame and need thwarting memories from childhood or adolescence were associated with eating psychopathology. As past research has focused on shame memories exclusively, it is unclear whether participants with eating psychopathology would spontaneously recall shame memories or not in the absence of guidance, and whether

such memories would be associated with ED psychopathology. To address this issue, the present research did not specifically ask participants to recall a particular shame memory.

However, shame and need thwarting experiences are common experiences from childhood and adolescence. It seems unlikely that all need thwarting and shameful memories would act as a risk factor for the specific development of eating psychopathology. Instead, it seems necessary for people to establish a certain symbolic link between a specific shame or need thwarting memory and their eating or body concerns. Therefore, shame and need thwarting were expected to be associated with ED psychopathology only when people were consciously drawing a link between that memory and their eating behavior or body concerns, regardless of the themes in memory.

Finally, existing studies on memories have not accounted for major factors that contribute to ED psychopathology. Trait neuroticism (Cassin & Ranson, 2005), perfectionism (Stackpole et al., 2023), and impulsivity (Steward et al., 2017) have been consistently found to be among the strongest trait predictors of ED psychopathology (Farstad et al., 2016), along with social-environmental influences like social contingencies related to thinness (Thompson et al., 2004). These traits and social-environmental influences may act as confounding variables, explaining both the presence of ED psychopathology and the recall of shame or need thwarting memories. Therefore, a secondary objective was to account for these factors in order to better understand the unique contribution of memories to ED psychopathology. Since perfectionism and neuroticism share common genetic and environmental factors accounting for approximately half of their individual variance (Burcaş & Creţu, 2021), perfectionism was selected as control variable in Study 1, as it is the most commonly measured personality factors in ED studies (Bardone-Cone et al., 2007; Farstad et al., 2016). Impulsivity was also chosen, since with perfectionism, it represents both the undercontrolled and overcontrolled types of ED, respectively (e.g., Boone et al., 2014). Study 2 controlled for social-environmental influences. In both studies, only females were recruited, and age, income, and BMI were controlled to provide a greater generalizability to our findings across the female population.

In Study 1, we focused on shame and need thwarting in memories related to parents and caregivers and in Study 2, we sought to replicate the findings of Study 1 by broadening memories to include childhood or adolescence. Moreover, Study 1 investigated individual differences in the degree of perceived influence on eating behaviors of shameful and need thwarting memories, whereas Study 2 used a repeated-measures design to investigate both eating influential and non-influential memories. Study 2 also extended the range of ED psychopathology outcomes investigated in Study 1. To explore whether certain types of event would be specifically related to ED or not, memory narratives were also coded for themes that are known to be central to ED psychopathology, that is, parental criticism and weight and body concerns in Study 1. Study 2 also examined whether the memory narratives pertained to a specific close other (e.g., parents, family members, friend), given the broader category of memories (childhood and adolescence memories) investigated in that study.

2. Study 1

Considering the influence of parents in the development of ED (e.g., parental criticism, pressuring messages; Rodgers & Chabrol, 2009), Study 1 specifically focused on memories related to parents. Only women were recruited given that ED are much more prevalent among the female population. The primary hypothesis was that shame and need thwarting in parent-related memories would be positively associated with ED psychopathology but only when the person would draw a personal symbolic link between their memories and their relationship with food and eating. It is only when such a symbolic link exists for the parent-related memory that the level of shame and of need thwarting characterizing this memory would be positively associated with ED

psychopathology. In other words, an interaction was hypothesized between memory characteristics (shame or need thwarting) and the perceived influence this memory had on food and eating behavior. As a secondary hypothesis, we expected these results to hold after controlling for other known predictors of ED psychopathology, that is, body mass index (BMI; Duncan et al., 2017), perfectionism (Vacca et al., 2021), and impulsivity (Waxman, 2009). Given that our sample was drawn from the general population, we also controlled for age and income. Finally, for exploratory purposes, we also examined whether certain themes of the memories would be more predictive of ED symptoms or not. Memory narratives were therefore coded to identify whether they revolved around parental criticism or weight and body concerns, two key themes identified in the ED literature (e.g., Rodgers & Chabrol, 2009).

2.1. Method

2.1.1. Participants and procedure

A priori power analysis was conducted with Gpower3.1 (Faul et al., 2009). It indicated that to detect a small but still meaningful effect size (R^2 increase between 0.04 and 0.05) in multiple regressions with one tested predictor (the interaction term) among five control variables and two main effects (need thwarting/shame and memory influence) with a power of 0.80 and an alpha of 0.05, a sample size between 158 and 191 was required. Accordingly, 208 Canadian women took part in the study. Mean age was 30.75 years ($SD = 11.92$ years). Most participants' first language was French (92.8 %) and the vast majority (89.4 %) of the sample identified as White. Participants were recruited from the general population using Facebook posts and emails to a list of participants recruited in various public locations in the Greater Montreal area who had shown interest in taking part in psychological studies. The recruitment was supplemented with ads on a Canadian university campus. The study was advertised as a study on personality and eating behaviors. Participants were invited to complete an online questionnaire in which they first responded to demographic questionnaires, personality scales, and scales screening for eating disorders. Finally, participants were asked to describe a meaningful personal memory related to their parents and to rate this memory for its level of need thwarting. This order of completion was important since past research has shown that the description of a personal memory can affect the scores of the scales completed subsequently (Philippe et al., 2015). Informed consent was obtained from participants and their rights were protected. This study was approved by the research ethics board of the University of Quebec at Montreal.

2.2. Measures

2.2.1. Body mass index

Body mass index (BMI; kg/m^2) was calculated using self-reported weight and height. Recent research suggests that self-reported and measured BMI are strongly correlated and concordant (Hodge et al., 2020; Lipsky et al., 2019). The average BMI in this study was 23.71 ($SD = 4.54$). Because of an automatic conversion issue from meters to feet from survey platform, height data for some participants were lost ($n = 37$). Therefore, we computed their BMI scores using score imputation (expectation maximization) to avoid biased estimates (Enders, 2017).

2.2.2. Impulsivity

The Barratt Impulsivity Scale (BIS; Barratt, 1959) was used to assess impulsivity. The 30-item scale consists of three subscales: motor impulsiveness (e.g., "I do things without thinking"), non-planning impulsiveness (e.g., "I spend or charge more than I earn"), and attentional impulsiveness (e.g., "I get easily bored when solving thought problems"). Participants responded to each item on a 4-point Likert scale ranging from 1 (*rarely/never*) to 4 (*almost always/always*). Subscales were averaged into a global score of impulsivity ($\alpha = 0.79$).

2.2.3. Perfectionism

The Multidimensional Perfectionism Scale (MPS; Frost et al., 1990) was used to assess perfectionism. The 35-item scale consists of six subscales: concern over mistakes ("If I fail at school/work, I am a failure as a person"), personal standards ("If I do not set the highest standards for myself, I am likely to end up a second rate person"), parent expectations ("My parents set very high standards for me"), parent criticism ("As a child, I was punished for doing things less than perfectly"), doubting of actions ("Even when I do something very carefully, I often feel that it is not done quite right"), and organization ("Organization is very important for me"). Participants rated each item on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A global score was computed by averaging the subscales ($\alpha = 0.89$).

2.2.4. Eating disorders symptoms

The Eating Disorders Examination questionnaire v6.0 (EDE-Q; Fairburn & Beglin, 2008) was used to assess central behaviors and cognitions found in eating disorders. When completing this scale, participants were asked to reflect on their thoughts and behaviors of the past 28 days (past 4 weeks). The EDEQ comprises four subscales: restraint ("Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?"), eating concern ("Have you had a definite fear of losing control over eating?"), weight concern ("Have you had a strong desire to lose weight?"), and shape concern ("Have you had a definite desire to have a totally flat stomach?"). A global score was computed by averaging scores from the subscales ($\alpha = 0.95$).

2.2.5. Parent-related memory

Participants were asked to describe a specific personal memory that occurred with one or both of their parents/caregivers and that was meaningful to them. They were instructed that this memory should reveal something about their relationship with their parents. Specifically, participants were instructed:

"Please, describe a personal memory of a specific event/moment that occurred with one of your parents/caregivers (or both of them) that was meaningful (important) to you. Ideally, this memory should reveal something about your relationship with your parent(s). Choose a memory that comes often to your mind. This memory can be either positive or negative, or both. However, do not take too much time to find the perfect memory. Choose a personal memory that comes most spontaneously to your mind. Describe what happened, where it happened, who you were with (if anyone), what you were thinking and feeling, and how you and other people reacted. What was your role and what were the consequences of your reaction and/or your behavior during this event. Please, provide as much information as possible so we can understand what happened, as if you were telling the event (memory) to someone."

2.2.6. Memory characteristics and coding of memory narratives

2.2.6.1. Need thwarting. Participants were then asked to rate the level of need satisfaction/thwarting they experienced in the event they just described using scales developed in previous studies (e.g., Philippe et al., 2011, 2012). Nine items assessed the satisfaction/thwarting of each of the three basic psychological needs with three items each. Sample items were "I felt that I could be myself" (autonomy), "I felt stupid" (competence), and "I felt rejected" (relatedness). Ratings were made on a 7-point Likert scale ranging from -3 (*strongly disagree*) to $+3$ (*strongly agree*), with 0 representing "do not agree nor disagree or not applicable." A global score of need thwarting was computed by reversing the need

satisfaction items and averaging the score of all three needs, consistent with past research on need satisfaction and memories (e.g., Philippe et al., 2011, 2012). This score was calculated such that a high score represents a need-thwarting memory ($\alpha = 0.94$).¹

2.2.6.2. Shame and parental criticism. Narratives were also coded by two independent judges for feelings of shame and parental figures' criticism. The judges were trained by the first author, an expert in the codification of memory narratives. Initially, the judges identified whether the memory narrative related a parental criticism or not or a shameful experience or not. The material was first fully coded for parental criticism and then for shame. To be coded as parental criticism, the memory narrative had to describe criticism, reproach, disapproval, denigration, or negative sarcasm from a parental figure (i.e., father, mother, caregiver, grandfather, etc.). Criticism was also considered in a broad sense; if the parent humiliated or mocked the child, it was considered criticism. Shame was coded when the protagonist of the narrative displayed a sense of embarrassment, humiliation, feelings of inadequacy, unworthiness, self-disgust, or distress in response to one's actions, thoughts, or circumstances, perceiving that they violated or did not live up to the expectation of a social norm, moral standard, or personal value.

Judges rated the intensity of the parental criticism or shame on a scale ranging from 0 (*absence*) to 3 (*highly present*). They attributed a lower score when parental criticism or shame was not explicitly mentioned but likely experienced by most humans in the described circumstances (e.g., "my mother told me I was too fat to wear my skirt"). A higher score was attributed when parental criticism or shame appeared explicit in the protagonist's mind, more lasting in terms of the frequency or effect over time, and/or more severe and intense.

The judges familiarized themselves with the coding procedure using memory narratives from other studies. They independently coded each narrative and then discussed discrepancies with the first author to clarify the coding scheme if necessary. Training ended when the judges achieved an adequate level of agreement on the practice material (intraclass correlations ≥ 0.70 or kappas ≥ 0.70). For the present study material, intraclass correlations between judges' coding were 0.89 for parental criticism and 0.85 for shame.

Narrative excerpts below show that some narratives could be coded as displaying both parental criticism and shame, while others would only be coded for one of these themes or none at all.

"When my parents told my brother and me that they would divorce. At the moment, it didn't really affect me. I was surprised but indifferent, without emotion. I returned to my activities immediately." (Shame = 0; Parental criticism = 0).

"My mother entered my office once and told me that my blouse was too small for me and that it was tight across my chest." (Shame = 1; Parental criticism = 1).

"During a tennis tournament, I lost against a less experienced player and my father in the stand looked like he was ashamed of me and sad to have a failing son." (Shame = 3; Parental criticism = 2).

"At a moment where I was not feeling great, my mother kept calling me to ask me to come home. She was insulting me and threatening with false things such that she would exclude me from the family and that all my family members were angry against me." (Shame = 0; Parental criticism = 3).

2.2.6.3. Weight and body concerns. Narratives were also coded for

whether they were about weight or body concerns or not (0 or 1 coding). Kappa was 0.85 for weight and body concerns.

2.2.6.4. Perceived influence of memory on food and eating behaviors. Participants were asked to rate their agreement on a 7-point Likert scale (1 = "strongly disagree", 4 = "Do not agree nor disagree or not applicable", 7 = "strongly agree") with one item "This memory has influenced or still influences my current eating behaviors or my relationship with food."

2.3. Statistical analyses

Two main regression analyses were conducted on the dependent variable of ED symptoms. One regression included shame in the parents-related memory, how influential of food and eating this memory has been, and the interaction between these two variables. The second regression was the same but used need thwarting in the parents-related memory instead of shame. Finally, three more regressions were conducted for exploratory purposes. One to examine whether parental criticism in parents-related memories would interact with memory influence to predict ED symptoms and two others to investigate whether shame or need thwarting in the parents-related memories would better interact with body and weight concern as coded from the memories (instead of how influential of food and eating this memory was). Finally, all regressions were conducted again to control for the covariates of age, income, BMI, perfectionism, and impulsivity.

3. Results and discussion

Table 1 presents means, standard deviations, and correlations among study variables. And Table 2 reports the results of the regression analyses. As shown in Table 2, in the first regression analysis, shame significantly interacted with memory influence to predict ED symptoms. Simple effects of this interaction showed that shame was not related to ED symptoms when perceived memory influence was moderate (mean), $t(204) = 1.25, p = 0.21$, or low ($-1 SD$), $t(204) = -0.72, p = 0.47$, but it was significantly associated with ED symptoms when perceived memory influence was high ($+1 SD$), $t(204) = 3.42, p < 0.001$ (see Fig. 1). However, shame did not interact with weight/body concerns.

In the second regression analysis, need thwarting also interacted with perceived memory influence to predict ED symptoms. Simple effects analyses of this interaction showed that memory need thwarting was positively related to ED symptoms for individuals who reported that their personal memory had a strong influence on their eating behaviors ($+1 SD$), $t(199) = 3.60, p < 0.001$ or an average one (mean), $t(204) = 2.19, p = 0.029$, but not when perceived memory influence was low ($-1 SD$), $t(204) = -0.39, p = 0.77$ (see Fig. 1). In short, similar to shame, need thwarting in a personally significant memory involving one's caregiver(s) was positively associated with ED symptoms, but this association was observed only among individuals who reported that their memory had an influence on their eating behavior. Need thwarting did not interact with weight/body concerns (see Table 2).

Next, separate hierarchical regressions (one for shame and one for need thwarting) were conducted to examine whether shame and need thwarting would still be associated with ED symptoms and would still significantly interact with perceived memory influence after accounting for other control variables. Table 3 shows the results of these analyses. ED symptoms were hierarchically regressed onto age, income, BMI (Step 1), perfectionism and impulsivity (Step 2), perceived influence of the memory (Step 3), memory shame or need thwarting (Step 4), and the interaction term between shame/need thwarting and perceived food-influence (Step 5). Results of Step 1 showed that BMI was positively and significantly related to ED symptoms. Step 2 showed a positive association between perfectionism and ED symptoms, but not between impulsivity and ED symptoms. At Step 3, perceived memory influence

¹ Correlations among the three needs ranged from 0.73 to 0.82 and each was correlated between 0.20 and 0.23 with ED symptoms, further corroborating the relevancy of this index.

Table 1
Means, standard deviations, and correlations among study variables: Study 1.

	M	SD	1	2	3	4	5	6	7	8	9	10
1. Age	30.75	11.92	–									
2. Income	37 500	27 600	0.46**	–								
3. BMI	23.72	4.55	0.21**	0.13	–							
4. Perfectionism	2.67	0.58	–0.17*	–0.05	–0.01	–						
5. Impulsivity	2.14	0.31	0.05	–0.09	0.08	0.20**	–					
6. Memory need thwarting	0.68	1.85	0.02	–0.08	–0.03	0.25**	0.17*	–				
7. Memory shame	0.34	0.76	0.04	–0.07	0.05	0.11	0.07	0.49**	–			
8. Memory parental criticism	0.55	0.86	0.07	–0.04	–0.03	0.09	0.12	0.60**	0.55**	–		
9. Memory eating-influence	3.01	2.04	0.10	0.01	0.12	0.21**	0.14*	0.22**	0.23**	0.21**	–	
10. Weight/body concerns	0.11	0.31	0.04	–0.06	0.06	0.16*	0.11	0.30**	0.41**	0.31**	0.49**	–
11. Eating disorder symptoms	1.51	1.18	–0.01	0.01	0.48**	0.39**	0.21**	0.21**	0.21**	0.10	0.25**	0.17*

Note. *n* = 208; BMI = Body mass index.
p* < 0.05, *p* < 0.01.

Table 2
Moderations of shame, need thwarting, and parental criticism on eating disorder symptoms by perceived memory influence or body-weight concerns: Study 1.

Memory characteristic	Moderator	Variables	Eating disorder symptoms			
			B	SE	β	Model R ²
Shame	Perceived influence	Shame	0.11	0.086	0.090	R ² = 0.122, <i>F</i> (3, 204) = 9.44, <i>p</i> < 0.001
		Perceived influence	0.24	0.080	0.20**	
		Shame X Perceived influence	0.20	0.073	0.20**	
	Body-weight concern	Shame	0.14	0.10	0.11	R ² = 0.01, <i>F</i> (3, 204) = 2.12, <i>p</i> = 0.15
		Body-weight concern	0.12	0.33	0.033	
		Shame X Body-weight concern	0.31	0.21	0.14	
Need thwarting	Perceived influence	Need thwarting	0.17	0.079	0.15*	R ² = 0.121, <i>F</i> (3, 204) = 9.32, <i>p</i> < 0.001
		Perceived influence	0.23	0.080	0.20**	
		Need thwarting X Perceived influence	0.21	0.076	0.18**	
	Body-weight concern	Need thwarting	0.17	0.085	0.15*	R ² = 0.07, <i>F</i> (3, 204) = 5.09, <i>p</i> < 0.01
		Body-weight concern	–0.037	0.39	–0.010	
		Need thwarting X Body-weight concern	0.61	0.36	0.18	
Parental criticism	Perceived influence	Parental criticism	0.030	0.084	0.025	R ² = 0.074, <i>F</i> (3, 204) = 5.46, <i>p</i> < 0.001
		Perceived influence	0.28	0.081	0.24**	
		Parental criticism X Perceived influence	0.11	0.081	0.10	
	Body-weight concern	Parental criticism	0.035	0.091	0.029	R ² = 0.031, <i>F</i> (3, 204) = 2.19, <i>p</i> = 0.09
		Body-weight concern	0.48	0.36	0.13	
		Parental criticism X Body-weight concern	0.15	0.32	0.046	

Note. **p* < 0.05, ***p* < .01.

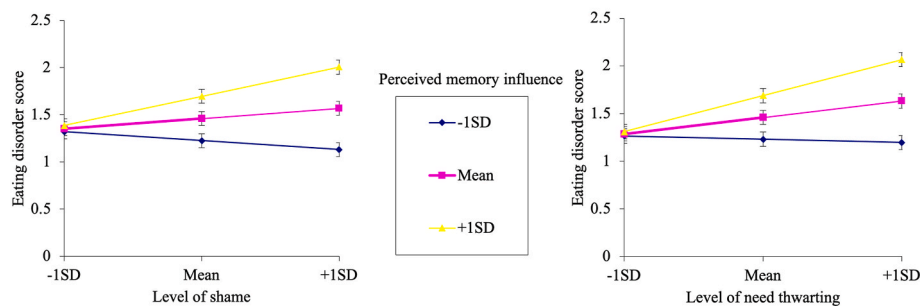


Fig. 1. Caption: Plot of the interaction between shame or need thwarting in parent-related memories and perceived memory influence on eating disorder score. Error bars are standard errors. Lines represent the slope of shame or need thwarting on eating disorder score when perceived memory influence is at –1 standard deviation (–1SD), equal to its mean, or at +1 standard deviation (+1SD).

was significantly associated with ED symptoms. Shame, entered at Step 4, was positively associated with ED symptoms. However, in a separate regression, need thwarting was not significantly related to ED symptoms. Finally, at Step 5, the interaction remained significant but only for need thwarting, not for shame. This interaction with need thwarting explained 2.1% of the variance of ED symptoms after accounting for all control variables. This interaction remained significant even after controlling for shame.

3.1. Sensitivity and exploratory analyses

Given the relationship found between need thwarting and ED symptoms, we examined whether the thwarting of only one or two of the three needs was responsible for its association with ED symptoms. To investigate this question, we analyzed the effect of each need (autonomy, competence, and relatedness) separately. All results were the same in that the interaction Need X Perceived Memory Influence remained significant for each need (all *t*s [204] > 2.16, *ps* < 0.05). Thus, it seems

Table 3
Hierarchical regression of memory need thwarting or shame, perceived memory influence, and control variables on eating disorders symptoms; study 1.

	Eating disorder symptoms			R ² change
	B	SE	β	
Step 1				R ² = 0.24, F (3, 204) = 21.67, p < 0.001
Age	-0.011	0.007	-0.11	
Income	-0.003	0.037	-0.01	
BMI	0.13	0.016	0.50**	
Step 2				R ² = 0.15, F (2, 202) = 25.84, p < 0.001
Perfectionism	0.76	0.12	0.37**	
Impulsivity	0.36	0.22	0.10	
Step 3				R ² = 0.013, F (1, 201) = 4.55, p = 0.034
Perceived memory influence	0.14	0.066	0.12*	
Step 4				R ² = 0.010, F (1, 200) = 3.60, p = 0.059 [R ² = 0.017, F (1, 200) = 6.03, p = 0.015]
Memory need thwarting [shame]	0.13 [0.16]	0.067 [0.066]	0.11 [0.14*]	
Step 5				R ² = 0.021, F (1, 199) = 7.64, p = 0.006 [R ² = 0.009, F (1, 199) = 3.22, p = 0.074]
Memory need thwarting [shame] × Perceived memory influence	0.17 [0.11]	0.062 [0.060]	0.15** [0.11]	
				Total R ² : 0.441 [0.436]

Note. n = 208.

BMI = Body mass index.

Results in brackets are those with respect to shame in memory.

*p < 0.05; **p < 0.01.

that need thwarting of each of the three psychological needs characterizing a parent-related memory is associated with ED psychopathology.

We also examined whether participants who described a need thwarting or shameful influential memory could be differentiated based on ED symptoms from those who did not. We categorized participants in two groups; those having described a need thwarting (above zero on the -3 to +3 Likert scale) or a shameful memory (above zero on the coding scheme) vs. those having described neither of these. The perceived memory influence variable was also dichotomized based on the Likert scale used at ≥4. A 2 (Memory: Thwarting/Shameful vs. Absence) X 2 Perceived Influence: Influenced vs. Did not influence ANOVA was conducted on the ED score. The analysis revealed a significant Memory X Perceived Influence interaction, F (1, 204) = 4.07, p = 0.045. Post hoc tests showed that individuals who reported a need thwarting/shameful influential memory had a significantly higher score on ED (Ms > 2.74, ts (96) > 4.89, p < 0.001) than all other groups of participants, which did not differ against each other (Ms < 1.47), ts (108) < 1.00, ns.

Finally, as exploratory analyses, it was examined whether memories characterized by parental criticism would interact with perceived memory influence or weight/body concerns, but both were not significant (see Table 2). As a sensitivity analysis, we recoded parental criticism as a dichotomous variable (0 = absence; 1 = presence). Results showed that the interaction between parental criticism and memory influence was marginally significant β = 0.16, t (204) = 1.87, p = 0.064. However, that interaction was not significant after controlling for the covariates, β = 0.09, t (199) = 1.23, p = 0.22.

To summarize, need thwarting and shameful memories were associated with ED symptoms, but only when people consciously perceived their memories as influential of their food and eating behavior. This link was personal and symbolic as need thwarting and shame in memories directly related to body and weight concerns (as coded by judges) were not more related to ED symptoms. Need thwarting and shame characterizing influential memories were also found to be predictors of ED symptoms, over and above other known predictors, such as BMI, impulsivity, and perfectionism. However, the interaction between shame and perceived memory influence only emerged as marginally significant once these known predictors were controlled for. This is potentially due to the smaller effect size of the moderation with shame. Finally, Study 1 also provided evidence that describing influential need thwarting/shameful memories could be used to discriminate between ED and non-ED cases. Indeed, the mean score of this group of participants describing such an influential memory was in the range of the cut-off score proposed for the EDE-Q (between 2.3 and 2.8; Mond, Hay, Rodgers, & Owen, 2006; Velkoff et al., 2023), which was significantly higher than all other groups.

4. Study 2

Study 1 examined individual differences in the recall of parent-related memories, such that some people recalled memories that had more or less influenced their relationship with food and eating. In Study 2, we used a repeated-measures design to address the same primary objective as Study 1. All participants were directly asked to provide a memory that appears to have influenced their attitude and behavior toward eating and food in general (therefore symbolically related to food and eating). We also asked participants to recall a second memory from their childhood and adolescence, but one that seems unrelated to their attitude and behavior with eating and food. Moreover, we counterbalanced the presentation of these memory requests across participants (eating-related vs. eating-unrelated). In line with Study 1, the primary hypothesis was that shame and need thwarting in the eating-related memory, but not in the eating-unrelated memory, would be associated with ED psychopathology. Assessment of ED psychopathology was extended in Study 2 to also include measures of uncontrolled eating and body esteem. This was deemed important as the EDE-Q combines both restrained food intake and uncontrolled eating episodes. A specific measure of uncontrolled eating could help examine whether need thwarting or shameful memories are also associated with specific forms of ED psychopathology. Finally, body esteem was measured given that it is known to be a risk factor to the development of ED (e.g., Baceviciene & Jankauskiene, 2020), and could be a marker of subclinical cases of ED.

Study 1 found that shame and need thwarting in influential memories were not affected by controlling for trait predictors of ED psychopathology. Study 2 therefore examined more social-environmental predictors of ED psychopathology. Thin ideal internalization and appearance-related social pressures are among the two most important social-environmental influences impacting ED psychopathology (Fardstad et al., 2016). Furthermore, given our focus on childhood and adolescence memories, we also controlled for caregivers eating messages during childhood, which has been associated with BMI and body esteem (Kroon Van Diest & Tylka, 2010). Finally, as in Study 1, we also controlled for age, income, and BMI. The secondary hypothesis was thus that the results should hold after controlling for those other predictors of ED psychopathology.

Finally, like in Study 1, we also explored whether certain themes would be predictive of ED psychopathology or not. Since all participants of Study 1 were asked to recall parents-related memories, it was not possible to determine whether there was something unique about memories that pertained to parents or not. In Study 2, participants recalled memories from their childhood or adolescence in general. Narratives could then be coded for whether they were about parents,

relatives, or other people.

4.1. Method

4.1.1. Participants and procedure

A priori power analysis indicated that to detect a small but still meaningful effect size (R^2 increase between 0.04. and 0.05) in multiple regressions with one tested predictor (shame or need thwarting in the eating-related memory) among nine control variables with a power of 0.80 and an alpha of 0.05, a sample size between 158 and 191 was required. Accordingly, a total of 193 French-Canadian women were recruited. Their mean age was 29.06 years ($SD = 6.88$ years). Most (96.9%) participants identified as White. Participants were recruited through an advertisement on Facebook. Inclusion criteria were being a French-Canadian woman aged 21 or older. Women who were interested in participating in the study were directed to an online survey website that contained the questionnaire. All measures were completed online. Upon completion of the questionnaire, participants were entered into a prize draw. Informed consent was obtained from participants and their rights were protected. This study was approved by the research ethics board of the University of Quebec at Trois-Rivières.

4.2. Measures

4.2.1. Body mass index

Body mass index (BMI; kg/m^2) was calculated using self-reported height and weight. The average BMI was 27.09 ($SD = 6.79$).

4.2.2. Caregiver feeding practices during childhood

Participants completed the Caregiver Eating Messages scale (Kroon Van Diest & Tylka, 2010) that assessed their perceptions of the feeding practices used by their parents during childhood. The scale specifically measures restrictive and critical messages regarding children's food intake (5 items) and pressure to eat (5 items). Sample items include: "During childhood, your parents/caregivers made fun of you (or scolded you) for eating too much" (restrictive and critical) and "During childhood, your parents made you eat despite the fact that you were full" (pressure to eat). Two items from the Comprehensive Feeding Practices questionnaire (Musher-Eizenman & Holub, 2007) were also used to assess caregivers' use of food as a reward during childhood. A sample item is: "During childhood, my parents offered me sweets (candy, ice cream, cake, pastries) as a reward for good behavior." Responses were scored on a 6-point Likert-type scale ranging from 1 (Never) to 6 (Always). The Cronbach alpha values ranged from 0.87 to 0.90 across the three subscales.

4.2.3. Appearance-related social pressures

Participants completed the three subscales of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4; Thompson et al., 2004) that assesses appearance-related pressures from various domains of sociocultural influence (i.e., peers, family, and media). Sample items include: "I feel pressure from my peers to look in better shape" (peers), "I feel pressure from family members to look thinner" (family), and "I feel pressure from the media to decrease my level of body fat" (media). Responses were scored on a 5-point Likert-type scale ranging from 1 (Definitely disagree) to 5 (Definitely agree). All 12 items were aggregated into a global score of appearance-related social pressures. The Cronbach alpha value was 0.90.

4.2.4. Internalization of the thin ideal

Participants completed the 5-item Internalization of the thin ideal subscale of the SATAQ-4 (Thompson et al., 2004). A sample item is: "I think a lot about looking thin." Responses were scored on a 5-point Likert-type scale ranging from 1 (Definitely disagree) to 5 (Definitely agree). The Cronbach alpha value was 0.82.

4.2.5. Eating disorder symptoms

The Eating Disorders Examination Questionnaire v6.0 (EDE-Q; Fairburn & Beglin, 2008) was again used in this study. As in Study 1, a global score was computed, and its Cronbach alpha was 0.95.

4.2.6. Uncontrolled eating

This behavior was assessed using the 9-item uncontrolled eating subscale (e.g., "When I smell a delicious food, I find it very difficult to keep from eating, even if I have just finished a meal") of the Three Factor Eating Questionnaire (TFEQ-R18; de Lauzon et al., 2004; Stunkard & Messick, 1985). Responses were scored on a 4-point Likert-type scale measuring how true a statement was or how frequent a behavior was for the participant. In the present study, the Cronbach alpha value for this subscale was 0.89.

4.2.7. Body esteem

Participants completed the appearance and weight subscales of the Body Esteem scale (Mendelson et al., 2001). Sample items are: "I like what I see when I look in the mirror" (appearance subscale; 10 items) and "I am satisfied with my weight" (weight subscale; 8 items). Responses were scored on a 5-point Likert-type scale ranging from 1 (Never) to 5 (Always). The Cronbach alpha values were 0.94 for both the appearance and the weight subscale.

4.2.8. Childhood or adolescent memory

Participants were asked to describe two memories of events that occurred when they were a child or adolescent. One of the memories was about an event or moment that they feel has influenced their current relationship with food (*eating-related memory*), and the other was about an event or moment that they feel has *not* influenced it (*eating-unrelated memory*). The order of presentation of the two memories was counter-balanced among participants. More specifically, participants were asked to describe in detail:

"a personal memory, a specific event or moment that occurred when you were between the ages of 0 and 18 years old, which in your view has [not] influenced or still influences your current eating behaviors or relationship with food."

The remainder of the instructions were the same as those of Study 1. Thus, participants were free to recall any type of memory and were not guided in selecting one memory of a particular valence.

4.2.9. Memory characteristics and coding of memory narratives

4.2.9.1. *Need thwarting.* Participants were asked to rate the level of psychological need thwarting they experienced in each of their two memories on a 7-point Likert scale ranging from -3 (Strongly disagree) to +3 (Strongly agree), with 0 representing "Do not agree nor disagree or not applicable." The same items used in Study 1 were again used in Study 2. An index representing the level of need thwarting characterizing each memory was computed by averaging the scores of the nine items. The Cronbach alpha value was 0.92 for the eating-related memory and 0.91 for the eating-unrelated memory.

4.2.9.2. *Shame.* The same shame coding used in Study 1 was again used in this study. Two judges made their ratings on a 0 (*absence of that theme*) to 3 (*theme present and very intense*) scale. Intraclass correlation for shame was 0.84 for the eating-related memory and 0.86 for the eating-unrelated memory.

4.2.9.3. *Parents and significant others.* Narratives were coded by judges to determine whether people with ED psychopathology were more likely to recall a parent memory from their childhood/adolescence. They coded each memory narrative for whether they pertained to a parent, family, friend, and/or another significant person. Each category was

coded as a binary variable (0 = absent or 1 = present). Kappas of each category ranged between 0.85 and 0.96 for both types of memories.

4.3. Statistical analyses

Hierarchical regression analyses were conducted on each of the four dependent variables (ED symptoms, uncontrolled eating, body esteem related to appearance, body esteem related to weight). Each regression included the control variables in Steps 1 (age, income, BMI) and 2 (caregiver messages, appearance-related social pressures, thin ideal idealization) and need thwarting (or shame) in the eating-related and eating-unrelated memories in Step 3. As exploratory analyses, it was investigated whether the relationship between memory need thwarting or shame and the eating and body image outcomes would be moderated by the presence of the themes of parent, family, friend, and other significant person in both the eating-related and eating-unrelated memories. Thus, a total of 32 separate multiple regressions were conducted (4 themes [parent, family, friend, significant other] × 2 memory characteristics [need thwarting and shame] × 4 dependent variables [ED symptoms, uncontrolled eating, body esteem related to appearance, body esteem related to weight] with the same control variables as in the main analyses above. Each interaction included two interaction terms (e.g., parents theme × need thwarting in the eating related memory and parents theme × need thwarting in the eating unrelated memory), thus leading to 64 interaction terms tested.

5. Results

Means, standard deviations, and correlations among study variables are presented in Table 4. Correlational results showed that need thwarting in the eating-related memory (relevant) was only weakly correlated with need thwarting in the eating unrelated memory (irrelevant). Moreover, only need thwarting in the eating-related memory was positively associated with ED symptoms and eating and body image outcomes. The same results were found regarding shame in the eating-relevant and eating-irrelevant memories. Counterbalancing had no effect on shame and need thwarting, whether the eating-related or the eating-unrelated memory was described first, all *t*s (191) < 1.55, *ns*.

The main hierarchical regression analyses were conducted to examine the incremental value of need thwarting or shame in the eating-related memory on ED psychopathology after controlling for the covariates. Results are presented in Table 5. BMI and internalization of the thin ideal were associated with almost all eating and body image outcomes. Although the variables included at Steps 2 and 3 accounted for a large proportion of variance in the eating and body image outcomes, need thwarting and shame in the eating-related memory still made a significant contribution to the prediction of all outcomes. More specifically, need thwarting in the eating-related memory accounted for between 1.3% and 1.9% of the variance of the EDE-Q global score, uncontrolled eating, and body esteem related to both appearance and weight. Importantly, need thwarting in the eating-unrelated memory did not significantly predict any of the outcome variables. Shame in the eating-related memory accounted for 1.6% and 2.4% of the variance of the EDE-Q symptoms and body esteem related to weight, respectively. However, it was not associated with body esteem related to appearance and only marginally positively associated with uncontrolled eating, although explained variance by shame for this latter variable was significant at *p* < 0.05. Shame in the eating-unrelated memory did not predict those outcomes.

5.1. Sensitivity and exploratory analyses

Finally, we also examined whether the relationship between memory need thwarting or shame and eating and body image outcomes would be moderated by the presence of the themes of parent, family, friend, and other significant person for both eating-related and eating-unrelated

Table 4
Means, standard deviations, and correlations among the study variables: Study 2.

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Need thwarting in eating-related memory	-0.72	1.57	-														
2. Need thwarting in eating-unrelated memory	1.15	1.49	0.15*	-													
3. Shame in eating-related memory	1.08	1.19	0.54**	0.16*	-												
4. Shame in eating-unrelated memory	0.24	0.60	0.20**	0.43**	0.19**	-											
5. Age	29.06	6.88	-0.05	-0.04	-0.06	-0.21**	-										
6. Income	4.45	2.53	0.05	-0.15*	-0.01	-0.13	0.34**	-									
7. BMI	27.09	6.79	0.21**	-0.09	0.20**	-0.07	0.15*	0.05	-								
8. Caregiver use of food as reward	2.58	1.12	0.07	0.04	0.12	0.07	-0.06	-0.06	0.17*	-							
9. Caregiver pressure to eat messages	3.19	1.25	0.13	0.07	0.01	-0.04	0.03	-0.07	0.10	0.24**	-						
10. Caregiver restrictive critical messages	2.04	1.06	0.31**	-0.05	0.34**	-0.01	-0.11	-0.07	0.37**	0.17*	0.27**	-					
11. Appearance-related social pressures	2.87	0.84	0.29**	-0.12	0.23**	-0.04	-0.07	0.00	0.46**	0.20**	0.28**	0.50**	-				
12. Thin ideal internalization	3.13	0.93	0.23**	0.09	0.26**	0.15*	-0.11	-0.01	0.03	0.19**	0.15*	0.30**	0.38**	-			
13. Eating disorder score	2.03	1.43	0.36**	0.01	0.35**	-0.01	0.07	0.05	0.48**	0.31**	0.27**	0.43**	0.55**	0.60**	-		
14. Uncontrolled eating	2.46	0.68	0.29**	0.02	0.28**	0.10	-0.02	-0.01	0.33**	0.29**	0.31**	0.34**	0.38**	0.26**	0.50**	-	
15. Body esteem related to appearance	2.83	0.92	-0.38**	-0.01	-0.31**	-0.01	-0.03	-0.02	-0.51**	-0.24**	-0.21**	-0.43**	-0.57**	-0.50**	-0.81**	-0.45**	-
16. Body esteem related to weight	2.60	1.09	-0.36**	0.02	-0.35**	0.00	-0.08	-0.10	-0.64**	-0.18*	-0.21**	-0.44**	-0.51**	-0.40**	-0.82**	-0.44**	0.83**

Note. *n* = 193.
BMI = Body mass index.
p* < 0.05; *p* < 0.01.

Table 5
Hierarchical regression analyses of caregiver eating messages during childhood, appearance-related social pressures, thin ideal internalization, and need thwarting or shame on uncontrolled eating and body esteem: Study 2.

	Eating disorder symptoms	Uncontrolled Eating	Body Esteem Related to Appearance	Body Esteem Related to Weight
Step 1				
Age	-0.01	-0.07	0.05	0.04
BMI	0.48**	0.34**	-0.52**	-0.65**
Income	0.03	-0.01	-0.01	-0.08
Step 2				
Caregiver pressure to eat messages	0.08	0.18*	-0.03	-0.07
Caregiver restrictive critical messages	0.06	0.10	-0.06	-0.09
Caregiver use of food as reward	0.11*	0.16*	-0.05	0.02
Appearance-related social pressures	0.15*	0.11	-0.21**	-0.08
Thin ideal internalization	0.49**	0.12	-0.38**	-0.33**
Step 3				
Need thwarting [shame] in eating-related memory	0.13* [0.13*]	0.14* [0.13]	-0.15** [-0.08]	-0.13* [-0.14*]
Need thwarting [shame] in eating-unrelated memory	-0.02 [-0.07]	0.02 [0.08]	-0.01 [0.01]	0.01 [0.01]
Total R ²	0.64 [0.64]	0.29 [0.30]	0.56 [0.55]	0.60 [0.60]
R ² _{change} due to need thwarting [shame] in relevant memory	0.013* [0.016*]	0.017* [0.024*]	0.019** [0.005]	0.014* [0.016*]

Note. n = 193.

BMI = Body mass index.

Results in brackets are those with respect to shame in memory.

*p < 0.05; **p < 0.01.

memories. Out of the 64 interaction terms tested, we only found three small significant interactions, each on a different outcome. Since the number of significant interactions obtained was below the number expected by chance (3/64 = 0.046), we did not interpret them and concluded that parents (or any significant other) are not a particularly important figure in memories in their association with ED psychopathology.

6. General discussion

The present research showed with two studies that shame and need thwarting in parent-related and childhood/adolescence memories were associated with ED psychopathology when people drew a symbolic and idiosyncratic link between that memory and their food consumption and eating behaviors. This was true regardless of whether participants were freely asked to recall a parent-related memory or instructed to recall a childhood memory that had specifically affected their relationship with food and eating. Exploratory analyses of thematic coding of the memories did not reveal a particular salient topic or theme central to these memories.

These results suggest that no specific event or theme in memory is related to ED psychopathology. What is important is the individual's idiosyncratic interpretation between the memory of a past event and the

context of food, eating, and body. This suggests that some memories may anchor issues and concerns related to food and eating behaviors. These memories, through their frequent reactivation, may increase negative affect and distress. Because of its symbolic link with food and eating, the person may start to believe that controlling their eating and body shape is a way to reduce that negative affect and distress. This belief can then instigate maladaptive eating attitudes and behaviors and, over time, eating disorders (Gadsby, 2023). This is demonstrated even more clearly in posttraumatic stress disorder, where the individual constantly suffers from intrusive thoughts and heightened arousal to any subtle reminder of a traumatic event (Brewin, 2014). Indeed, negative affect and distress have been identified as important mediators in the relationship between posttraumatic stress disorder and ED (Rijkers et al., 2019). Working on the rationality of the symbolic link drawn between the memory of a specific life event and eating and food concerns could therefore be beneficial in therapy.

Overall, the present research extends past studies on the topic of memories and ED psychopathology, notably those on shame memories (e.g., Ferreira et al., 2014; Matos et al., 2015) by highlighting that shame characterizes particularly salient need thwarting memories from childhood and adolescence. However, other types of need thwarting experiences also appear to associate with ED psychopathology.

It may be surprising that memories of parental criticism were not found to be associated with eating disorder psychopathology in the present research, given that many studies have shown such a link (Claes et al., 2011). However, past research used self-reports to assess parental criticism, not memories. It is important to note that the effect of parental criticism, as coded from parents-related memories in Study 1, was in the expected direction and close to statistical significance. When recalling a central memory that has influenced their relationship with food and eating, people with ED may simply be more likely to recall a memory involving shame or thwarted needs, which can encompass various themes beyond parental criticism. Therefore, shame and thwarted needs may have a greater predictive power than parental criticism alone. This suggests that while parental criticism can contribute to a sense of shame or need thwarting related to ED psychopathology, various other experiences can also lead to that type of psychopathology.

The effect size of shame and need thwarting in memories on eating outcomes was appreciable, explaining around 11% and 18% of the variance across the two studies—a medium effect size. However, the variance explained was substantially reduced by the introduction of control variables, dropping between 1% and 2%. Two clarifications are in order. First, the analyses controlled for several key variables, highly related to ED psychopathology, such as BMI or thin ideal internalization, which makes this test very stringent. Indeed, it is possible that need thwarting or shameful eating-related memories might have already contributed to a person's BMI, thin ideal internalization, and ED symptoms. Therefore, controlling for the first two variables should substantially reduce the prediction of need thwarting/shame in memories on ED symptoms or other related eating outcomes. Second, the results show the effect of only one eating-related memory. People hold more than one memory and research has shown that each memory contributes additively and independently to outcomes by having a cumulative effect (e.g., Philippe et al., 2012). Therefore, it is likely that if more than one eating-related memory had been assessed in each study, the effect size of these memories would have been stronger. Future research is needed to ascertain that claim.

It is, however, important to emphasize that the two current studies cannot ascertain whether certain childhood or adolescence memories can anchor key life concerns, which over time can escalate into ED psychopathology, or whether people with ED psychopathology are simply more prone to recalling shameful and need thwarting food-related memories from their childhood and adolescence. It is also possible that people with ED psychopathology develop body and weight concerns and subsequently select an episodic or autobiographical memory from their childhood or adolescence as a marker of these

concerns or goal and reconstruct this memory in light of these concerns.

Regardless of which of these explanations of the findings holds true, all have important implications. Obviously, if certain past events are recorded in memories as turning points that triggered concerns about food, leading to maladaptive attitudes and behaviors responsible for eating disorders, then revisiting these memories in therapy and interventions may be useful. However, even if people with ED psychopathology select memories to represent or anchor their pre-existing eating concerns, this does not confer a simple proxy or placeholder role to these memories. Self-defining memories, such as these, have been consistently shown to direct behavior and influence mental health over time in studies using longitudinal designs (e.g., Philippe & Bernard-Desrosiers, 2017; Philippe et al., 2012; Philippe & Houle, 2020). Therefore, even if these memories are recruited or reconstructed after the emergence of eating concerns, they could still contribute to exacerbate ED psychopathology as a function of their need thwarting levels. While this remains to be empirically shown in the eating domain using longitudinal designs, similar memories have shown this effect in various other domains: Relationship (Philippe et al., 2013), identity processing (Bouizegarene & Philippe, 2018), work (Philippe et al., 2019), and sports (Lopes & Philippe, 2023). This suggests that they may indeed contribute in a similar manner to ED psychopathology. Future research is needed to verify this hypothesis.

Several limitations need to be underscored regarding the present research. First, as noted above, the cross-sectional design prevented us from interpreting causality and the direction of the relationship between need thwarting/shame in memories and eating disorder symptoms. Future longitudinal and experimental studies are needed to address these questions. Second, while we controlled for several traits and sociocultural influences, it remains possible that a third variable better explains the relationship outlined between need thwarting or shame in memories and ED psychopathology. Again, experimental studies where specific need thwarting/shame memories of childhood and adolescence are primed, and their effect on subsequent eating attitudes or behaviors are evaluated (e.g., Philippe et al., 2012, 2017) are needed to rule out this potential issue. Third, the two samples used in the present research were composed of young females and most were White. It is therefore unclear whether the present research would generalize to other subgroups of the population. For instance, it has been shown that memory narratives are heavily influenced by cultural norms (Nelson & Fivush, 2020) and developmental stages (Conway & Holmes, 2004). Future research is necessary to investigate the generalizability of the present findings. Fourth, our studies investigated parents and childhood and adolescence memories because of past work that identified this period as critical in the development of ED. However, there may be other types of memories or memories from adulthood that also contribute to ED. Future research could survey a broader range of memories to identify other types of memories that could also contribute to eating disorders.

In sum, the present research highlights how need thwarting and shameful memories of childhood and adolescence are associated with ED symptoms, maladaptive eating habits, and lower body esteem. Not all need thwarting or shameful memories were shown to be associated with these eating outcomes, but only those for which a conscious symbolic link was drawn between the need thwarting/shame memories and eating and body concerns. While a few themes from memories were found to be associated with ED symptoms, no special theme was shown to be more critical than others (e.g., criticism, body and weight concerns, parents). The key aspects were the need thwarting and shameful nature of the memories, highlighting that many types of life events may be likely to trigger ED psychopathology and that it is the interpretative and reconstructive nature of these events in memories that may represent the largest issue. Further research is warranted to explore the potential efficacy and applicability of interventions aimed at modifying the impact of these memories on ED psychopathology.

Ethics approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the University of Quebec at Montreal and of the University of Quebec at Trois-Rivières: 2019-1755, 2069.

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Consent to participate

Informed consent was obtained from all individual participants included in the study and from their parents/tutors.

CRediT authorship contribution statement

Frederick L. Philippe: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Noémie Carbonneau:** Writing – review & editing, Resources, Project administration, Methodology, Funding acquisition, Conceptualization. **Annabelle Fortin:** Methodology, Formal analysis, Data curation. **Valerie Guilbault:** Writing – review & editing, Validation, Supervision, Methodology, Conceptualization. **Nabil Bouizegarene:** Writing – original draft, Methodology, Formal analysis, Data curation. **Juliana Mazanek Antunes:** Project administration, Methodology, Data curation, Conceptualization. **Sook Ning Chua:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no conflict of interest.

Data availability

Data will be made available on request.

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