Motivation and Emotion
https://doi.org/10.1007/s11031-023-10037-y

ORIGINAL PAPER

Motivational pathways involved in women's intentions to engage in healthy and disordered eating behavior following a body-related discrepancy

Kheana Barbeau[1,2] · **Kayla Boileau**[1] · **Luc Pelletier**[1]

Accepted: 2 August 2023

Abstract
The current mixed method study aimed to examine (1) the types of body-related discrepancies that college-aged women face, (2) the association between women's motivation for eating regulation and intent to engage in healthy and disordered eating following such experiences, and (3) the mediating role of affect and compensation strategies in these relationships. Thematic analysis of narratives from a body-related self-discrepancy recall task revealed that Canadian college-aged women (N = 398) experience discrepancies related to the appearance and care of their bodies. These experiences were more likely to occur in a non-social-evaluative setting. A path analysis revealed that autonomous eating regulation was associated with healthy eating intentions, whereas controlled eating regulation was associated with disordered eating intentions following a recalled body-related discrepancy. These distinct pathways were partly explained by levels of self-compassion and selection of distinct behavioral and cognitive compensation strategies. Findings suggest that those with autonomous eating regulation possess a resource, self-compassion, which aids self-regulation following body-related threats.

Keywords Body-related self-discrepancies · Motivation for eating regulation · Cognitive dissonance · Eating behaviors · Self-compassion

Perceiving discrepancies between actual and ideal bodily states (e.g., size, shape, weight) can elicit discomforting emotions, such as body-related negative affect (Dittmar, 2009), anxiety and depression (Heron & Smyth, 2013), and are associated with the use of unhealthy weight-controlling behaviors (e.g., dietary restraint; Lantz et al., 2018; Schnettler et al., 2017). These discomforting body-related experiences are more likely to occur in social-evaluative contexts where women's bodies are on display and can be evaluated by others (Lamarche et al., 2012). However, the process by which emotional and cognitive states resulting from body-related discrepancies are associated with eating behaviors is somewhat inconclusive and existing studies do not explore the role of the social context. For instance, some studies demonstrate that body-related discrepancies are associated with lower engagement in healthy eating (Anton et al., 2000) and higher dysregulated eating, such as emotional eating (Halliwell & Dittmar, 2006), binge eating (Anton et al., 2000) and overall eating disorder psychopathology (Mason et al., 2018), while others demonstrate that they can help facilitate health-promotion and reduce disordered eating (binging, purging, and restricting; Freijy & Kothe, 2013).

A promising model that can shed light on these potentially distinct behavioral processes following a body-related discrepancy is the Hierarchical Action-Based Model of Inconsistency Compensation (HABICE; Lavergne & Pelletier, 2015). This model combines tenants of Cognitive Dissonance Theory (CDT; Festinger, 1957) and Self-Determination Theory (SDT; Ryan & Deci, 2017) to understand motivational differences in dissonance arousal and compensation following attitude-behavior inconsistencies and their respective implications on domain-specific behavior (Lavergne & Pelletier, 2015, 2016). We sought to examine how body-related discrepancies relate to college-aged women's adaptive and disordered eating behavior through affective and cognitive processes by applying the HABICE model and examining the moderating role of the social context. This study also aimed to provide an expansive and nuanced

✉ Kheana Barbeau
kbarb006@uottawa.ca

[1] University of Ottawa, Ottawa, Canada

[2] University of Calgary, Calgary, Canada

Published online: 19 August 2023

understanding of the types of body-related discrepancies that college-aged women experience. This is important to investigate considering that college-aged women could experience discrepancies related to their physical appearance and/or behaviors involved in maintaining or modifying body weight or shape (e.g., eating and physical activity behavior). This cross-sectional mixed method study in a sample of Canadian college-aged women sought to fill these knowledge gaps in the literature.

Hierarchical action-based model of inconsistency compensation (HABICE)

The action-based model of dissonance improved the predictive power of CDT (Festinger, 1957) by distinguishing between proximal and distal motivational processes involved in dissonance compensation (Harmon-Jones et al., 2009). Proximal motivation refers to the state of psychological discomfort, *dissonance*, that is aroused by discrepant self-states (e.g., attitudes and behavior) that threaten effective action in a given domain. As discrepancies elicit dissonance, it propels individuals to use strategies to avoid or reduce the discomfort referred to as *compensation strategies* (Festinger, 1957). These include attitude change (e.g., cognitive restructuring), such as aligning one's attitudes with the dissonant action, and behavior change (e.g., behavior modification), such as correcting one's behavior to align with existing attitudes. The action-based model suggests that strategy selection is dependent on distal rather than proximal motivation (i.e., dissonance arousal; Harmon-Jones et al., 2009). Distal motivation refers to the activation of dominant action tendencies, such as beliefs, knowledge, or goals, that are primed by the self-discrepant state (e.g., setting a goal to eat healthily but engaging in unhealthy eating), and its capacity to drive individuals to engage in compensatory strategies that have potential to fulfil salient domain-specific commitments and goals to restore effective action (e.g., making a healthy food choice to align with health goals; Harmon-Jones et al., 2009).

Lavergne and Pelletier (2015) built on the action-based model of cognitive dissonance by using motivation orientations postulated by SDT (Ryan & Deci, 2017) to operationalize individual differences in distal motives. This amended action-based model was tested in the environmental domain and is therefore referred to as the Hierarchical Action-Based Model of Inconsistency Compensation in the Environmental Domain (HABICE; Lavergne & Pelletier, 2015). It is proposed that motivation underlying the regulation of domain-specific behavior is activated when inconsistent self-states threaten effective action or goal attainment in the domain (Lavergne & Pelletier, 2016). In turn, the activation of individuals' motivation orientation orients them toward specific compensation strategies due to dispositional differences in action tendencies for organismic integration via authentic regulation or ego-protection. In SDT literature, women's motivation for regulating eating behavior is associated with different perceptual, affective, and behavioral responses to stimuli that has potential to elicit awareness of body-related discrepancies, such as exposure to thin-ideal images (Mask & Blanchard, 2011). Thus, women's eating regulatory style may be implicated in the dissonance-compensation process, and in turn, eating behavior outcomes when a body-related discrepancy occurs.

Motivation for eating regulation

The regulation of eating behavior can be approached in a controlled or autonomous fashion (Pelletier et al., 2004). Those who regulate their eating behaviors for more autonomous reasons do so out of interest and perceived importance (e.g., importance of eating healthily), thus the regulation is perceived to emanate from the self and is experienced as authentic. In contrast, those who regulate their eating behaviors for more controlled reasons do so out of obligation or to avoid external criticism and losses to esteem (e.g., feeling guilty or ashamed), thus the regulation is perceived to emanate from external sources and is experienced as coercive. Due to these qualitatively different reasons for regulating eating behaviors, autonomous and controlled motivation toward eating regulation is associated with distinct health-related processes and outcomes. For instance, more autonomous eating regulation is associated with the valuation of health goals for weight management (Guertin et al., 2017, 2018), and consequently, higher preoccupations with the quality of food consumed (Pelletier et al., 2004) and more healthy eating (Carbonneau et al., 2021; Guertin et al., 2017, 2018; Pelletier et al., 2004). In contrast, more controlled eating regulation is associated with the valuation of appearance goals for weight management (Guertin et al., 2017, 2018), and consequently, higher preoccupations with the quantity of food consumed (Pelletier et al., 2004), avoidance planning strategies (e.g., avoidance of certain foods; Otis & Pelletier, 2008), and disordered eating characterized by stringent control (i.e., restriction) or loss of control (i.e., binging; Verstuyf et al., 2012, 2016).

Motivational dispositions toward healthy or disordered forms of eating have also been found experimentally following exposure to a thin-ideal image (Mask & Blanchard, 2011). For instance, women with more autonomous eating regulation experienced less size dissatisfaction, whereas women with controlled eating regulation experienced more negative affect. Additionally, women with more autonomous eating regulation were more likely to intend to eat more healthily, whereas women with more controlled eating

regulation were more likely to intend to restrict their eating. According to the HABICE model (Lavergne & Pelletier, 2015), compensation strategies play a mediating role between motivation and domain-relevant behavior and thus offers an explanatory mechanism by which autonomous and controlled eating regulation is associated with intentions to engage in healthy or disordered eating following a body-related discrepancy.

Motivational orientations and compensation strategies

According to Deci and Ryan (1985), those with autonomous motivation have an action tendency for organismic integration, acting in ways that ensure coherence and consistence with authentic self-structures (e.g., beliefs, goals), whereas those with controlled motivation have an action tendency for ego-investment, acting contingently upon obtaining extrinsic rewards, such as admiration or avoiding losses to esteem. These motivational differences in action tendencies were observed in Lavergne and Pelletier's study (2015). For instance, autonomous motivation was found to be consistently associated with behavior modification strategies, which increased the coherence between behaviors and beliefs. In contrast, controlled motivation was contingently associated with compensation strategies: when dissonance levels were higher, behavior modification was more likely, whereas when dissonance levels were lower, cognitive restructuring was more likely. This variability was associated with more frequent behavioral incongruencies. This may suggest that those with controlled motivation select strategies conditionally based on features of the social context, wherein behavioral strategies will be used when ego threat is high (i.e., social-evaluative context) and cognitive restructuring strategies will be used when ego threat is low (i.e., non-social-evaluative context).

In the body image domain, Cash et al. (2005) identified strategies that college women employ when coping with stressful body image experiences which, like CDT, are characterized by behavior modification and cognitive restructuring/disengagement. For instance, appearance fixing (e.g., altering appearance to hide or correct flaws) is an ego-invested behavior modification strategy that women employ to be viewed more favourably by others. In contrast, avoidance is a cognitive and behavioral strategy that is used for ego-protection; discomfort is reduced by avoiding (e.g., deflecting attention) or escaping from stressful body image stimuli. Given that appearance fixing and avoidance are employed to reduce body discomfort and are associated with higher disordered eating (Cash et al., 2005), they may function as compensation strategies and mediate the relationship between controlled eating regulating and disordered eating and exercise behaviors. Furthermore, these associations may be strengthened if a body-related discrepancy occurs in a social-evaluative context. A study by Bailey et al. (2014) demonstrated that women allocated to an imagined high-social-evaluative body image threat condition (modeling a swimsuit in front of friends) compared to a low-social-evaluative body image threat condition (modeling a swimsuit alone) were more likely to report using appearance fixing and avoidance as their primary coping strategy (Bailey et al., 2014). Thus, the social context of body-related discrepancies may modulate the relationships between controlled motivation for eating regulation and use of avoidance and appearance fixing strategies, wherein associations will be stronger if a body-related discrepancy occurs in a social-evaluative context.

Self-compassion is acknowledged as another strategy that individuals employ to cope with feelings of failure or inadequacy as it relates to one's appearance and dietary lapses (Thøgersen-Ntoumani et al., 2021; Turk & Waller, 2020) and minimizes arousal in response to threats in social-evaluative contexts (Arch et al., 2014; Petrocchi et al., 2017). Self-compassion is conceptualized as an emotion regulation (vs compensation) strategy as it mitigates negative emotions (Inwood & Ferrari, 2018), suggesting it may be associated with the magnitude of dissonance aroused when individuals become aware of body-related discrepancies.

Self-compassion and affect regulation

Self-compassion constitutes being kind toward the self rather than critical and judgemental, viewing mistakes and imperfections as shared rather than a unique character flaw, and being mindful of emotions without overidentifying with them (i.e., ruminate). When dealing with personal shortcomings, being understanding and viewing failure as part of the human experience can help offset self-conscious (e.g., guilt, shame) and dejection-related emotions (e.g., disappointment). A longitudinal study found that both trait and state self-compassion were associated with lower levels of body-related self-conscious emotions among adolescent girls playing sports (Pila et al., 2022). Moreover, accepting one's flaws rather than denying them facilitates action-oriented coping. A series of experiments conducted by Breines and Chen (2012) demonstrated that after recalling a personal weakness, transgression, or failure, individuals instructed to re-appraise these events using self-compassion viewed their weakness as more malleable, reported greater motivation to avoid repeating a transgression, and more effort to improve (Breines & Chen, 2012). Furthermore, mindfulness allows individuals to build tolerance to negative emotional states, which frees up self-regulatory resources through the mitigation of rumination (Sirois et al. 2015). Several studies

have shown that improved affective balance partly explains the relationship between self-compassion and increased engagement in health-promoting behaviors and reduced disordered eating (Biber & Ellis, 2019; Sirois et al. 2015; Turk & Waller, 2020). Additionally, self-compassion has been found to mediate the relationship between health-oriented goal strivings and more self-determined (autonomous) motivation for eating regulation (Guertin et al., 2018). Although these results suggest that self-compassion facilitates more autonomous forms of motivation, the relationship between these constructs is interactional and therefore could be bidirectional. For instance, a longitudinal study in college-aged students found that the association between autonomous motivation for goal pursuit and low negative affect was stronger for individuals with higher levels of self-compassion (Hope et al., 2014). This suggests that self-compassion could be a personal resource that more autonomously motivated individuals call upon when facing challenges (i.e., self-discrepancies) during their goal pursuits, which sustains their commitment to effortful action and affords resources to employ self-corrective behavior that promotes goal progress, such as healthy eating.

Current study

The objectives of the current study were twofold. First, to explore the types of body-related discrepancies that college-age women face daily. An inductive-deductive qualitative approach was used to identify and code themes interpreted from women's responses to a body-related discrepancy recall task. Codes were partly deduced based on the literature, such as the SDT eating regulation literature and previous studies examining body image threats (Lamarche et al., 2012) and physical self-discrepancies (Brunet et al., 2012), which is a more rigorous approach to thematic analysis (Braun & Clarke, 2006). However, given that no study to date has examined all possible types of self-discrepancies in the weight management domain, there was flexibility for new themes to be interpreted (inductive approach).

Second, to examine if women's autonomous and controlled motivation for eating regulation are associated with healthy or disordered eating intentions following a body-related discrepancy and whether these relationships are mediated by distinct affect regulation and dissonance compensation strategies. We used a model building approach in which models were tested and compared to understand the contribution of motivation, compensation strategies, and affect regulation strategies on women's eating intentions following a body-related discrepancy. The first model reflects motivational differences for eating regulation as postulated by SDT (Fig. 1A), the second model represents the addition of compensation strategies in the HABICE model (Fig. 1B), and the third model represents the addition of self-compassion to the HABICE model as a form of introspective self-talk that individuals may use to respond or reflect on the discomfort created by body-related discrepancies (Fig. 1C). The modulating role of the social context was examined for each model.

This study fills knowledge gaps in the self-discrepancy literature by broadening our understanding of body-related discrepancies implicated in the body image and weight management domain. Additionally, our mixed method approach allows the quantification of relationships between constructs to be contextualized and grounded by college women's narratives surrounding their body, thereby giving us insight on the generalizability of these relationships to various life experiences involving the body. Furthermore, by applying the HABICE model in the context of body-related discrepancies, we can elucidate distinct processes involved in women's use of adaptive and maladaptive weight-managing behaviors following a state of cognitive dissonance, which rectifies the paradoxical findings found in the self-discrepancy and cognitive dissonance literature. We believe that the HABICE model may not fully capture these nuances in the dissonance compensation process, thus the addition of self-compassion to this model may further explain why people with different motivational orientations adopt different compensation strategies in response to self-discrepancies.

Research questions and hypotheses

As qualitative analyses are descriptive in nature, our research questions pertaining to our analyses were (1) apart from appearance self-discrepancies, which other types of self-discrepancies do college women face related to their bodies? (2) do these experiences typically occur in a social-evaluative or a non-social evaluative context?

Hypotheses regarding motivational differences in compensation and eating intentions in response to a body-related discrepancy were based on the SDT eating regulation literature and the HABICE model. It was hypothesized that autonomous eating regulation would be positively associated with intentions to engage in healthy eating directly and indirectly through behavior modification strategies (H1), whereas controlled eating regulation would be positively associated with intentions to engage in disordered eating behaviors directly and indirectly through cognitive restructuring, appearance fixing, and avoidance strategies (H2).

Furthermore, it was hypothesized that self-compassion, as an emotion regulation strategy, would be negatively associated with dissonance (H3). It was also hypothesized that autonomous eating regulation would be negatively associated with dissonance directly and indirectly through higher self-compassion (H4) and indirectly associated with behavior modification through higher self-compassion and lower

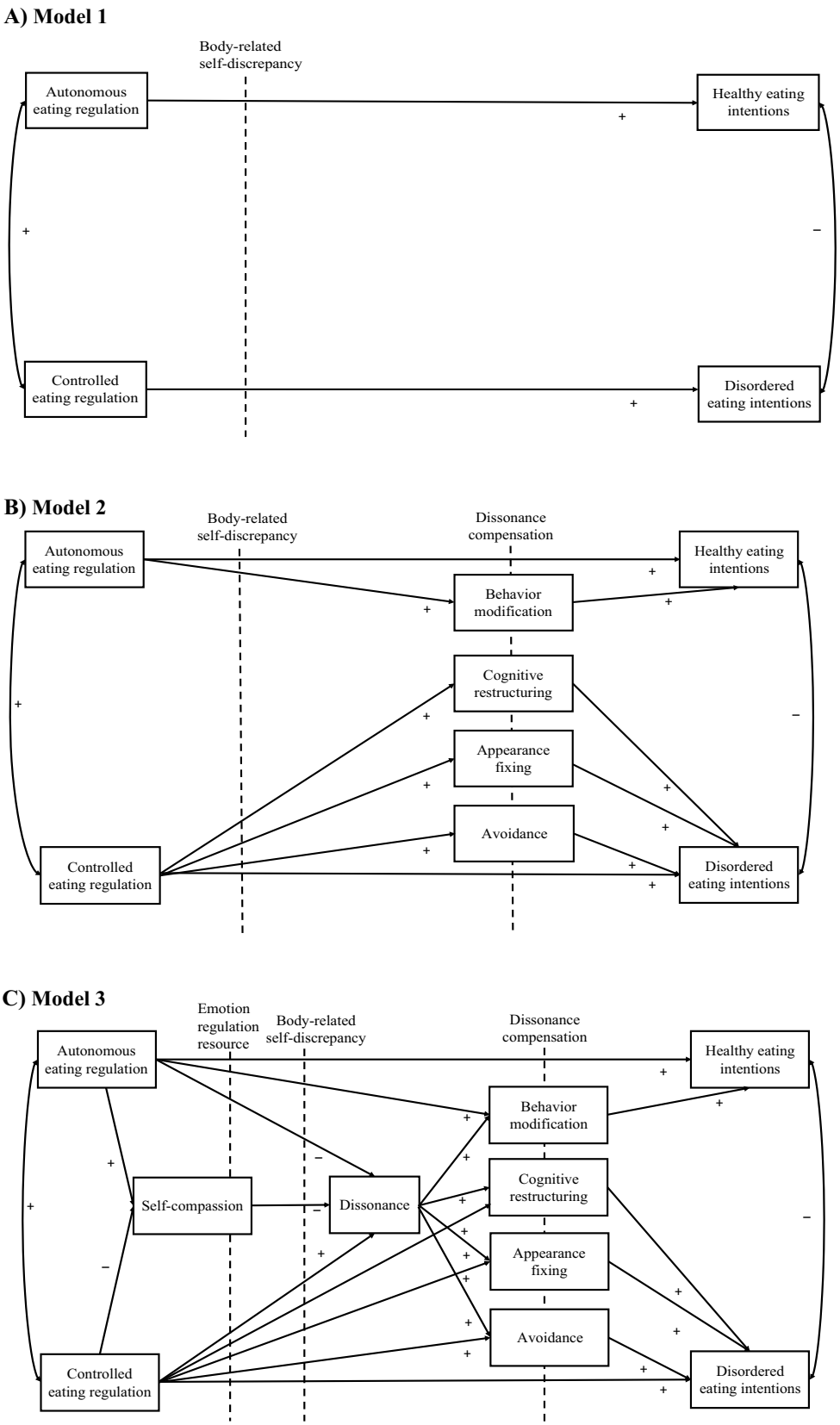


Fig. 1 Conceptual Hypothesized Models Using a Phased Model Building Approach. + positive association, − negative association. Eating disorder attitudes are controlled for but do not appear in the model for simplicity

dissonance (H5), whereas controlled eating regulation was hypothesized to be positively associated with dissonance directly and indirectly through its negative association with self-compassion (H6) and indirectly associated with avoidance, cognitive restructuring, and appearance fixing through lower self-compassion and higher dissonance (H7). Finally, as individuals higher in controlled eating regulation contingently employ compensation strategies based on the degree of ego threat, it was hypothesized that associations between controlled motivation and appearance fixing and avoidance strategies would be stronger if a body-related discrepancy was reported in a social-evaluative context, whereas associations between controlled motivation and cognitive restructuring would be stronger if a body-related discrepancy was reported in a non-social-evaluative context (H8). All hypothesized relations in the path analysis model were proposed to hold while controlling for women's eating disorder attitudes (see Fig. 1C).

Method

Study design

A mixed method cross-sectional design was employed where quantitative approaches are more heavily weighted (Cresswell & Plano Clark, 2011). Canadian college women's narratives surrounding their experienced body-related self-discrepancies were captured via a body-related discrepancy recall task (qualitative component) administered through an online survey. The online survey also assessed women's self-reported eating disorder attitudes, motivation for eating regulation, levels of dissonance following the body-related recall task, compensation strategies they typically employ to deal with similar experiences, and their intentions to engage in healthy and disordered eating (quantitative component). The data were not triangulated; results are considered separate; however, the qualitative component provides some context for understanding patterns in the quantitative data (i.e., statistical models) as some of the self-report measures reflect the experience women reported on.

Participants

Four-hundred eight undergraduate women (mean age = 19.6, $SD = 4.6$; mean Body Mass Index = 23.3, $SD = 5.1$) from a Canadian university research participation pool were recruited (between October 2020 and February 2022) for an online multi-phase study. The study was advertised as examining the relationship between personality and contextual characteristics in relation to coping with threats to the self and their potential impacts on the ability to regulate health behaviors. Participants were allocated a credit toward a course for their participation in. Ethics were obtained by the university's ethics review committee before the commencement of the study. The number of participants recruited for this study was based on a priori power analysis for the path analysis model (see data analytical plan). Data were only analyzed once recruitment terminated.

Most participants identified as White ($n = 223$), South Asian or Indian Canadian ($n = 42$), or Black, Afro-Caribbean, or Afro-Canadian ($n = 42$). Most participants also identified as heterosexual ($n = 320$). Using Tatham et al.'s (2015) Eating Disorder-15 weight, shape, and eating concerns subscale and Rodrigues et al.'s (2019) suggested cut-off of 2.8 (using the Youden index, which maximizes specificity and minimizes sensitivity), 183 (45%) women's scores were in the clinical range and 225 (55%) women's scores were in the non-clinical range.

Measures

Sociodemographic information

Women self-reported their age, height, weight, ethnicity, and sexual orientation.

Eating disorder attitudes

The Eating Disorder-15 (ED-15; Tatham et al., 2015) shape, weight, and eating concerns subscale was used to measure women's eating disorder attitudes. The attitudinal subscale comprises 10 items: 4 items measure eating concerns (e.g., I follow strict rules about my eating) and 6 items measure weight and shape concerns (e.g., I avoid activities or people because of the way I look). Women were asked to rate the extent to which each statement reflected their eating attitudes and behaviors over the past week on a 7-point Likert scale from 0 (*not applicable*) to 6 (*all the time*). A total score was created by averaging all items from the attitudinal subscale (Tatham et al., 2015). Evidence of the validity of the ED-15 was established in a sample of clinical and non-clinical adult women, and scores on the ED-15 are highly correlated with a gold standard measure of eating disorder cognitions and behaviors (i.e., EDE-Q) in both samples. Both attitudinal subscales also demonstrate high internal consistency using Cronbach's alpha (weight and shape concerns subscale = 0.94; eating concerns subscale = 0.80; Tatham et al., 2015). In the current sample, the average inter-item correlation for this scale was 0.54, which is above the minimum suggested value of 0.20 (Piedmont, 2014).

Autonomous and controlled motivation for eating regulation

The Regulation of Eating Behaviors Scale (REBS; Pelletier et al., 2004) was used to assess women's motivation for regulating their eating behavior. The REBS comprises 24 items with six subscales (4 items each) representing different types of behavioral regulation styles: three subscales represent more autonomous forms of regulation (intrinsic, integrated, and identified), two subscales represent more controlled forms of regulation (introjected and extrinsic), and one subscale represents a lack of intent to act or to self-regulate (amotivation). On a scale from 1 (*does not correspond at all*) to 7 (*corresponds exactly*), women indicated the extent to which each statement represented their reasons for regulating their eating behavior (e.g., because I take pleasure in fixing healthy meals; because I don't want to be ashamed of how I look). Composite scores were created for autonomous and controlled motivation by averaging items related to autonomous and controlled forms of regulation, respectively. Structural validity of the REBS was supported via exploratory and confirmatory factor analysis conducted in a sample of college women (Pelletier et al., 2004). Construct validity was also supported by examining the associations between autonomous and controlled motivation and wellbeing, healthy eating behaviors, and bulimic symptoms (Pelletier et al., 2004). Cronbach's alpha for behavioral regulatory subscales range between 0.79 and 0.91 (Pelletier et al., 2004). In the current sample, inter-item correlations for autonomous eating regulatory style scores was 0.60, and was 0.37 for controlled eating regulatory style scores.

Self-compassion

The 26-item Self-Compassion Scale (SCS; Neff, 2003) was used to measure women's degree of self-compassion (e.g., I'm tolerant of my own flaws and inadequacies). Women indicated on a scale from 1 (*almost never*) to 7 (*almost always*) the extent to which they typically engaged in compassionate coping (altered Likert scale used in Barbeau et al., 2022; Guertin et al., 2018). A global score of self-compassion was created by averaging all six subscale scores after reverse-scoring negatively worded subscales (i.e., self-judgment, isolation, over-identification). Structural validity of the SCS was supported via exploratory and confirmatory factor analyses in a sample of men and women (Neff, 2003). In addition, the SCS demonstrates discriminant validity from other positive self-attitudes, such as self-esteem, when predicting mental health outcomes (Neff, 2003). Reported internal consistency of the scores on the SCS was 0.92 using Cronbach's alpha (Neff, 2003). In the current study, the average inter-item correlation between subscale scores of the SCS was 0.69.

Dissonance

The 18-item Inconsistency Induced Affect Scale (IIAS; Lavergne & Pelletier, 2015) was used to measure women's levels of psychological discomfort following the body-related discrepancy recall task. Women were asked the extent to which they were feeling the following emotions after the task on a scale from 1 (*not at all*) to 7 (*very much*). A composite score was created by averaging nine items that represent general discomfort (3 items; e.g., uncomfortable), negative self-conscious emotions (3 items; e.g., guilty), and dejection-related emotions (3 items; e.g., disappointed). Previous studies eliciting dissonance through a recall task used this score to represent psychological discomfort and demonstrated construct validity by examining associations with dissonance compensation strategies (Lavergne & Pelletier, 2015, 2016). In the current sample, the average inter-item correlation for this score was 0.59.

Dissonance compensation strategies

An adapted version of the Abbreviated Inconsistency Compensation Strategies Scale (AICSS; Lavergne & Pelletier, 2015) was used to assess women's use of compensation strategies in response to the body-related discrepancy they described in the recall task. The AICSS comprises two subscales: a subscale with items measuring behavioral compensation strategies, such as enacting behavior change (4 items; e.g., immediately thinking of ways to correct myself through actions) and a subscale measuring cognitive restructuring strategies (5 items), such as weakening attitudes by trivializing (e.g., concluded that my thoughts or behaviors are indicative of my true attitudes) or rationalizing (e.g., thinking that the action I just did, despite being inconsistent, was consistent with other values and goals I consider important). Women rated on a scale from 1 (*never*) to 7 (*all of the time*) the extent to which they use these strategies during a situation similar to the one reported in the recall task. Since the subscale items were adapted from the original scale, an exploratory factor analysis was conducted using Principal Axis Factoring based on eigenvalues with an oblique promax rotation due to previous correlations found between behavior and cognitive restructuring strategies (Lavergne & Pelletier, 2015). The analysis revealed that the scale comprised two factors, which explained 45% of the variance. Items that did not have a loading ≥ 0.40 were removed (Matsunaga, 2010). Remaining items in each factor were averaged to create a composite score for behavioral (3 items) and cognitive (4 items) restructuring strategies. The average inter-item correlation for scores on the behavior modification and cognitive restructuring subscales were 0.34 and 0.29, respectively.

Appearance fixing and avoidance coping strategies

The appearance fixing (10 items; e.g., I spend extra time trying to fix what I don't like about my looks) and avoidance (8 items; I try to ignore the situation and my feelings) subscales from the Body Image Coping Strategies Inventory (BICSI; Cash et al., 2005) were used and assessed the extent to which women used appearance fixing and avoidance strategies when they experience the body-related discrepancy reported in the recall task. Women rated on a scale from 1 (*definitely not like me*) to 4 (*definitely like me*) the extent to which they use these strategies when similar situations occur. Items belonging to each subscale were averaged. Structural validity of the BICSI was supported via exploratory factor analysis in a sample of college men and women (Cash et al., 2005). Convergent validity of the scale was also supported in the same sample through correlations with other body image and eating disorder inventories (Cash et al., 2005). The internal reliability of the appearance fixing and avoidance subscales in women were 0.90 and 0.74, respectively, using Cronbach's alpha. In the current sample, average inter-item correlations were 0.22 for scores on avoidance and 0.50 for scores on appearance fixing.

Healthy eating behavior intentions

To measure intentions to engage in health eating, items from the Healthy and Unhealthy Eating Behavior Scale (HUEBS; Guertin et al., 2019) were adapted to reflect approaching healthy foods (2 items; e.g., eat more fruits) and limiting/decreasing ingestion of unhealthy foods (4 items; e.g., limit/decrease intake of deep-fried foods). An additional item was added to reflect eating a variety of foods (1 item; e.g., increase variety in my diet, such as eating green, orange, and red fruits and vegetables). On a scale from 1 (*not at all likely*) to 7 (*very likely*) women rated the extent to which they plan to engage in these activities in the following 7 days. Structural validity of the HUEBS was supported via an exploratory factor analysis in a sample of college-aged women and has been replicated in other samples of adult women (Guertin et al., 2019). Construct validity was demonstrated through associations with different motivational styles underlying the regulation of eating behaviors (Guertin et al., 2019). Due to our adaptations of the HUEBS, an exploratory factor analysis was conducted using Principal Component Analysis with a varimax rotation. Similar to the HUEBS (Guertin et al., 2019) two factors emerged (76% of the variance explained) with all items loading ≥ 0.40. A composite score was created by averaging scores on both subscales. In the current study, the average inter-item correlation for this score was 0.54.

Disordered eating behavior intentions

To measure intentions to engage in disordered eating, the 5-item behavioral subscale from the ED-15 was used (Tatham et al., 2015; e.g., binge on food). The ED-15 was created to measure short-term changes in eating disorder attitudes and behaviors (Tatham et al., 2015) and therefore was suitable to be adapted to measure short-term changes in behavioral intentions. To be comparable to our intention to engage in health-promoting behavior measure, the ED-15 behavioral subscale used the same 7-point Likert scale from 1 (*not at all likely*) to 7 (*very likely*) and asked women the extent to which they plan to engage in these activities in the following 7 days. A total score was created by averaging the items. Concurrent validity of this subscale was demonstrated in a sample of non-clinical women through correlations with behavioral items from the EDE-Q (Tatham et al., 2015). In the current study, the average inter-item correlation for this score was 0.35.

Procedure

Participants signed up for this online multi-phase study through a research participation pool. The measures and recall task used in the current study functioned as a baseline questionnaire for the second phase of the study. For this phase of the study, college women self-reported their socio-demographics, eating disorder attitudes, motivation for eating regulation, and their degree of self-compassion. Following these questionnaires, they completed the body-related discrepancy recall task (qualitative data). Next, they were asked if this scenario occurred in a social-evaluative or non-social-evaluative setting. Following this, they completed questionnaires assessing dissonance aroused by the body-related discrepancy recall task, compensation strategies they use to cope with similar experiences, and their intentions to engage in health-promoting or disordered eating and exercise behaviors over the next 7 days (quantitative data).

Body-related discrepancy recall task

College women were asked to briefly describe a recent situation where they either behaved or felt counter to their attitudes/beliefs about their body. Examples were provided to participants, which included attitudes or behaviors related to caring for their body or attitudes or behaviors related to the evaluation or affective components of their body image (see online resource 1). This form of recall increases individuals' awareness of a discrepancy between their attitudes and behaviors, which is a commonly used technique to induce

cognitive dissonance and examine the implications of dissonance on health behavior change (Freijy & Kothe, 2013) and intentions (Cooper & Feldman, 2020).

Context of body-related discrepancies

Following the recall task, college women were asked if the situation they described occurred in a social-evaluative or non-social-evaluative setting (close-ended question).

Data analysis

Thematic and content analysis of body-related discrepancies

College women's narratives derived from the recall task were thematically analyzed using a hybrid deductive-inductive approach. This approach was used to situate the synthesis of data in existing theoretical frameworks that are applicable to the conceptualization and understanding of body-related self-discrepancies, such as the eating regulation literature within SDT (Guertin et al., 2017, 2018; Pelletier et al., 2004; Verstuyf et al., 2012) and other frameworks focused on social stress (Lamarche et al., 2012). The flexibility afforded by a hybrid inductive-deductive approach allows new themes to be interpreted to capture nuances of experiences that may not, in its entirety, be reflected adequately by existing theory (Proudfoot, 2022). In this case, college women's experiences related to their bodies.

First, a priori themes based on the literature were defined and added to the codebook by the first author. Following this, the first author familiarized themselves with the data and added new themes to the codebook that were interpreted from the data (see online resource 2). Ten other reviewers were trained on the codebook and coded five practice entries, which were then compared to the coding conducted by the first author. When inconsistencies in coding occurred, the first author and a second coder engaged in discussion until consensus was reached. Following this training, the first author and other reviewers independently coded the data. The first author functioned as the second coder for all entries coded by other reviewers and vice versa. When discrepancies between coding occurred, reviewers engaged in discussion until consensus was reached. Inter-rater agreement in coding using Cohen's kappa was considered strong (0.87).

Main analyses

A content analysis was conducted to explore the frequency of themes that were interpreted in relation to body-related discrepancies that college women face daily. Themes were ranked from most to least frequently reported and are accompanied by deidentified exemplary quotes from participants (see Fig. 2). Frequencies of body-related discrepancies stratified by social-evaluative or non-social-evaluative context appear in Table 1.

To examine the motivational differences in dissonance compensation strategies and their respective implications on adaptive and disordered eating intentions, a phased path analysis modelling approach was used in Mplus Version 7 while controlling for women's eating disorder attitudes. Three models were tested. Each model tested the contribution of variance explained in eating behavior intentions following the recall of a body-related discrepancy. Model 1 reflected the contribution of women's autonomous and controlled eating regulation on their adaptive and disordered eating behavior intentions. Model 2 reflected the addition of dissonance compensation strategies outlined in the HABICE model (Lavergne & Pelletier, 2015) and avoidant and appearance fixing body image coping strategies. Model 3 reflected the addition of self-compassion as an affect regulation strategy that may further explain individual differences in dissonance arousal. Means, standard deviations, and correlations between the variables in models 1–3 are presented in Table 2.

To examine if the social context played a moderating role on the models, each model was tested under two conditions: constrained (parameters constrained to be equivalent across contexts) or unconstrained (parameters are free to vary across contexts). The constrained and unconstrained models were then compared using a chi-square difference (χ^2diff) test ($p > 0.05$ = equivalency of relationships across context). For all models generated in the study (e.g., constrained, unconstrained, final accepted model), model fit was considered good if the $\chi 2$ value was nonsignificant (Barbeau et al., 2019), the comparative fit index (CFI) and Tucker-Lewis index were ≥ 0.90 (Hair et al., 2010; Forza & Filippini, 1998), the root mean square error of approximation (RMSEA) was $\leq .06$ (Barbeau et al., 2019), and the standardized root mean square residual (SRMR) index was ≤ 0.08 (Hu & Bentler, 1999). Only women who self-reported a self-discrepancy in the recall task were included in the path analysis (included $n = 398$; removed $n = 10$). Data were screened for univariate and multivariate outliers; univariate outliers were winsorized and multivariate outliers were removed ($n = 2$). An a priori power analysis suggested that an adequate sample size for a path analysis model with 11 variables is 330 participants according to Streiner's (2005) parameter

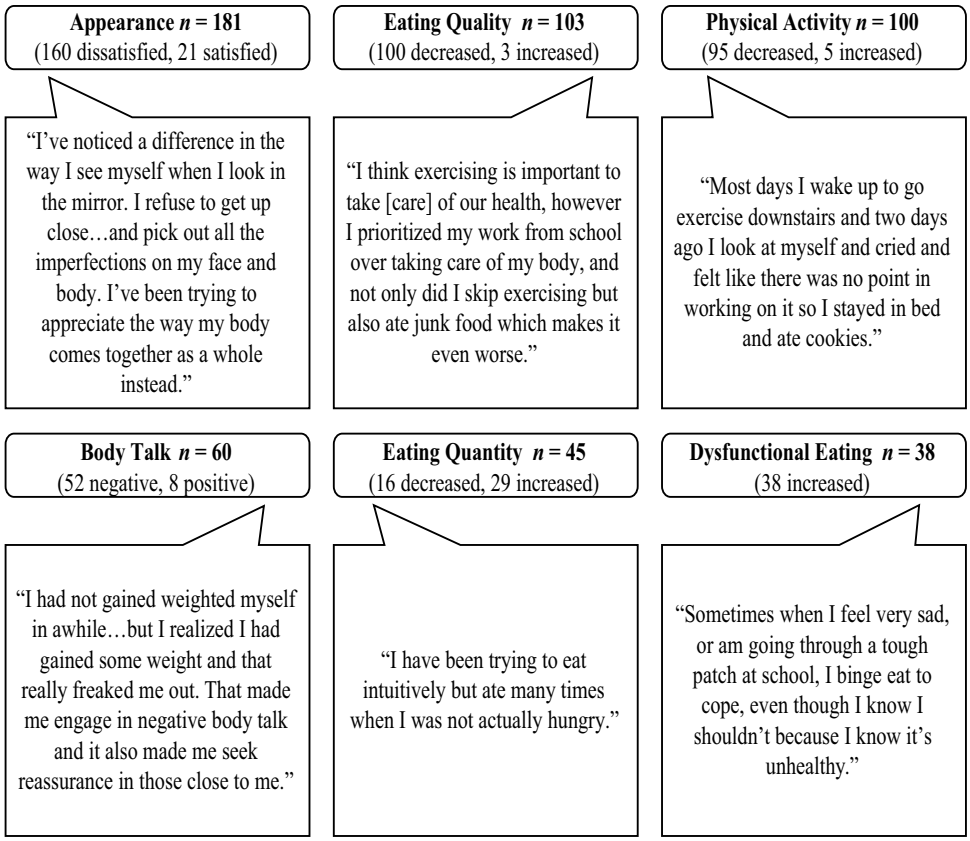


Fig. 2 Thematic Mapping of Types of Body-Related Discrepancies by Frequency Count. $N = 398$ women reported at least one body-related discrepancy; women may have reported more than one type of discrepancy; therefore, total themes identified are > 398. Themes of body-related discrepancies appear in order of prevalence, their directionality are signified, and contextual elicitors are in rank order from most to least common

Table 1 Body-related discrepancy theme counts by context

Direction	Context	Appearance	Eating Quality	Physical Activity	Eating Quantity	Body Talk	Dysfunctional Eating	Row Total
Decreased/dissatisfied/negative	Non-social-evaluative	133	73	84	13	45	–	348
	Social-evaluative	28	27	14	3	7	–	79
Increased/satisfied/positive	Non-social-evaluative	18	3	4	22	7	31	85
	Social-evaluative	3	0	1	7	1	7	19
	Total	181	103	100	45	60	38	531

$N = 398$ women reported at least one self-discrepancy; women may have reported more than one type of self-discrepancy; therefore, row totals may be > 398

calculation ([$k$variables^2 + $k$variables]/2 = 66) and Bentler and Chou's (1987) 5 to 1 ratio of observations per parameter (5 × 66 = 330).

Results

Body-related discrepancies

Types

Six themes under body-related discrepancies were interpreted from 398 narratives and (see Fig. 2). They include *appearance*, such as body shape/size, weight, or facial features ($n = 181$), with most experiences being negative ($n = 160$, 88%); *quality of foods ingested* ($n = 103$; e.g., perceived healthiness of food ingested), with most college women reporting reduced diet quality ($n = 100$, 97%) as indicated by eating more "junk foods"; *physical activity levels* ($n = 100$), with most college women reporting reduced levels of physical activity ($n = 95$, 95%; e.g., not going to the gym); *body talk* ($n = 60$), with most college women reporting more negative self-focused body talk ($n = 52$, 87%; e.g., negative self-appraisals, becoming more self-critical); *quantity of food ingested* ($n = 45$), with more college women reporting increased food intake ($n = 29$,

Table 2 Means, standard deviations, and correlations among the variables examined in the models collapsed across context

Variable	Mean	SD	ConMot	EDAT	SC	DA	BM	CS	AF	Avo	HEBI	DEBI
1. AutMot	4.6	1.3	.15*	.01	.23*	− 03	.35*	.16*	.01	− 02	.32*	.07
2. ConMot	3.0	1.3	–	.65*	− .41*	.48*	.20*	.16*	.50*	.48*	.23*	.59*
3. EDAT	2.6	1.5	–	–	− .43*	.49*	.21*	.04	.54*	.48*	.31*	.67*
4. SC	3.7	1.0	–	–	–	− .40*	.06	.18*	− .39*	− .43*	− .06	− 33*
5. DA	3.6	1.6	–	–	–	–	.26*	.08	.41*	.42*	.22*	.42*
6. BM	4.0	1.7	–	–	–	–		− .15*	.22*	.08	.29*	.26*
7. CS	2.8	1.4	–	–	–	–	–	–	.09	.20*	.04	.03
8. AF	2.7	0.8	–	–	–	–	–	–	–	.42*	.26*	.43*
9. Avo	2.1	0.6	–	–	–	–	–	–	–	–	.18*	.47*
10. HEBI	4.6	1.5	–	–	–	–	–	–	–	–	–	.41*
11. DEBI	2.1	1.1	–	–	–	–	–	–	–	–	–	–

$N = 397$. *$p < .05$. *AutMot* autonomous motivation for eating; *ConMot* controlled motivation for eating; *EDAT* eating disorder attitudes; *SC* self-compassion; *DA* dissonance arousal; *BM* behavior modification; *CS* cognitive restructuring; *AF* appearance fixing; *Avo* avoidance; *HEBI* healthy eating behavior intentions; *DEBI* disordered eating behavior intentions

64%; e.g., eating more than usual) and some reporting decreased food intake ($n = 16$, 36%; e.g., unintentionally eating less than usual); and *dysfunctional eating patterns* ($n = 38$), such as binging/emotional overeating, restricting, and purging.

Context

College-aged women experienced body-related discrepancies more in non-social-evaluative ($n = 453$ discrepancies) compared to social-evaluative ($n = 102$ discrepancies) settings. Counts of body-related discrepancies by context are displayed in Table 1.

Motivational differences in eating intentions following a body-related discrepancy

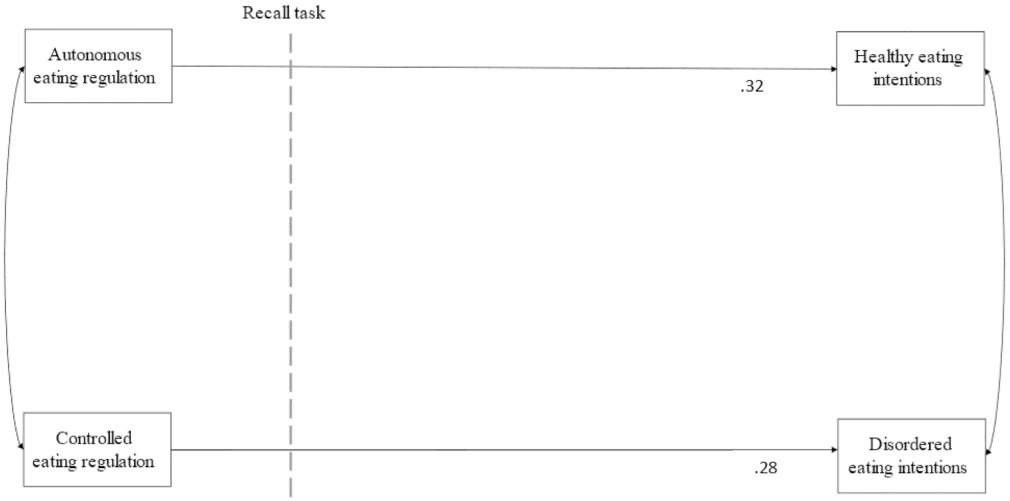
The results of the path analysis (N = 397; $n = 320$ private, $n = 77$ public) revealed no moderating effect of context on all three models (χ^2 diff $p > 0.05$ between constrained and unconstrained models); therefore, the constrained model was retained and there was no support for H8. The hypothesized model with constrained parameters fit the data well for each model tested with model 3 best fitting the observations in the data and improved variance explained in compensation strategies (model fits and R^2 displayed in Table 3). Thus, direct and indirect effects for the best fitting model (model 3, Fig. 3) were discussed.

Table 3 Model fit indices and explained variance in outcomes

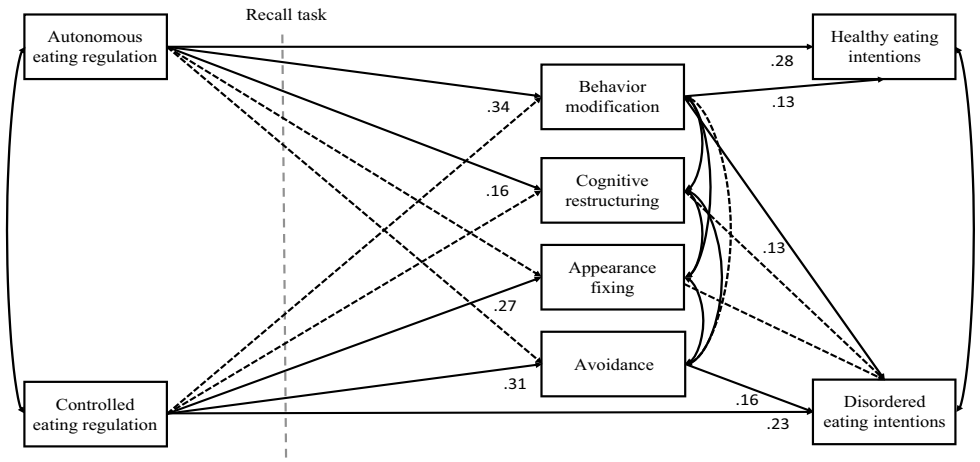
Fit Indices	Model 1	Model 2	Model 3
χ^2	(12) = 17.51, $p = .131$	(41) = 49.95, $p = .159$	(63) = 73.84, $p = .178$
CFI	0.99	0.99	0.99
TLI	0.98	0.99	0.99
RMSEA	.05 [90% CI = .000-.094, $p = .476$]	.03 [90% CI = .000-.062, $p = .810$]	.029 [90% CI = .000–053, $p = .990$]
SRMR	.07	.06	.06

$N = 397$; model fit represents constrained models. Model 1 = based on SDT, Model 2 = based on HABICE model; Model 3 = based on HABICE model with integration of self-compassion. R^2 model 1 = 21% in healthy eating behavior intentions and 49% in disordered eating behavior intentions; model 2 = 23% in healthy eating behavior intentions, 53% in disordered eating behavior intentions, 3% in cognitive restructuring, 16% in behavior modification, 30% in avoidance, and 32% in appearance fixing; model 3 = 23% in healthy eating behavior intentions, 53% in disordered eating behavior intentions, 9% in cognitive restructuring, 21% in behavior modification, 36% in avoidance, 35% in appearance fixing, 30% in self-compassion and 31% in dissonance

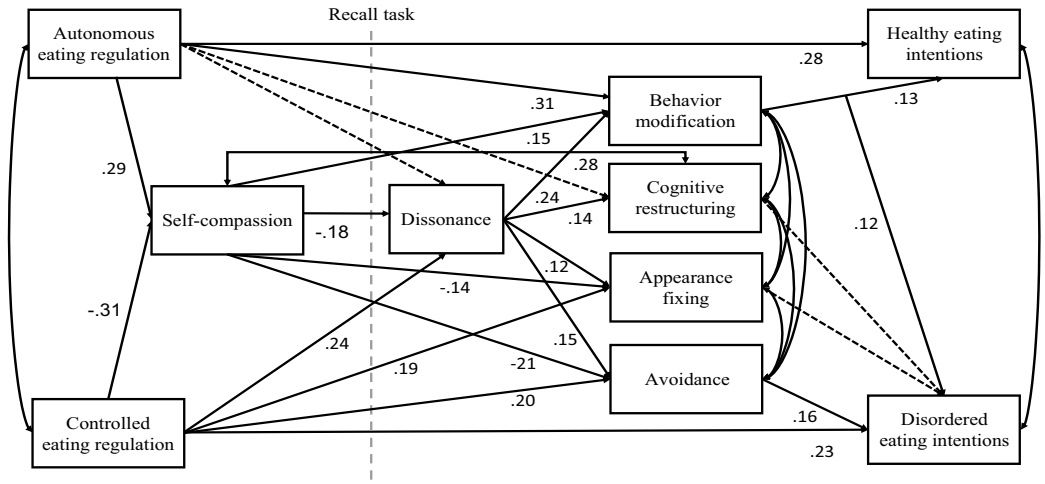
A) Model 1



B) Model 2



C) Model 3



◂**Fig. 3** Path Analysis Models Tested Using a Phased Model Building Approach N = 396; all paths are constrained, solid lines denote statistically significant paths, $*p < .05$, dotted lines represent non-significant paths, curved arrows represent variables that were allowed to covary, and variables appearing before the dotted grey line were assessed before the recall task. Eating disorder attitudes were controlled for. Path coefficients are standardized. Non-significant relationships between autonomous and controlled eating regulation and compensation strategies in Fig. 3B were removed in Fig. 3C for simplicity

Dissonance compensation pathways

As hypothesized (H1 and H2), autonomous eating regulation was associated with higher levels of healthy eating behavior intentions, whereas controlled eating regulation was associated with higher levels of disordered eating intentions following the body-related discrepancy recall task. Furthermore, we observed distinct dissonance compensation pathways associated with setting these behavioral intentions across women with more autonomous and controlled eating regulation; therefore, results were described separately.

Autonomous motivation for eating

Autonomous eating regulation was directly associated with higher use of behavior modification strategies and non-significantly associated with the use of cognitive restructuring, avoidance, and appearance fixing strategies, supporting the hypotheses (H1). Furthermore, engagement in behavior modification was directly associated with higher levels of healthy eating intentions. Behavior modification partly mediated the relationship between autonomous eating regulation and higher healthy eating behavior intentions ($\beta = 0.04$, $p = 0.018$, 95% CI [0.012 to 0.093]), which also supported the hypotheses (H1). As hypothesized (H4), autonomous eating regulation was directly associated with higher levels of self-compassion and non-significantly associated with dissonance. The non-significant relationship between autonomous eating regulation and dissonance was fully explained by higher levels of self-compassion ($\beta = -0.05$, $p = 0.002$, 95% CI [− 0.086 to − 0.020]), which is aligned with the hypotheses (H3 and H4). Furthermore, aligned with hypotheses (H5), both self-compassion and dissonance serially partially mediated the relationship between autonomous eating regulation and higher use of behavior modification strategies ($\beta = -0.01$, $p = 0.012$, 95% CI [− 0.023 to − 0.003]). Unexpectedly, in model 2, autonomous eating regulation was directly positively associated with cognitive restructuring strategies; however, this relationship became non-significant following the addition of self-compassion in model 3. Post-hoc, exploratory mediation analyses revealed that self-compassion functioned as a full mediator between autonomous eating regulation and cognitive restructuring ($\beta = 0.08$, $p = < 0.001$, 95% CI [0.038 to 0.123]). Thus, autonomous eating regulation is associated with cognitive restructuring through higher levels of self-compassion.

Controlled motivation for eating

Controlled eating regulation was directly associated with higher levels of appearance fixing and avoidance strategies and non-significantly associated with behavior modification, which was aligned with the hypotheses (H7). However, counter to this hypothesis (H7), controlled eating regulation was not directly associated with higher use of cognitive restructuring. Furthermore, only engagement in avoidance strategies partially mediated the relationship between controlled eating regulation and intentions to engage in disordered eating behavior ($\beta = 0.03$, $p = 0.011$, 95% CI [0.007 to 0.055]). This suggests that controlled eating regulation is associated with higher intentions to engage in disordered eating through higher levels of avoidance, which partially supports the hypotheses (H2). As hypothesized (H6), controlled eating regulation was directly associated with lower levels of self-compassion and higher levels of dissonance. In addition, the positive relationship between controlled eating regulation and dissonance was partially explained by lower levels of self-compassion ($\beta = 0.06$, $p = 0.002$, 95% CI [0.020 to 0.093]), supporting the hypotheses (H6). Finally, both self-compassion and dissonance independently partially mediated the relationship between controlled eating regulation and avoidance (β self-compassion = 0.07, $p = 0.002$, 95% CI [0.024 to 0.105], β dissonance = 0.04, $p = 0.029$, 95% CI [0.004 to 0.070]) and fully mediated the relationship between controlled eating regulation and cognitive restructuring (β self-compassion = − 0.09, $p < 0.001$, 95% CI [− 0.134 to—0.038], β dissonance = 0.03, $p = 0.042$, 95% CI [0.001 to 0.066]). Only self-compassion functioned as a partial mediator between controlled eating regulation and appearance fixing (β self-compassion = 0.04, $p = 0.019$, 95% CI [0.007 to 078], β dissonance = 0.03, $p = 0.05$, 95% CI [0.000 to 0.056]), which lends partial support to the hypotheses (H7).

Discussion

The current study sought to explore the types of body-related discrepancies that college-aged women experience, and distinct motivational pathways implicated in intentional action toward healthy and disordered eating following their salience as a result of dissonance. Expanding on previous research, women experience self-discrepancies related to the appearance and care of their bodies, including the quantity and quality of the food they eat, their relationship with

food (i.e., binging, purging, restricting), and physical activity levels. Our study suggests areas for the self-discrepancy literature to expand, particularly beyond experiences related to one's physical appearance, such as behavioral discrepancies related to the maintenance of weight/shape (i.e., eating behavior and physical activity). Additionally, most college women reported experiencing a body-related discrepancy in a non-social-evaluative setting; however, this finding may be influenced by the timeframe of data collection (i.e., when restrictions were in place due to the COVID-19 pandemic). Our results also suggest that college women's intentions to engage in eating behavior in a manner that promotes health or ill-being following the awareness of a body-related discrepancy can be distinguished by their motivation for regulating their eating behaviour. These distinct motivational pathways are partly explained by differences in emotion regulation and selection of cognitive and behavioral compensation strategies.

Types of body-related discrepancies

Content analysis of college women's narratives from the body-related discrepancy recall task revealed that appearance discrepancies, particularly dissatisfaction with facial features or skin (e.g., acne, skin tone) and body shape/size/weight, were the most reported type of self-discrepancy. In contrast, dysfunctional eating discrepancies (e.g., binging, purging, restricting) were the least common form. Although these findings may seem paradoxical due to the robust positive association between body dissatisfaction and disordered eating (Menzel et al., 2010), our findings could suggest that appearance dissatisfaction is normative among young adult college women and does not always necessitate disordered eating. This corroborates with the findings in Smith-Jackson et al.'s (2011) study where college-aged women reported using other strategies, such as self-improvement (i.e., exercise, healthy eating), to cope with body dissatisfaction. Furthermore, our sample comprised a large percent of women with clinical levels of eating disorder attitudes (45%), suggesting that our findings may reflect their tendency to perceive discrepancies between their current and ideal appearance, while engaging in self-congruent disordered eating behaviour. Themes related to eating quantity and quality discrepancies complement previous research demonstrating that women use quality (i.e., nutrient-based) and quantity-focused (i.e., portion size, calories) food planning strategies to regulate their eating behaviour (Guertin & Pelletier, 2021). These distinct eating discrepancies may reflect college women's tendency to behave incongruently with their chosen strategy. Additionally, body-related discrepancies seem to co-occur and may be temporally related, such as those related to physical activity and eating quality (see narratives in Fig. 2).

Motivational differences in affect regulation, compensation, and eating intentions

Aligned with Lavergne and Pelletier's (2015) HABICE model, autonomous and controlled motivation were associated with the use of distinct compensation strategies to resolve discrepancies, and consequently, were differentially related to domain-specific behavioral outcomes. Aligned with Lavergne and Pelletier's findings (2015), autonomous motivation was associated with the use of behavior modification strategies, which preclude changing behavior to be more aligned with important self-structures and behavioral commitments as indicated by intending to engage in healthy eating. Similarly, we also observed that autonomous motivation was associated with the use of behavior modification strategies directly and indirectly through dissonance, suggesting that autonomously motivated individuals select more effortful strategies irrespective of experiencing dissonance, demonstrating a non-contingent pro-active orientation (i.e., change behavior to avoid discrepancies pre-emptively or to reduce their magnitude).

Our findings further expand on this by illustrating the role of self-compassion in the mitigation of dissonance arousal and the joint effects of higher levels of self-compassion and lower levels of dissonance in the link between autonomous motivation and behavior modification strategies. These findings suggest that self-compassion is a personal resource used by women with a more autonomous eating regulatory style when processing emotions and cognitions implicated in body-related discrepancies, and it is through the reduction of negative emotions (i.e., dissonance) that self-compassion enhances their self-regulatory capacity to select effortful compensatory strategies that result in sustained commitment to healthy eating.

We also observed that autonomous motivation was associated with cognitive restructuring strategies indirectly through self-compassion. Previous research suggests that self-compassion promotes positive cognitive restructuring whereby negative events are construed as less dire through self-acceptance and positive reinterpretation (Allen & Leary, 2010). As a result, failures as perceived as less threatening, more controllable, and consequently, less of a hindrance to goal progress (Mosewich et al., 2019). Thus, the indirect relationship between autonomous eating regulation and cognitive restructuring through self-compassion may reflect re-appraising body-related discrepancies as less threatening and more controllable by trivializing the importance of incongruent cognitions related to the body (i.e., negative body appraisals).

Also aligned with the HABICE model (Lavergne & Pelletier, 2015), strategy selection was contingent upon dissonance arousal for those with more controlled motivation. For instance, controlled eating regulation was associated with higher use of avoidance and appearance fixing strategies through higher levels of dissonance. This suggests that when body-related discrepancies are perceived to be more threating to their ego (i.e., higher dissonance), individuals with controlled eating regulation employ strategies that minimize losses to esteem by concealing or fixing their appearance or by avoiding their appearance or negative body cognitions.

Furthermore, corroborating with the findings of Mask and Blanchard (2011), we observed that college women with more controlled eating regulation are more likely to intend to engage in maladaptive weight-controlling behaviors, such as disordered eating, following a threat to their body image. We expanded these findings by elucidating the distinct pathway involved in these intentioned actions, namely through avoidance strategies. Moreover, other mechanisms in this pathway, such as lower levels of self-compassion and higher levels of dissonance, support affect regulation models of disordered eating (Anderson et al., 2018; Stice et al., 1996). As demonstrated in our model, poor emotion regulation skills, such as those afforded by self-compassion, in conjunction with negative emotional states elicited by self-related threats (i.e., appearance, eating), is associated with experiential avoidance to reduce the saliency of the threat (Macneil et al., 2012). Similar to our findings, Anderson et al. (2018) found that limited access to emotion regulation strategies mediated the relationship between emotional distress and avoidance, and in turn, both low emotion regulation strategies and high avoidance mediated the relationship between emotional distress and disordered eating among college-aged women.

Finally, we observed an indirect relationship between controlled motivation and cognitive restructuring through lower levels of self-compassion and higher levels of dissonance. These links follow the opposite pattern observed in the indirect relationship between autonomous motivation and cognitive restructuring. This may suggest a different underlying mechanism. For instance, it has been suggested that those who regulate their behavior contingently to obtain desired outcomes (i.e., more controlled reasons) are motivated to compensate for discrepancies to save face, which may lead to the use of any available strategy if they lack the resources to compensate effectively (Lavergne & Pelletier, 2016). It is plausible that for some individuals with controlled eating regulation, cognitive restructuring was the only available strategy, particularly when emotion regulation resources were low (i.e., self-compassion), or was jointly used with other strategies that share similar underlying (mediating) mechanisms, such as avoidance. Thus, cognitive restructuring could represent defensive responding when emotion regulation resources are low, such as diffusion of personal responsibility via trivialization or rationalization of attitude-behavior inconsistent behavior, though more research is required.

Strengths, limitations, and future directions

This study had several strengths. First, we used a strong methodological approach, such as a recall task, to understand the relationships between body-related discrepancies and eating intentions. Furthermore, we employed an inductive-deductive qualitative approach to analyze college women's responses to the recall task, which contextualized the statistical models and spoke to the generalizability of our model to various discrepancies related to the body, including appearance and health behaviors. As many narratives were analyzed, the breadth of data can help inform the creation of a self-report measure assessing body-related discrepancies to be used in stronger quantitative designs, such as ecological momentary assessment, to examine the dynamics (causal relations) in the HABICE model. Second, as dissonance techniques are commonly used to reduce disordered eating (Stice et al., 2019) and promote healthy eating (Freijy & Kothe, 2013), testing the HABICE model in the eating domain identifies distinct dissonance compensation processes that can help tailor such programs and increase its efficacy as the awareness of self-discrepancies could inadvertently increase disordered eating.

Despite these strengths, there are limitations. First, this study was cross-sectional; therefore, causal relations among the variables cannot be deduced. Second, participants could have reported more than one body-related discrepancy in the recall task. When prompted to report on the strategies they used to compensate, their responses could reflect the independent strategies they use to resolve each type, resulting in high response rates across different strategies. For this reason, the patterns in the model may best represent a generalized process (i.e., all body-related discrepancies) when in fact some of these pathways observed could be unique to specific body-related discrepancies. Future research should experimentally induce specific types of body-related discrepancies in isolation and compare the compensation processes to delineate whether they are dependent on the characteristic of the self-discrepancy or stable according to motivational differences. Third, our paradigm induced awareness of a body-related discrepancy by relying on participants' abilities to recall a recent instance from memory using instructional prompts; therefore, it is plausible that specific biases affected their recall that were elicited by task instructions or individual differences. For instance, women with high body dissatisfaction have a memory bias for stimuli related to "fatness"

compared to "thinness" (Baker et al., 1995; Chen & Jackson, 2005). These biases may have led to overreporting appearance discrepancies when prompted by words such as "body image" in the task instructions. Future research should examine how task instructions in hypocrisy paradigms influence the type of experiences reported and the role of cognitive biases. Finally, our sample comprised a significant number of college women who met clinical criteria for an eating disorder, thus our results may represent the tendencies of clinical and non-clinical women. This may be viewed as a strength due to capturing the experiences of women with a healthy and maladaptive eating orientation. Our sample was demographically homogenous; therefore, our findings are only generalization to a subset of college-aged women (i.e., highly educated, Canadian, White, heterosexual, and live in smaller bodies). There is a need to replicate our findings in more diverse samples. For instance, sexual and gender minority (SGM) individuals are at increased risk for disordered eating and negative body image (Mason et al., 2018; Miller et al., 2019; Nagata et al., 2020). The capacity to engage in self-compassionate coping with stigmatizing experiences varies at the intersection of multiple stigmatized identities (Vigna et al., 2018). This may suggest that relationships in the HABICE model involving self-compassion may be strengthened or weakened depending on intersectional identities (e.g., gender, sexual orientation, weight, ethnicity).

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s11031-023-10037-y.

Author contributions This study was part of the first author's doctoral thesis supervised by the last author, LP. KB, the first author, conceptualized and designed the study, collected the data, analysed the data, and wrote the manuscript; KB, the second author, aided in data collection and edited the manuscript; LP aided in the conceptualization of the study and analyses and edited the manuscript.

Funding This research was supported by scholarships from the Social Sciences and Humanities Research Council of Canada (SSHRC) as well as the Canadian Psychological Association's Grant for Student Research and Knowledge Dissemination were awarded to the first author. The funders did not contribute to any aspect of the study or manuscript.

Data availability Data is not freely available upon request because participants did not consent to their data being accessed by other persons other than those who are currently listed as authors.

Declarations

Conflict of interest The authors have no conflicts of interest to disclose.

References

Allen, A. B., & Leary, M. R. (2010). Self-compassion, stress, and coping. *Social and Personality Psychology Compass, 4*(2), 107–118. https://doi.org/10.1111/j.1751-9004.2009.00246.x

Anderson, N. L., Smith, K. E., Mason, T. B., & Crowther, J. H. (2018). Testing an integrative model of affect regulation and avoidance in non-suicidal self-injury and disordered eating. *Archives of Suicide Research, 22*(2), 295–310. https://doi.org/10.1080/13811118.2017.1340854

Anton, S. D., Perri, M. G., & Riley, J. R. (2000). Discrepancy between actual and ideal body images: Impact on eating and exercise behaviors. *Eating Behaviors, 1*, 153–160. https://doi.org/10.1016/S1471-0153(00)00015-5

Arch, J. J., Brown, K. W., Dean, D. J., Landy, L. N., Brown, K. D., & Laudenslager, M. L. (2014). Self-compassion training modulates alpha-amylase, heart rate variability, and subjective responses to social evaluative threat in women. *Psychoneuroendocrinology, 42*, 49–58. https://doi.org/10.1016/j.psyneuen.2013.12.018

Bailey, K. A., Lamarche, L., & Gammage, K. L. (2014). Coping with body image threats among college women: The swimsuit problem. *International Journal of Psychological Studies*. https://doi.org/10.5539/ijps.v6n2p19

Baker, J. D., Williamson, D. A., & Sylve, C. (1995). Body image disturbance, memory bias, and body dysphoria: Effects of negative mood induction. *Behavior Therapy, 26*, 747–759.

Barbeau, K., Boileau, K., Sarr, F., & Smith, K. (2019). Path analysis in Mplus: A tutorial using a conceptual model of psychological and behavioral antecedents of bulimic symptoms in young adults. *The Quantitative Methods for Psychology, 15*(1), 38–53. https://doi.org/10.20982/tqmp.15.1.p038

Barbeau, K., Guertin, C., Boileau, K., & Pelletier, L. (2022). The effects of self-compassion and self-esteem writing interventions on women's valuation of weight management goals, body appreciation, and eating behaviors. *Psychology of Women Quarterly, 46*(1), 82–98. https://doi.org/10.1177/03616843

Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research, 16*, 78–117. https://doi.org/10.1177/0049124187016001004

Biber, D. D., & Ellis, R. (2019). The effect of self-compassion on the self-regulation of health behaviors: A systematic review. *Journal of Health Psychology, 24*(14), 2060–2071. https://doi.org/10.1177/1359105317713361

Braun, V., & Clarke, V. (2005). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Breines, J. G., & Chen, S. (2012). Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin, 38*(9), 1133–1143. https://doi.org/10.1177/0146167212445599

Brunet, J., Sabiston, C., Castonguay, A., Ferguson, L., & Bessette, N. (2012). The association between physical self-discrepancies and women's physical activity: The mediating role of motivation. *Journal of Sport & Exercise Psychology, 34*(1), 102–123. https://doi.org/10.1123/jsep.34.1.102

Carbonneau, E., Pelletier, L., Bégin, C., Lamarche, B., Bélanger, M., Provencher, V., Desroches, S., Robitaille, J., Vohl, M. C., Couillard, C., Bouchard, L., Houle, J., Langlois, M. F., Rabasa-Lhoret, R., Corneau, L., & Lemieux, S. (2021). Individuals with self-determined motivation for eating have better overall diet quality: Results from the PREDISE study. *Appetite, 165*, 105426. https://doi.org/10.1016/j.appet.2021.105426

Cash, T. F., Santos, M. T., & Williams, E. F. (2005). Coping with body-image threats and challenges: Validation of the body

image coping strategies inventory. *Journal of Psychosomatic Research, 58*(2), 191199. https://doi.org/10.1016/j.jpsychores.2004.07.008

Chen, H., & Jackson, T. (2005). Are cognitive biases associated with body image concerns similar between cultures? *Body Image, 2*(2), 177–186. https://doi.org/10.1016/j.bodyim.2005.03.005

Cooper, J., & Feldman, L. A. (2020). Helping the "couch potato": A cognitive dissonance approach to increasing exercise in the elderly. *Journal of Applied Social Psychology, 50*(1), 33–40. https://doi.org/10.1111/jasp.12639

Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Sage Publications.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19*, 109–134.

Dittmar, H. (2009). How do "body perfect" ideals in the media have a negative impact on body image and behaviors? Factors and processes related to self and identity. *Journal of Social and Clinical Psychology, 28*(1), 1–8. https://doi.org/10.1521/jscp.2009.28.1.1

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford University Press.

Freijy, T., & Kothe, E. J. (2013). Dissonance-based interventions for health behaviour change: A systematic review. *British Journal of Health Psychology, 18*(2), 310–337. https://doi.org/10.1111/bjhp.12035

Guertin, C., Barbeau, K., Pelletier, L., & Martinelli, G. (2017). Why do women engage in fat talk? Examining fat talk using Self-Determination Theory as an explanatory framework. *Body Image, 20*, 7–15. https://doi.org/10.1016/j.bodyim.2016.10.008

Guertin, C., Barbeau, K., & Pelletier, L. (2018). Examining fat talk and self-compassion as distinct motivational processes in women's eating regulation: A Self-determination Theory perspective. *Journal of Health Psychology, 25*(12), 1965–1977. https://doi.org/10.1177/1359105318781943

Guertin, C., & Pelletier, L. (2021). Planning and self-monitoring the quality and quantity of eating: How different styles of self-regulation strategies relate to healthy and unhealthy eating behaviors, bulimic symptoms, and BMI. *Appetite*. https://doi.org/10.1016/j.appet.2020.104839

Guertin, C., Pelletier, L., & Pope, P. (2019). The validation of the healthy and unhealthy eating behavior scale (HUEBS): Examining the interplay between stages of change and motivation and their association with healthy and unhealthy eating behaviors and physical health. *Appetite, 144*, 104487. https://doi.org/10.1016/j.appet.2019.104487

Hair, J. F., Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Prentice Hall.

Halliwell, E., & Dittmar, H. (2006). Associations between appearance-related self-discrepancies and young women's and men's affect, body satisfaction, and emotional eating: A comparison of fixed-item and participant-generated self-discrepancies. *Personality and Social Psychology Bulletin*, *32*(4), 447–458. https://doi.org/10.1177/0146167205284005

Harmon-Jones, E., Amodio, D. M., & Harmon-Jones, C. (2009). Action-based model of dissonance. A review, integration, and expansion of conceptions of cognitive conflict. *Advances in Experimental Social Psychology, 41*, 119–166. https://doi.org/10.1016/S0065-2601(08)00403-6

Heron, K. E., & Smyth, J. M. (2013). Body image discrepancy and negative affect in women's everyday lives: An ecological momentary assessment evaluation of self-discrepancy theory. *Journal of Social and Clinical Psychology, 32*(3), 276–295. https://doi.org/10.1521/jscp.2013.32.3.276

Hope, N., Koestner, R., & Milyavskaya, M. (2014). The role of self-compassion in goal pursuit and well-being among university freshmen. *Self and Identity, 13*(5), 579–593. https://doi.org/10.1080/15298868.2014.889032

Hu, L., & Bentler, P. M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55. https://doi.org/10.1080/10705519909540118

Inwood, E., & Ferrari, M. (2018). Mechanisms of change in the relationship between self-compassion, emotion regulation, and mental health: A systematic review. *Applied Psychology: Health and Well-Being, 10*(2), 215–235. https://doi.org/10.1111/aphw.12127

Lamarche, L., Kerr, G., Faulkner, G., Gammage, K. L., & Klentrou, P. (2012). A qualitative examination of body image threats using social self-preservation theory. *Body Image, 9*(1), 145–154. https://doi.org/10.1016/j.bodyim.2011.10.004

Lantz, E. L., Gaspar, M. E., DiTore, R., Piers, A. D., & Schaumberg, K. (2018). Conceptualizing body dissatisfaction in eating disorders within a self-discrepancy framework: A review of evidence. *Eating and Weight Disorders: EWD, 23*(3), 275–291. https://doi.org/10.1007/s40519-018-0483-4

Lavergne, K. J., & Pelletier, L. G. (2015). Predicting individual differences in the choice of strategy to compensate for attitude-behaviour inconsistencies in the environmental domain. *Journal of Environmental Psychology, 44*, 135–148. https://doi.org/10.1016/j.jenvp.2015.10.001

Lavergne, K. J., & Pelletier, L. G. (2016). Why are attitude–behaviour inconsistencies uncomfortable? Using motivational theories to explore individual differences in dissonance arousal and motivation to compensate. *Motivation and Emotion, 40*(6), 842–861. https://doi.org/10.1007/s11031-016-9577-3

Macneil, L., Esposito-Smythers, C., Mehlenbeck, R., & Weismoore, J. (2012). The effects of avoidance coping and coping self-efficacy on eating disorder attitudes and behaviors: A stress-diathesis model. *Eating Behaviors, 13*(4), 293–296. https://doi.org/10.1016/j.eatbeh.2012.06.005

Mask, L., & Blanchard, C. M. (2011). The effects of "thin ideal" media on women's body image concerns and eating-related intentions: The beneficial role of an autonomous regulation of eating behaviors. *Body Image, 8*(4), 357–365. https://doi.org/10.1016/j.bodyim.2011.06.003

Mason, T. B., Lewis, R. J., & Heron, K. E. (2018). Disordered eating and body image concerns among sexual minority women: A systematic review and testable model. *Psychology of Sexual Orientation and Gender Diversity, 5*(4), 397–422. https://doi.org/10.1037/sgd0000293

Matsunaga, M. (2010). How to factor-analyze your data right: Do's, don'ts and how-to's. *International Journal of Psychological Research, 3*(1), 97–110. https://doi.org/10.21500/20112084.854

Menzel, J. E., Schaefer, L. M., Burke, N. L., Mayhew, L. L., Brannick, M. T., & Thompson, J. K. (2010). Appearance-related teasing, body dissatisfaction, and disordered eating: A meta-analysis. *Body Image, 7*(4), 261–270. https://doi.org/10.1016/j.bodyim.2010.05.004

Miller, J. M., & Luk, J. W. (2019). A systematic review of sexual orientation disparities in disordered eating and weight-related behaviors among adolescents and young adults: Toward a developmental model. *Adolescent Research Review*, *4*(2), 187–208

Mosewich, A. D., Sabiston, C. M., Kowalski, K. C., Gaudreau, P., & Crocker, P. R. E. (2019). Self-compassion in the stress process in women athletes. *Sport Psychologist, 33*(1), 23–34. https://doi.org/10.1123/tsp.2017-0094

Nagata, J. M., Ganson, K. T., & Austin, S. B. (2020). Emerging trends in eating disorders among sexual and gender minorities. *Current Opinion in Psychiatry*, *33*(6), 562–567. https://doi.org/10.1097/YCO.0000000000000645

Neff, K. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*, 223–250. https://doi.org/10.1080/15298860390209035

Otis, N., & Pelletier, L. G. (2008). Women's regulation styles for eating behaviors and outcomes: The mediating role of approach and avoidance food planning. *Motivation and Emotion, 32*(1), 55–67. https://doi.org/10.1007/s11031-008-9083-3

Pelletier, L. G., Dion, S. C., Slovinec-D'Angelo, M., & Reid, R. (2004). Why do you regulate what you eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion, 28*(3), 245–277. https://doi.org/10.1023/B:MOEM.0000040154.40922.14

Petrocchi, N., Ottaviani, C., & Couyoumdjian, A. (2017). Compassion at the mirror: Exposure to a mirror increases the efficacy of a self-compassion manipulation in enhancing soothing positive affect and heart rate variability. *Journal of Positive Psychology, 12*(6), 525–536. https://doi.org/10.1080/17439760.2016.1209544

Piedmont, R. L. (2014). Inter-item correlations. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research.* Springer.

Pila, E., Gilchrist, J. D., Kowalski, K. C., & Sabiston, C. M. (2022). Self-compassion and body-related self-conscious emotions: Examining within- and between-person variation among adolescent girls in sport. *Psychology of Sport and Exercise*. https://doi.org/10.1016/j.psychsport.2021.102083

Proudfoot, K. (2022). Inductive/deductive hybrid thematic analysis in mixed methods research. *Journal of Mixed Methods Research*. https://doi.org/10.1177/15586898221126816

Rodrigues, T., Vaz, A. R., Silva, C., Conceição, E., & Machado, P. P. P. (2019). Eating disorder-15 (ED-15): Factor structure, psychometric properties, and clinical validation. *European Eating Disorders Review, 27*(6), 682–691. https://doi.org/10.1002/erv.2694

Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory Basic psychological needs in motivation, development, and wellness*. The Guilford Press. https://doi.org/10.1521/978.14625/28806

Schnettler, B., Grunert, K. G., Orellana, L., Sepúlveda, J., Miranda, H., Lobos, G., Adasme-Berríos, C., Denegri, M., Mora, M., Salinas-Oñate, N., Hueche, C., & Etchebarne, S. (2017). Restricción alimentaria, satisfacción con la vida y discrepancia del yo en estudiantes universitarios de distinto género. *Suma Psicologica, 24*(1), 25–33. https://doi.org/10.1016/j.sumpsi.2016.12.001

Sirois, F. M., Kitner, R., & Hirsch, J. K. (2015). Self-compassion, affect, and health-promoting behaviors. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association, 34*(6), 661–669. https://doi.org/10.1037/hea0000158

Smith-Jackson, T., Reel, J. J., & Thackeray, R. (2011). Coping with "bad body image days": Strategies from first-year young adult college women. *Body Image, 8*(4), 335–342. https://doi.org/10.1016/j.bodyim.2011.05.002

Stice, E., Marti, C. N., Shaw, H., & Rohde, P. (2019). Meta-analytic review of dissonance-based eating disorder prevention programs: Intervention, participant, and facilitator features that predict larger effects. *Clinical Psychology Review, 70*, 91–107. https://doi.org/10.1016/j.cpr.2019.04.004

Stice, E., Ziemba, C., Margolis, J., & Flick, P. (1996). The dual pathway model differentiates bulimics, subclinical bulimics, and controls: Testing the continuity hypothesis. *Behavior Therapy, 27*, 531–549.

Streiner, D. L. (2005). Finding our way: An introduction to path analysis. *Canadian Journal of Psychiatry. Revue Canadienne de Psychiatrie, 50*(2), 115–122. https://doi.org/10.1177/070674370505000207

Tatham, M., Turner, H., Mountford, V. A., Tritt, A., Dyas, R., & Waller, G. (2015). Development, psychometric properties and preliminary clinical validation of a brief, session-by-session measure of eating disorder cognitions and behaviors: The ED-15. *The International Journal of Eating Disorders, 48*(7), 1005–1015. https://doi.org/10.1002/eat.22430

Thøgersen-Ntoumani, C., Dodos, L. A., Stenling, A., & Ntoumanis, N. (2021). Does self-compassion help to deal with dietary lapses among overweight and obese adults who pursue weight-loss goals? *British Journal of Health Psychology, 26*(3), 767–788. https://doi.org/10.1111/BJHP.12499

Turk, F., & Waller, G. (2020). Is self-compassion relevant to the pathology and treatment of eating and body image concerns? A systematic review and meta-analysis. *Clinical Psychology Review, 79*, 101856. https://doi.org/10.1016/j.cpr.2020.101856

Verstuyf, J., Patrick, H., Vansteenkiste, M., & Teixeira, P. J. (2012). Motivational dynamics of eating regulation: A self-determination theory perspective. *The International Journal of Behavioral Nutrition and Physical Activity, 9*, 21. https://doi.org/10.1186/1479-5868-9-21

Verstuyf, J., Vansteenkiste, M., Soetens, B., & Soenens, B. (2016). Motivational dynamics underlying eating regulation in young and adult female dieters: Relationships with healthy eating behaviours and disordered eating symptoms. *Psychology and Health, 31*(6), 711–729. https://doi.org/10.1080/08870446.2016.1143942

Vigna, A. J., Poehlmann-Tynan, J., & Koenig, B. W. (2018). Does self-compassion covary with minority stress? Examining group differences at the intersection of marginalized identities. *Self and Identity, 17*(6), 687–709. https://doi.org/10.1080/15298868.2018.1457566