Women’s Global Self-determination, Body Dissatisfaction and Eating:

Exploring the Role of Autonomy Support

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Abstract
Body image is a correlate of women’s self-concept and well-being, and body dissatisfaction is an important correlate of dysfunctional eating. In the present study ($N = 208$) the primary aims were to test whether women’s self-determination can protect against endorsements of societal pressures regarding the ideal female body, body dissatisfaction, and problem eating. Additionally, the role of others’ autonomy support was investigated. General self-determination was associated with perceptions of fewer body image pressures and lower body dissatisfaction. Also, women who reported a more autonomous regulatory style toward eating reported more frequent consumption of healthy foods. However, they also reported more frequent dieting and more oral control, which was an unexpected finding. Autonomy support played some role in eating regulation, as women with more support reported more autonomous and less controlled eating. Yet, support did not moderate the relationship between body dissatisfaction and eating regulation. Future studies should continue to explore the potential facilitative role of autonomy support in promoting a self-determined approach to eating regulation.

Keywords: Thin Ideal; Body Dissatisfaction; Self-Determination; Eating; Autonomy Support

Abbreviations: SDT = Self-Determination Theory; GSD = Global Self-Determination; AREB = Autonomous Regulation of Eating; CREB = Controlled Regulation of Eating; CET = Cognitive Evaluation Theory
1. Introduction

Body dissatisfaction has been related to women’s poor physical and mental health (Polivy & Herman, 2002; Stice, 2002). This has prompted research to identify risk factors for body dissatisfaction and patterns of dysfunctional eating (Field, 2004). Many researchers have focused on perceived sociocultural pressure and internalisation of the thin ideal (Polivy & Herman, 2004). This research suggests that one path to body dissatisfaction and eating problems is via perceived sociocultural pressure combined with the extent to which pressures are internalised (Dittmar, 2005).

Although the messages are pervasive and strong, not all women are equally susceptible to sociocultural pressures to be thin, and some evaluate appearance norms according to their own personal values, rather than subscribing to the thin ideal (Polivy & Herman, 2004). Women who are more resistant to sociocultural pressure have been found to be less likely to report symptoms of disordered eating and less likely to develop an eating disorder (Pelletier, Dion, & Lévesque, 2004). Accordingly, a number of researchers have begun to focus on the motivational mechanisms underlying thin ideal cognitions and regulation of eating behaviour. In particular, self-determination theory (SDT; Deci & Ryan, 1985) and related theories (Deci & Ryan, 1991; Vallerand, 1997) provide useful theoretical frameworks for identifying potentially important motivational mechanisms involved in the development of body dissatisfaction and disordered eating.

1.1 Self-Determination, Societal Pressure, Body Dissatisfaction and Eating

SDT focuses on the degree to which human behaviour is self-determined, defined as the extent to which individuals engage in actions with a sense of personal choice (Deci & Ryan, 1985). Specifically, behaviour is expected to arise from motivational foundations that range from intrinsic (autonomous) to extrinsic (controlled). According to Deci and Ryan, autonomously
regulated behaviour promotes more adaptive psychological and behavioural functioning. Past research in the sport, work and education domains has shown a myriad of benefits for autonomous in comparison to controlled motivation, including enhanced well-being, persistence, and higher performance (Deci & Ryan, 2002; Ryan & Deci, 2000). Also, various clinical studies have confirmed the importance of autonomous versus controlled motivation in predicting drop-out and lasting change with regards to alcohol and smoking cessation (Williams & Deci, 2001), weight loss (Williams, Grow, Freedman, Ryan, & Deci, 1996), exercise programs (Williams, Freedman, & Deci, 1998) and medication adherence (Williams, Rodin, Ryan, Grolnick, & Deci, 1998).

Vallerand (1997) has developed a complementary model to SDT, which considers the source of motivation at three levels of generality (i.e., global, contextual and situational). The global level refers to a general pre-disposition to engage in autonomous or controlled regulation of behaviour; the contextual level refers to domain-specific regulatory styles (i.e., eating regulation) and situational level addresses one’s current motivational state. Within the model, associations are also proposed among the three levels of motivation in the hierarchy. One such association involves a *top-down effect* whereby motivation at a higher level influences motivation at the next lower level (e.g., global motivation influences contextual motivation). The last element of the model is the notion that motivation can produce cognitive (e.g., concentration), affective (e.g., satisfaction) or behavioural (e.g., persistence at the task) outcomes and consequences exist at all three levels.

The SDT framework (Deci & Ryan, 1985) and Vallerand’s (1997) model have been utilised in two studies of the development of body dissatisfaction and eating behaviour regulation (Pelletier & Dion, 2007; Pelletier, Dion, & Lévesque, 2004). In one study of female university students, Pelletier, Dion et al. found that a higher level of global self-determination (GSD) was associated with less perceived sociocultural pressure to be thin, less thin ideal internalisation, less body dissatisfaction and less reported bulimic symptoms. Pelletier and Dion extended these
findings by showing that greater GSD is associated with less internalisation of the thin ideal via the full meditational role of less perceived sociocultural pressure about body image.

Theory suggests that women with higher GSD will engage in more autonomous regulation of eating (AREB; Pelletier & Dion, 2007). AREB has been described as regulating eating behaviours out of a sense of volition (e.g., “healthy eating is a fundamental part of who I am”) and is clearer when contrasted with controlled regulation (CREB), defined as eating behaviours performed out of external or internalised pressure (e.g., “People around me nag me to eat healthy”). GSD has been found to be associated with more AREB, and AREB is positively associated with healthy eating (Pelletier, Dion et al. 2004). Additionally, GSD has been found to be negatively associated with CREB, such that women with higher GSD are less likely to report controlled regulating of eating (Pelletier & Dion), and CREB has been positively associated with dysfunctional eating and negatively associated with healthy eating (Pelletier, Dion, Slovinec-D’Angelo et al., 2004).

Overall, the studies of Pelletier and colleagues suggest a role for body dissatisfaction in understanding eating behaviour. Body dissatisfaction is hypothesised to motivate the use of particular behaviours, which have the goal of reducing body dissatisfaction or the threat of discrepancy between one’s actual and ideal body shape (Pelletier & Dion, 2007). One such strategy is dieting, or changing eating patterns. Body dissatisfaction has been found to be an important predictor of eating pathology. Yet, a potential moderating factor may be levels of GSD in determining the manner in which eating is regulated. More specifically, AREB and CREB can mediate the association between body dissatisfaction and eating patterns, with AREB associated with more frequent healthy eating and CREB associated with more frequent dysfunctional eating. Pelletier and Dion also found that body dissatisfaction was associated with both AREB and CREB, but it was more strongly associated with CREB. These findings suggest that the majority
of women who are dissatisfied with their bodies rely on controlled regulation of their eating, which may be due to external pressure (e.g., thin ideal media images) to achieve a thin body. However, when dissatisfied with their bodies, women with more GSD may engage in more autonomous regulation and healthy eating due to an intrinsically motivated desire to achieve a personal goal of weight loss.

1.2 Cognitive Evaluation Theory and Autonomy Support

In other literature, researchers have begun to examine the conditions under which women are more likely to report more AREB. Ryan and Deci (2000) note that much behaviour (e.g., healthy eating) is not inherently intrinsically motivated, but rather must be self-regulated. Thus, the question concerning non-intrinsically motivated practices is how individuals acquire the motivation to carry them out. It has been shown that the social context can influence both the amount and quality of internalisation (Isaac, Sansone, & Smith, 1999).

Cognitive Evaluation Theory (CET; Deci & Ryan, 1991), a sub-theory of SDT, is useful for forming hypotheses about the importance of an autonomy supportive social context in promoting internalisation. CET focuses on individual psychological needs for autonomy and competence and proposes that social-contextual events, which promote these feelings during action, can enhance intrinsic motivation for the behaviour. Empirical evidence suggests that social experiences supporting one’s sense of autonomy are likely to increase self-determination and autonomous regulation of behaviour (Ryan & Deci, 2000). For instance, allowing personal choice (Zuckerman, Porac, Lathin, Smith, & Deci, 1978) and acknowledgement of feelings (Koestner, Ryan, Bemier, & Holt 1984) have been found to enhance intrinsic motivation because they increase one’s sense of autonomy. Conversely, events that thwart autonomy are associated with less intrinsic motivation (Deci & Ryan, 1985).
Two specific interpersonal styles have been identified as important, including a controlling style, in which an important other acts in an authoritarian way, and an autonomy-supportive style, in which important others support choice and support the decision-making process (Ryan & Deci, 2000). According to CET, a controlling interpersonal style, like other controlling influences, should bring about an external perceived locus of causality and thus undermine feelings of autonomy. On the other hand, an autonomy-supportive style should facilitate autonomous regulation and promote self-determination. Overall, the provision of autonomy support by an important other (e.g., close friend or spouse) would be expected to promote AREB. In contrast, lower autonomy support should undermine AREB and promote CREB. Thus far, no other study has specifically tested associations between autonomy support, AREB and CREB.

1.3 Summary, Study Aims and Hypotheses

In sum, SDT is a useful foundation for research on how societal pressures to be thin may or may not be internalised, and how some women are more successful than others at maintaining healthy eating and avoiding dysfunctional eating even in the face of these pressures (Pelletier & Dion, 2007). The general aim of the present study was to apply SDT to the study of sociocultural pressure to be thin, body dissatisfaction and regulation of eating behaviours by testing a series of hypotheses. Associations were expected between GSD, perceived societal messages about body image, internalisation of the thin ideal, body dissatisfaction, regulation of eating (i.e., AREB and CREB) and eating patterns. One particular aim was to test the role of general (i.e., GSD) and context-specific motivational mechanisms (i.e., AREB and CREB) in the relation between body dissatisfaction and eating. In addition, to the author’s knowledge, this study was the first to examine associations between autonomy support, regulation of eating and eating patterns. Finally, to account for which regulatory behaviours would be found under conditions of greater body dissatisfaction, it was necessary to examine the moderating effects of GSD and autonomy support.
Self-determination, body dissatisfaction and eating

It was expected that associations of body dissatisfaction with AREB and CREB would be moderated by GSD and autonomy support. Nine hypotheses were tested in the current study.

**H1.** General self-determination (GSD) will be negatively associated with internalisation of the thin ideal, although this association will be completely mediated by perceived sociocultural body image pressures.

**H2.** Perceived sociocultural body image pressures will be positively associated with body dissatisfaction, although this association will be partially mediated by internalisation of the thin ideal.

**H3.** GSD will be positively associated with autonomous regulation of eating (AREB) and negatively associated with controlled regulation of eating (CREB).

**H4.** Body dissatisfaction will be positively associated with both controlled and autonomous regulation of eating. However, there will be a stronger positive association between body dissatisfaction and CREB than between body dissatisfaction and AREB.

**H5.** AREB will be positively associated with healthy eating patterns and negatively associated with dysfunctional eating patterns (i.e., eating disorder symptoms).

**H6.** CREB will be positively associated with dysfunctional eating patterns (i.e., eating disorder symptoms) and negatively associated with healthy eating patterns.

**H7.** Associations of body dissatisfaction with AREB and CREB will be moderated by general self-determination (GSD). There will be a stronger association between body dissatisfaction and AREB among women with relatively higher levels of GSD. There will be a stronger association between body dissatisfaction and CREB among women with relatively lower levels of GSD.

**H8.** Autonomous support by an important other will be positively associated with AREB and negatively associated with CREB.
**H9.** Associations of body dissatisfaction with AREB and CREB will be moderated by autonomy support. There will be a stronger positive association between body dissatisfaction and AREB among women with high rather than low autonomy support. There will be a stronger association between body dissatisfaction and CREB among women with low rather than high autonomy support.

2. **Method**

2.1 **Participants**

Participants were 208 females (\(M = 26.15, \ SD = 10.94\)). Only females were sampled, as previous research has shown that, relative to males, females in Western society are more body dissatisfied (Feingold & Mazzella, 1998) and that gender differences exist in eating attitudes and eating behaviour (e.g., Furnham, Badmin & Sneade, 2002). Participants were university students (73%, 135 full-time; 19 part-time) or in paid employment (27%, 38 full-time; 21 part-time). Approximately 30 students were recruited from a psychology course and were awarded credit toward their final grade in exchange for participation. The remaining participants were recruited on the university campus or referred by other participants. The average body mass index (BMI; kg/m²) was 22.92 (\(SD = 4.09\)), which is in the middle of the healthy range for BMI (Kuczmarski, Carroll, Flegal, & Troiano, 1997). Using the cut-off score from the EAT-26 (i.e., > 20), 11% of participants would warrant further screening for a clinical eating disorder if presenting for treatment (Garner, Olmsted, Bohr, & Garfinkel, 1982). Most (86%) of participants identified as white, whereas 9% were Asian, 2% Aboriginal Australian, and 1% Hispanic.

2.2 **Measures**

2.2.1 **Global self-determination**

The 18-item General Motivation Scale (GMS-18; Pelletier, Sharp et al., 2007) was used to assess each participants’ autonomous versus controlled motivation in general. Each 3-item
subscale is used to assess one of six types of motivation (Deci & Ryan, 1985). Consistent with scoring methods used by Pelletier and Dion (2007), items were weighted according to their position on the self-determination continuum, with self-determined motivation being weighed positively (i.e., intrinsic motivation [+3], integrated regulation [+2], identified regulation [+1]) and non-self-determined motivation weighted negatively (i.e., amotivation [-3], external regulation [-2], introjected regulation [-1]). In the present study, internal consistencies for the subscales were: intrinsic motivation ($\alpha = .67$), integrated regulation ($\alpha = .66$), identified regulation ($\alpha = .71$), introjected regulation ($\alpha = .68$), external regulation ($\alpha = .66$) and amotivation ($\alpha = .78$).

An average of these weighted scores was computed with higher scores indicating more autonomous regulation (i.e., intrinsic motivation, integrated regulation and identified regulation) and less controlled regulation (i.e., introjected regulation, external regulation and amotivation). An example item for autonomous motivation is “In general I do things in order to help myself become the person I aim to be”. An example item for controlled motivation is “In general I do things because I don’t want to disappoint certain people”. Responses ranged from 1 (do not agree at all) to 7 (completely agree).

2.2.2 Perceived sociocultural pressure

The Perceived Sociocultural Pressure Scale (PSPS; Stice & Agras, 1998) was used to assess pressure to conform to societal appearance norms. The PSPS includes 10 items that assess level of perceived pressure to be thin from family, friends, dating partners and the media. An example of item is: “I’ve noticed a strong message from my family to have a thin body”. Responses ranged from 1 (do not agree at all) to 7 (completely agree). Internal consistency ($\alpha = .88$), test-retest reliability ($r = .93$) and predictive validity of this scale have been documented. Cronbach’s $\alpha$ for
the present study was .90. Scores were averaged for each participant, with higher scores indicating more perceived pressure.

2.2.3 Awareness and internalisation of the thin ideal

The 21-item Sociocultural Attitudes Towards Appearance Questionnaire – Revised: Female Version (SATAQ-R; Cusumano & Thompson, 1997; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) has two subscales that measure awareness and internalisation of body stereotypes in popular media (i.e., television & magazines). An example item from the awareness subscale is “Attractiveness is very important if you want to get ahead in our culture”. An example item from the internalisation subscale is “Music videos with women who are in good physical shape make me wish that I were in better shape”. Responses ranged from 1 (do not agree at all) to 7 (completely agree). Previous research has shown this scale to be psychometrically valid; for example, Cusumano and Thompson found that the 11-item awareness subscale and the 9-item internalisation subscale had Cronbach’s alpha levels of .83 and .89 respectively. Cronbach’s α was .85 for the awareness subscale and .89 for the internalisation subscale in the present study. Items on each subscale were averaged to create total scores for awareness and internalisation. Higher scores indicated more awareness and internalisation of societal appearance norms, respectively.

2.2.4 Regulation of eating behaviour

The 24-item Regulation of Eating Behaviour Scale (REBS; Pelletier, Dion, Slovinec-D’Angelo et al., 2004) measured eating behaviour regulation according the SDT framework. Studies by Pelletier, Dion, Slovinec-D’Angelo and colleagues have shown good construct validity for the REBS, with confirmatory factor analyses revealing support for both the simple and higher order factor structure. The items are divided into six subscales (four items/subscale) that represent the six motivation levels defined by Deci and Ryan (1985). An example item for autonomous
regulation of eating is “It is fun to create meals that are good for my health”. An example item for controlled regulation of eating is “Other people close to me insist that I eat healthy”. Response options ranged from 1 (does not correspond at all) to 7 (corresponds exactly). For this study, minor changes were made to item wording to improve clarity for Australian participants.

Global scores were formed by grouping together subscales representing AREB (i.e., intrinsic motivation, integrated regulation and identified regulation) and subscales representing CREB (i.e., introjected regulation, external regulation and amotivation; Pelletier & Dion, 2007). In order to maintain scoring consistency, items in each subscale were weighted in a similar manner to items on the GMS-18 (i.e., according to their position on the self-determination continuum. Cronbach’s α was .89 for AREB and .78 for CREB. Items on each subscale were averaged with higher scores indicating more autonomous regulation of eating and more controlled regulation of eating.

2.2.5 Body dissatisfaction

The Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper & Fairburn, 1987) was used to assess body shape and weight concerns. The 34-item scale measures body dissatisfaction, fear of fatness, feelings of low self-worth because of appearance, and desire to lose weight (Cooper et al.). An example item is: “Over the past four weeks, how often have you thought that your thighs, hips and/or bottom are too large for the rest of you?” Participants respond on a scale ranging from 1 (never) to 6 (always). The BSQ has been established as a reliable and valid measure of body image, with a Cronbach’s α level of .88 and concurrent validity with other body image measures (Rosen, Jones, Ramirez & Waxman, 1995). In the present study, the BSQ had a Cronbach’s α of .96. Items were averaged with higher scores indicating more body dissatisfaction.
2.2.6 Healthy eating behaviour

The 4-item Healthy Foods subscale of the Healthy Eating Habits Scale was used to assess healthy eating patterns (Pelletier, Dion, Slovinec-D’Angelo et al., 2004). Some adaptation was required to comply with the Australian Food Guide (Commonwealth Department of Health and Family Services, 1998). Participants were asked to indicate how frequently they consume different healthy foods (e.g., fruits and vegetables) on a scale from 1 (Very infrequently/less than once a month) to 7 (very frequently, almost daily or daily). In previous research (Pelletier, Dion, Slovinec-D’Angelo et al.) a Cronbach’s alpha level of .74 has been found and in the present study, this subscale had a Cronbach’s alpha of .64. Items were averaged to indicate more frequent consumption of healthy foods.

2.2.7 Dysfunctional eating behaviour

The 26-item Eating Attitudes Test (EAT-26; Garner, Olmsted, et al., 1982) was utilised in the present study, as it is one of the most widely used standardised measures of eating problem symptoms. In previous research, the internal consistency of the EAT-26 has been documented (α = .94; Garner, Olmsted et al.). The EAT-26 was maintained as three subscales including Oral Control (seven items/subscale), Dieting (13 items/subscale) and Bulimia and Food Preoccupation (six items/subscale). The Oral Control subscale has been related to lower weight and the absence of bulimia (Garner, Olmsted et al., 1982; e.g., “I display self-control around food”). The Dieting subscale reflects a pathological avoidance of fattening foods and body shape fixation (e.g., “I am preoccupied with a desire to be thinner”). The Bulimia and Food Preoccupation subscale has been related to a heavier body weight and bulimic symptoms (e.g., “I have the impulse to vomit after meals”). All items had six response options, with the first three responses coded 1 (Always), 2 (Usually), and 3 (Often) and the final three assigned a zero (Sometimes, Rarely, Never), as is
typical for this measure. In the present study, Oral Control had a Cronbach’s $\alpha$ of .48, Dieting had $\alpha = .87$ and Bulimia and Food Preoccupation had $\alpha = .59$. Items on each subscale were averaged with higher scores indicating more problems.

### 2.2.8 Autonomy support

The Important Other Climate Questionnaire for Diet (IOCQ-D; Williams, Lynch, McGregor, Ryan, Sharp & Deci, 2006) was utilised to assess perceived autonomy supportiveness of the interpersonal climate created by a participant-selected important other. The 6-item IOCQ-D was derived from the Health Care Climate Questionnaire (HCCQ; Williams, Grow et al., 1996) to allow for non-professional important others to be selected and to specifically target healthy eating behaviour and cholesterol control. To complete the scale, participants specified an important other, from five options, including family member, spouse/partner, friend, co-worker or another person. Items are answered with reference to this person from 1 (strongly disagree) to 7 (strongly agree). For example, “I feel that he/she (i.e., my important other) helps me make choices and think about diet options including not changing my diet”. Williams, Lynch et al. found that the IOCQ was a more consistent predictor of dietary outcomes than the HCCQ and Cronbach’s $\alpha = .87$ for this study. Items were averaged with higher scores indicating more autonomy support from an important other.

### 2.3 Procedure

Following ethical approval permission was sought from first year psychology course conveners to recruit. Participants reported to nominated rooms at scheduled times to complete the survey. Additionally, females were recruited from university campus and recruited from personal social networks with snowballing techniques. These participants were given the option of completing the survey at a later time and returning it in a sealed envelope. All questionnaires were
confidential. Prior to completing the survey, participants were informed of their rights as research participants and presented with an information sheet outlining the study. Completion of the survey was understood to indicate informed consent. The survey took approximately 20 minutes. Upon completion, a brochure comprising details of local Clinical Psychologists was available to all participants as a cautionary measure, should any women wish to speak to a health professional after completing the survey. In total, 400 surveys were distributed throughout the course of the study, with 215 returned constituting a 54% response rate.

3. Results

3.1 Preliminary Analyses

All variables were examined to evaluate assumptions of normality, linearity, and homoscedasticity. Distributions were examined and skewness and kurtosis were checked for each of the variables, revealing significant departure from normality for scores on perceived sociocultural pressure and autonomy support. Perceived sociocultural pressure had moderate positive skew, so a square root transformation was conducted, whereas autonomy support had significant moderate negative skew, which required a square root transformation, with reflection. Both transformations assisted in normalising the respective variables, thus, transformed variables were used in all analyses. Autonomy Support was reflected and transformed, thus, higher scores indicate less autonomy support. Two outlying scores were identified via boxplots and high Mahalanobis Distance (MD) scores. Analyses were repeated after removing these participants, but results were similar to those reported here. Awareness of the thin ideal did not demonstrate a significant correlation with GSD. Hence, this variable was not utilised in subsequent analyses. Further, weak and nonsignificant correlations of body mass index with other variables did not justify its retention in subsequent analyses.
Descriptive statistics and bivariate correlations between all other variables are presented in Table 1. Non-significant correlations between autonomy support and several variables were unexpected and warrant mention. Positive correlations were expected between reflected autonomy support and perceived sociocultural pressure, body dissatisfaction and CREB. However, no significant associations were found. Other correlations are described in subsequent sections.

3.2 Global Self-Determination, Societal Pressure and Thin Ideal Internalisation

To test Hypothesis 1, hierarchical multiple regression was conducted in order to establish whether the relationship between thin ideal internalisation (DV) and global self-determination (IV) was mediated by perceived sociocultural pressure (MV). Also, the significance of this mediation effect was examined by conducting the Sobel test (Preacher & Leonardelli, 2001). It is commonly argued that the conditions for a mediation effect require that a significant relationship be found between the IV and the MV, the MV and the DV and between the IV and the DV (e.g., Baron & Kenny, 1986). Additionally, the relationship between the IV and the DV should be substantially reduced with the introduction of the MV. In this case, assumptions, outlined by Baron and Kenny, were met (see Table 2).

The relationship between the GSD and perceived sociocultural pressure was significant, $r = -.21, p < .05$, and the relationship between GSD and thin ideal internalisation was significant, $r = -.16, p < .01$. In addition, the relationship between the GSD and thin ideal internationalisation became non-significant with the introduction of perceived sociocultural pressure to the model in Step 2 (see Table 2). Further, the Sobel test revealed the significance of the full mediating effect ($z = -3.10, p = .002$). This indicated that the relationship between thin ideal internalisation and GSD was fully mediated by perceived sociocultural pressure. Overall, in Step 2, the model accounted for 31% of the variance in thin ideal internalisation, $F (2, 207) = 45.49, p < .01$. The confidence interval around $R^2$ extended from 20.4% to 41.0%, which is a large effect.
3.3 Societal Pressure, Thin-Ideal Internalisation and Body Dissatisfaction

Hierarchical multiple regression was also used to test the second Hypothesis, to establish whether the relationship between body dissatisfaction (DV) and perceived sociocultural pressure (IV) was mediated by thin ideal internalisation (MV). The relationship between perceived sociocultural pressure and thin ideal internalisation was significant, $r = .55, p < .05$, and the relationship between perceived sociocultural pressure and body dissatisfaction was significant, $r = .56, p < .01$. Also, the relationship between perceived sociocultural pressure and body dissatisfaction was reduced with the inclusion of the MV, but remained significant, suggesting partial mediation (see Table 3). The Sobel test revealed the significance of the indirect association of perceived sociocultural pressure with body dissatisfaction via thin ideal internalisation, $z = 5.32, p < .01$. This indicates that body dissatisfaction has a direct association with perceived sociocultural pressure, but also has a partial indirect effect because of the mediating role of thin ideal internalisation. Overall, in Step 2, the model accounted for 45.1% of the variance in body dissatisfaction, $F (2, 207) = 84.09, p < .01$. The confidence interval around $R^2$ extended from 35.2% to 55%, which is a large effect.

3.4 GSD, Body Dissatisfaction, the Regulation of Eating and Eating Patterns

To test Hypotheses 3 and 4, Pearson’s $r$ correlations were examined (see Table 1). In Hypothesis 3, associations of GSD with AREB and CREB were expected. GSD was significantly positively associated with AREB, $r = .23, p < .01$, and significantly negatively associated with CREB, $r = -.40, p < .01$. Thus, women who reported higher levels of GSD also were higher in autonomous regulation and lower in controlled regulation of their eating. Also, in Hypothesis 4, associations of body dissatisfaction with CREB were expected. Body dissatisfaction was significantly positively correlated with CREB, $r = .52, p < .01$. However, there was no significant association between body dissatisfaction and AREB, $r = -.04$. Thus, women in the study who
reported greater body dissatisfaction reported more controlled regulation of their eating, but they did not report relatively less use of autonomous regulation.

To test Hypothesis 5, correlations were examined for associations between eating regulation (i.e., AREB and CREB) and healthy and dysfunctional eating (see Table 1). As expected, a significant positive correlation was found between AREB and healthy eating, $r = 0.44, p < .01$. Participants who reported more autonomous regulation of their eating also consumed healthy foods more frequently. However, among the subscales of the dysfunctional eating measure, AREB was significantly positively correlated with the Dieting, $r = 0.25, p < .01$, and Oral Control, $r = 0.22, p < .01$; these associations were not expected. No significant association was found between AREB and the Bulimia and Food Preoccupation subscale (see Table 1). Thus, participants who reported more autonomous regulation their eating were also more likely to report dieting and controlling their food intake, but were not relatively more preoccupied with food.

Additionally, correlations were examined for Hypothesis 6, and, as expected, a significant, negative correlation was found between CREB and healthy eating, $r = -0.14, p < .05$ (see Table 1). Participants who reported more controlled regulation of their eating reported less frequent consumption of healthy foods. Also as expected, CREB was significantly positively correlated with the Bulimia and Food Preoccupation, $r = 0.29, p < .01$, and Dieting subscales, $r = 0.32, p < .01$, of the dysfunctional eating measure. However, no significant association was found between CREB and the Oral Control subscale (see Table 1). Thus, participants who reported more controlled regulation of eating had more bulimic symptoms and engaged in more frequent dieting, though they did not report more oral control around food.

3.5 GSD, Body Dissatisfaction and Eating Regulation

To investigate Hypothesis 7, hierarchical multiple regression was used to test the relationship between body dissatisfaction and eating regulation, with GSD as a potential
moderator. The moderator effect was tested separately for AREB and CREB. Variables were centred to reduce the potential for difficulties with multicollinearity (Aiken & West, 1991).

**AREB.** First, AREB was regressed onto body dissatisfaction and GSD, $R^2 = .06$, $F\,(2,\,205) = 6.36, \, p = .002$. The interaction term was added in Step 2 ($\Delta R^2 = .02, \, F\,[1,\,204] = 4.00, \, p = .047$). Overall, the model accounted for 8% of the variance in AREB (95% confidence intervals ranging from 0.9% to 14.5%), $F\,(3,\,207) = 5.63, \, p < .01$. This is a small to medium effect. The Body Dissatisfaction $\times$ GSD interaction was significant ($B = -.28, \, p < .05$), indicating that GSD has a moderating effect on the relationship between body dissatisfaction and AREB.

The significant interaction was probed using simple slopes analysis as recommended by Aiken & West (1991). This analysis was conducted at each level of GSD, by regressing AREB on body dissatisfaction separately for low GSD ($1\,SD < M$) and high GSD ($1\,SD > M$). Whereas the relation between body dissatisfaction and AREB among participants with low GSD was positive ($B = .41, \, SE\,(B) = .22, \, \beta = .58, \, p = .066$), the association among those with high GSD was negative ($B = -.28, \, SE\,(B) = .29, \, \beta = -.11, \, p = .337$). Despite the difference in direction, however, only the slope for the low GSD group approached significance. Taken together, findings indicate that the association between body dissatisfaction and AREB does differ when comparing those low in GSD to those high in GSD, but the association was not significant in either group.

**CREB.** Next, CREB was regressed on body dissatisfaction and GSD, $R^2 = .31$ at Step 1, $F\,(2,\,205) = 45.92, \, p < .01$, with the interaction term entered in Step 2 ($\Delta R^2 = .00, \, F\,[1,\,204] = .01, \, p = .748$). Overall, the model accounted for 31% of the variance in CREB (95% confidence intervals range from 20.7% to 41.3%). The Body Dissatisfaction $\times$ GSD interaction was not significant ($B = -.03, \, p = .748$). Thus, GSD did not moderate the relationship between body dissatisfaction and CREB.
3.6 Body Dissatisfaction, Autonomy Support and Eating Regulation

3.6.1 Simple correlations with autonomy support

To test Hypothesis 8, Pearson’s $r$ correlations were examined to determine the association of autonomy support with AREB and CREB (see Table 1). A significant, negative relationship was found between autonomy support and AREB, $r = -.16, p < .05$. However, as this variable has been reflected, lower scores indicated higher levels of autonomy support. Thus, participants reporting greater autonomy support from an important other also reported more autonomous regulation of their eating. No significant relationship was found between autonomy support and CREB, $r = -.01$.

3.6.2 Autonomy support as a moderator

To investigate Hypothesis 9, autonomy support was tested as a potential moderator of the association between body dissatisfaction and eating regulation using hierarchical multiple regression. First, AREB was regressed onto centred body dissatisfaction and centred autonomy support, $R^2 = .03, F (2, 205) = 2.64, p = .074$. The interaction term was added in Step 2 ($\Delta R^2 = .01$ at Step 2, $F [1, 204] = .98, p = .325$). Overall, the model accounted for nonsignificant 3% of the variance in AREB, $F (3, 207) = 2.09, p = .103$. Also, the interaction was not significantly associated with AREB ($B = 0.44, p = .325$). Thus, autonomy support did not moderate the association between body dissatisfaction and CREB.

CREB was then regressed onto body dissatisfaction and autonomy support, $R^2 = .26, F (2, 205) = 35.21, p < .01$, with the interaction term added in Step 2 ($\Delta R^2 = .00$ at Step 2, $F [1, 204] = .13, p = .717$). Overall, the model accounted for 26% of the variance in CREB (95% confidence intervals range from 15.5% to 35.7%), $F (3, 207) = 23.42, p < .01$. Yet, the interaction was not significant ($B = -.10, p = .717$). There was no moderating effect of autonomy support on the relationship between body dissatisfaction and CREB.
4. Discussion

Findings of the present study show the relevance of self-determination theory (SDT; Deci & Ryan, 1985) for understanding women’s perceptions of body image pressures and eating behaviour. By testing a series of hypotheses, a number of mediational paths were identified linking global self-determination (GSD) to healthy and problem eating behaviours via perceptions of societal pressure to be thin, internalisation of the thin ideal, body dissatisfaction and autonomous and controlled patterns of eating regulation. In addition, autonomy support from a close friend, partner or other played a role in eating regulation.

4.1 GSD, Societal Pressure, Body Dissatisfaction, Eating Regulation and Eating Behaviour

More specifically, findings showed that body dissatisfaction is partly explained by perception and internalisation of societal pressures, and that GSD may protect against perceived social pressure to be thin and, in turn, internalisation of societal ideals of thinness. These findings were expected and consistent with previous research (Pelletier & Dion, 2007; Pelletier, Dion, & Lévesque, 2004). Thus, the present study provides additional empirical support for the role of sociocultural factors in the development of body dissatisfaction. Present findings also contribute to a better understanding of why some women, though exposed to thin ideal messages, may be less at risk of developing body dissatisfaction, as they are more likely to dismiss such information if inconsistent with their own personal values.

Turning to findings regarding the correlates of autonomous and controlled eating regulation (AREB and CREB), both GSD and body dissatisfaction were implicated. Women who reported more GSD were higher in AREB and lower in CREB, indicating more eating regulation because they believe that healthy eating energises them and makes them feel better about themselves, and less eating regulation because of pressure and/or shame. These findings are consistent with the top-down effect in Vallerand’s (1997) model, which proposes that general levels of self-
Self-determination, body dissatisfaction and eating
determination can influence context-specific forms of self-determination. Findings are also
consistent with research showing that women with higher levels of GSD are also more self-
determined in the regulation of their eating (i.e., more AREB; Pelletier & Dion, 2007; Pelletier,
dion, & Levesque, 2004). With regards to body dissatisfaction, somewhat different than found by
Pelletier and Dion (2007), this variable was associated with more CREB but not less AREB.

AREB and CREB were expected to be important because they would be correlated with
women’s actual eating patterns. First for AREB, the expected association with healthier eating was
found, but women higher in AREB also reported more dieting and greater control of their food
intake, which, because they are risk factors for eating disorders, were defined as dysfunctional
eating patterns in this study. In addition, the expected negative association between AREB and
bulimic symptoms was not found. Second for CREB, the expected associations were found;
women who reported more controlled eating regulation were less frequent consumers of healthy
foods, reported more dieting, and reported more bulimic symptoms. Most of the associations
between AREB, CREB and eating patterns are consistent with the findings of two previous
research studies (Pelletier & Dion, 2007; Williams, Grow et al., 1996). Yet, the association
between AREB and dieting and the lack of a negative association between AREB and
dysfunctional eating were unexpected. One possible explanation is the different measure utilised
in this study to assess dysfunctional eating. In previous research, dysfunctional eating was
assessed as bulimic symptoms only, whereas the measure used in the current study (EAT-26) was
originally developed as a self-report measure for anorexic symptoms, but is now widely used as a
screening measure for general eating disorder symptoms (Mintz & O’Halloran, 2000).

The three subscales of the EAT-26 measure different eating disorder symptoms and each
have been associated with different criterion measures (Mintz & O’Halloran, 2000). Only the
Bulimia and Food Preoccupation subscale has been related to bulimic symptoms (i.e.,
Self-determination, body dissatisfaction and eating

binge ing/purging type anorexia; Garner, Olmsted et al., 1982). In the present study, women who reported more CREB also scored higher on the Bulimia and Food Preoccupation subscale, which is consistent with previous research findings relating CREB and bulimic symptoms (Pelletier & Dion, 2007; Pelletier, Dion, Slovinec-D’Angelo et al., 2004). However, the Oral Control subscale, which assesses restricting-type anorexic symptoms, was not correlated with CREB, but was positively associated with AREB. Thus, present findings potentially support Pelletier and Dion’s suggestion that associations found between eating regulation and dysfunctional eating may not generalise to restricting-type anorexic symptoms. Research should further explore these preliminary findings.

Additionally, low scores on the Bulimia and Food Preoccupation subscale and high scores on the Oral Control subscale of the EAT-26 may be better predictors of a more favourable outcome than the total scale score when screening for eating disorder (Garner, Olmsted et al., 1982). This implies that moderately high scores on the Oral Control subscale may not necessarily indicate pathological eating patterns, but rather greater self-control or self-regulation of eating behaviour. The Dieting subscale was positively associated with both AREB and CREB, which was also unexpected. According to Garner, Olmsted et al. this subscale reflects a pathological avoidance of high-calorie foods. One possible explanation for present findings may be that the EAT-26 indicates the presence of disturbed eating but it does not reveal the motivation underlying this behaviour (Mintz & O’Halloran, 2000). These motivations and their implications should be further investigated.

4.2 GSD as a Moderator: Association between Body Dissatisfaction and Eating Regulation

It was also expected that GSD would moderate the positive association of body dissatisfaction with AREB and CREB, because, when dissatisfied with their bodies, women may regulate their eating in a more controlled or a more autonomous manner, conditional upon levels
of GSD. For AREB, a stronger association was expected among women with relatively higher levels of GSD and, for CREB, a stronger association was expected among women with relatively lower levels of GSD. In two separate hierarchical regression models, GSD was found to moderate the association between body dissatisfaction and AREB, but not the association between body dissatisfaction and CREB. These findings showed that the relation between body dissatisfaction and AREB was different at high versus low levels of GSD. However, further inspection of the simple slopes among those classified as higher versus lower in GSD revealed that the association within each group was not significant, although it approached significance in the former group. However, neither association was significant. Hence, GSD does seem to change the association between body dissatisfaction and AREB, but body dissatisfaction and AREB are not associated after GSD is considered.

One consideration is that the relationship between the variables of interest is more complex than originally anticipated. For example, previous studies examining psychosocial dimensions of autonomous behaviour have found a curvilinear relationship (i.e., an inverted U), whereby functioning it best at moderate levels (e.g., Gray & Steinberg, 1999). Thus, moderate levels of AREB may be most desirable. Regulating one’s eating is not necessarily an activity that is inherently enjoyable, such that it may be viewed as intrinsically motivating (Vansteenkiste, Soenens, & Vandereycken, 2005). Instead, eating regulation (e.g., choosing a piece of fruit rather than a muffin) is more likely to occur as a result of external motivation. This suggests that a very high level of AREB (i.e., intrinsic motivation) is not likely. Further, not all types of autonomous regulation are created equally (Koestner & Losier, 2002). Indeed, individuals can place themselves under pressure to engage in an activity, and still not fully accept behaviour regulation as their own. This is only partial internalisation, and suggests that a very low level of AREB may not signify truly autonomous regulation. Although, when individuals fully internalise the regulation of an
activity, they will experience their behaviour as highly autonomous. This is known as integrated regulation in SDT and suggests that a moderate level of AREB may be most adaptive, and a better way to manage eating than either a lower or higher level of AREB.

4.3 The Role of Autonomy Support in Eating Regulation

Another aim of this study was to explore the role that autonomy supportive behaviours play in eating regulation. Women who reported greater autonomy support from an important other also reported more AREB. However, no relationship was found between autonomy support and CREB. Finally, it was expected that autonomy support might provide the most protection against eating regulatory difficulties when body dissatisfaction is high. However, this not found, as autonomy support did not moderate the relationship between body dissatisfaction and eating regulation.

Although existing studies have acknowledged the potential influence of positive interpersonal relationships (i.e., autonomy support) in studies drawing from SDT and investigating health behaviour change, this has been a neglected area of research with regards to eating regulation. Thus, the present study sought to explore this. Interpersonal autonomy support was expected to facilitate the adoption of a more self-determined approach to eating regulation, which could, in turn, lead to more healthy eating patterns. As expected in the present study, women who reported more autonomy support by an important other reported more AREB. This finding is consistent with previous research, which found that perceived autonomy support in various contexts facilitates the development of more autonomous regulation of behaviour (Wilson & Rodgers, 2004; Williams, Lynch et al., 2004). For example, Wilson and Rodgers (2004) found that perceived autonomy support from friends strengthened the tendency to endorse more autonomous regulation of exercise.

However, other results in the present study were less promising. No relationship was found between autonomy support and CREB, which was unexpected, and autonomy support was not
found to moderate the relationship between body dissatisfaction and AREB, or the relationship between body dissatisfaction and CREB. Previous research has consistently found that a more controlling social context is associated with less intrinsic motivation to perform a task (e.g., Deci, Koestner & Ryan, 1999). It is likely that reporting low autonomy support is not the same as reporting control and coercion (Zimmer-Gembeck & Collins, 2003). Hence, controlling behaviours of close others, as well as autonomy support, should be measured in future research.

4.4 Limitations and Future Research Directions

There are three limitations to consider along with these results. The first limitation is the use of self-report to measure all constructs. Although the use of anonymous and confidential self-report measures is likely to encourage honest responses, multiple methods of assessment could be included in future studies (e.g., reports from peers). In addition, using only self-report might have resulted in shared method variance, which can inflate correlations (Podsakoff, MacKenzie, Jeong-Yeon, & Podsakoff, 2003).

A second limitation is the use of cross-sectional design. Future studies should gather longitudinal data and/or examine alternative explanations for the present findings. For example, it is possible that body dissatisfaction may lead women to become more attentive to sociocultural pressures about body image or that the relationship between these variables is reciprocal in nature. Also, future studies should employ more objective measures of successful and unsuccessful eating (e.g., weight loss) over time. Overall, considering the present findings along with longitudinal and experimental studies will help to clarify casual direction.

Finally, a third limitation is the possibility that the generalisability of findings is limited. Data were collected from only females via convenience methods. Thus, it is possible that the present sample consisted of females who differed from those who declined to participate. Also,
Caucasian undergraduate university women were overrepresented in the present sample. Although a limitation, this population is at risk for bulimic symptoms (Striegel-Moore & Smolak, 1996).

4.5 Conclusion

In sum, a self-determined life approach may protect against societal body image pressures and body dissatisfaction, and this may filter down to autonomous regulation and healthy eating. However, this still seems to mean that dieting and oral control will be common strategies that women rely on to maintain their weight despite their autonomous approaches and more frequent consumption of healthy food. It also is important to continue to study how social relationships might promote self-determination in girls and women. Autonomy support may be one way, but the findings of the present study were mixed. However, a better understanding of how relationships might promote young girls’ self-determination has the potential to point towards effective interventions to reduce eating problems and disorders.
6. References


Author Disclosure

Statement 1: Role of Funding Sources

No funding was provided for this study.

Statement 2: Contributors

Both authors collaborated to design the study. Ms Kopp conducted literature searches, provided summaries of previous research studies, conducted the statistical analysis and wrote the first draft of the manuscript. Professor Zimmer-Gembeck oversaw and contributed to statistical analysis and edited drafts of the manuscript. Both authors contributed to and have approved the final manuscript.

Statement 3: Conflict of Interest

No authors have conflicts of interest to disclose.
### Table 1

*Pearson’s Correlations between Variables (N =208)*

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<td>-.14*</td>
<td>-.23**</td>
<td>-.15*</td>
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<td>.68**</td>
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<td>.12</td>
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<td>.44**</td>
<td>.22**</td>
<td>.25**</td>
<td>.07</td>
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<td>8. Oral control</td>
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*aVariable was reflected and transformed, so higher scores indicated less autonomy support.

*p < .05. **p < .01.
Table 2

Results of Regressing Thin Ideal Internalisation on General Self-Determination and Perceived Sociocultural Pressure (N = 208)

<table>
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<th>Independent variables</th>
<th>Lower 95% CI</th>
<th>Upper 95% CI</th>
<th>( \beta )</th>
<th>( sr^2(%) )</th>
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<td>4.38</td>
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Note: \( R^2 = .03 \) at Step 1, \( F (2, 207) = 5.44, p = .021 \); \( \Delta R^2 = .28 \) at Step 2, \( F (2, 207) = 83.36, p < .01 \).

\*\( p < .05 \). \**p < .01.\n
Table 3

Results of Regressing Body Dissatisfaction on Perceived Sociocultural Pressure and Thin Ideal Internalisation (N = 208)

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<th>CI(B)</th>
<th>β</th>
<th>sr²(%)</th>
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<td>.22</td>
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<td>.42**</td>
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*Note: R² = .33 at Step 1, F (2, 207) = 101.99, p < .01; ∆R² = .12 at Step 2, F (2, 207) = 44.60, p < .01.**

**p < .01.