

AN EXAMINATION OF GENERAL AND SPECIFIC MOTIVATIONAL MECHANISMS FOR THE RELATIONS BETWEEN BODY DISSATISFACTION AND EATING BEHAVIORS

LUC G. PELLETIER AND STÉPHANIE C. DION
University of Ottawa

The purpose of this study was to test a model of the regulation of eating behaviors that could help to better understand the processes by which body dissatisfaction could be either associated with dysfunctional eating behaviors or with healthy eating behaviors. Based on Self-Determination Theory (Deci & Ryan, 1985; Ryan & Deci, 2000), it appears that women's general level of self-determination in life may help protect against pressures about body image and endorsement of society's beliefs about thinness and obesity. Findings also suggest that women's general level of self-determination is positively associated with an autonomous regulation of eating behaviors (AREB) and negatively associated with a controlled regulation of eating behaviors (CREB). In turn, the AREB is positively associated with healthy eating while CREB is positively associated with dysfunctional eating. Overall, it appears that body dissatisfaction resulting from pressures about body image and endorsement of society's beliefs about thinness and obesity may be more closely associated with a controlled regulation of eating behaviors, which may explain its relation with eating pathology.

Research on body image has exploded since the mid-1990s, mainly because of the central role this concept has played in the understanding of disordered eating and weight control (Cash, 2002; Cash & Hrabosky, 2004). The sociocultural climate emphasizing thinness as a standard for

We would like to thank Lisa Mask for her insightful comments on drafts of this article.

This article was prepared while the first author was supported by a grant from the Social Sciences and Humanities Research Council of Canada (SSHRC), and the second author was supported by a doctoral scholarship from the Social Sciences and Humanities Research Council of Canada (SSHRC).

Address correspondence to Luc G. Pelletier, School of Psychology, University of Ottawa, Ottawa, ON K1N 6N5, Canada; E-mail: social@uottawa.ca.

attractiveness is thought to play a prominent role in promoting and maintaining a number of body image-related problems (e.g., McVey, Pepler, Davis, Flett, & Abdolell, 2002; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Wertheim, Paxton, & Blaney, 2004). Today's beauty standards are not only portrayed as highly important but are difficult and near impossible to achieve (Wolf, 1991). In turn, this increasing discrepancy between people's *ideal body size* and actual body size is thought to set the stage for body concerns for those who do not meet the socially prescribed ideals.

In order to provide a better understanding of the complex ways in which social and psychological factors influence the development of body image-related problems, a number of researchers have focused on the sociocultural pressures about body image and the internalization of the "thin-ideal" as risk factors for body dissatisfaction (Dittmar, 2005; Levine & Harrison, 2004; Polivy & Herman, 2004). Others have focused on the relation between body dissatisfaction and eating-related problems such as binge eating, dietary restraint, and bulimic symptoms (Levine & Piran, 2004; Stice, 2002). In the present study, we intend to investigate both issues using the framework of Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000). The theoretical and practical applications of SDT (Deci & Ryan, 1985; Ryan & Deci, 2002) to the present study are twofold. First, it can help to clarify why sociocultural pressures about body image and the internalization of the thin-ideal may represent risk factors for body dissatisfaction in some women, but not in others. As suggested by SDT, sociocultural norms, practices, and pressures (such as those related to thinness), can be assimilated or internalized into the self to varying degrees. However, the assimilation or internalization of these concepts may depend on the extent to which women feel that they are active agents or self-determined toward different aspects of their life. Greater levels of general self-determination are thought to provide women with a buffer against sociocultural pressures of thinness and the endorsement of societal beliefs about thinness and obesity, thus reducing the likelihood of experiencing bulimic symptoms (Pelletier, Dion, & Lévesque, 2004). Second, SDT may also be useful to better explain the relation between body dissatisfaction and problem eating by distinguishing how self-determined forms of motivation for the regulation of eating behavior could lead to healthy eating, while nonself-determined forms of motivation for the regulation of eating behavior could lead to problem eating (Pelletier, Dion, Slovinec-D'Angelo, & Reid, 2004).

Therefore, the main purpose of the present study is to investigate how SDT may contribute to the literature on the risk factors of eating pathology by examining how motivation at two different levels, one related to

a sense of self-determination toward one's life in general (general self-determination), and the other to a more specific sense of self-determination toward eating, could explain why some women differ in their responses to sociocultural pressures and messages related to body image, thus resulting in different eating patterns. The next section provides an overview of the research on a sociocultural approach of eating pathology. This section is followed by a brief description of SDT and recent studies on eating behaviors grounded in the framework of SDT. Finally, specific hypotheses of the present study are presented

OVERVIEW OF THE RESEARCH ON THE SOCIOCULTURAL MODEL OF EATING PATHOLOGY

Given the prevalence of body image and eating-related problems, researchers have invested a significant amount of effort in the attempt to identify the risk factors that lead to the onset of body image-related problems. Both risk factors (i.e., factors associated with dysfunctional eating) and protective factors (i.e., factors associated with healthy eating or less dysfunctional eating) are of interest because they may help researchers to identify which individuals are more or less at risk of developing unhealthy eating patterns. Possible risk factors for body image-related problems such as body dissatisfaction include: puberty (Ricciardelli & McCabe, 2001), sexual abuse (Connors, 2001), as well as several variables associated with a sociocultural climate of thinness such as pressures from the media, peer influences, and parental pressures. According to Stice (1994, 2001), two of the most in a sociocultural approach to explain the development of bulimia nervosa are perceptions of sociocultural pressures about body image and the internalization or endorsement of society's beliefs about thinness and obesity.

SOCIOCULTURAL PRESSURES ABOUT BODY IMAGE

Among the different sources of social pressure, the media has been proposed as one of the most important purveyors of the cultural expectations of thinness for women (Garner & Garfinkel, 1982; Gordon, 1988; Harrison & Cantor, 1997; Silverstein, Perdue, Peterson, & Kelly, 1986; Stice, 2001). Indeed, content analyses of print and televised media have demonstrated a trend toward increasingly leaner and less curvaceous representations of women throughout the past few decades (e.g., Garner, Garfinkel, Schwartz, & Thompson, 1980; Owen and Laurel-Seller, 2000; Sypeck, Gray, & Ahrens, 2004). A recent meta-analysis of 25 controlled experimental studies provided support for the media's harmful effects on women's body concerns (Groesz, Levine, & Murnen, 2002).

Results from a number of laboratory experiments indicate that girls and women experience decreased body satisfaction (e.g., Groesz et al., 2002), decreased self-esteem (Irving, 1990) and self-confidence (Tiggemann & Slater, 2003), increased negative affect (Cattarin, Thompson, Thomas, & Williams, 2000), and increased eating disorder symptoms (Mills, Polivy, Herman, & Tiggemann, 2002) following exposure to images of thin beautiful women that epitomize the thin-ideal. Moreover, investigations of the processes by which sociocultural factors contribute to eating pathology suggest that perceived pressures to be thin are associated with a thin-ideal internalization, resulting in body dissatisfaction (Stice, 2001; Stice & Whitenton, 2002), which, in turn, predicted the onset of bulimic symptoms through restrained eating and negative affect (Stice, Zlemba, Margolis, & Flick, 1996; Stice, Shaw, & Nemeroff, 1998).

ENDORSEMENT OF SOCIETY'S BELIEFS ABOUT THINNESS AND OBESITY

Current societal standards of body image suggest that thinness is highly valued and is associated with a number of positive qualities such as attractiveness, success, and intelligence (Striegel-Moore, McAvay, & Rodin, 1986; Thompson, 1990). By contrast, being slightly overweight is frowned upon and is perceived as socially undesirable (Rand & Kuldau, 1990; Rodin, Silberstein, & Striegel-Moore, 1985). Several authors (Stice, 1994; Stice, Shaw, & Nemeroff, 1998; Stice, Ziemba, Margolis, & Flick, 1996; Twamley & Davis, 1999) have proposed that repeated exposure to societal pressures and messages glorifying thinness leads women to equate "what is thin with good and beautiful" and "what is not thin with bad and ugly" (Stice, 1994). The endorsement of this thin-ideal as the criteria for feminine beauty is thought to promote women's normative discontent with their bodies, given that it is near impossible to achieve (Wolf, 1991). For example, Stice, Shaw, & Nemeroff (1998) found that perceived sociocultural pressures to be thin had an indirect effect on body dissatisfaction through the endorsement of the thin-ideal body stereotype. Recent research has also shown that a sociocultural climate of thinness can alter an individual's core beliefs regarding the importance of physical appearance in his or her life (Cash & Hrabosky, 2004; Cash & Labarge, 1996). Many events, like exposure to images of thinness, weighing, viewing oneself in the mirror, changes in one's appearance, and social comparison, can provoke thoughts related to one's body image (Williamson, Stewart, White, & York-Crowe, 2002). In turn, these thoughts may lead to interpretations or evaluations of body image.

In sum, the studies reviewed herein suggest that when women are repetitively exposed to pressures and messages glorifying thinness, they

are more likely to endorse society's beliefs about thinness and obesity. The internalization of this thin-ideal body may lead them to develop a desired body image to which they will compare their actual body image to. Therefore events hypothesized to trigger body image-related thoughts may lead women to compare their current body image with their internalized body-ideal. The discrepancy between their ideal and their current body would result in body dissatisfaction.

BODY IMAGE AND EATING BEHAVIORS PROCESSES

Several studies offer support for the proposition that perceived pressures to be thin, thin-ideal internalization, and body dissatisfaction predict dieting (Stice, 2001; Stice, Mazotti, Krebs, & Martin, 1998), the onset of bulimic symptoms (Stice, 2001; Stice & Agras, 1998), and an increase in eating-related problems (Attie & Brooks-Gunn, 1989). Results from longitudinal studies have identified body dissatisfaction to be an independent and the single most important cause of dieting and disordered eating (Polivy & Herman, 2002; Shisslak & Crago, 2001; Stice, 2002). More precisely, body dissatisfaction is hypothesized to motivate the use of certain strategies to either increase body satisfaction or minimize the threat created by the discrepancy between one's internalized ideal body and one's current body. While certain strategies such as grooming behaviors are aimed at self-reinforcement to engender body satisfaction, others such as exercising and dieting are aimed at changing one's physical appearance (Cash & Hrabosky, 2004). Dieting has received the most attention because of the common belief that this behavior is an effective technique for weight control. By the same token, dieting is also theorized to result in a greater risk of bulimic pathology and weight control problems, because individuals may binge eat to eliminate the effects of caloric deprivation or to gain some comfort and distraction from negative emotions (Fairburn, 1997).

Ironically, dieting and cognitive control over eating may leave dieters feeling more vulnerable to engage in uncontrolled eating (Heatherton & Polivy, 1992; Wadden, Bownell, & Foster, 2002; Wilson, 2002). Often, dieters adopt strict dietary rules that may result in the temporary abandonment of dietary restraint because of an abstinence violation effect. These binge eating episodes may trigger more restraint and the use of radical weight control techniques, such as vomiting and the use of laxatives, resulting in a self-maintaining binge-purge cycle associated with bulimic pathology (Fairburn, 1997). In line with these predictions, dissatisfaction with one's body image has emerged as a consistent risk factor of bulimic pathology (e.g., Fairburn, 1997; Heatherton & Polivy, 1992; Wilson, 2002).

Together, several studies indicate that body dissatisfaction is an important predictor of problem eating. One possible explanation for this may be the manner in which people approach the regulation of their eating behaviors. When people adopt strict dietary rules that are inflexible, and use weight control techniques that are radical in nature as means to reduce the discrepancy between their current ideal body image, they are likely regulating their eating behaviors in a restrictive and controlled manner. However, women vary in their responses to sociocultural pressures of thinness, thus resulting in varying degrees of body dissatisfaction. Furthermore, not all women will engage in unhealthy means to “cope” with their body dissatisfaction. Some women are less likely to engage in dysfunctional eating patterns and are thus less at risk of experiencing bulimic symptoms because they may approach the regulation of their eating behaviors in a healthy, more agentic manner. In the next section, we will examine how self-determination theory could help us to understand why some women may be more successful at regulating their eating behaviors while others may be less successful, thus providing a better understanding of why some women may be more at risk of developing problem eating.

SELF-DETERMINATION THEORY (SDT)

According to SDT, an understanding of behavior regulation implies an examination of the source of the regulatory processes underlying the behavior. It is important to consider whether the origin of behavior regulation emanates from the self or if the source of regulation is brought about by forces or pressures external to the self. Deci and Ryan (1985, 1991; Ryan & Deci, 1999) have proposed that the regulation of behavior can take many forms that correspond to qualitatively different styles of behavior regulation. These regulatory styles vary in their implied level of autonomy and are associated with one of three basic types of motivation: intrinsic motivation, extrinsic motivation, and amotivation.

Intrinsic motivation represents the manifestation of one’s innate tendency to seek challenge, discover novel things, and to master the environment in absence of material rewards or external constraints. When intrinsically motivated, one embraces the activity with a sense of personal choice and commitment. Extrinsic motivation pertains to a variety of behaviors that are engaged in as a means to an end and not for their own sake (Deci, 1975). The activity is performed to prompt pleasant consequences or to avoid unpleasant ones. Deci and Ryan (1985) have proposed four different forms of regulation for extrinsic motivation that vary in the extent to which the regulation of behavior is perceived as constrained by external sources or as freely chosen by the individual. *Exter-*

nal regulation is the prototype of extrinsic motivation and corresponds to behaviors that are governed by external sources of control originating from one's environment (e.g., reward or punishment). With *introjected regulation*, the formally external sources of control have been internalized such that its actual presence is no longer needed to initiate behavior. Instead, the control stems from within the person in the form of self-imposed pressures such as guilt or anxiety (Ryan & Connell, 1989). The internalization is only partial in the sense that one is still "being" regulated, resulting in feelings of internal pressure (Williams & Deci, 1996). When external regulatory processes have been internalized into one's sense of self, the resulting regulatory style is *identified regulation*. The activity is valued and is perceived as being central to one's identity. One personally decides to do the activity because it is congruent with one's own values and goals. Although the behavior is still performed for extrinsic reasons, identified regulation is considered self-determined because it is internally regulated. *Integrated regulation* results when a behavior is performed not only because an individual values its significance, but also because it is consistent with other values and self-schemas within one's psyche. The instrumental behavior has been valorized to the extent that it has become part of one's self-definition. Finally, amotivation refers to a state where individuals fail to perceive contingencies between their actions and their associated outcomes. Individuals who regulate their behavior in an amotivated way feel that their behavior is caused by external forces beyond their control, resulting in feelings of incompetence and a lack of control (Deci & Ryan, 1985).

According to SDT, the different regulatory styles of behavior can be differentiated along a continuum of self-determination ranging from nonself-determined or controlled forms of behavior regulation (i.e., amotivation, external regulation, and introjected regulation) to self-determined or autonomous forms of behavior regulation (i.e., identification, integration, and intrinsic motivation). Furthermore, SDT posits that the internalization of the different forms of regulation is fueled by peoples' naturally tendencies to integrate within themselves the regulation of activities that are useful for effective functioning in the social world even though they may not be inherently interesting (Deci, Eghari, Patrick, & Leone, 1994).

SDT posits that greater levels of self-determination should be associated with better psychological functioning (Deci, 1980; Deci & Ryan, 1985). Because the regulatory styles of behavior vary according to their level of self-determination or perceived autonomy, self-determined forms of regulation taken individually (i.e., intrinsic motivation, integrated regulation, and identified regulation) or as a global construct (i.e.,

autonomous regulation) are expected to result in more positive consequences, whereas nonself-determined forms of regulation taken individually (i.e., introjected regulation, external regulation, and amotivation) or as a global construct (i.e., controlled regulation) are expected to ensue more negative outcomes. Results from studies conducted in a variety of life domains offer support for this proposition (Vallerand, 1997). Globally, self-determined forms of regulation were associated with enhanced learning, greater interest, more persistence, greater effort, better performance, higher self-esteem, increased life satisfaction, and enhanced health, whereas nonself-determined forms of regulation were negatively related to these outcomes.

MOTIVATION AT THE GENERAL LEVEL AND MOTIVATION AT THE CONTEXTUAL LEVEL

Vallerand (1997) has recently proposed a hierarchical model of motivation that provides a useful framework for organizing and understanding the basic mechanisms underlying motivation. The model encompasses the three different types of motivation (intrinsic, extrinsic, and amotivation) described at three different levels of generality within the individual, how these various motivations are related, as well as the determinants and consequences of these motivational representations. It is proposed that motivation at the highest or more general level can determine motivation at the next contextual (or domain) level (i.e., a "top-down" effect). In other words, general or dispositional motivation can be channeled toward more specific life domain motivations. For instance, Williams, Grow, Freedman, Ryan, & Deci (1996) specifically assessed the impact of general motivation on severely obese patients' contextual motivation to participate in a medically supervised weight-loss program and to adhere to the regimen. Results revealed that general self-determined motivation at Time 1 predicted self-determined motivation toward the treatment at Time 2. In other words, the more patients felt self-determined toward their lives in general, the more self-determined they felt toward their treatment program.

In agreement with Vallerand's (1997) hierarchical model of motivation, it is hypothesized that women who display greater levels of self-determination toward their lives in general (general self-determination) should feel volitional in the regulation of their eating behaviors. Conversely, women with a less self-determined or controlled dispositional motivational orientation should feel pressured and coerced by internal and/or environmental forces to regulate their eating behaviors. When people are self-determined toward the different aspects of their lives, they should initiate regulatory processes that are

qualitatively different from those who display a general nonself-determined motivational orientation. For the present study, not all women would be expected to adopt the same regulatory style toward their eating behaviors. General self-determination should represent an important determinant of a person's regulatory style toward a particular context such as the regulation of eating behaviors.

GENERAL SELF-DETERMINATION AS A PROTECTOR AGAINST SOCIOCULTURAL PRESSURES ABOUT BODY IMAGE

When people feel self-determined toward their lives in general, they should display an overall tendency to initiate and regulate their behaviors through choice and act in accordance with their own values. Because regulation through choice is characterized by flexibility instead of rigidity, people should not feel that they have to subscribe to information or adhere to societal ideals that may or may not be consistent with their own values. Rather, the information should be processed in light of their own needs and previous integrated experiences, with the aim of selecting the best course of action that can help them attain their own selected goals. Should the information be inconsistent with their previous integrated experiences, then it would simply be disregarded. These hypotheses have already been tested and supported in one study. Pelletier, Dion, and Lévesque (2004) first tested a model that supported the sociocultural pathway to bulimia, observing that greater perceptions of sociocultural pressures about body image predicted greater endorsement of societal beliefs related to thinness and obesity, which, in turn, was associated with greater body dissatisfaction resulting in more bulimic symptoms. However, when general self-determination was added to the model, the results provided support for a protective role for self-determination. The more women felt self-determined toward the different aspects of their lives, the less they perceived sociocultural pressures about body image, the less they endorsed society's beliefs related to thinness and obesity, and the less they experienced bulimic symptoms. These findings suggest that a self-determined motivational profile toward one's life in general could influence perceptions of sociocultural influences about body image and possibly decrease the likelihood of women experiencing bulimic symptoms. For the present study, it was hypothesized that the more self-determined women felt toward their lives in general, the fewer sociocultural pressures they would perceive about body image and the less they would endorse society's beliefs about thinness and obesity.

SELF-DETERMINED MOTIVATION AND NONSELF-DETERMINED MOTIVATION FOR THE REGULATION OF EATING BEHAVIORS

Recently Pelletier, Dion, Slovinec-D'Angelo and Reid (2004) have proposed that different forms of motivation for the regulation of eating behaviors as defined by SDT may be useful to explain why some individuals may be successful at regulating their eating behavior while others may not and may be at risk of developing dysfunctional eating patterns. Specifically, one would expect that self-determined regulatory styles toward eating would be associated with healthy eating behaviors, whereas nonself-determined regulatory styles toward eating would predict dysfunctional eating behaviors (i.e., bulimic symptoms). Given that several studies have linked bulimic symptoms to depression, low self-esteem, and anxiety (e.g., Laessle, Wittchen, Fitcher, & Pike, 1989; Shisslack, Pazda, & Crago, 1990), dysfunctional eating behavior was expected to correlate negatively with psychological adjustment and a positive association was expected between healthy eating behaviors and psychological adjustment.

Pelletier, Dion, Slovinec-D'Angelo, and Reid (2004) tested these hypotheses in three studies. They examined how autonomous and controlled forms of motivation for the regulation of eating behaviors were related to both self-reported eating behaviors and sustained dietary behavior change over a period of 26 weeks. Their results showed that an autonomous regulation toward eating was positively associated with healthy eating behaviors, whereas a controlled regulation toward eating was positively associated with dysfunctional eating behaviors and negatively associated with healthy eating behaviors. These results were further substantiated in a population at risk for developing coronary artery disease. Results indicated that a general sense of self-determination assessed at Week 1 predicted self-determination toward eating behaviors at Week 13. In turn, self-determination toward eating emerged as a significant predictor of long term adherence to healthier dietary behaviors, evidenced by total dietary fat and saturated fat intake, as well as improvements in weight and blood lipid parameters at 26 weeks.

The studies reviewed in these last sections are of particular importance because they suggest that the concept of self-determined motivation could be useful to better understand the mechanisms underlying the regulation of both healthy eating and problem eating. First, self-determination toward one's life in general should play two roles: one as a protective factor against sociocultural pressures about body image (Pelletier, Dion, & Lévesque, 2004), and the other as a significant determinant of the motivation toward eating behaviors (Pelletier, Dion,

Slovinec-D'Angelo, & Reid, 2004). Second, specific self-determination for the regulation of eating behaviors should be an important predictor of both healthy eating and problem eating. An autonomous or self-determined regulation toward eating should lead to healthy eating. By contrast, a controlled or nonself-determined regulation toward eating is expected to promote dysfunctional eating behaviors (i.e., bulimic symptoms). However, it is not entirely clear how body dissatisfaction would relate to the two forms of food regulation. Given that body dissatisfaction often results from the internalization of sociocultural pressures and messages related to thinness, it is anticipated that body dissatisfaction would be strongly associated with a controlled approach toward eating.

GOAL OF THE PRESENT STUDY

The purpose of the present study is to test the hypotheses mentioned above in a motivational model of regulation toward eating behaviors. The mechanisms by which motivation at a more general level is related to both sociocultural influences about body image and motivation at a more specific level (i.e., regulation of eating behaviors) will be examined. We also propose to examine how motivation for the regulation of eating behaviors could mediate the relation between body dissatisfaction and eating behaviors (see Figure 1). First, it is hypothesized that general self-determination will be negatively associated with both sociocultural pressures about body image and the endorsement of society's beliefs about thinness and obesity. Second, sociocultural pressures should be positively linked to the endorsement of society's beliefs, which, in turn, will positively predict body dissatisfaction. Third, although body dissatisfaction is expected to positively predict both an autonomous and a controlled form of regulation of eating behaviors, it should lead mainly to a controlled regulation of eating. Fourth, the autonomous form of regulation of eating will be positively associated with healthy eating behaviors, whereas the controlled form of regulation will be positively associated with dysfunctional eating behaviors. Fifth, general self-determination should be positively associated with the autonomous form of regulation and negatively associated with the controlled form of regulation. Sixth, the autonomous regulation of eating behaviors will be positively associated with healthy eating behaviors and negatively associated with bulimic symptoms, whereas the controlled regulation of eating behaviors will be positively associated with dysfunctional eating and negatively associated with healthy eating behaviors. Finally, healthy eating behaviors should positively predict psychological adjustment, whereas dysfunctional eating should negatively predict psychological adjustment.

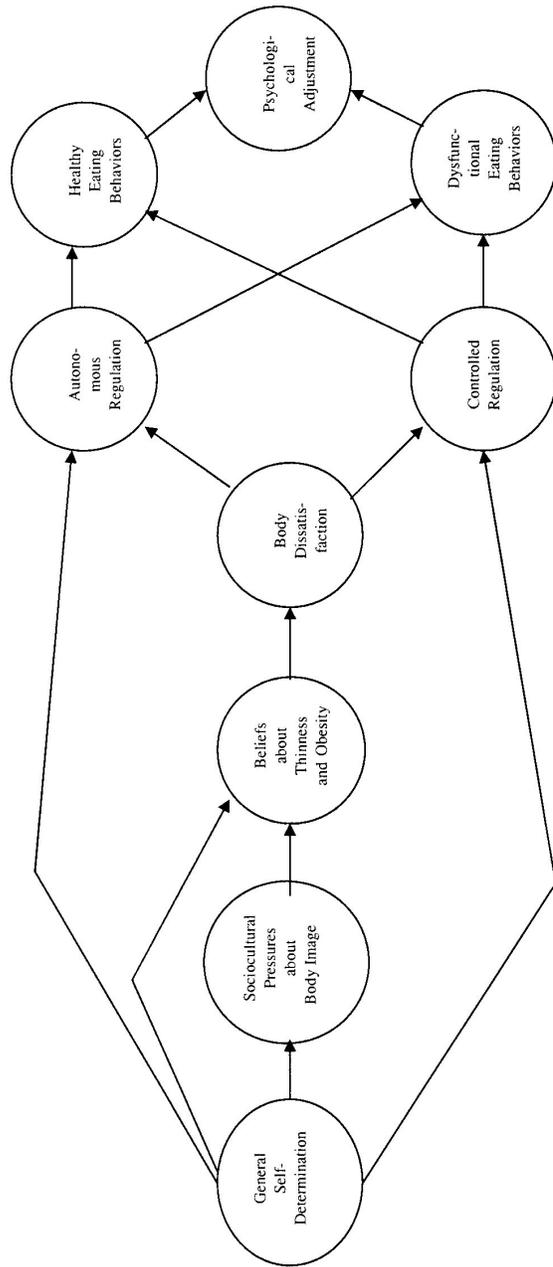


FIGURE 1. Hypothesized model of the regulation of eating behaviors.

METHOD

Participants and Procedure

The sample was comprised of 447 female students enrolled in a number of different undergraduate (78.2%) and graduate (20%) programs at the University of Ottawa or at Carleton University (1.2%). Participants' ages ranged from 16 to 54 years ($M = 22.5$ years). Participants were informed that the researchers were interested in better understanding women's habits regarding the regulation of their eating behaviors and the perceptions they may have about themselves. No compensation was offered and participants were assured that their responses would remain confidential.

INSTRUMENTS

The General Motivation Scale (GMS)

The GMS (Pelletier, Blanchard et al., 2004) was used to assess the various reasons for which people perform their different life activities. The 24 items (four items/subscales) are divided into six subscales that represent the six subtypes of motivation defined by Deci and Ryan (1985): intrinsic motivation (e.g., in order to feel pleasant emotions; $\alpha = .89$), integrated regulation (e.g., because they reflect what I value most in life; $\alpha = .92$), identified regulation (e.g., in order to help me become the person I aim to be; $\alpha = .83$); introjected regulation (e.g., because I would beat myself up for not doing them; $\alpha = .82$), external regulation (e.g., in order to show others what I am capable of; $\alpha = .83$), and amotivation (e.g., although I do not see the benefit in what I am doing; $\alpha = .77$). Participants were asked to indicate using a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*) the extent to which each item corresponds to their own motives for performing their different activities.

The reliability and validity of the GMS has been supported in five independent studies (Pelletier, Blanchard et al., 2004). Results from confirmatory factor analyses supported the 6-factor structure of the scale, revealed satisfactory internal consistency, and provided support for the self-determination continuum (Study 1 and 2). The construct validity of the scale was further substantiated in the third and fourth studies. In the fifth study, the GMS was administered on two different occasions (6-week intervals) and revealed adequate test-retest reliability.

In the present study, we were interested in measuring each participant's general level of self-determination (self-determination index). Therefore, scores from each subscale were weighed according to their position on the self-determination continuum. Specifically, self-deter-

mined forms of motivation such as intrinsic motivation, integrated regulation, and identified regulation were weighed positively and were assigned the weights of +3, +2, +1, respectively. By contrast, nonself-determined forms of motivation such as amotivation, external regulation, and introjected regulation were assigned the following respective weights: -3, -2, -1. Given that there were four items for each of the motivational subscales, four indices were computed using the individual motivational items. Each of the four indices (GSD1, GSD2, GSD3, GSD4) was then used in the following equation: $GSD = 3(IM) + 2(INTEG) + (IDEN) - (INTRO) - 2(ER) - 3(AMO)$. Ryan and Connell (1989) have reported extensive support for the construct validity of such a composite index (see also Blais, Sabourin, Boucher, & Vallerand, 1990; Vallerand, 1997). Cronbach's alpha for the four indicators was .92.

SOCIOCULTURAL PRESSURES ABOUT BODY IMAGE

Sociocultural pressures about body image represent a latent variable that is comprised of five indicators: sociocultural pressures from one's family, one's friends, one's partner, and the media to have a thin body, as well as a history of being teased about one's body image. *Perceived sociocultural pressures for a thin body* (Stice, Ziemba et al., 1996) were measured with eight items that describe the amount of perceived pressure from family, friends, dating partners, and the media to have a thin body. An example of an item is: "I've perceived a strong message from my family to have a thin body." Responses ranged from 1 (*do not agree at all*) to 5 (*strongly agree*). Stice, Nemeroff, and Shaw (1996) have reported adequate internal consistency for the scale ($\alpha = .87$). The scale also demonstrated good test-retest reliability ($r = .93$) over a 2-week period. Other studies using similar measures revealed a good correlation ($r = .51$) between child reports of perceived parental pressure to lose weight and parental self-reports of pressure (Thelen & Cormier, 1995). *History of being teased about physical appearance* (Boyer, 1991) was measured with three items that refer to past teasing experiences about one's weight during childhood/adolescence (e.g., "When you were a child, or an adolescent, were you the brunt of family jokes because of your weight?"). Items were adapted from the Teasing Assessment Scale (Thompson, 1990). Responses ranged from 1 (never) to 6 (always). Previous research demonstrated good internal consistency for the scale ($\alpha = .75$) and adequate test-retest reliability ($r = .87$) over a 1-month period. The scale was also shown to discriminate between women reporting bulimic symptoms and those who do not (Boyer, 1991).

Endorsement of Society's Beliefs About Thinness and Obesity

This scale (Boyer, 1991) was designed to assess the extent to which an individual has internalized societal beliefs about thinness and obesity. The scale is comprised of two subscales of four items each. The first subscale refers to the endorsement of beliefs about thinness (e.g., "Thin people are well liked"), whereas the second subscale refers to the endorsement of beliefs about obesity (e.g., "Fat people don't have any self-control"). Participants' level of agreement with each item was scored using a 7-point Likert scale ranging from 1 (do not agree at all) to 7 (strongly agree). Cronbach's alphas for each subscale were adequate ranging from .80 to .81 as were test-retest reliability coefficients over a 1-month period, ranging from .77 to .83. This scale was also shown to discriminate bulimic from non-bulimic females (Boyer, 1991).

Eating Disorder Inventory – Body Dissatisfaction Subscale (EDI-BD)

The EDI-BD (Garner, 1991) is comprised of nine items and is the most commonly used instrument for measuring body dissatisfaction. Participants were asked to rate how they felt toward specific areas of their bodies using a 6-point Likert scale ranging from 1 (never) to 6 (always). An example of an item is: "Do you think your stomach is too big?" The reliability and validity of the EDI is well documented with internal consistency estimates ranging around .90 for the Body Dissatisfaction Subscale (Garner & Olmstead, 1984; Garner, 1991).

The Regulation of Eating Behaviors Scale (REBS)

The REBS (Pelletier, Dion, Slovinec, & Reid, 2004) was design to assess the different reasons that people may have for regulating their eating behaviors. The scale is comprised of 24 items (four items/subscales), which are divided into six subscales that represent the six regulatory styles defined by Deci and Ryan (1985). Participants were asked to what extent each item corresponds to a reason for which they are regulating their eating behaviors using a 7-point Likert scale ranging from 1 (does not correspond at all) to 7 (corresponds exactly). Sample items from each subscale include: "...because it's fun to create meals that are good for my health" (intrinsic motivation, $\alpha = .93$), "...because eating healthy is congruent with other important aspects of myself" (integrated regulation, $\alpha = .84$), "...because I believe it's a good thing I can do to feel better about myself in general" (identified regulation, $\alpha = .78$), "...because I would be humiliated if people thought I wasn't in control of my eating behaviors" (introjected regulation, $\alpha = .85$), "...because other people insist that I do" (external

regulation, $\alpha = .78$), and “. . . I don’t know. I can’t see how my efforts to eat healthy are helping my health situation” (amotivation, $\alpha = .83$). Pelletier, Dion, Slovinec–D’Angelo, & Reid (2004) have shown that the REBS displays good factorial structure and good psychometric properties. The authors have shown (Study 2) that an autonomous regulation of eating behaviors was positively associated with healthy eating behaviors, whereas a controlled regulation of eating behaviors was positively associated with dysfunctional eating behaviors and negatively associated with healthy eating behaviors. The authors have also shown (Study 3) that self-determination toward eating behaviors emerged as a significant predictor of changes in dietary behavior over a 26-week period.

In the present study, the subscales referring to the self-determined forms of regulation toward eating behaviors (i.e., intrinsic motivation, integrated regulation, and identified regulation) were grouped together to form a global score of autonomous regulation. Similarly, the subscales referring to nonself-determined forms of regulation toward eating behaviors (i.e., introjected regulation, external regulation, and amotivation) were grouped to form a global score of controlled regulation. A composite index for each global style of regulation toward eating (i.e., autonomous and controlled) was used because we were interested in testing a parsimonious model (Elliot & Sheldon, 1998; Sheldon & Elliot, 1998).

Healthy Eating Habits Scale

Developed by Pelletier, Dion, Slovinec–D’Angelo, and Reid (2004), this scale was used to measure healthy eating. Inspired from recommendations made by the Canadian Food Guide (Health & Welfare Canada, 1992), the entire scale is comprised of two subscales of four items each. One subscale refers to “healthy foods” (e.g., “I eat vegetables, fruits, and grain products”; “I eat a variety of foods from each of the four groups recommended by the Canadian Food Guide”; “I eat foods that are low in fat, saturated fat, and cholesterol”; and “I drink water”), whereas the other subscale refers to “foods that should be eaten with moderation” (e.g., “I eat foods such as chips, chocolate, and candies”; “I eat fried food”; “I use white sugar”; and “I use salt”). Participants were asked to indicate using a 5-point Likert scale ranging from 1 (not at all) to 5 (all of the time) the frequency with which they consume each type of food. Results from confirmatory factor analyses support the 2-factor structure of the scale (Pelletier, Dion, Slovinec–D’Angelo, & Reid, 2004).

Dysfunctional Eating (BULIT–R)

The BULIT–R (Thelen, Farmer, Wonderlich, & Smith, 1991) is a widely used psychometrically sound measure of dysfunctional eating and

bulimic symptoms in accordance with criteria from the Diagnostic and Statistical Manual of Mental Disorders, 3rd ed., rev. (DSM-III-R). The instrument is comprised of 28 items (a total of 34 items with eight filler items) and is useful for identifying people who are most likely to receive a diagnosis of bulimia on the basis of a clinical interview. This self-report scale was shown to be a valid indicator of bulimia nervosa in both clinical and nonclinical populations. Participants were asked to choose from among five answers (1-5) the one that applies best to them. Responses for each item are then summed to yield a total score. The scale has been shown to have high internal consistency ($\alpha = .97$), good test-retest reliability ($r = .95$), to discriminate well between bulimics and nonbulimics, and to correlate well with other measures of eating pathology (Thelen et al., 1991).

Psychological Adjustment

A psychological adjustment index (PAI) comprised of different variables (depressive symptoms, self-esteem, and life satisfaction) associated with psychological well-being was used in this study.

Center for Epidemiological Studies – Depressed Mood Scale (CES-D; Radloff, 1977). This scale is comprised of 20 items, designed to measure symptoms commonly associated with depression in the general population. The scale was shown to have high internal consistency (i.e., .85 for nonclinical samples and .90 for clinical patient samples), acceptable test-retest reliability, and excellent concurrent validity.

Self-Esteem Scale (SES; Rosenberg, 1965). This measure of self-esteem is comprised of ten items. Its reliability and validity are well established. With respect to reliability, the SES has demonstrated satisfying internal consistency and temporal stability. Test-retest reliabilities ranged from .73 to .85 for over a 2-week and seven-month period respectively. For reasons of parsimony, only five items were used from the original scale.

Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). This 5-item scale was designed to assess people's satisfaction with their lives in general. The SWLS has shown to have good internal consistency ($\alpha = .87$) and good test-retest reliability ($r = .82$ over 2 months). The SWLS showed moderately strong correlations with other scales of subjective well-being (Diener et al., 1985).

RESULTS

SAMPLE'S CHARACTERISTICS

Descriptive statistics for all constructs of interest are presented in Table 1. Overall, the general level of self-determination for our sample is posi-

TABLE 1. Means and Standard Deviations for the Indicators Included in the Structural Equation Model

	<i>M</i>	<i>SD</i>	Kurtosis	Skewness	Range
Global Self-Determination (GSD1)	14.58	9.15	-.08	-.36	-36/36
Global Self-Determination (GSD2)	12.05	10.08	-.11	-.15	-36/36
Global Self-Determination (GSD3)	10.92	8.86	.01	-.08	-36/36
Global Self-Determination (GSD4)	12.22	8.86	.05	-.29	-36/36
Body Teasing Experience (TEASE)	2.35	1.30	.18	.98	1/6
Sociocultural Pressures from ...					
Family	1.88	1.10	.48	1.19	1/5
Friends	1.70	.87	.70	1.18	1/5
Partner	1.94	1.10	.65	1.19	1/5
Media	3.73	1.22	-.53	-.68	1/5
Endorsement of Thinness beliefs	3.74	1.45	-.73	.08	1/7
Endorsement of Obesity beliefs	2.42	1.17	.30	.92	1/7
Body Dissatisfaction (DISAT1)	3.58	1.66	-1.18	.16	1/6
Body Dissatisfaction (DISAT2)	3.75	1.63	-1.13	-.09	1/6
Body Dissatisfaction (DISAT2)	3.59	1.39	-.68	-.20	1/6
Motivation for Eating Behaviors					
Intrinsic Motivation (IM)	4.06	1.55	-.85	-.11	1/7
Integrated Regulation (INTEG)	4.16	1.58	-.75	-.23	1/7
Identified Regulation (IDEN)	5.14	1.29	.65	-.88	1/7
Introjected Regulation (INTRO)	3.18	1.58	-.82	.34	1/7
External Regulation (ER)	1.92	1.13	1.13	1.53	1/7
Amotivation (AMO)	1.48	.80	6.10	2.24	1/7
Healthy Food1 (HF1)	3.63	.73	-.52	-.21	1/5
Healthy Food2 (HF2)	3.37	.74	-.13	-.52	1/5
Dysfunctional Eating Behaviors	51.59	18.40	1.98	1.35	36/140
Bulimic Symptomatology (BULIT1)	18.31	6.79	.63	.89	
Bulimic Symptomatology (BULIT2)	15.98	5.68	2.14	1.41	
Bulimic Symptomatology (BULIT3)	17.29	6.91	2.51	1.52	
Depressive Sympt. (DEPRE)	1.73	.52	.47	.93	1/4
Self-Esteem (EST)	3.96	.77	.19	-.80	1/5
Life Satisfaction (LIFE SAT.)	3.49	.95	-.44	-.43	1/5

tive and of a moderate magnitude ($M = 12.49$). Although participants rarely reported being teased in the past about their weight, they reported perceiving significant pressures from the media to have a thin body. Participants' internalization of norms related to thinness is moderate, whereas their internalization of societal beliefs surrounding obesity is lower. The sample's level of self-determination for regulating their eating behaviors is positive and of moderate magnitude. Partici-

pants reported “often” feeling dissatisfied with their bodies. In terms of psychological adjustment, participants reported having few symptoms of depression, good levels self-esteem, and generally feel satisfied with their lives. The average Body Mass Index (BMI; Kg/m²) for the sample is 22.4, which is considered to be the midpoint of the healthy range for BMI. Using the BULIT-R cut-off provided by Thelen et al., (1991), 1.6% of the women would be classified as putative bulimics.

TEST OF THE PROPOSED MODEL

The hypothesized model was tested with structural equation modeling (SEM) using LISREL 8.30 (Jöreskog & Sörbom, 1996). Analyses were conducted on the covariance matrix using Maximum Likelihood estimation. The model was comprised of nine factors, one independent factor representing general self-determination, and 8 dependent factors: sociocultural pressures about body image, the endorsement of society’s beliefs about thinness and obesity, body dissatisfaction, autonomous regulation and controlled regulation of eating behaviors, healthy eating habits, dysfunctional eating behaviors, and psychological adjustment. For identification purposes, the loading between the first indicator and its latent construct was fixed to 1.0. Correlations among all constructs to be included in the model are presented in Table 2. Constructs were related in a manner consistent with the proposed model, and the correlational pattern was also reflective of the constructs’ position in the model. For example, general self-determination was more negatively associated with sociocultural pressures about body image, slightly less negatively linked to the endorsement of society’s beliefs about thinness and obesity, and even less negatively correlated with body dissatisfaction. The same was true for the relation between sociocultural pressures about body image, the endorsement of societal beliefs surrounding thinness and obesity, and body dissatisfaction.

Although the initial model displayed an acceptable fit to the data [$\chi^2(336, N = 442) = 1143.91, p < .001$; RMSEA = .08; CFI = .89; IFI = .89; PCFI = .79], reestimation of the model after re-specifications of some parameters led to a more adequate fit. Specifically, an examination of the modification indices suggested that an improvement in the overall fit of the model would be benefited by allowing two correlations between the error uniqueness values of two indicators of the same latent construct to be estimated. Post hoc analyses were conducted by first estimating the correlation between the error uniqueness values of two indicators of the body dissatisfaction construct. Estimation of the correlation led to a significant drop in the chi-square, ($\Delta\chi^2 = 25.22, p < .001$) as well as a decrease from .08 to .07 in the RMSEA fit index. Finally, estimation of a sec-

TABLE 2. Zero-Order Correlations between the Variables Used in the Structural Equation Model

Variables	Correlations									
	SCP	BTO	BD	AREB	CREB	HEB	DEB	PA		
General Self-Determination (GSD)	-.28	-.21	-.06	.46	-.22	.21	-.05	.42		
Social Pressures about Body Image (SCP)	—	.59	.52	-.02	.44	-.03	.32	-.05		
Beliefs about Thinness and Obesity (BTO)	—	—	.64	-.14	.49	-.08	.36	-.03		
Body Dissatisfaction (BD)	—	—	—	.08	.62	.10	.58	-.27		
Autonomous Regulation Eating Beh. (AREB)	—	—	—	—	-.12	.58	-.02	.11		
Controlled Regulation Eating Beh. (CREB)	—	—	—	—	—	-.11	.68	-.32		
Healthy Eating Behaviors (HEB)	—	—	—	—	—	—	-.39	.20		
Dysfunctional Eating Behaviors (DEB)	—	—	—	—	—	—	—	-.51		
Psychological Adjustment (PA)	—	—	—	—	—	—	—	—		

Note. N = 447. $r > .08$, $p < .05$; $r > .11$, $p < .01$.

ond correlation between the error uniqueness values of two indicators of the controlled regulation construct led to a significant drop in the chi-square [$\Delta\chi^2 = 22.84, p < .001$] and satisfactory values for all of the other fit indices ($\chi^2(334, N = 442) = 1095.85, p < .001$; RMSEA = .07; CFI = .90; IFI = .90; PCFI = .80). Although the post hoc analyses were theoretically sound, they remained exploratory in nature since they reflect the detection of misfitting parameters in the originally hypothesized model (Byrne, 1998).

As hypothesized, general self-determination was positively associated with an autonomous form of regulation of eating behaviors ($\gamma = .51$) and negatively associated with a controlled form of regulation of eating behaviors ($\gamma = -.26$). Moreover, general self-determination was negatively associated with both sociocultural pressures about body image ($\gamma = -.32$) and the endorsement of society's beliefs about thinness and obesity ($\gamma = -.24$). Sociocultural pressures about body image was positively associated with the endorsement of society's beliefs about thinness and obesity ($\beta = .70$) which, in turn, were positively associated with body dissatisfaction ($\beta = .76$). Both forms of regulation of eating behaviors (autonomous and controlled) were found to be good motivational mechanisms to explain the effect of body dissatisfaction on eating behaviors. While body dissatisfaction was positively associated with an autonomous regulation ($\beta = .14$), the strength of the relation between body dissatisfaction and controlled regulation was more important ($\beta = .74$). In turn, an autonomous regulation was positively linked to healthy eating behaviors ($\beta = .82$) and negatively linked to dysfunctional eating behaviors ($\beta = -.09$). In contrast, controlled regulation was positively associated with dysfunctional eating behaviors ($\beta = .84$) and negatively associated with healthy eating behaviors ($\beta = -.14$). Finally, healthy eating behaviors were positively associated with positive psychological adjustment ($\beta = .25$) whereas dysfunctional eating behaviors were negatively associated with this same construct ($\beta = -.58$). All estimates reported herein were significant at the $p < .01$ level, with the exception of the association between autonomous regulation and dysfunctional eating, which was significant at the $p < .05$ level. These results are shown in Figure 2.

With respect to percentage of variance explained in each dependent variable, general self-determination explained 10% of the variance in sociocultural pressures about body image. Together general self-determination and sociocultural pressures about body image explained 76% of the variance in the endorsement of society's beliefs about thinness and obesity, while this latter construct accounted for 57% of the variance in body dissatisfaction. Together, body dissatisfaction and general self-determination explained 33% of the variance in autonomous regulation of eating behaviors, whereas these same variables explained 76% of the

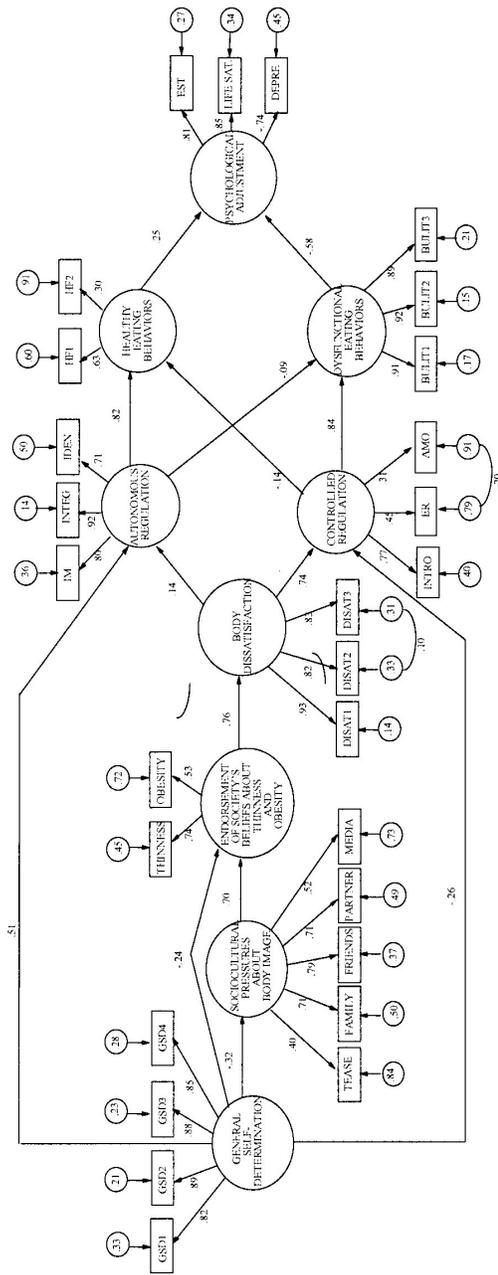


FIGURE 2. Relations between general self-determination, sociocultural pressures about body image, endorsement of society's beliefs about thinness and obesity, body dissatisfaction, forms of regulation of eating behaviors, types of eating behaviors, and psychological well-being.

variance in controlled regulation of eating behaviors. Both autonomous and controlled regulation accounted for 73% of the variance in healthy eating and 75% of the variance in dysfunctional eating. Finally, both healthy eating habits and bulimic symptoms explained 49% of the variance in positive psychological adjustment.

DISCUSSION

The purpose of the present study was to test a motivational model for the regulation of eating behaviors that could help us to better understand why women respond differently to a sociocultural climate of thinness, resulting in varying degrees of body dissatisfaction and different means to approach one's eating behaviors. Based on SDT (Deci & Ryan, 1985; Ryan & Deci, 2000), we tested a model where general self-determination served as a determinant for the internalization of pressures and messages related to thinness as well two forms of regulation toward eating: an autonomous and a controlled regulation style. More importantly, the model provided a better understanding of how body dissatisfaction may be linked to two different styles of regulation of eating behaviors resulting in both healthy and dysfunctional eating patterns, predicting different levels of psychological adjustment.

GENERAL SELF-DETERMINATION AND DETERMINANTS OF BODY DISSATISFACTION

Results from structural equation analyses provided support for the proposed factors associated with body dissatisfaction tested herein. In line with findings reported by Pelletier, Dion & Lévesque (2004), Stice, Shaw, & Nemeroff (1998), as well as Twamley and Davis (1999), the more women perceived sociocultural pressures about body image, the more they internalized societal beliefs about thinness and obesity, which, in turn, was associated with greater body dissatisfaction. Our results also suggest that general self-determination may serve as a buffer against sociocultural pressures and messages of thinness. These findings suggest that the more women feel self-determined toward their lives in general, the more motivated they may be to act in accordance with their own integrated values rather than responding to controlling forces external to the self. It would thus seem plausible to believe that women with greater levels of general self-determination would be less likely to perceive sociocultural messages about body image as a source of *pressure*, but instead as information that they are free to use or dismiss. Kasser and Ryan (1996) have suggested that individuals who regulate their general behaviors in a nonself-determined fashion lack the solid foundation of a

well-integrated self, thus rendering them more susceptible to rely on extrinsic values (i.e., financial success, physical attractiveness, and social recognition) for self-worth. Conversely, people who have an integrated self (i.e., people with greater levels of self-determination), are more likely to adopt intrinsic values (i.e., personal growth, meaningful relationship, and social responsibility). Our results are in line with these conclusions.

GENERAL SELF-DETERMINATION AND FORMS OF REGULATION OF EATING BEHAVIORS

Another important component of the proposed model concerns the determinants of each of the two global forms of regulation of eating behaviors. It was hypothesized that women's motivation toward their lives in general would predict their motivation toward a more specific life domain such as the regulation of eating behaviors. Our analyses supported these hypotheses. Women who were generally self-determined in their lives were also found to be self-determined in the regulation of their eating behaviors (autonomous regulation). Conversely, general self-determination was negatively associated with a controlled form of regulation of eating behaviors. These findings provide further support for the influence of motivation at a dispositional level on motivation at the contextual level as suggested by Vallerand (1997).

It was also hypothesized that an autonomous form and a controlled form of regulation of eating behaviors would constitute the mechanisms through which body dissatisfaction would lead to both healthy and dysfunctional eating patterns. Our results provided support for these hypotheses. Body dissatisfaction was positively associated with an autonomous form of regulation as well as a controlled form of regulation. In turn, both of these forms of regulation were associated differently with healthy and dysfunctional eating behaviors. It is important to note that although body dissatisfaction was related to both forms of regulation, it was more importantly associated with a controlled form than an autonomous one. As discussed earlier, these findings suggest that the majority of women who feel dissatisfied with their bodies regulate their eating behaviors in a restrictive or controlling manner because sociocultural pressures about body image and the endorsement of beliefs about thinness and obesity are associated with a motivation to reduce body dissatisfaction due to either internal pressure (e.g., guilt, shame) or external pressure (e.g., media, partner, parents). The autonomous form of regulation of eating behaviors that is positively associated with healthy eating was also in large part determined by greater levels of self-determination toward one's life in general. This observation is consistent with

the observation that when women report feeling more self-determined in their lives in general, they are less likely to perceive sociocultural pressures about body image and internalize societal beliefs about thinness and obesity.

CONSEQUENCES OF THE FORMS OF REGULATION OF EATING BEHAVIORS ON PSYCHOLOGICAL ADJUSTMENT

In agreement with SDT, our analyses also showed that an autonomous form of regulation of eating behaviors was positively associated with healthy eating and negatively associated with bulimic symptoms. The reverse pattern was obtained for a controlled form of regulation. These results are consistent with those reported by Williams and colleagues (1996) in a sample of severely obese patients who participated in a supervised very-low-calorie weight-loss program. Participants with an autonomous orientation toward their weight loss attended the program more regularly, lost more weight, and maintained the greatest weight loss at follow-up.

Finally, both types of eating behaviors (healthy vs. dysfunctional) were found to be differently associated with psychological adjustment. Women who reported healthy eating behaviors also reported positive psychological adjustment. In contrast, women who reported bulimic symptoms reported less psychological adjustment. Although healthy eating behaviors are certainly not sufficient for experiencing psychological well-being, our results suggest that they may be a necessary condition for global psychological adjustment.

Despite these interesting and encouraging findings, limitations to our study warrant discussion. First, it must be emphasized that all constructs were evaluated by means of self-report scales using a correlational design. Although our model offers a first test of the idea that body dissatisfaction could be associated with different regulatory styles of eating and that these styles could lead to different types of eating behaviors (healthy and dysfunctional), alternative explanations for these relations should be examined. For example, it is possible that body dissatisfaction may lead women to be more attentive to sociocultural pressures about body image, and they may be more likely to endorse society's beliefs about thinness and obesity. Future studies should also include more objective measures of successful or unsuccessful eating behaviors such as weight loss or gain over a given period of time, the maintenance of weight loss, or even a variation in body mass index over time. When assessed independently of the self-regulatory styles toward eating, these variables could also give a clearer indication of the model's capacity to predict outcomes over a period of time. Second, dysfunc-

tional eating behaviors were represented by bulimic symptoms rather than the syndrome of bulimia nervosa. It would be important to investigate if similar results could be obtained with a sample of women meeting the full criteria of bulimia nervosa. Moreover, the results may not replicate with other dysfunctional eating behaviors such as those associated with anorexia nervosa, binge eating disorder, or weight control. Future studies could test how the different styles of regulation toward eating are associated with these specific eating disorders. Third, although sophisticated statistical procedures were used to evaluate the proposed model, the cross-sectional design of our study prevents us from stating clear causal relations among the variables identified as statistically significant. Longitudinal and experimental designs would clarify the causal directions of the relations found in this study, thus enabling us to draw more definitive conclusions.

Despite these limitations, the results from the present study represent a contribution to the literature on the development of eating pathology for three main reasons. First, this study was the first to investigate, within one model, the motivational mechanisms that could shed light on the relations between body dissatisfaction and both dysfunctional and healthy eating. To the best of our knowledge, past studies have examined exclusively the mechanisms linking body dissatisfaction to dysfunctional eating behaviors. Second, the proposed model introduces a motivational perspective to the study of eating behaviors as well as an empirical test of SDT to the regulation of eating behaviors. Third, we were able to replicate, within one model, sequences of variables that had previously been tested in studies looking at the determinants of body dissatisfaction (Pelletier, Dion, & Lévesque, 2004; Stice et al., 1996, 1998; Twamley & Davis, 1999) as well studies focusing on the relations between different forms of regulation of eating behaviors and healthy versus dysfunctional eating behaviors (Pelletier, Dion, Slovinec-D'Angelo, & Reid, 2004).

The results obtained in the present study suggest new avenues for research and intervention strategies related to body image and eating behaviors. While we believe that traditional approaches that challenge negative thoughts that one may have about one's body image may be helpful in reducing body dissatisfaction, the results from our study suggest that an approach oriented toward women's general motivation in their different life activities as well as a more specific approach focused on women's motivation toward eating behaviors could also be beneficial. For instance, providing women with information aimed at increasing their awareness of their own values in life as well as their level of perceived autonomy may help them to become more resilient to sociocultural influences related to body image (see for example, Stice, Pressnell, Groesz, & Shaw, 2005; Williams, et al., 1996). This in turn may

reduce the perception of having to comply with external pressures about body image. While many studies have acknowledged the powerful influence of environmental pressures surrounding the thin-ideal on women's body concerns, the present study emphasizes that some women have the capacity within themselves to become more or less resilient against society's pressures related to body image.

While we agree that interventions targeting body dissatisfaction can indirectly help reduce dysfunctional eating patterns, we believe that this may not be sufficient. Educating women about healthy nutrition may not necessarily translate into behavioral change unless the regulation toward one's eating behaviors is autonomous. In light of these findings, it becomes particularly important to understand under what conditions people are likely to develop an autonomous regulation style toward eating. According to Cognitive Evaluation Theory (CET; Deci & Ryan, 1991), a subtheory of SDT, events that bolster feelings of competency and agency are hypothesized to increase feelings of self-determination, while events that undermine these same feelings are expected to thwart feelings of self-determination (Deci & Ryan, 1985, 1991). Interpersonal behaviors constitute a class of events that have been studied extensively. Studies conducted in several life domains have shown that people experience greater feelings of self-determination when their agents in their social environment (e.g., parents, partner, friends) support their basic needs such as allowing them to make their own choices rather than applying pressure to control them, providing them feedback that is informational regarding their competence, and showing a caring attitude toward them. Future research could examine if the spouse or other family members play a similar role toward one's motivation for regulating eating behaviors.

REFERENCES

- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: APA.
- Attie, I., & Brooks-Gunn, J. B. (1989). Development of eating problems in adolescent girls: A longitudinal study. *Developmental Psychology*, *25*, 70-79.
- Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*, 1021-1031.
- Boyer, H. (1991). *Structural equation analyses of cognitive sociocultural factors of bulimia*. Ph.D. Thesis. University of Ottawa.
- Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Cash, T. F. (2002). The management of body image problems. In C. G. Fairburn & K. D. Brownell (Eds.), *Eating disorders and obesity: A comprehensive handbook* (2nd ed., pp. 38-46). New York: The Guilford Press.

- Cash, T. F., & Hrabosky, J. I. (2004). Treatment of body image disturbances. In J. K. Thompson (Ed.), *Handbook of eating disorders and obesity* (pp. 515–542). Hoboken, NJ: John Wiley & Sons.
- Cash, T. F., & Labarge, A. S. (1996). Development of the Appearance Schemas Inventory: A new cognitive body image assessment. *Cognitive Therapy and Research, 20*, 37–50.
- Cattarin, J. A., Thompson, J. K., Thomas, C., & Williams, R. (2000). Body image, mood, and televised images of attractiveness: The role of social comparison. *Journal of Social and Clinical Psychology, 19*(2), 220–239.
- Connors, M. E. (2001). Relationship of sexual abuse to body image and eating problems. In J. K. Thompson & L. Smolak (Eds.), *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment* (pp. 149–168). Washington, DC: American Psychological Association.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L. (1980). *The psychology of self-determination*. Lexington, MA: D.C. Heath.
- Deci, E. L., Eghari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The Self-Determination Theory perspective. *Journal of Personality, 62*, 118–142.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska Symposium on Motivation: Vol 38. Perspectives on motivation*. (pp. 237–288). Lincoln, NE: University of Nebraska Press.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality and Assessment, 49*, 71–76.
- Dittmar, H. (2005). Body image – vulnerability factors and processes linking sociocultural pressures and body dissatisfaction: An introduction to the special issue. *Journal of Social and Clinical Psychology, 24*, 1081–1084.
- Elliot, A. J., & Sheldon, K. M. (1998). Avoidance of personal goals and the personality–illness relationship. *Journal of Personality and Social Psychology, 75*, 1282–1299.
- Fairburn, C. G. (1997). Eating disorders. In D. M. Clark & C. G. Fairburn (Eds.), *Science and practice of cognitive behavior therapy* (pp. 209–241). Oxford, UK: Oxford University Press.
- Garner, D. M. (1991). *Eating Disorder Inventory–2: Professional Manual*. Odessa, FL: Psychological Assessment Resources.
- Garner, D. M., & Garfinkel, P. E. (1982). The multidetermined nature of anorexia nervosa. In P. E. Garfinkel & D. M. Garner (Eds.), *Anorexia nervosa: A multidimensional perspective*. New York: Brunner–Mazel.
- Garner, D. M., Garfinkel, P. E., Schwartz, D., & Thompson, M. (1980). Cultural expectations of thinness in women. *Psychological Reports, 47*(2), 483–491.
- Garner, D. M., & Olmstead, M. P. (1984). *The Eating Disorder Inventory Manual*. Odessa, FL: Psychological Assessment Resources.
- Gordon, R. A. (1988). A sociocultural interpretation of the current epidemic of eating disorders. In B. J. Blinder, B. F. Chaiting, & R. Goldstein (Eds.), *The eating disorders* (pp. 151–163). Great Neck, NY: PMA.
- Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*, 1–16.
- Harrison, K., and Cantor, J. (1997). The relationship between media consumption and eating disorders. *Journal of Communication, 47*, 40–67.
- Health and Welfare Canada. (1992). *Canada's Food Guide to Healthy Eating: Its Rational* (Brochure). Ottawa, ON: Ministry of Supply and Services Canada.
- Heatherton, T. F., & Polivy (1992). Chronic dieting and eating disorders: A spiral model. In

- J. H. Crowther, D. L. Tennenbaum, S. E. Hobfold, & M. A. Parris (Eds.), *The etiology of bulimia nervosa: The individual and familial context* (pp. 133–155). Washington, DC: Hemisphere.
- Heinberg, L. J., & Thompson, J. K. (1995). Body image and televised images of attractiveness: A controlled laboratory investigation. *Journal of Social and Clinical Psychology, 14*, 325–338.
- Irving, L. M. (1990). Mirror images: Effects of the standard of beauty on the self- and body-esteem of women exhibiting varying levels of bulimic symptoms. *Journal of Social and Clinical Psychology, 9*, 230–242.
- Jöreskog, K. G., & Sörbom, D. (1996). *Lisrel 8.0: User's reference guide*. Chicago: Scientific Software International.
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic goals. *Personality and Social Psychology Bulletin, 22*, 281–288.
- Laessle, R. G., Wittchen, H. U., Fitcher, M. M., & Pike, K. M. (1989). The significance of subgroups of bulimia and anorexia nervosa: Lifetime frequency of psychiatric disorders. *International Journal of Eating Disorders, 8*, 569–574.
- Levine, M. P., and Harrison, K. (2004). Media's role in the perpetuation and prevention of negative body image and disordered eating. In J. K. Thompson (Ed.), *Handbook of eating disorders and obesity* (pp. 695–717). Hoboken, NJ: Wiley.
- Levine, M. P., and Piran, N. (2004). The role of body image in the prevention of eating disorders. *Body Image, 1*, 57–70.
- McVey, G. L., Pepler, D., Davis, R., Flett, G. L., & Abdoell, M. (2002). Risk and protective factors associated with disorder eating during early adolescence. *Journal of Early Adolescence, 22*, 75–95.
- Mills, J. S., Polivy, J., Herman, P., & Tiggemann, M. (2002). Effects of exposure to thin media images: Evidence of self-enhancement among restrained eaters. *Personality and Social Psychology Bulletin, 28*, 1697–1699.
- Owen, P. R., & Laurel-Seller, E. (2000). Weight and shape ideals: Thin is dangerously in. *Journal of Applied and Social Psychology, 30*, 979–990.
- Pelletier, L.G., Blanchard, C. M., Sharp, E., Otis, N., Vallerand, R. J., & Guay, F. (2004). *The General Motivation Scale: A dispositional measure of intrinsic, extrinsic, and amotivation for different life activities*. Manuscript submitted for publication. University of Ottawa.
- Pelletier, L.G., Dion, S., & Lévesque, C (2004). Can self-determination help protect women against sociocultural influences related to body image and reduce their risk of experiencing bulimic symptoms? *Journal of Social and Clinical Psychology, 23*, 61–88.
- Pelletier, L. G., Dion, S., Slovinec-D'Angelo, M., & Reid, R. (2004). Why do you regulate what they eat? Relationships between forms of regulation, eating behaviors, sustained dietary behavior change, and psychological adjustment. *Motivation and Emotion, 28*, 245–277.
- Polivy, J. and Herman, C.P. (2002). Causes of eating disorders. *Annual Review of Psychology, 53*, 187–213.
- Polivy, J. and Herman, C. P. (2004). Sociocultural idealization of thin female body shapes: An introduction to the special issue on body image and eating disorders. *Journal of Social and Clinical Psychology, 23*, 1–6.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- Rand, C. S. W., & Kuldau, J. M. (1990). The epidemiology of obesity and self-defined weight problem in the general population: Gender, race, age, and social class. *International Journal of Eating Disorders, 9*, 329–343.

- Ricciardelli, L. A., & McCabe, M. P. (2001). Children's body image concerns and eating disturbance: A review of the literature. *Clinical Psychology Review, 21*, 325–344.
- Rodin, J., Silberstein, L. R., & Striegel-Moore, R. H. (1985). Women and weight: A normative discontent. In T. B. Sonderegger (Ed.), *Psychology and Gender: Nebraska Symposium on Motivation, 1984* (pp. 267–307). Lincoln, NE: University of Nebraska Press.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Ryan, R. M., & Connell, J. R. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749–761.
- Ryan, R. M., & Deci, E. L. (1999). Approaching and avoiding self-determination: comparing cybernetic and organismic paradigms of motivation. In R. S. Wyer, Jr. (Ed.), *Perspectives on behavioral self-regulation: Advances in social cognition, Vol XII*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68–78.
- Sheldon, K. M., & Elliott, A. J. (1998). Not all personal goals are "personal": Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin, 24*, 546–557.
- Shisslak, C. M., & Crago, M. (2001). Risk and protective factors in the development of eating disorders. In J.K. Thompson & L. Smolak (Eds.), *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment* (pp.103–126). Washington, DC: APA.
- Shisslak, C. M., Pazda, S. L., & Crago, M. (1990). Body weight and bulimia as descriptors of psychological characteristics among anorexic, bulimic, and obese women. *Journal of Abnormal Psychology, 99*, 380–384.
- Stice, E. (1994). Review of the evidence for a sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clinical Psychology Review, 14*, 1–29.
- Stice, E. (2001). Risk factors of eating pathology: Recent advances and future directions. In R. Striegel-Moore & L. Smolak (Eds.), *Eating disorders: Innovative directions in research and practice* (pp. 51–74). Washington, DC: American Psychological Association.
- Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin, 128*, 825–848.
- Stice, E., & Agras, W. S. (1998). Predicting the onset and remission of bulimic behaviors during adolescence: A longitudinal grouping analysis. *Behavior Therapy, 29*, 257–276.
- Stice, E., Mazotti, L., Krebs, M., & Martin, S. (1998). Predictors of adolescent dieting behaviors: A longitudinal study. *Psychology of Addictive Behaviors, 12*, 195–205.
- Stice, E., Nemeroff, C., & Shaw, H. (1996). A test of the dual pathway model of bulimia nervosa: Evidence for restrained-eating and affect-regulation mechanisms. *Journal of Social and Clinical Psychology, 15*, 340–363.
- Stice, E., Pressnell, K., Groesz, L., & Shaw, H. (2005). Effects of a weight maintenance diet on bulimic symptoms in adolescent girls: An experimental test of the dietary restraint model. *Health Psychology, 24*, 402–412.
- Stice, E., & Shaw, H. (1994). Adverse effects of the media portrayed thin-ideal on women and linkages to bulimic symptomatology. *Journal of Social and Clinical Psychology, 13*, 288–308.
- Silverstein, B., Perdue, L., Peterson, B., and Kelly, E. (1986). The role of the mass media in promoting a thin standard of bodily attractiveness for women. *Sex Roles, 14*, 519–532.

- Stice, E., Shaw, H., & Nemeroff, C. (1998). Dual pathway model of bulimia nervosa: Longitudinal support for dietary restraint and affect-regulation mechanisms. *Journal of Social and Clinical Psychology, 17*, 129–149.
- Stice, E., & Whitenton, K. (2002). Risk factors of body dissatisfaction in adolescent girls: A longitudinal investigation. *Developmental Psychology, 38*, 669–678.
- Stice, E., Ziemba, C., Margolis, J., & Flick, P. (1996). The dual pathways model differentiates bulimics, subclinical bulimics, and controls: Testing the continuity hypothesis. *Behavior Therapy, 27*, 531–549.
- Striegel-Moore, R. McAvay, G., & Rodin, J. (1986). Psychological and behavioral correlates of feeling fat in women. *International Journal of Eating Disorders, 5*, 935–947.
- Sypeck, M. F., Gray, J. J., & Ahrens, A. H. (2004). No longer just a pretty face: Fashion magazines' depictions of ideal female beauty from 1959 to 1999. *International Journal of Eating Disorders, 36*, 342–347.
- Thelen, M. H., & Cormier, J. F. (1995). Desire to be thinner and weight control among children and their parents. *Behavior Therapy, 26*, 85–99.
- Thelen, M., Farmer, J., Wonderlich, S., & Smith, M. (1991). A revision of the Bulimia Test: The BULIT-R. *Psychological Assessment, 3*, 119–124.
- Thompson, J. K. (1990). *Body image disturbance: Assessment and treatment*. New York: Pergamon Press.
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty*. Washington, DC: American Psychological Association.
- Thompson, J. K., & Smolak, L. (Eds.). (2001). *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment*. Washington, DC: American Psychological Association.
- Tiggemann, M., & Slater, A. (2003). Thin ideals in music television: A source of social comparison and body dissatisfaction. *International Journal of Eating Disorders, 35*, 48–58.
- Twamley, E. W., & Davis, M. C. (1999). The sociocultural model of eating disturbance in young women: The effects of personal attributes and family environment. *Journal of Social and Clinical Psychology, 4*, 467–489.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 271–360). New York: Academic Press.
- Wadden, T. A., Brownell, K. D., & Foster, G. D. (2002). Obesity: Responding to the global epidemic. *Journal of Consulting and Clinical Psychology, 70*, 510–525.
- Wertheim, E. H., Paxton, S. J., & Blaney, S. (2004). Risk factors for the development of body image disturbances. In J. K. Thompson (Ed.), *Handbook of eating disorders and obesity* (pp. 463–494). Hoboken, NJ: John Wiley & Sons.
- Williams, G. C., & Deci, E. L. (1996). Internalization of biopsychosocial values by medical students. *Journal of Personality and Social Psychology, 70*, 767–779.
- Williams, G. C., Grow, V. M., Freedman, Z. R., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70*, 115–126.
- Williamson, D. A., Stewart, T. M., White, M. A., & York-Crowe, E. (2002). An information-processing perspective on body image. In T. F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 47–54). New York: The Guilford Press.
- Wilson, G. T. (2002). The controversy over dieting. In C. G. Fairburn & K. D. Brownell (Eds.), *Eating disorders and obesity: A comprehensive handbook* (2nd ed., pp. 93–97). New York: The Guilford Press.
- Wolf, N. (1991). *The beauty myth: How images of beauty are used against women*. New York: Doubleday.