



# The effects of “thin ideal” media on women’s body image concerns and eating-related intentions: The beneficial role of an autonomous regulation of eating behaviors

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## ABSTRACT

The present study examines the protective role of an autonomous regulation of eating behaviors (AREB) on the relationship between trait body dissatisfaction and women’s body image concerns and eating-related intentions in response to “thin ideal” media. Undergraduate women ( $n = 138$ ) were randomly assigned to view a “thin ideal” video or a neutral video. As hypothesized, trait body dissatisfaction predicted more negative affect and size dissatisfaction following exposure to the “thin ideal” video among women who displayed less AREB. Conversely, trait body dissatisfaction predicted greater intentions to monitor food intake and limit unhealthy foods following exposure to the “thin ideal” video among women who displayed more AREB.

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## Introduction

The media’s portrayal of thinness as a standard of female attractiveness is thought to play a determining role in women’s contentious relationship with their bodies by pressuring them to lose weight and be thin (e.g., Fouts & Burggraf, 1999, 2000; Spitzer, Henderson, & Zivian, 1999; Stice, 1994, 2002; Stice & Shaw, 2002; Sypeck, Gray, & Ahrens, 2004). Indeed, a meta-analysis of 47 experimental studies has shown that girls and women do report greater dissatisfaction with their body and overall appearance following acute exposure to media images of thin women compared to media images of average sized women or inanimate objects ( $d = -0.35$ ) (Want, 2009).

By the same token, a growing body of literature indicates that not all women respond to “thin ideal” media in the same manner. To illustrate, the magnitude and direction of effect sizes reported in the Want (2009) meta-analysis evidenced considerable variability ( $ds$  ranged from  $-1.48$  to  $1.16$ ) as did the effect sizes reported in an earlier meta-analysis ( $ds$  ranged from  $-1.12$  to  $0.30$ ) (Groesz, Levine, & Murnen, 2002). These findings suggest that while some women are adversely affected by exposure to media portrayals of the “thin ideal”, others are not. For instance, samples of women with “pre-existing appearance concerns” produced larger effect sizes on average ( $d = -0.52$ ) than did samples of women without such

concerns ( $d = -0.16$ ) (Want, 2009). Yet, the effect sizes reported in the former sub-samples of women were not uniform. For example, inconsistencies were documented for body dissatisfaction and restrained eating. Part of this variability may be attributed to the interplay between these two factors which has not yet been investigated. We propose that a qualitatively different style of restrained eating interacts with body dissatisfaction in a manner that mitigates women’s responses to “thin ideal” media.

## Individual Responses to “Thin Ideal” Media

To date, body dissatisfaction and restrained eating have been investigated separately in the literature as moderators of the effects of exposure to “thin ideal” media on women’s body image and eating related disturbances. While both imply a chronic preoccupation with one’s appearance (Mills, Polivy, Herman, & Tiggemann, 2002; Posavac, Posavac, & Posavac, 1998), the former is limited to a negative evaluation of one’s shape and weight while the latter includes intentional caloric restriction with the aim of losing or maintaining body weight (Herman & Mack, 1975; Stice, Fisher, & Lowe, 2004). A review of these studies reveals a mixed pattern of results.

For instance, body dissatisfaction did exacerbate undergraduate women’s negative affect and body image disturbance (Hausenblas, Janelle, Gardner, & Hagan, 2002) following exposure to images of slender-looking women (Posavac et al., 1998) and even to images of slender-looking vases (Trampe, Stapel, & Siero, 2007). Yet, body dissatisfied adolescent girls did not significantly differ from their body satisfied counterparts in overall appearance dissatisfaction

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after viewing images of female fashion models (e.g., [Champion & Furnham, 1999](#)).

Inconsistencies have also been documented for restrained eating. For example, some studies evidenced a “self-enhancement” effect among restrained eaters in response to “thin ideal” media, marked by significant increases in self-esteem, a more positive self-image, and a perceived smaller current body size ([Joshi, Herman, & Polivy, 2004](#); [Mills et al., 2002](#)). Yet, restrained eaters consumed *more* snack food after viewing diet commercials featuring slim female models compared to unrestrained eaters ([Mills et al., 2002](#); [Seddon & Berry, 1996](#); [Strauss, Doyle, & Kreipe, 1994](#); [Warren, Strauss, Taska, & Sullivan, 2005](#)). In a more recent set of studies, the reverse pattern was documented; restrained eaters consumed *less* snack food in response to exemplars of restraint compared to unrestrained eaters ([Anschutz, van Strien, & Engels, 2007, 2008](#)). When viewing a movie clip featuring thin female models, restrained eaters compared to unrestrained eaters reported greater body dissatisfaction and consumed less snack food when the movie clip was viewed on a wide screen television which made the models appear larger compared to a standard size screen television ([Anschutz, Engels, Becker, & van Strien, 2008](#)). However, restrained eaters did report greater body dissatisfaction, lower appearance self-esteem, and marginally greater negative affect following exposure to information about a “thin bodied” peer ([Trottier, Polivy, & Herman, 2007](#)). While differences in the measurement of restrained eating may partially account for these contradictory findings (e.g., Restraint Scale; [Polivy, Herman, & Warsh, 1978](#) vs the Restraint subscale of the Dutch Eating Behavior Questionnaire; [van Strien, Frijters, Bergers, & Defares, 1986](#)), we propose that women may also differ in their underlying reasons for engaging in dietary restraint.

### **The Regulation of Eating Behaviors from Self-Determination Theory**

Grounded in the framework of self-determination theory ([Deci & Ryan, 1985b, 2002](#)), [Pelletier and colleagues](#) have shown that people may approach the regulation of their eating behaviors in an autonomous or controlled fashion ([Pelletier, Dion, Slovinec D'Angelo, & Reid, 2004](#)). While both imply an intentional act of behavior regulation, these two broad motivational orientations differ in their degree of perceived autonomy or self-determination. An autonomous regulation of eating behaviors (AREB) is considered self-determined because it emanates from the self and is experienced as authentic and freely chosen. This motivational orientation is characterized by an identification with the importance of eating healthy as well as feelings of pleasure and satisfaction in preparing healthy meals. By contrast, a controlled regulation of eating behaviors (CREB) is enacted by forces outside of the self and is thus experienced as coercive and controlling. This motivational orientation is marked by feelings of pressure and compliance (e.g., “other people expect me to regulate my eating behaviors”) as well as self-worth contingencies (e.g., “I would be ashamed of myself if I was not eating healthy”). In turn, these distinct motivational orientations are associated with qualitatively different health-related outcomes.

Given that perceptions of self-determination reflect an endorsement of behavior by the self, an AREB has been associated with healthier eating-related attitudes and behaviors compared to a CREB. For example, an autonomous orientation was positively and more strongly correlated with perceptions of importance, efforts, and success in the regulation of eating behaviors compared to a controlled orientation ([Pelletier, Dion, Slovinec D'Angelo, et al., 2004](#)). Women who regulated their eating behaviors in an autonomous fashion were also more preoccupied with the quality of food they ate ([Pelletier, Dion, Slovinec D'Angelo, et al., 2004](#)), engaged in more approach-based meal planning strategies ([Otis & Pelletier, 2008](#)), and reported healthier eating habits ([Otis & Pelletier, 2008](#); [Pelletier](#)

& [Dion, 2007](#)). By contrast, women who regulated their eating behaviors in a controlled fashion were more preoccupied with the quantity of food they ate ([Pelletier, Dion, Slovinec D'Angelo, et al., 2004](#)), engaged in more avoidance-based meal planning strategies ([Otis & Pelletier, 2008](#)), and dysfunctional eating behaviors ([Otis & Pelletier, 2008](#); [Pelletier & Dion, 2007](#)). In a sample of adults at risk for coronary heart disease, greater perceptions of self-determination underlying the regulation of eating behaviors predicted significant decreases in dietary fat consumption evidenced by healthier blood lipid profiles 13 weeks following an intervention ([Pelletier, Dion, Slovinec D'Angelo, et al., 2004](#)).

The regulation of eating behaviors has recently been incorporated in an adapted version of the socio-cultural model of disordered eating ([Pelletier & Dion, 2007](#)). According to this model, repeated exposure to messages espousing slenderness as a determinant of women's happiness and societal success contributes to women's elevated levels of body image disturbance through an internalization of the “thin body ideal” stereotype ([Stice, 1994, 1998](#)). In turn, body dissatisfaction promotes disordered eating behaviors through dieting and negative affect ([Stice, 2002](#)). While body dissatisfaction appears to be a normative part of the female experience (e.g., [Keel, Baxter, Heatherton, & Joiner, 2007](#)), disordered eating is not. This suggests that not all body dissatisfied women approach their eating behaviors in the same manner. Some may pressure themselves to reduce their food intake in order to meet their goal weight, whereas others may take pleasure in fixing meals that are healthy (e.g., low in sugar and/or saturated fat) and nutritious. Findings from [Pelletier and Dion \(2007\)](#) provide support for this hypothesis; body dissatisfaction emerged as a significant predictor of both healthy and dysfunctional eating habits (i.e., bulimic symptoms) through an autonomous and controlled regulation of eating behaviors.

### **Overview of the Present Study**

Taken together, a number of individual studies have investigated whether women who are chronically preoccupied with their appearance marked by elevated levels of body dissatisfaction or restrained eating would be more vulnerable to the adverse effects of exposure to “thin ideal” media. Findings from these studies have produced a mixed pattern of results. To date, no study has examined whether these individual differences interact with one another to exacerbate or mitigate women's responses to “thin ideal” media. Moreover, no study has examined whether a qualitatively different style of dietary restraint – one grounded in self-endorsed motives (i.e., an autonomous regulation of eating behaviors) – may protect women from the media's adverse effects.

Based on the findings of [Pelletier and Dion \(2007\)](#), we propose that an AREB moderates the vulnerability afforded by elevated levels of trait body dissatisfaction in response to “thin ideal” media. The outcomes under investigation include: negative affect, size dissatisfaction, dieting intentions (i.e., monitor food intake and abstain from eating), and food consumption intentions (i.e., eat healthy foods and eat unhealthy foods). Controlling for women's pre-exposure levels to a “thin ideal” video, we hypothesize that elevated levels of an AREB buffers the relationship between trait body dissatisfaction and post-exposure negative affect/size dissatisfaction. We also hypothesize that elevated levels of an AREB buffers the relationship between trait body dissatisfaction and dieting/food consumption intentions following exposure to a “thin ideal” video. More precisely, women with elevated levels of an AREB were expected to formulate greater intentions to monitor their food intake (e.g., keep track of calories) and eat healthy foods (e.g., fruits and vegetables), and fewer intentions to abstain from eating (e.g., skip meals) and eat unhealthy foods (e.g., chips).

## Method

### Design

The present study employed a between-subjects pretest–posttest experimental design for the outcomes of size dissatisfaction and negative affect while a between-subjects posttest-only design was employed for the outcomes of “dieting intentions” and “food consumption intentions”. In both designs, the between-subjects variable was video exposure condition (“thin ideal”, neutral).

### Participants

The sample was comprised of 138 female undergraduate students with a mean age of 19.27 years ( $SD=2.56$ ) who were predominantly Caucasian ( $n=104$ ), followed by Black ( $n=11$ ), Asian ( $n=9$ ), Middle-Eastern ( $n=5$ ), East Indian ( $n=4$ ), Latin American ( $n=1$ ), and Aboriginal ( $n=1$ ). Three participants did not indicate their ethnicity. Participants’ self-reported weight (lbs) and height (feet and inches) were used to calculate their body mass index (BMI) which was used as a covariate in subsequent analyses ( $M=22.00$ ,  $SD=2.33$ ). All participants were recruited from an Integrated System of Participation in Research. The ISPR is a subject pool comprised of first year psychology students ( $N>2000$ ) who elect to participate in psychological research studies in exchange for course credit. At the beginning of the semester, all ISPR students are required to complete a mass online pre-test comprised of several unrelated measures which are used as screening tools or baseline assessments. ISPR students then select from a list of available studies which ones they would like to take part in throughout the semester. In order to minimize a self-selection bias based on pre-existing appearance concerns, the present study was advertised as a study on “Media and Memory Retention” designed to investigate the visual aspects of television and advertising which make them memorable.

### Experimental Stimuli

Two videos were created for this laboratory experiment: a “thin ideal” video and a neutral video. Each video featured advertisements and portions of television programs selected from approximately 25 h of television recorded during prime time viewing hours. Clips were spliced together in order to create a continuous stimulus of 7 min in duration. The “thin ideal” video featured stereotypical images of beautiful, slim female models who exemplified the societal standard of female attractiveness (Heinberg & Thompson, 1995). Sample clips included an advertisement for Victoria Secret and a segment from Fashion File. The ratio of “thin ideal” content to neutral content (i.e., products only) was 65:35. The neutral video was created in the same manner but was devoid of human images. Sample clips included an advertisement for a cell phone and an advertisement for a mattress. An instrumental piece of music of neutral tone was dubbed over the original soundtracks of both videos.

### Procedure

All participants completed the Regulation of Eating Behaviors Scale (an assessment of the two broad motivational orientations [i.e., autonomous and controlled] underlying the regulation of eating behaviors) and the Body Dissatisfaction subscale of the Eating Disorder Inventory (an assessment of trait body dissatisfaction) at the beginning of the semester during the mass online pre-test. Participation in our laboratory study occurred four weeks later under the guise of a study on “Media and Memory Retention”.

Upon arrival to the laboratory and following informed consent, participants completed pre-exposure levels of body dissatisfaction, weight dissatisfaction, anger, and depression using Visual Analogue Scales (VAS). Participants were then randomly assigned to view either the “thin ideal” video or the neutral video and were instructed to watch the video as though they were watching television in their own homes. Afterwards, participants completed a series of questions pertaining to the contents of the video followed by post-exposure levels of body dissatisfaction, weight dissatisfaction, anger, and depression (VAS), dieting intentions (i.e., monitor food intake and abstain from eating), and food consumption intentions (i.e., eat healthy foods and eat unhealthy foods). The time span between completion of the pre- and post-exposure assessments was approximately 15 min. At the end of the experiment, participants were thanked for their participation, debriefed, and queried on their suspicions as to the real goal of the study. No participants suspected the hypotheses being tested.

### Measures

#### Autonomous and controlled regulation of eating behaviors.

Participants’ autonomous and controlled orientations underlying the regulation of their eating behaviors were assessed with the Regulation of Eating Behaviors Scale (REBS; Pelletier, Dion, Slovinec D’Angelo, et al., 2004). The REBS is comprised of six subscales of four items each which correspond to the six styles of behavior regulation proposed by Deci and Ryan (1985b). Participants rated the extent to which each of the items corresponded to their reasons as to “why they are trying to regulate their eating behaviors” on a scale from 1 (*does not correspond to my reasons at all*) to 7 (*corresponds exactly to my reasons*). Sample items include: “. . . because it’s fun to create meals that are good for my health” (intrinsic regulation), “. . . because eating healthy is part of the way I have chosen to live my life” (integrated regulation), “. . . because I think it’s a good idea to try to regulate my eating behaviors” (identified regulation), “. . . because I would be humiliated if people thought I wasn’t in control of my eating behaviors” (introjected regulation), “. . . because other people close to me insist that I do” (external regulation), and “. . . honestly, I don’t know. I can’t really see what I’m getting out of it” (amotivation).

An autonomous regulation of eating behaviors (AREB) motivation composite was created by averaging scores across the identified, integrated, and intrinsic regulation items ( $\alpha=.88$ ) whereas a controlled regulation of eating behaviors (CREB) motivation composite was created by averaging scores across the amotivation, external regulation, and introjected regulation items ( $\alpha=.87$ ). Scores on the AREB and the CREB motivation composites ranged from 1 to 7 whereby higher scores were indicative of greater autonomous/controlled motivation underlying the regulation of eating behaviors.

**Trait body dissatisfaction.** The Body Dissatisfaction subscale (nine items) of the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983) was used to assess trait levels of body dissatisfaction. Participants rated their level of dissatisfaction from 1 (*never*) to 6 (*always*) with various parts of the body (e.g., hips, stomach, thighs, and buttocks). Responses were averaged together whereby greater scores reflected greater body dissatisfaction ( $\alpha=.93$ ).

**Size dissatisfaction and negative affect.** Pre- and post-exposure levels of body dissatisfaction, weight dissatisfaction, anger, and depression were assessed with Visual Analogue Scales (Heinberg & Thompson, 1995) which consisted of 10 cm horizontal lines anchored with “none or no feelings” on the far left (0 cm) and “extreme feelings” on the far right (10 cm). Participants indicated “how they felt right now” toward each attribute by making a slash

somewhere along the line. Responses were derived by measuring the markings to the nearest 0.1 cm. The four baseline ratings were subjected to a principal component analysis with an oblique rotation. Two components emerged: a Size Dissatisfaction component which accounted for 54.43% of the total variance and a Negative Affect component which accounted for 30.48% of the total variance. All factor loadings were superior to .73 and there were no cross-loadings. Thus, a “size dissatisfaction” composite was derived by averaging the body dissatisfaction and weight dissatisfaction ratings together while a “negative affect” composite was derived by averaging the anger and depression ratings together.

**Dieting intentions.** The Dietary Intent Scale (DIS; Stice, 1998) was used to assess participants’ intentions to engage in several “concrete behaviors that individuals use to reduce caloric intake” (Stice et al., 2004, p. 57) “over the next few weeks”. Responses were rated from 1 (*never*) to 5 (*always*). The items were slightly modified to reflect intentions by omitting the “I” at the beginning of each item. Consistent with the work of Sherry and Hall (2009), a principal component analysis on the nine items of the DIS revealed the presence of two components. The first component termed Intentions to Monitor Food Intake accounted for 55.26% of the total variance (e.g., “Count calories to try to prevent weight gain”). The second component termed Intentions to Abstain from Eating accounted for 11.77% of the total variance (e.g., “Sometimes avoid eating in an attempt to control my weight”). All factor loadings were superior to .53 and there were no cross-loadings. Factor scores were retained for subsequent analyses. Higher factor scores were indicative of greater intentions to monitor food intake/abstain from eating “over the next few weeks”.

**Food consumption intentions.** The Healthy Eating Behavior Scale (HEBS; Pelletier, Dion, Slovinec D’Angelo, et al., 2004) was used to assess intentions to consume healthy and unhealthy foods “over the next few weeks”. The HEBS is comprised of two subscales of four items each: a Healthy Foods subscale (e.g., “I eat vegetables, fruits, and grain products”) and a Foods to be Eaten in Moderation/Unhealthy Foods subscale (e.g., “I eat foods such as chips, chocolate, and candies”). Responses were rated from 1 (*never*) to 5 (*always*). The items were slightly modified to reflect intentions by omitting the “I” at the beginning of each item. Two composites were created by averaging scores across each subscale’s respective four items: “intentions to eat healthy foods” ( $\alpha = .56$ ) and “intentions to eat unhealthy foods” ( $\alpha = .64$ ). Scores on these composites ranged from 1 to 5 whereby higher scores reflected greater intentions to eat healthy/unhealthy foods “over the next few weeks”.

## Results

### Manipulation Check

First, the ecological validity of each video was assessed with a single item: “To what extent do you think that the clips you’ve just watched are representative of those you would usually see in an hour of television viewing?” Responses were rated from 1 (*not at all representative*) to 5 (*very representative*). Those who viewed the “thin ideal” video ( $M = 3.42$ ,  $SD = 1.02$ ) and those who viewed the neutral video ( $M = 3.57$ ,  $SD = 1.06$ ) both judged their respective contents to be “somewhat representative” of a typical hour of television viewing,  $t(134) = -0.83$ ,  $p > .10$ .

Second, the construct validity of the “thin ideal” video was assessed with the following items: (1) The women were attractive; (2) The women had beautiful bodies; (3) The women depicted in this video were representative of the “thin ideal” a lot of women would like to achieve; and (4) The women were sexually desirable. Responses were rated from 1 (*do not agree at all*) to 7 (*strongly agree*)

and subjected to a principal component analysis which supported a one-component structure accounting for 66.82% of the total variance. Responses were averaged together across these four items and evaluated against the scale’s theoretical mid-point of 4. Perceptions of the “thin ideal” content in this video were supported ( $M = 5.15$ ,  $SD = 1.14$ ),  $t(69) = 8.48$ ,  $p < .001$ .

Finally, exposure to the “thin ideal” video was hypothesized to activate an appearance and weight related schema which was assessed with a word stem completion task (Tiggemann, Hargreaves, Polivy, & McFarlane, 2004). Participants were presented with 20 three-letter word stems that could be completed to form either an appearance/weight-related word (e.g., PRE-ty, THIn) or a neutral word (e.g., PRE-sent, THInk). As expected, those who viewed the “thin ideal” video generated more appearance/weight-related words ( $M = 5.78$ ,  $SD = 2.34$ ) compared to those who viewed the neutral video ( $M = 4.65$ ,  $SD = 2.10$ ),  $t(136) = 2.99$ ,  $p = .003$ .

### Main Analyses

Descriptive statistics and inter-correlations among all study variables are displayed in Table 1. A series of hierarchical multiple regression analyses were conducted on each of the six dependent variables. Step 1 included the covariates of BMI and either baseline ratings or corresponding subscale ratings.<sup>1</sup> Step 2 included the main effects of video exposure condition (coded 0 for the neutral video and 1 for the “thin ideal” video), trait body dissatisfaction, an AREB, and a CREB.<sup>2</sup> Step 3 included the double interactions of video exposure condition by trait body dissatisfaction, video exposure condition by AREB, and trait body dissatisfaction by AREB. Step 4 included the triple interaction of interest of video exposure condition by trait body dissatisfaction by AREB.

Standardized regression coefficients and changes in  $R^2$  for all six hierarchical regression models are displayed in Table 2. When significant, the triple interaction of interest was depicted by estimating and probing the trait body dissatisfaction by AREB interaction within each video exposure condition using the SPSS macro MODPROBE (Hayes & Matthes, 2009). Both the focal predictor (i.e., trait body dissatisfaction) and the moderator (i.e., AREB) were entered as continuous variables in the macro. A moderating effect of an AREB on the relationship between trait body dissatisfaction and the criterion would be evidenced if (1) the trait body dissatisfaction by AREB interaction term was significant in the “thin ideal” video exposure condition and not in the “neutral” video exposure condition; (2) the magnitude/direction of the relationship between trait body dissatisfaction and the criterion was different at varying levels ( $\pm 1SD$ ) of the moderator (AREB) within the “thin ideal” video condition.

<sup>1</sup> Pre-exposure size dissatisfaction and pre-exposure negative affect were entered in Step 1 of the regression models predicting post-exposure size dissatisfaction and post-exposure negative affect. Corresponding subscale ratings were entered in Step 1 of the regression models predicting the remaining outcomes. More specifically (1) intentions to abstain from eating were entered in Step 1 of the model predicting intentions to monitor food intake (2) intentions to monitor food intake were entered in Step 1 of the model predicting intentions to abstain from eating (3) intentions to eat unhealthy foods were entered in Step 1 of the model predicting intentions to eat healthy foods (4) intentions to eat healthy foods were entered in Step 1 of the model predicting intentions to eat unhealthy foods.

<sup>2</sup> The present study is concerned with the protective role of an AREB in response to “thin ideal” media. Given that all six forms of behavior regulation (i.e., intrinsic, integrated, identified, introjected, external, and amotivation) co-exist within the same person to varying degrees (Deci & Ryan, 1985b), the CREB motivation composite was entered in the regression models as a covariate in order to partial out any influence women’s controlled motives underlying the regulation of their eating behaviors might have on the criterion.

**Table 1**  
Means (SDs) across video exposure conditions and inter-correlations among study variables for the entire sample.

Variables	"Thin Ideal" (n = 69)	Neutral (n = 69)	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. BD (n = 138)	3.30 (1.15)											
2. AREB (n = 138)	4.63 (0.91)		-.11									
3. CREB (n = 138)	2.56 (0.99)			.55**								
4. Negative affect 1	2.60 (1.63)			-.04	.34**							
5. Size dissatisfaction 1	3.92 (2.38)	2.86 (2.07)		.71**	-.15	.66**						
6. Negative affect 2	2.35 (1.89)	4.59 (2.60)			.32**	-.17	.36**					
7. Size dissatisfaction 2	4.63 (2.68)	1.79 (1.48)				.56**	-.18*					
8. Monitor food intake	-0.03 (1.04)	4.20 (2.54)				.28*	.40**					
9. Abstain from food	-0.01 (1.06)	0.03 (0.97)					.65**					
10. Eat healthy foods	3.83 (0.62)	3.85 (0.55)					.31**					
11. Eat unhealthy foods	2.94 (0.73)	2.87 (0.64)						.44**				

Note. BD = Trait body dissatisfaction; AREB = Autonomous regulation of eating behaviors; CREB = Controlled regulation of eating behaviors; Negative affect 1 = pre-exposure levels of negative affect and size dissatisfaction; Negative affect 2 = post-exposure levels of negative affect and size dissatisfaction.

\*  $p < .05$ .

\*\*  $p < .01$ .

**Negative affect.** Controlling for pre-exposure levels in Step 1,  $F(2, 124) = 46.01, p < .001, f^2 = 0.74$ , significant main effects emerged in Step 2,  $\Delta F(4, 120) = 5.78, p < .001, f^2 = 0.19$ : exposure to the "thin ideal" video and a CREB predicted an increase in post-exposure negative affect. The double interactions in Step 3 also made marginal contributions to the criterion,  $\Delta F(3, 117) = 3.48, p = .018, f^2 = 0.09$ . However, the regression model in Step 4 which included the significant triple interaction of interest provided the best fit to the data,  $\Delta F(1, 116) = 13.67, p < .001, f^2 = 0.12$  and accounted for 60.50% ( $R^2_{adj} = 57.10\%$ ) of the total variance in post-exposure negative affect.

In the "thin ideal" video condition, greater trait body dissatisfaction predicted an increase in post-exposure negative affect for those who were low ( $B = 0.82, SE = 0.22, p < .001$ ) but not for those who were high ( $B = -0.11, SE = 0.23, p > .60$ ) on an AREB,  $F(4, 57) = 8.76, p = .005$ . In the neutral video condition, the relationship between trait body dissatisfaction and post-exposure negative affect was non-significant,  $F(4, 61) = 0.72, p > .40$ .

**Size dissatisfaction.** Controlling for pre-exposure levels in Step 1,  $F(2, 127) = 118.41, p < .001, f^2 = 1.87$ , significant main effects emerged in Step 2,  $\Delta F(4, 123) = 7.06, p < .001, f^2 = 0.23$ : exposure to the "thin ideal" video and trait body dissatisfaction predicted an increase in post-exposure size dissatisfaction while an AREB predicted a decrease. The double interactions in Step 3 did not significantly contribute to the criterion,  $\Delta F(3, 120) = 1.31, p > .10, f^2 = 0.03$ . However, the triple interaction of interest in Step 4 did,  $\Delta F(1, 119) = 6.88, p = .010, f^2 = 0.06$  and accounted for 74.00% ( $R^2_{adj} = 71.80\%$ ) of the total variance in post-exposure size dissatisfaction.

In the "thin ideal" video condition, greater trait body dissatisfaction predicted an increase in post-exposure size dissatisfaction for those who were low ( $B = 0.77, SE = 0.24, p = .002$ ) but not for those who were high ( $B = 0.03, SE = 0.32, p > .90$ ) on an AREB,  $F(4, 62) = 4.78, p = .03$ . In the neutral video condition, the relationship between trait body dissatisfaction and post-exposure size dissatisfaction was non-significant,  $F(4, 60) = 2.24, p > .10$ .

**Dieting intentions: monitor food intake.** Controlling for a significant effect of BMI, greater intentions to abstain from eating predicted fewer intentions to monitor food intake in Step 1,  $F(2, 129) = 30.45, p < .001, f^2 = 0.47$ . Significant main effects also emerged in Step 2,  $\Delta F(4, 125) = 9.34, p < .001, f^2 = 0.30$  whereby trait body dissatisfaction, an AREB, and a CREB predicted greater intentions to monitor food intake. The double interactions in Step 3 did not significantly contribute to the criterion,  $\Delta F(3, 122) = 1.28, p > .10, f^2 = 0.03$ . However, the triple interaction of interest in Step 4 did,  $\Delta F(1, 121) = 4.74, p = .031, f^2 = 0.04$  and accounted for 51.20% ( $R^2_{adj} = 47.20\%$ ) of the total variance in intentions to monitor food intake.

In the "thin ideal" video condition, greater trait body dissatisfaction predicted an increase in intentions to monitor food intake for those who were high ( $B = 0.59, SE = 0.12, p < .001$ ) but not for those who were low ( $B = 0.10, SE = 0.14, p > .40$ ) on an AREB,  $F(5, 60) = 9.15, p = .004$ . In the neutral video condition, the relationship between trait body dissatisfaction and intentions to monitor food intake was non-significant,  $F(5, 60) = 0.62, p > .40$ .

**Dieting intentions: abstain from eating.** Controlling for a marginally significant effect of BMI, greater intentions to monitor food intake predicted fewer intentions to abstain from eating in Step 1,  $F(2, 127) = 36.33, p < .001, f^2 = 0.57$  as did a CREB in Step 2,  $\Delta F(4, 123) = 5.30, p < .001, f^2 = 0.17$ . The double interactions in Step 3,  $\Delta F(3, 120) = 1.20, p > .10, f^2 = 0.03$  did not significantly contribute to the criterion nor did the triple interaction in Step 4,  $\Delta F(1, 119) = 0.59, p > .10, f^2 = 0.01$ . Together, these models accounted for

**Table 2**Standardized regression coefficients and  $R^2$  change from hierarchical regression models across all dependent variables.

Predictors	Dependent variables											
	Negative affect 2		Size dissatisfaction 2		Monitor food intake		Abstain from eating		Eat healthy foods		Eat unhealthy foods	
	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$	$\Delta R^2$
<i>Step 1</i>												
BMI	.07	.426***	.07	.651***	.17*	.321***	-.14 <sup>†</sup>	.364***	-.04	.090**	-.07	.098**
Negative affect 1	.64***		–		–		–		–		–	
Size dissatisfaction 1	–		.78***		–		–		–		–	
Abstain from eating	–		–		-.49***		–		–		–	
Monitor food intake	–		–		–		-.54***		–		–	
Eat unhealthy foods	–		–		–		–		-.30***		–	
Eat healthy foods	–		–		–		–		–		-.31***	
<i>Step 2</i>												
Video	.21**	.093***	.20***	.065***	.03	.156***	-.05	.093**	.01	.145***	.02	.054 <sup>†</sup>
BD	.06		.17*		.39***		-.08		.04		-.26*	
AREB	-.10		-.11*		.16*		.07		.39***		-.15	
CREB	.18*		.01		.15 <sup>†</sup>		-.30***		-.06		.04	
<i>Step 3</i>												
Video x BD	.17 <sup>†</sup>	.039 <sup>†</sup>	.08	.009	-.01	.016	-.12	.016	.06	.021	.11	.007
Video x AREB	-.16 <sup>†</sup>		-.11		-.06		-.14		.22		.01	
BD x AREB	-.12 <sup>†</sup>		-.03		.13 <sup>†</sup>		.06		.01		-.06	
<i>Step 4</i>												
Video x BD x AREB	-.34***	.047***	-.19*	.015*	.21*	.019*	.08	.003	-.11	.005	-.24 <sup>†</sup>	.024 <sup>†</sup>

Note. BMI = Body mass index; BD = Trait body dissatisfaction; AREB = Autonomous regulation of eating behaviors; CREB = Controlled regulation of eating behaviors; Negative affect 1 and Size dissatisfaction 1 = pre-exposure levels of negative affect and size dissatisfaction; Negative affect 2 and Size dissatisfaction 2 = post-exposure levels of negative affect and size dissatisfaction.

<sup>†</sup>  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

47.60% ( $R^2_{adj.} = 43.20\%$ ) of the total variance in intentions to abstain from eating.

**Food consumption intentions: eat healthy foods.** Intentions to eat unhealthy foods predicted fewer intentions to eat healthy foods in Step 1,  $F(2, 131) = 6.47, p = .002, f^2 = 0.10$  while an AREB predicted greater intentions to eat healthy foods in Step 2,  $\Delta F(4, 127) = 6.02, p < .001, f^2 = 0.19$ . The double interactions in Step 3,  $\Delta F(3, 124) = 1.16, p > .10, f^2 = 0.03$  did not significantly contribute to the criterion nor did the triple interaction in Step 4,  $\Delta F(1, 123) = 0.87, p > .10, f^2 = 0.01$ . Together, these models accounted for 26.10% ( $R^2_{adj.} = 20.10\%$ ) of the total variance in intentions to eat healthy foods.

**Food consumption intentions: eat unhealthy foods.** Intentions to eat healthy foods predicted fewer intentions to eat unhealthy foods in Step 1,  $F(2, 132) = 7.17, p < .001, f^2 = 0.11$  as did trait body dissatisfaction in Step 2,  $\Delta F(4, 128) = 2.03, p = .094, f^2 = 0.06$ . The double interactions in Step 3 did not significantly contribute to the criterion,  $\Delta F(3, 125) = 0.37, p > .10, f^2 = 0.01$ . However, the triple interaction of interest in Step 4 did (marginally),  $\Delta F(1, 124) = 3.69, p = .057, f^2 = 0.03$  and accounted for 18.40% ( $R^2_{adj.} = 11.80\%$ ) of the total variance in intentions to eat unhealthy foods.

In the “thin ideal” video condition, greater trait body dissatisfaction predicted a *marginal decrease* in intentions to eat unhealthy foods for those who were high ( $B = -0.21, SE = 0.11, p = .048$ ) but not for those who were low ( $B = 0.04, SE = 0.10, p > .70$ ) on an AREB,  $F(4, 63) = 2.88, p = .09$ . In the neutral video condition, the relationship between trait body dissatisfaction and intentions to eat unhealthy foods was non-significant,  $F(4, 64) = 0.82, p > .30$ .

## Discussion

Past research indicates that the adverse effects of exposure to “thin ideal” media on women’s self-evaluations and eating-

related attitudes may be particularly damaging to those who are chronically preoccupied with their appearance (e.g., Want, 2009). Body dissatisfaction and restrained eating both reflect an enduring concern with how one looks and both have been investigated individually as moderators of women’s responses to “thin ideal” media. However, findings from these individual studies have produced a mixed pattern of results. We hypothesized that a qualitatively different style of dietary restraint interacts with trait body dissatisfaction in a manner that protects women from the media’s ill-effects. Findings from the present study support our hypotheses and underscore the beneficial role of an autonomous regulation of eating behaviors (AREB) particularly among women with a pre-existing vulnerability to “thin ideal” media.

Our first set of findings concern the independent and interactive effects of our predictors on women’s negative affect and size dissatisfaction. Controlling for pre-exposure levels, women reported more negative affect and size dissatisfaction after viewing media images of thin female models vs inanimate objects. These findings support the overall adverse effects of exposure documented in the literature (e.g., Groesz et al., 2002; Want, 2009). The vulnerability afforded by elevated levels of trait body dissatisfaction was also demonstrated as the latter was directly related to post-exposure size dissatisfaction (Durkin & Paxton, 2002; Trampe et al., 2007). Both motivational orientations (i.e., autonomous and controlled) also made unique contributions to women’s mood and dissatisfaction. For instance, a CREB was positively associated with post-exposure negative affect while an AREB was negatively associated with post-exposure size dissatisfaction (Mask & Blanchard, 2011; Pelletier, Dion, Slovinc, D’Angelo, et al., 2004). Consistent with our hypotheses, these main effects were also qualified by a significant triple interaction between video exposure condition, trait body dissatisfaction, and an AREB.

As expected, the vulnerability afforded by trait body dissatisfaction in response to “thin ideal” media was buffered by elevated levels of an AREB. Controlling for pre-exposure levels and a CREB, trait body dissatisfaction was associated with greater

post-exposure negative affect and size dissatisfaction among women who felt *less* autonomous in the regulation of their eating behaviors but not among women who felt *more* autonomous. These findings suggest that not all body dissatisfied women are equally vulnerable to the media's adverse effects. Feelings of agency and volition underlying the regulation of eating behaviors appear to protect women from state increases in body image and mood disturbances despite overall feelings of dissatisfaction with their body. These results are consistent with those documented at the dispositional level of autonomy. In response to a video which portrayed very thin female models, women with low but not high levels of relative self-determination toward their everyday activities reported greater perceptions of pressure from the media to be thin and greater body dissatisfaction (Mask & Blanchard, 2011).

Our findings are also in line with previous research on self-determination theory's general causality orientations (Deci & Ryan, 1985a). People with a strong autonomous orientation toward their environment operate from the intrinsic needs, values, and interests of the self. Consequently, external events are evaluated as sources of information in determining the appropriate course of action. By contrast, people who display little autonomy toward their environment (i.e., who are more control-oriented) operate mainly from expectations and obligations whether self or other imposed thus rendering them more sensitive to environmental contingencies. Consequently, external events are perceived as inputs of pressure or threat as to what they "should" do (Deci & Ryan, 1985a). For example, an autonomous orientation was associated with less defensiveness (Hodgins, Yacko, & Gottlieb, 2006; Knee & Zuckerman, 1998), fewer self-presentation strategies (Lewis & Neighbors, 2005), and fewer self-serving biases following success and failure feedback (Knee & Zuckerman, 1996). In a word finding task designed to induce comparisons with a better performing confederate, people with low but not high levels of dispositional autonomy experienced a drop in positive affect and performance self-esteem (Neighbors & Knee, 2003). People with greater autonomy also responded to threatening health information in a more adaptive manner than people with low autonomy (Pavey & Sparks, 2008, 2009). Our results therefore suggest that the female models portrayed in the "thin ideal" video conveyed qualitatively different information to women pending their level of autonomy underlying the regulation of their eating behaviors. To women with elevated levels of autonomy, the models likely conveyed societal ideals of female attractiveness. Yet, to women with lower levels of autonomy, the same female models likely conveyed standards as to how their bodies should look (Mask & Blanchard, 2011; Pelletier, Dion, & Levesque, 2004).

Our second set of findings concern the independent and interactive effects of our predictors on women's eating-related intentions. First, trait body dissatisfaction exerted an independent effect on intentions to monitor food intake and consume unhealthy foods "over the next few weeks". These findings suggest that body dissatisfied women may be more inclined to formulate avoidance-based meal planning strategies (e.g., avoid eating desert) in an effort to ensure successful dietary self-regulation. Second, a direct effect was documented for an AREB on intentions to monitor food intake and consume healthy foods "over the next few weeks". A direct effect also emerged for a CREB on intentions to abstain from eating. These results are consistent with those documented in previous studies whereby women who displayed an AREB were more preoccupied with the quality rather than the quantity of food they ate while the reverse pattern emerged for those who displayed a CREB (Mask & Blanchard, 2011; Pelletier & Dion, 2007; Pelletier, Dion, Slovenic-D'Angelo, et al., 2004). Consistent with our hypotheses, an AREB moderated the relationship between trait body dissatisfaction and women's dieting/food consumption intentions in the "thin ideal" video condition but not in the neutral video condition.

Controlling for BMI, food restriction intentions, and a CREB, trait body dissatisfaction predicted greater intentions to monitor food intake in response to media images of the "thin ideal" among women who felt *more* autonomous in the regulation of their eating behaviors but not among women who felt *less* autonomous. These findings are in line with those of previous studies linking an AREB to successful dietary self-regulation. For example, an AREB has been associated with perceptions of success as well as behavioral indications of success evidenced by greater weight loss goal attainment and healthier blood lipid profiles (Otis & Pelletier, 2008; Pelletier, Dion, Slovenic-D'Angelo, et al., 2004). Our results therefore suggest that body dissatisfied women respond differently to societal exemplars of "successful" dietary self-regulation (i.e., thin female media models) pending their level of autonomy toward the regulation of their eating behaviors. To women with elevated levels of autonomy, they may serve as gentle reminders to continue their self-regulatory efforts. To women with lower levels of autonomy, the presence of "successful" exemplars appears to disengage them (at least momentarily) from their self-regulatory efforts.

Controlling for BMI, intentions to eat healthy foods, and a CREB, trait body dissatisfaction also predicted fewer intentions to eat unhealthy foods in response to media images of the "thin ideal" among women who felt *more* autonomous in the regulation of their eating behaviors but not among women who felt *less* autonomous. According to Otis and Pelletier (2008), women who regulate their eating behaviors in an autonomous fashion are more successful in their efforts because they plan more toward healthy eating ( $\beta = .62$ ) such as "trying new and healthy recipes" than plan away from unhealthy eating ( $\beta = .30$ ) such as "avoid reading the desert menu". When asked to formulate approach-focused implementation intentions, high autonomous women experienced greater weight loss goal attainment compared to their low autonomous counterparts (Koestner, Otis, Powers, Pelletier, & Gagnon, 2008). Thus, women who regulate their eating behaviors in an autonomous fashion seem to favor approach-based strategies when planning their meals to ensure successful dietary self-regulation. However, this does not negate the use of avoidance-based meal planning strategies. While high autonomous women may be naturally inclined to formulate approach-based intentions, our results suggest that chronic feelings of body dissatisfaction coupled with reminders of restraint weigh in favor of an avoidance-based approach to meal planning and dietary self-regulation.

## Limitations

The interpretation of our findings does warrant caution in light of some limitations. The study sample was fairly homogeneous with respect to age, body mass, and ethnicity. Thus, our conclusions may not apply to populations of older women, women with elevated body masses (BMI > 30), or women of different ethnicities. Responses were also limited to self-report data. Future studies should include an unobtrusive objective measure of food intake, particularly an unhealthy food (e.g., chocolate). Finally, the reliability estimates for the subscales of the Healthy Eating Behavior Scale were low which likely limited the power to detect a significant triple interaction, particularly for intentions to eat healthy foods. While the hypothesized triple interaction emerged for intentions to eat unhealthy foods, its effect remains marginal ( $p = .057$ ) and thus its interpretation warrants caution.

Despite these limitations, findings from the present study contribute to the growing body of literature on moderators of the effects of exposure to "thin ideal" media on women's body image and eating disturbances—which to date has been largely limited to the study of vulnerabilities or risk factors (Cash, 2005; Steck, Abrams, & Phelps, 2004). This is the second study to investigate a factor which could potentially protect women from the media's ill

effects (Mask & Blanchard, 2011). Findings from the present study coupled with those of an earlier investigation (Mask & Blanchard, 2011) underscore the beneficial role of autonomy in mitigating women's response to "thin ideal" media; particularly women with a pre-existing vulnerability. While the average woman may be dissatisfied with her shape and weight, our results suggest that not all body dissatisfied women respond to socio-cultural pressures of thinness extolled in the media in the same manner. Hence prevention and intervention efforts aimed at diminishing risk factors might also benefit from the inclusion of strategies aimed at increasing a protective factor. For example, interventionists could be encouraged to deliver their programs in an autonomy supportive manner by providing girls and women with a meaningful rational, minimizing pressures and acknowledging their perspective so that they come to internalize the importance of healthy eating which should ensure lasting benefits on their body image and eating behaviors (Ryan, Patrick, Deci, & Williams, 2008).

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