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Effect of anti-obesity media on body image and antifat attitudes

BY

Laura Jakul

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Effect of Anti-Obesity Media on Body Image and Antifat Attitudes

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A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of Manitoba in partial fulfillment of the requirements of the degree of

MASTER OF ARTS

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Abstract

This research examined whether exposure to anti-obesity media contributes to body image disturbance and antifat attitudes, and whether attributing obesity to internal factors leads to more negative evaluations of body image and more antifat attitudes. Attributional theory (Weiner, 2000) formed the theoretical basis for study predictions. Participants were 220 female university students randomly assigned to read one of three messages: anti-obesity (condition 1), anti-obesity and the controllability of weight (condition 2), or health-anxiety placebo (condition 3). Participants were assessed on measures of body image disturbance and anti-obesity attitudes before and after the experimental manipulation and at one-week follow-up. Using four multivariate analysis of covariance procedures, results showed that reading newspaper articles about obesity improved antifat attitudes except when the message that weight is controllable was included. Results also demonstrated that high drive for thinness and perceiving oneself as underweight were pre-existing characteristics that tend to improve body image disturbance.

Effect of anti-obesity media on body image disturbance and antifat attitudes

Body image is a multidimensional concept that is defined differently throughout the literature. A generally accepted definition is that body image involves the thoughts, feelings and attitudes related to one's own body (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Body image disturbance is generally defined as any form of affective, cognitive, behavioural or perceptual disturbance that is related to a part of physical appearance (Thompson, 1995). Specifically, affective body image disturbance refers to anxiety or depression related to body image; cognitive disturbance indicates an excess of attentional resources devoted to body image disturbance; behavioural disturbance denotes a surplus of behaviours related to body image such as grooming, weighing, and making comparisons with other bodies, and can also involve avoidance of body image related situations such as wearing certain types of clothing, attending particular social activities, and eating restraint; and perceptual disturbance refers to body size overestimation.

Body Image Disturbance

Definitions

Definitions of body image disturbance tend to be relatively stable within the literature. In a discourse analytic study on understanding body image disturbance within the field of mental health, Moulding and Hepworth (2001) found that body image disturbance is typically defined by three distinctive themes: cognitive-behavioural, gender and socio-cultural. Cognitive behavioural themes are drawn from cognitive behavioural theory which proposes that body image disturbance involves perception,

cognition, emotion and behaviour. According to this view, individuals perceive external and internal stimuli, think about the stimuli, respond emotionally, and this sequence determines behaviour. Gender themes are also an important part of body image disturbance. While both males and females can have a disturbed body image, it is widely recognized as more common and more acute in females as compared to males. A third component of body image disturbance involves socio-cultural themes. Cultural expectations about what is defined as the ideal body are considered an important component of body image disturbance.

Prevalence

Body image disturbance is prevalent in Western cultures, particularly in females. To illustrate, a survey conducted by Garner (1997), found that 89% of 3,452 women surveyed about body image were dissatisfied with their bodies and wanted to lose weight. Rodin, Silberstein, and Striegel-Moore (1985) have claimed that even with women who do not experience eating disorders, general body image dissatisfaction, or overall body image disturbance, is pervasive enough to be characterized as "normative discontent." Body image disturbance is not relegated to adult females alone. High levels of body image disturbance are found in elementary school girls and boys. Approximately 50% of girls and 30% of boys are dissatisfied with their bodies and wish they were thinner (Littleton & Ollendick, 2003). However, the current discussion of body image will be limited to females because, at every age, females are much more likely to have body image disturbance (Striegel-Moore & Franko, 2002).

Body image disturbance becomes increasingly common for females at puberty. By mid-adolescence, it is normative for females to report dissatisfaction with weight, fear

of weight gain, and preoccupation with losing weight (Striegel-Moore & Franko, 2002). For instance, in a study sample of 2279 females (aged 10-14), McVey, Tweed, and Blackmore (2004) found that 29.3% of the participants were currently trying to lose weight. Furthermore, 31.3% of the sample reported feeling "too fat" despite the fact that only 7.2% of the participants were above the upper limit of a healthy weight range according to the Body Mass Index (BMI). Weight dissatisfaction is positively correlated with actual weight; however, the majority of females who report feeling fat are within the normal weight range (Striegel-Moore & Franko, 2002). Moreover, comparable rates of dissatisfaction were found in a study by Cash (2002) in which 46% of 803 participants were dissatisfied with their weight. Similarly, Jones, Bennett, Olmstead, Lawson and Rodin (2001) found that 27% of 1739 female participants (12-18 years of age) had significant symptoms of disordered attitudes about food and weight, and unhealthy weight loss behaviour, as evidenced by scores above 20 on the EAT-26. These studies suggest that body image disturbance is widespread in Western cultures, at least amongst adolescents and in University populations.

Effects of body image disturbance

The widespread nature of body image disturbance is especially disconcerting given that the consequences of body image disturbance can be devastating. From an early age, body image affects emotions, thoughts and behaviours, as well as both public and private relationships (Pruzinsky & Cash, 2002). Consequently, body image disturbance can influence psychological well being and quality of life (Striegel-Moore & Franko, 2002). Furthermore, body image disturbance is associated with lower self-

esteem, obesity[1], emotional distress, depression or anxiety, appearance rumination, unnecessary cosmetic surgery, and is one of the strongest predictors for eating disturbances (Littleton & Ollendick, 2003; Stice & Shaw, 2002; Striegel-Moore & Franko, 2002; Thompson et al.,1999; Wardle, Waller & Fox, 2002). Specifically, it is suggested that body image disturbance can lead to dieting because there is a commonly accepted belief that dieting is an effective weight control technique; dieting, in turn, can increase the risk of eating disorder pathology because restrictive dieting can lead to binge eating and compensatory behaviours, such as excessive exercise and avoiding the consumption of forbidden foods (Stice & Shaw, 2002). Because body image disturbance is so prevalent in our culture, and has such serious consequences, attempts to understand body image disturbance are imperative.

The aetiology of body image disturbance has received much attention in the research literature due to the prevalence of such concerns in Western society. As a result of these studies, different factors such as self-esteem, the disparity between one's physical appearance and social standards of beauty, the media, peer influence, family environment, and teasing about physical appearance as a child, have been identified as potential risk factors for body image disturbance (Polivy & Herman, 2002). These risk factors have subsequently been used as the basis of prevention programs for body image disturbance.

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[1] Although there are some problems with the terms "obese" or "obesity" they are used throughout this paper whenever possible in order to avoid confusion with the Antifat Attitudes Questionnaire. The use of "obese" or "obesity" does not, however, imply a medical condition.

Media Exposure

One potential risk factor that has received a great deal of attention in the body image literature is the impact of the media. Almost every American household has a television set, and it is on for an average of 7 hours a day, with people watching approximately 3 or 4 hours a day (Tiggemann, 2002). Furthermore, children and adolescents typically spend more time watching television than any other activity apart from sleeping. This level of television exposure means that each individual may see up to 35,000 commercials per year. In addition to television exposure, most adults also read newspapers every day (Tiggemann, 2002), and at least 50% of adolescent girls regularly read magazines such as Seventeen or Vogue (Levine & Smolak, 1996). Such widespread exposure to the media has many potential ramifications because the media carries messages about the social norms regarding the importance of physical appearance, the role of physical appearance as a central component of femininity, the stigma surrounding obesity, and the thin ideal (Striegel-Moore & Franko, 2002; Tiggemann, 2002). Repeated presentations of thin females and muscular males in the media makes these images seem like the standard of attractiveness and therefore makes the media an influential carrier of the sociocultural ideal of attractiveness (Jones, 2001).

Several researchers have highlighted the connection between the promotion of sociocultural ideals of beauty in the media and body image disturbance. For instance, Levine and Smolak (1996) argue that the media is a context for the development of disordered eating. They contend that the media endorses unhealthy messages and beauty ideals that can lead to the development of body image and eating disturbances. Some of the proposed negative messages that the media endorses include: 1) promotion of the

importance of image as substance, 2) encouragement of individuality while restricting standards of physical beauty to a narrow range, 3) defining slenderness as the ideal, which then creates widespread anxiety, self-consciousness, and dissatisfaction about weight and shape, 4) equating slenderness with beauty, fitness and feminine morality, 5) promotion of slenderness as the means to achieve social, sexual, and occupational success for women, 6) hatred of obesity and obese women, 7) emphasis on the potential, desirability and safety of changing personal appearance through fashion and dieting, 8) endorsement of gender roles founded on unrealistic expectations, and 9) simultaneous glorification and confusion surrounding the issues of self indulgence and self control. Levine and Smolak propose that these damaging messages about body image propagated by the media can help to encourage the development of body image and eating disturbances for individuals with potential preexisting vulnerabilities.

Empirical Sources

Evidence for the detrimental effects of the media on women's body image comes from several sources: personal accounts, correlational studies of media exposure, and experimental studies of the immediate impact of thin ideal images (Tiggemann, 2002).

Personal accounts.

Females report that idealized images in the media are detrimental to their body image. In a large survey of 4,000 readers of *Psychology Today*, Garner (1997) found that almost half of the females reported that thin ideal images in the media make them feel insecure and consequently want to lose weight. Moreover, in open-ended interviews with females, they often spontaneously offered the media as the strongest source of pressure to be thin (Tiggemann, 2002). Furthermore, females diagnosed with eating disorders often

relate that thin ideal media was the trigger for the onset of their disorder (Tiggemann, 2002). Therefore, according to the personal accounts of females, the presentation of the thin ideal in the media has a detrimental effect on body image.

Correlational studies.

Many researchers have used correlational studies to investigate the prevalence and effect of the thin ideal in television programs, in movies, and in advertising, on women's self-esteem and body image disturbance (e.g. Stice, Maxfield & Wells, 2003; Groesz, Levine & Murnen, 2002; Cusumano & Thompson, 1997; Stice & Shaw, 1994). For instance, Gonzalez-Lavin and Smolak (1995) reported that females who watched 8 or more hours of television per week had significantly greater body dissatisfaction than individuals who watched less. Additionally, Turner, Hamilton, Jacobs, Angood, and Dwyer (1997) found that females who read more fashion magazines were more dissatisfied with their bodies, frustrated about weight, and feared gaining weight as compared to females who spent less time reading fashion magazines. Some argue that those who already have an interest in dieting and weight control seek out images and information that reinforce their beliefs. However, Harrison and Cantor (1997) found that exposure to thinness-depicting and thinness-promoting media was associated with increased eating disorder behaviours, drive for thinness, body dissatisfaction and feelings of ineffectiveness, even when the effects of interest in fitness and dieting were controlled. These results suggest that greater exposure to the thin ideal in the media is associated with greater body image disturbance.

Further support for the association between media exposure and body image disturbance comes from studies that have looked at differences in media directed at males

versus females. It is more common for females to experience body image disturbance compared to males, and these differences are reflected in the media directed at males and females. Anderson and DiDomenico (1992) examined the disparity in weight loss media in magazines marketed toward males and females. They looked at 10 magazines for males and 10 magazines for females with the highest readership for individuals ages 18-24. They found that magazines directed at females had 10 times as many weight loss articles than magazines directed at males. This study suggests that the differential exposure to media that promotes the thin ideal may be related to the disparate levels of body image disturbance among males and females. Overall, correlational studies of media exposure and body image disturbance suggest that greater exposure to media endorsing the thin ideal results in greater body image disturbance.

Experimental studies.

Another empirical source supporting the connection between the media and body image disturbance is experimental studies. Several studies have found a short-term negative impact on body image as a result of experimentally manipulated exposure to thin ideal media. For instance, Turner et al. (1997) looked at the effect of magazine reading on body image disturbance. In their sample of 49 females, they had 24 of the participants read fashion magazines, and 25 read news magazines without body image content. They found that individuals who read fashion magazines prior to answering questions about body image dissatisfaction wanted to weigh less, and had lower ratings of the self than individuals who read news magazines. Furthermore, in a recent meta-analytic review, Groesz et al. (2002) examined the effect of experimental presentation of thin media images on body image satisfaction in females. They found, that across 25

studies, body image was significantly more negative when participants viewed images of thin models compared to when participants viewed models of average size, obese models, or inanimate objects. The results of studies that employ an experimental manipulation of exposure to thin ideal media point to a direct relationship between exposure to the thin ideal and body image satisfaction.

In an attempt to replicate the relationship between thin ideal media and body image disturbance in a naturalistic setting, Stice, Spangler and Agras (2001) assigned 219 adolescent girls to either a subscription to a fashion magazine, or to a no subscription control condition. They expected to find that greater exposure to fashion magazines would increase body image disturbance, thin ideal internalization, dieting, negative affect and bulimic symptoms. Contrary to their hypotheses, Stice et al. found that participants in the fashion magazine subscription group did not have increased scores on the dependent measures unless they initially had a score that was one standard deviation above the mean on a scale measuring pressure to be thin. The authors concluded that prolonged exposure to thin-ideal media had an adverse effect only for adolescents already at risk. This study suggests that in a natural setting, thin ideal media may only have a detrimental effect on females with preexisting vulnerabilities.

Content Analyses

Content analyses of the media have found that there is an over-representation of young, tall, long-legged, and extremely thin females, many of who would meet the criteria in the Diagnostic and Statistical Manual of Mental Disorders 4th ed (American Psychiatric Association, 2000) for anorexia nervosa (Cusumano & Thompson, 1997). This type of female is found in magazines, film, and television—including children's

television (Tiggemann, 2002). In a study comparing the body shape and weight of females featured in popular magazines to the body shape and weight of average females, Wiseman, Gray, Mosimann, and Ahrens (1992) found that the cultural ideal for female body size is considerably smaller than the average size for females, and it possibly becoming even thinner. Content analyses of magazines have shown that they are also filled with articles and advertisements promoting weight loss (Andersen & DiDomenico, 1992; Nemeroff, Stein, Diehl, & Smilack, 1994). For instance, Wiseman et al. (1992) analyzed the content of 6 magazines for females and found that there was a significant increase between 1959 and 1988 in the number of diet, exercise, and diet and exercise articles. Furthermore, the focus on weight loss and the thin ideal is more pronounced in magazines for females as compared to magazines for males. In a content analysis of traditional, fashion and modern magazines for females and males, Nemeroff et al. (1994) found significantly more body-oriented articles in the magazines directed at females as compared to the magazines directed at males.

Although most researchers agree that pressure to be thin is consistent or rising in the media, Nemeroff et al.(1994) came to a different conclusion. In their 12-year longitudinal study of the content of magazines for females, they argue that pressure to lose weight is decreasing in magazine article content. They contend that while there are some articles that focus on exercise for the purpose of losing weight, there are also articles that simply focus on exercise. However, norms of attractiveness have recently become even more specific in terms of what is ideal (Nemeroff et al., 1994). Not only is the ideal body for females thin, but it is also toned, adding fitness to the thin ideal. Therefore, Wiseman et al. (1992) argue that articles that focus on exercise are merely

weight loss articles tailored toward the new thin, toned ideal, and accordingly, the emphasis on the ideal body for females has continued to increase over the years.

Thin Ideal Internalization

One of the proposed effects of media exposure is internalization of the thin ideal. Repeated exposure to the sociocultural ideal endorsed by the media can lead females to internalize the thin ideal so that it becomes the reference point against which to judge themselves (Tiggemann, 2002). Moreover, the media does not endorse the thin ideal alone. This ideal is part of a cultural script that associates thinness and attractiveness with happiness, desirability and status. If females accept this cultural script, then self-worth becomes contingent upon perceived attractiveness, and appearance becomes a core aspect of self-evaluation (Tiggemann, 2002). For instance, in a study on the thin ideal in the media and body image disturbance, Low et al. (2003), found that internalization, not simply exposure, to the thin ideal was predictive of body image disturbance. Similarly, in a study of 238 college women, Stice, Schupakneuberg, Shaw and Stein, (1994) tested the relationship between media exposure and eating disorder symptomatology. Using structural equation modeling, they found that internalization of the thin ideal mediated the relationship between media exposure and eating disorder symptomatology. They also found, however, a direct path between exposure to thin ideal media and body image and eating disturbances. These results suggest that media exposure may result in internalizing the thin ideal, which may subsequently play a role in the development of body image disturbance.

The thin ideal is often endorsed in the media by pairing thin female bodies with positive feedback. For instance, Fouts and Burggraf (2000) analyzed 18 prime time

television situation comedies and found that 76% of the female characters were below average in weight, with 19% and 5% being average and above-average weight, respectively. Furthermore, the thinner the female character, the more positive comments she received about her body from male characters. They concluded that the message for female viewers is that, in order to be attractive to and receive positive comments from males, one has to be slim; and the message for male viewers is that it is acceptable to make positive comments about female bodies when they are thin and to withhold positive comments when they are obese. Fouts and Burggraf argued that exposure to differential verbal reinforcement dependent on weight may contribute to the internalization of the thin ideal in female viewers.

Even though there is empirical evidence regarding the detrimental effect of the thin ideal in the media, it does not influence all females in the same way. Ruggiero, Levi, Ciuna and Sassaroli (2003) contend that internalizing the thin ideal may be more likely for individuals with certain personality styles. Specifically, body image and eating disturbances may be related to individual variability in tendencies toward perfectionism. The stress over conforming to the thin ideal may initiate eating disturbances in individuals with a perfectionistic personality. However, even though all women are not affected by exposure to thin ideal media in the same way, the consequences can be devastating for those affected. Several studies have found that internalizing an ultra thin, unattainable, beauty ideal can lead not only to body image disturbance, but negative affect, low self-esteem, dieting, obesity and eating disorders (Groesz et al., 2002; Stice & Shaw, 2002; Rodin et al., 1985).

Theories of Body Image Disturbance

There are several theories about the ways in which media can influence body image, however, the various theoretical perspectives center around two points: 1) the media promotes and reflects body shapes, styles of clothing and images that symbolize complex themes of gender, class, beauty, success and self-control (Levine & Smolak, 1996; Stice & Shaw, 1994); and 2) the media is part of a sociocultural network, that includes families, peers, school, athletics, business, and health care professionals, which generates and legitimizes a variety of messages; these messages combine with preexisting vulnerabilities, such as low self esteem and genetic susceptibility to obesity, to beget the continuum of eating disorders (Levine & Smolak, 1996; Stice & Shaw, 1994). Specific theories looking at the role of the media in body image disturbance that have received attention in the body image literature include appearance schematicity, social learning theory, social comparison theory, and self-discrepancy theory. Weiner's theory of causal attributions will also be discussed as a potentially useful theory for explaining the effect of media exposure on body image disturbance.

Appearance schematicity

Certain individual differences make it more likely that media exposure will result in body image disturbance: weight (heavier women tend to have more body image disturbance), eating disorder symptomatology, trait body dissatisfaction, self-consciousness, a penchant for social comparison, and high degree of internalizing the thin ideal (Tiggemann, 2002). These individual characteristics associated with body image disturbance are often referred to as "appearance schematicity" (Tiggemann, 2002). Cash (1995) proposes that individuals can have cognitive schemas about their own appearance

which are generalizations that serve to guide and favour the processing of information related to appearance. Processing of appearance-related information, by those who are appearance schematic, can often result in a change of mood.

Cash (1994) maintains that contextual events, such as exposure to media that endorses the thin ideal, can serve to activate schematic processing of self-evaluative information about one's appearance, which provokes appearance-related affective experiences. Altabe and Thompson (1996) also found that, for individuals who were appearance schematic, processing of information related to appearance was often followed by changes in mood and affect, and enhanced recall for appearance-related information. Furthermore, Cash and Labarge (1996), found that a person who is schematic for appearance would encode, process and react to a wide range of appearance-related stimuli. For example, advertisements concerning weight loss or beauty products would be more readily noticed by individuals who are appearance schematic. As a result, they would be more likely to compare the physical appearance of others to their own. Also, they would tend to interpret rejection as being a result of their physical appearance. These findings led Cash and Labarge to conclude that individuals who are appearance schematic "are more psychologically invested in their looks as a standard of self-evaluation and index of self-worth" (p.38). Appearance schematic individuals seek out, and have greater recall for, appearance-related information that may serve to reinforce their negative views about their own appearance. Consequently, individuals who are appearance schematic will tend to have greater body image disturbance.

Social learning theory

Another theory used to help explain the impact of the media on body image disturbance is social learning theory. Social learning theory, as applied to body image disturbance, proposes that the media is an important agent of socialization that influences eating behaviour and body image disturbance through modeling, feedback, and instruction (Harrison & Cantor, 1997). Two components of social learning theory, prevalence and incentives, are enacted through the media to affect body image disturbance. According to social learning theory, the more prevalent an event, the more likely it will be modeled (Bandura, 1977). Since images of thinness and dieting prevail in the media, and media exposure is widespread, dieting behaviour is likely to be modeled. Incentives are the motivating factors to perform modeled behaviours (Bandura, 1977). Media images tend to associate thinness with happiness and success. This type of reward for thinness may encourage individuals to believe that they too will be rewarded for thinness and experience positive outcomes. Accordingly, in a sample of 232 women, Harrison and Cantor (1997) found that increased media exposure predicted eating disorder symptomatology and greater body image disturbance. They interpret their results in the context of social learning theory and assert that the prevalence and incentives of weight and shape media messages may be the means by which girls and women acquire the thin ideal, the motivation to change their bodies, and information on how to do so.

Social comparison theory

Social comparison theory is also used to explain the media's influence on body image disturbance. It is widely accepted that mere exposure to the thin ideal does not

create body image disturbance. Several researchers have found that a combination of exposure to the thin ideal and social comparison increased body image disturbance (Thompson, Coovert, & Stormer, 1999; Cusumano & Thompson, 1997). Festinger's social comparison theory (1954), as applied to body image disturbance, indicates that individuals will compare themselves to people and images they think represent realistic goals to attain. This theory also proposes that individuals will be motivated to meet their goal after a comparison, and that comparisons can become automatic. According to social comparison theory, individuals study images in the media in order to determine what is considered beautiful, to decide how they ought to look, to compare themselves to the media images, and to motivate themselves to match their appearance to the media images (Botta, 2003). Social comparison theory proposes that, individuals become dissatisfied with their bodies through this process of social comparison, and may turn to unhealthy eating behaviours to bridge the gap between what they perceive they should look like, and their actual appearance (Botta, 2003).

Accordingly, studies have found that individuals who engage in more social comparison tend to have greater body image disturbance. For instance, in a study looking at social comparison and body image, Jones (2001) found that, regardless of BMI, girls who reported engaging in social comparison in terms of weight and shape were more likely to express greater body image disturbance. Heinberg and Thompson (1992) also found a strong relationship between social comparison and females' ratings of body image and eating disturbances. Specifically, females who engaged in more social comparison were more dissatisfied with their bodies, and had more eating disturbances.

Furthermore, in a series of studies using 201 high school and college girls, Botta (2003) found that increased health and fitness magazine reading was significantly related to increased bulimic behaviours, increased anorexic behaviours and an increased drive to be thin. Also, an increase in level of social comparison was significantly related to increased bulimic behaviours, increased anorexic behaviours, an increased drive to be thin, and decreased body image satisfaction (Botta, 2003). Participants were also asked questions about critical body image processing, which refers to the extent to which they thought critically about the bodies presented in the media. Participants rated items such as "I question why the models need to have such perfect bodies," and "I question why the models don't look like how my friends and I look." Notably, increased critical body image processing was significantly related to increased bulimic behaviours, increased anorexic behaviours, an increased drive to be thin, and decreased body satisfaction. The more participants thought critically about the media images, the more body image disturbance they had, and the more eating disturbances they experienced. Conversely, focusing on the central content of the magazine was significantly related to decreased bulimic behaviours, and decreased anorexic behaviours and marginally related to decreased drive to be thin, and increased body image satisfaction. Similarly, reporting "not noticing" body sizes and shapes was significantly related to decreased bulimic behaviours, decreased anorexic behaviours, decreased drive to be thin, and increased body satisfaction. Botta suggests that the increase in body image and eating disturbances following critical evaluation of media images may occur because of a tendency to engage in social comparison with the images presented. Furthermore, levels of social comparison were lower when participants focused on the central content of the

magazines, further supporting the role of social comparison in body image disturbance. Overall, these results suggest that exposure to media images, and social comparison to those images, may be related to an increase in body image and eating disturbances.

Self-discrepancy theory

Another theory used to explain body image disturbance is self-discrepancy theory. Researchers have frequently remarked that women are getting heavier as the images of women in the media are getting smaller creating a larger disparity between individual weight and the cultural ideal (Garner & Garfinkel, 1997; Spitzer, Henderson, & Zivian). This growing disparity can serve to increase concerns about body image and precipitate attempts to conform to this ideal. As a result, females' ideal body measurements tend to be significantly lower than actual body measurements (Powers & Erickson, 1986). According to self-discrepancy theory, individuals have beliefs about who they are (the actual self), who they would like to be (the ideal self), and who they ought to be (the ought self) (Higgins, Bond, Klein, & Strauman, 1986). If the actual self is discrepant from the ideal self then an ideal discrepancy exists (e.g. my actual body is round, but I would like it to be slender). If the actual self is discrepant from the ought self then an ought discrepancy exists (e.g. my actual body is round, but my parents would like it to be slender). Self-discrepancy theory predicts that individuals high in ideal discrepancy should feel more negative affect after exposure to media in which thinness is socially rewarded, as that is meant to remind them of the positive outcome absent from their lives. However, individuals high in ought discrepancy should feel more negative affect after exposure to media in which obesity is socially punished as that is meant to remind them of the potential negative outcome they face.

Harrison (2001) used self-discrepancy theory to predict body image outcome following media exposure and obtained results that support the predictions made by self-discrepancy theory. Harrison used three videos, two experimental and one control. The control video featured a young girl camping with her father; it was selected because it was emotionally neutral, and did not emphasize weight or shape. In one experimental video a thin girl is awarded a modeling contract, and in the other experimental video a heavy girl is tricked into thinking a popular boy likes her. Harrison found that a brief exposure to media in which a thin girl is rewarded increased ideal discrepancies, which then increased body image and eating disturbances. Furthermore, exposure to media in which an obese girl was punished increased ought discrepancies, which then also increased body image and eating disturbances. Harrison (2001) proposes that ideal discrepancies mediate the relationship between exposure to thin ideal media and body image and eating disturbances, whereas ought discrepancies mediate the relationship between anti-obesity media and body image and eating disturbances. This research suggests that depictions of rewards for thinness and punishment for obesity increase body image disturbance and eating pathology differentially. Specifically, females with ideal discrepancies (they would *like* to look different than they do) experience more body image disturbance when they view media commending thinness. In contrast, females with ought discrepancies (they think they *should* look different than they do) experience more body image disturbance when they view media punishing obesity.

Weiner's theory of controllability

Although it has not been directly applied, Weiner's theory of controllability may be a useful tool for understanding body image disturbance and antifat attitudes.

According to Weiner's theory of causal attributions, following a success or failure, a search is undertaken to find the cause of the outcome (Weiner, 2000; Weiner, Perry & Magnusson, 1988). Beliefs about the cause of an outcome affect perceptions of responsibility, which in turn, produce feelings and also affect behaviour. In terms of body image disturbance, if individuals fails to conform to their beauty or weight ideal ideal, they will search for the cause of their failure. Subsequently, they may attribute their failure to internal factors such as a lack of control over their behaviour. This internal attribution for a failure may lead to negative self-directed affect, and potentially, attempts to control future behaviour to avoid subsequent failure. Attempts to control behaviour may lead to eating pathology such as dieting, excessive exercising, over-reacting to high fat or forbidden foods, skipping meals, binge eating, vomiting or laxative use. If indeed this sequence of outcome-attribution-emotion-behaviour occurs, then attributions about the controllability of weight may have an important role in circumventing body image and eating disturbances. Weiner's (2000) theory of causal attributions has had success predicting outcomes when attributions are made about others based on weight but has not been directly applied to outcomes when attributions are made about the self in terms of weight. Additionally, Weiner's theory is highly appropriate in cases where media suggests that a particular problem is controllable, a message often embedded in anti-obesity media.

Obesity

The emphasis on thinness in the media is in direct conflict with the rising rates of obesity (Striegel-Moore & Franko, 2002). According to the Canadian Community Health

Survey conducted by Statistics Canada (2004), 48.2% of the 649,000 adults surveyed had a BMI of more than 25 and are considered overweight. Furthermore, 14.9% had a BMI of 30 or more, and qualified as obese. Overall, rates of obesity have doubled in the past 20 years. The availability of energy-dense, high fat foods, and the rise in sedentary behaviour has resulted in what many call an "epidemic" of obesity (Irving & Neumark-Sztainer, 2002). Furthermore, according to Statistics Canada, only 50.4 % of the Canadian population is physically active, and only 38.9% of the population report eating 5 or more servings of fruits and vegetables a day. Moreover, not only are the actual rates of obesity rising, but so too are the media warnings about the rise of obesity. According to the International Food Information Council (2003), media coverage of obesity has risen dramatically in recent years. They reported that the number of stories about weight has escalated from 395 for the 12-month period ending September 30, 2000, to 4,767 for the 12 months ending September 30, 2003.

The growing rates of obesity are distressing given that the physical and psychological consequences of being obese can be serious. The physical consequences include diabetes, heart disease, and certain types of cancer (Barclay, 2004). The psychological consequences associated with higher BMI include those associated with stigma toward obesity, such as more body image disturbance and lower self-esteem (Wardle et al., 2002). Specifically, as the level of obesity increases, so does the level of body dissatisfaction (Schwartz & Brownell, 2002). Furthermore, not only does our culture stigmatize obesity, but individuals who are obese also endorse the same amount of dislike for those who are obese, and tend to think that the discrimination they face is justified (Quinn & Crocker, 1999). Accordingly, Western culture is often referred to as a

toxic environment relative to food and weight, as it adores thinness, stigmatizes obesity, promotes high fat foods, and quick fix weight loss techniques (Irving & Neumark-Sztainer, 2002). This toxic environment is often identified as a factor that promotes an array of eating disturbances.

Fear of Fat

Given the hostility and discrimination endured by individuals who are obese, it is not surprising that fear of fat is common in North American society today (Shapiro, Newcomb, & Loeb, 1997). Both drive for thinness and fear of fat are part of the diagnostic criteria for anorexia nervosa and bulimia nervosa; however, drive for thinness and fear of fat are also pervasive at a subclinical level (Levitt, 2003). Drive for thinness is defined as an excessive drive to be thin, and is often related to the cultural glorification of slenderness as the ideal for females. Attributes often associated with thinness include: health, restraint, self-control, beauty and power. In this cultural context that venerates thinness, weight becomes an outward symbol of inner worth (Crandall et al., 2001). To attain these positive attributes, females frequently strive to be thin. In contrast, there is a stigma associated with obesity. Accordingly, there is great fear associated with becoming obese or gaining weight. In fact, gaining weight is cited as the most prevalent fear in children, adolescents, and often even in adults (Levitt, 2003). To illustrate, of the 239 Grade 3 students in their study, Shapiro et al. (1997) found that most of the children expressed some fear of gaining weight, and evidence of internalization of the sociocultural preference for thinness. Similarly, in a study with 438 secondary and tertiary students without eating disorders, Abraham (2003) found that 72% feared that

they "may gain weight or become fat or fatter." Abraham also found that, in a study of 116 participants with eating disorders, 91% feared weight gain and becoming fat or fatter. The research evidence suggests that fear of fat is so common as to be considered normative (Abraham, 2003).

The terms drive for thinness and fear of fat are often used interchangeably, however, Levitt (2003) contends that they are separate yet related constructs. Levitt argues that drive for thinness and fear of fat represent approach avoidance tendencies, where drive for thinness refers to a cumulative effect of positive reinforcement such as compliments and attention for weight loss, and fear of fat represents a cumulative effect of negative reinforcement, for instance, the avoidance of a negative outcome such as teasing (Levitt, 2003). This interpretation helps to explain how drive for thinness and fear of fat may both be components of body image disturbance.

Stigma Toward Obesity

Despite the fact that half of North American adults are heavy, and 1 in 4 are considered obese, being obese remains one of the most devastating stigmas to possess (Hebl & Mannix, 2003). In fact, stigma toward obesity is sometimes referred to as the "last socially acceptable form of discrimination" (Schwartz & Brownell, 2002, p. 202). Individuals who are obese are perceived as less active, intelligent, hardworking, attractive, popular, successful and athletic, as well as more self-indulgent, weak-willed and immoral. Additionally, individuals who are obese are not only the target of unfavorable perceptions, but they also experience negative social reactions. For instance, Roehling (1999) reviewed studies looking at individuals who are obese in professional

contexts and found evidence of discrimination at every stage of the employment cycle. There are also negative attitudes of physicians toward individuals who are obese (Czajka-Nairns & Parham, 1990). Unfortunately, since rates of obesity are on the rise, the stigma associated with obesity will affect large segments of the population (Statistics Canada, 2004).

Stigma toward individuals who are obese begins at an early age (Striegel-Moore & Franko, 2002). Children as young as kindergarten age tend to choose a thin body as their ideal, and they also negatively stereotype individuals who are obese. To illustrate, in a study assessing children's attitudes toward individuals who are obese, Felker (1972) found that boys and girls in the first, third and fifth grade described heavier bodies with more negative descriptors such as "ugly" and "dirty" as compared to thin bodies. Given that females are more likely to be judged by how they look, females who are obese face more stigma than males of a similar weight (Czajka-Nairns & Parham, 1990). For example, in a study looking at the effects of television exposure on grade school children, Harrison (2000) found that the more television males reported watching, the more likely they were to stigmatize a female who is obese, but not a male who is obese. Females also demonstrated a tendency to stereotype females more than males, but not as much as the males. These results support the idea that the stigma associated with obesity is more damaging for females than for males.

The media helps to endorse the stigma toward individuals who are obese. In a study looking at the representations of female bodies in television programs, Fouts and Burggraf (2000) analyzed the depictions of 37 central female characters from 18 popular programs. They found that, not only are below-average weight females over-represented

in the programs, but when heavier female characters were present, there were more negative comments made about or to her. Furthermore, the negative comments directed at the heavier television characters were reinforced by positive audience reactions such as laughter. They also found that heavier females were often given ''helpful'' suggestions on how to lose weight or how to dress to hide a ''weight problem.'' The results of this study indicate that situation comedies depict males making derogatory remarks about the weight and body shape of heavier females and their remarks are reinforced by audience laughter. Fouts and Burggraf argue that the message of this type of media is that a female who is obese may be subjected to sarcasm, disdain, and mockery, and that such behaviour will be positively reinforced. They further suggest that this combination of idealizing thinness and derogating obesity contributes to the internalization of gender and weight stereotypes. In turn, this differential reinforcement can lead female viewers to adopt distorted mental constructions of, and dissatisfaction with, their bodies. Not surprisingly then, Harrison and Cantor (1997) found that viewing television with main characters who are obese was significantly related to body image disturbance in female viewers.

Controllability of weight

An Attribution-Value model of prejudice proposes that the disparaging perception of individuals who are obese is predicated on the assumption that weight is controllable, and therefore, individuals who are obese are at fault for their condition (Crandall et al., 2001). Crandall (1994) refers to the antipathy toward people who are obese as an "ideology of blame," and likens the stigma they face to symbolic racism (p. 882). Therefore, the pernicious consequences of being obese are due in part to the perception

that being obese results from self-indulgence, gluttony or laziness (Dejong, 1980). Weiner's theory of controllability has been directly applied to a number of stigmas, including obesity, in order to explain people's reactions to those who are stigmatized (Weiner, 2000). Because individuals who are obese are held responsible for their weight, they are considered to be deficient in terms of other characteristics as well, some that have no relationship to attractiveness (Czajka-Nairns & Parham, 1990).

Controllability and Stigma Toward Obesity

Since negative perceptions of individuals who are obese are based on the assumption of personal responsibility, if information about a situational or an uncontrollable internal cause of obesity is provided (e.g. disease or bodily dysfunction), the person who is obese is rated more favorably. An illustration of this finding comes from a study conducted by Dejong (1980) in which perceptions of controllability of weight were directly manipulated. Participants were presented with a description of a female who was either obese or of average weight. Following the description, they were given a brief explanation of why the female was obese. Specifically, participants were either given no explanation, told that she had a thyroid condition, told that she was losing weight but did not have a thyroid condition, or told that she was losing weight and did have a thyroid condition. Participants who believed that the female who was obese could control her weight (when a thyroid condition was not cited as the reason for the female's weight) rated her as more self-indulgent, more lazy, and as having less self-discipline than when she was presented as having an "excuse" for her weight. A subsequent study by Dejong (1993) found similar results. Participants were asked to rate a female who they were led to believe was either obese due to a sedentary lifestyle, or due to a

glandular disorder. Participants that believed the obese female had a medical condition that resulted in weight gain, liked her more and felt less anger toward her than participants who believed that that she could control her weight.

Perceptions of controllability regarding the weight of an individual who is obese are not only influenced by whether a medical condition precipitating weight gain is identified. For instance, Grosko (2002) used a psycho-educational intervention to change participants' affective reactions to an obese person. Participants were presented with either a traditional or an alternative lecture, and then were asked to rate a obese female on scales that measured liking, emotional and cognitive reactions. The traditional lecture endorsed the message that weight is controllable and individuals who are obese should lose weight to be healthy. In contrast, the alternative lecture supported the message that diets do not work and to be healthy does not necessarily mean to be thin. Results showed that individuals who heard the alternative lecture blamed the obese person less, felt less anger, disgust and pity toward her, and more liking and willingness to help her as compared to participants who heard the traditional lecture. This study shows that even a brief psycho-educational intervention stressing that weight is not as controllable as people may think can change participants' attributions and affective reactions about an individual who is obese.

Stigma directed at those who are obese is prevalent; however, there is both individual and cultural variability in level of anti-obesity attitudes. Ideals of self-determination and internal control play a role in the attributional style that individuals adopt, and individual differences in attributional style have been correlated with level of prejudice toward those who are obese (Crandall & Martinez, 1996). Furthermore, these

differences in attributional style also remain at the cultural level. Crandall and Martinez (1996) argue that North American society is inherently individualistic and conservative, and that anti-obesity attitudes, which are prevalent in North America, stem from a social ideology specific to Western culture that maintains that individuals are responsible for their life outcomes.

Cultural differences in attributions about obesity help to explain cultural differences in stigma toward obese people. For instance, Quinn and Crocker (1999) argue that holding anti-obesity attitudes serves a symbolic, value-laden function and helps to reinforce a worldview consistent with the Protestant work ethic, individualism and the idea that people get what they deserve. The Protestant work ethic is an ideology considered to be a core value of North American culture; it includes the belief that hard work by an individual begets success, and that lack of success is the result of moral failings, of self-indulgence and a lack of self-discipline (Quinn & Crocker, 1999). Accordingly, Quinn and Crocker (1999) found a significant relationship between level of Protestant work ethic and beliefs about the controllability of weight. Specifically, the more a person endorsed the values of the Protestant work ethic, the more likely they were to say that weight is controllable and people are personally responsible for their weight. Furthermore, the stronger the belief about the controllability of weight, the more likely individuals were to stigmatize those who are obese. They also found that anti-obesity attitudes are significantly correlated with conservative views toward women, marriage, politics, affirmative action and capital punishment. Typical North American attitudes toward obesity help to elucidate why stigma toward the obese is pervasive in North American culture.

In a study assessing cross-cultural attitudes toward obesity, Crandall and Martinez (1996) used a sample of 406 university students, either from the United States, an individualistic country, or Mexico, a more communal country. They found that individuals in the U.S. had higher anti-obesity attitudes, would espouse the controllability of weight to a greater degree, and had a greater fear of obesity. They concluded that differences in social ideology contribute to differences in anti-obesity attitudes. They also found that making an internal attribution for a person's weight led to greater anti-obesity attitudes regardless of cultural values toward obesity. Crandall et al. (2001) found similar results in their assessment of cross-cultural anti-obesity attitudes. In a sample of 970 participants from 6 nations, 3 individualist (United States, Australia and Poland), and 3 collectivist (India, Venezuela and Turkey), they found that individuals who made attributions of controllability and devalued obesity were more likely to express anti-obesity attitudes. They also found cultural differences in degree of anti-obesity attitudes. Specifically, participants in individualist cultures were more likely to endorse anti-obesity attitudes than participants in collectivist cultures.

Even though perceptions of controllability of weight often lead to the stigmatization of individuals who are obese, the idea that weight is entirely controllable is still over-represented in the media, and in the medical field. For instance, popular women's magazines have many articles devoted to diet and exercise, and this type of article content promotes the belief that people can and should control their weight and shape (Tiggemann, 2002). Furthermore, not only does the media emphasize that people can control their weight, they also endorse the message that people will only be respected by others and themselves if they lose weight (Quinn & Crocker, 1999). For instance,

Geier, Swartz and Brownell (2003) examined the impact of "before and after" diet ads which feature pictures of people before and after weight loss, and personal testimonies of the effectiveness of a particular method of weight loss. Participants were divided into three groups: those that saw the before and after diet ads, those that saw the before picture only, and those that saw the after picture only. They found that participants who saw the "before and after" diet ads most strongly endorsed the belief that weight is controllable. Furthermore, they found that participants who believed that weight is controllable were more likely to stigmatize the individuals who are obese. They also found that participants who saw both the before and after ads and the before only ads were more likely to stigmatize individuals who are obese than those who saw the after only ads. Further to this, they found that individuals who scored high on a life satisfaction scale were less likely to stigmatize individuals who are obese. According to these results, the more an individual believes in the controllability of weight, the more likely they are to stigmatize those who are obese.

The idea that weight is controllable is also over represented in the medical field. The medical model of obesity maintains that for every height, there is a fixed healthy weight range dictated by the Body Mass Index (BMI). Most anti-obesity campaigns are based on a medical perspective, and accordingly, have focused on ways to control weight to fit the standards of the BMI (Irving & Neumark-Sztainer, 2002). Consequently, individuals who do not fall in the healthy weight range set by the BMI, may experience body image disturbance and resort to unhelpful and unhealthy means of reducing their body weight. This medical perspective conveys the message that individuals are responsible for maintaining their weight within a range determined by the BMI. In

contrast, research evidence suggests that weight is mostly a result of genetic factors and only somewhat related to lifestyle (Crandall & Martinez, 1996). A recent publication by the Weight Realities Division of the Society for Nutrition Education (2003) put forth a healthy message regarding prevention of obesity. They emphasize that expecting all people to fall into a predetermined weight range is unrealistic and can result in problems. Furthermore, they stress that a healthy weight should be defined as the "natural weight the body adopts, given a healthful diet and meaningful levels of physical activity" (p. 2). In order to avoid the problems that arise from rigid expectations about weight, this healthy message should be used in relation to body image regardless of the size of the target population.

Summary and Present Research

Body image disturbance is prevalent in Western culture and stems from many factors including low self-esteem, the disparity between one's physical appearance and social standards of beauty, peer influence, family environment, teasing about physical appearance as a child, and media exposure (Polivy & Herman, 2002). The impact of the media on body image disturbance has been extensively studied as a potential risk factor for body image disturbance, particularly the role of exposure to ultra-thin females in the media (e.g. Thompson et al., 1999). Research supports the connection between greater exposure to media espousing the thin ideal and greater body image disturbance. In contrast, obesity media has been largely overlooked. This is surprising because the number of anti-obesity media messages is rapidly increasing (International Food Information Council, May, 2004), and one study showed that exposure to television

media in which obesity was punished led to increased body image disturbance (Harrison, 2001). However, the impact of anti-obesity media on body image disturbance and antifat attitudes has not been comprehensively evaluated using a popular form of media (i.e., newspaper advertisements). This research program will examine the role of anti-obesity media in contributing to body image disturbance and antifat attitudes.

Several theories have been developed to explain the impact of the media on body image disturbance including appearance schematicity, social learning theory, social comparison theory, and self-discrepancy theory. Although not a theory of body image dissatisfaction, Weiner's (2000) Attribution theory can be used to understand the impact of making internal attributions about excess weight and obesity. Specifically, if exposure to anti-obesity media leads some individuals to feel dissatisfied with their body, and they make an internal attribution for their weight or shape, they may blame themselves and experience greater body image disturbance. Accordingly, it is reasonable to expect that individuals who judge themselves harshly may also be more critical of individuals who are obese for failing to control their weight. Therefore, it is expected that individuals who experience more body image disturbance may also endorse more antifat attitudes. We would also expect that other variables related to body image disturbance would be affected by exposure to media espousing the controllability of weight, such as increased anticipated emotional reactions to certain foods, increase in worry, increase in negative affect, and increased exercise behavior. Although an increase in exercise may be healthy, excessive exercise is not; therefore, levels of exercise behaviour were monitored for participants in the present study.

To determine whether anti-obesity media contributes to body image disturbance and antifat attitudes, the present research will address the following questions: 1. Does exposure to anti-obesity media contribute to body image disturbance and antifat attitudes? 2. Does the idea that weight is largely controllable, a message often embedded in anti-obesity media, lead to more negative evaluations of body image and more antifat attitudes? Participants will read a brief newspaper article with either an anti-obesity message delineating the dangers of obesity (condition 1), an anti-obesity message describing the dangers of obesity in addition to information about weight control strategies (condition 2), or a message about the rise of a healthcare problem uncommon in university students (condition 3). The newspaper articles were all written for the study in order to control for the saliency of the message of conditions 1 and 2, and article length.

Degree of drive for thinness and perceived weight will be included as covariates in this study and will be measured by the Drive for Thinness subscale of the Eating Disorder Inventory-2 (Garner, 1991) and the Self-Classified Weight subscale of the Multidimensional Body-Self Relations Questionnaire (Cash & Pruzinsky, 1990). These measures are included as covariates because research has suggested that individuals with a high drive for thinness, and who perceive themselves as heavy, tend to have a higher degree of body image disturbance (Tiggemann, 2002; Thompson, et al., 1999). It is therefore expected that individuals who are high in drive for thinness and who perceive themselves as heavy at the beginning of the study will have higher scores on the measures of body image disturbance. It is also expected that, since individuals with high initial scores on the covariate measures tend to have high standards in terms of weight for

themselves, that they would also be critical of the weight of others. It is therefore anticipated that individuals with higher initial scores on the covariates will have higher scores on the Antifat Attitudes Questionnaire.

The independent variable in the study is media condition (obesity warning, obesity warning plus message of controllability of weight, health-anxiety placebo). The dependent variables in this study include the Antifat Attitudes Questionnaire, the Body Shape Questionnaire, the Thirteen-Figure Contour Drawing Ratings Scale, the Eating Attitudes Test-26, the Forbidden Foods Survey, the Penn State Worry Questionnaire, the Positive and Negative Affect Scale, and the Stanford 7-day Physical Activity Re-call Scale.

Hypotheses

In the following hypotheses, Drive for Thinness and Self-Classified Weight will serve as covariates.

Hypothesis 1 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the Antifat Attitudes Questionnaire relative to those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to post-test and from pre-test to follow-up.

Hypothesis 2 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the Body Shape Questionnaire and greater change in discrepancy scores on the Thirteen-Figure Contour Drawing Ratings Scale relative to

those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to post-test and from pre-test to follow-up.

Hypothesis 3 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the Eating Attitudes Test-26 relative to those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to post-test and from pre-test to follow-up.

Hypothesis 4 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the Forbidden Foods Scale relative to those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to post-test and from pre-test to follow-up.

Hypothesis 5 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the Penn State Worry Questionnaire relative to those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to post-test and from pre-test to follow-up.

Hypothesis 6 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the depression subscale of the Positive and Negative Affect Scale relative to those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to post-test and from pre-test to follow-up.

Hypothesis 7 is that individuals in condition 2 (obesity plus controllability) will have a greater change in scores on the Stanford 7-day Physical Activity Re-call Scale

relative to those in condition 1 (obesity), who will have greater change in scores than those in condition 3 (placebo) from pre-test to follow-up.

Method

Design

The present study is a randomized, controlled trial developed to determine whether anti-obesity media impact on body image disturbance and antifat attitudes. As an integrity check, all participants were asked to complete several questions after reading the newspaper articles to assess for comprehension and retention of the information (see Appendix A).

Participants

Participants were 220 female undergraduate introductory psychology students recruited from the University of Manitoba. This study concentrated on female participants because females typically have more concerns about body image. The total sample consisted of 72 participants in condition 1, 75 participants in condition 2, and 72 participants in condition 3. See Table II for a summary of participant characteristics. The participants received written and oral instructions that indicated what would be required of them, that their participation was voluntary, and that they could discontinue participation without penalty. All participants received course credit for their participation.

Materials

Independent variables.

There were three newspaper article conditions. The first condition was an anti-obesity message delineating the dangers of obesity (see Appendix B). The second condition was an anti-obesity message describing the dangers of obesity in addition to information about weight control strategies (see Appendix C). The third condition was a health-anxiety placebo condition describing the rise of a healthcare problem known to be infrequent in university students (see Appendix D). The health-anxiety placebo condition was intended to control for the effect of health-related worry by reading about the rise of a health problem. The newspaper articles were all written for the study in order to control for the saliency of the message of conditions 1 and 2, and article length. The articles were similar in number of words: condition 1 (anti-obesity) 408, condition 2 (anti-obesity plus controllability of weight) 421, and condition 3 (health-anxiety placebo) 397.

Covariates.

Drive for Thinness Subscale—Eating Disorders Inventory-2

The Drive for Thinness subscale of the Eating Disorders Inventory-2 is comprised of 7 items measuring preoccupation with weight, excessive concern related to dieting, and fear of weight gain (Garner, 1991). Participants respond to statements about attitudes toward eating and weight on a 6-point Likert scale from "Always" to "Never" (see Appendix E). The drive for thinness subscale is one of 11 subscales that make up the 91-item EDI-2 questionnaire. In a study assessing the psychometric properties of the drive for thinness subscale of the EDI-2, the internal consistency reliability (Cronbach's alpha)

in a sample of women with eating disorders was high (α = .83) (Garner, 1991). Eberenz and Gleaves (1993) also found a similar internal consistency reliability coefficient for the drive for thinness subscale in a large inpatient eating disorder sample (α = .81). Test-retest reliability coefficients for the drive for thinness subscale in an eating disorder population ranged from α = .81 to α = .91., and were similar for non eating disorder samples (α = .85, α = .92) (Garner, 1991). Concurrent validity of the drive for thinness subscale was established by its relationship with the EAT-26 and EAT-26 subscales: EAT-26 Total score (r = .71), Dieting, (r = .74), Bulimia and Food Preoccupation (r = .53), and Restraint (r = .61).

Self-Classified Weight subscale—Multidimensional Body-Self Relations Questionnaire

An additional covariate will be the Self-Classified Weight subscale of the Multidimensional Body-Self Relations Questionnaire (MBSRQ) (Cash & Pruzinsky, 1990). The Self-Classified Weight subscale measures perceived weight from very underweight to very overweight (see Appendix F). The Self-Classified Weight subscale is one of 10 subscales that comprise the 69-item MBSRQ. Internal consistency reliability (Cronbach's alpha) was established on a sample of 804 females, and was found to be adequate both at initial test (α = .89), and at 1-month test-retest (α = .74) (Cash & Pruzinsky, 1990).

Dependent variables.

Antifat Attitudes Questionnaire

The Antifat Attitudes Questionnaire measures antipathy toward obese people (Crandall, 1994). Participants rate how much they agree with each of 13 statements

regarding individuals that are obese on a 9-point Likert scale, from 0 "Strongly disagree," to 9 "Strongly agree" (see Appendix G). The scale is divided into three subsections that assess different aspects of antifat attitudes: "Dislike," a measure of judgment of people that are obese, "Fear of fat," a measure of concerns about weight and the self-relevance of fat, and "Willpower," a measure of the perceived controllability of weight. Each of the three subscales has a high internal consistency reliability coefficient (Cronbach's alpha): Dislike ($\alpha = .84$), Fear of Fat, ($\alpha = .79$), and Willpower ($\alpha = .66$) (Crandall, 1994). The Antifat Attitudes Questionnaire was created based on the theory of the Protestant work ethic. The extent to which a person endorses the qualities of hard work, self-determination, and the belief in a just world, should predict high scores on the Antifat Attitudes Questionnaire. Accordingly, construct validity was established by its significant relationships with other measures of the protestant work ethic, intolerance, and right wing political views (Crandall, 1994).

Body Shape Questionnaire (BSQ)

The Body Shape Questionnaire (BSQ) is a 34-item self-report questionnaire that assesses global body shape concerns (Cooper, Taylor, Cooper, & Maguire, 1987). Participants respond to a series of statements regarding their feelings about their shape on a 6-point Likert scale from 1 "Never" to 6 "Always" (see Appendix H). Test-retest reliability of the BSQ is robust: $r = .88$, $p < .001$ (Rosen, Jones, Ramirez, & Waxman, 1996). Concurrent validity of the BSQ is supported by significant correlations with the Eating Attitudes Test ($r = .35$, $p < .02$), the Eating Disorder Inventory Body Dissatisfaction subscale ($r = .66$, $p < .001$) (Cooper et al., 1987), the Multidimensional

Body-Self Relations Questionnaire (*r*s -.47 to -.67, *p*s < .05), and the Body Dysmorphic Disorder Examination (*r*s .58 to .81, *p*s < .05) (Rosen et al., 1996).

Thirteen-Figure Contour Drawing Ratings Scale

The Thirteen-Figure Contour Drawing Ratings Scale is a measure of body-size, weight and shape satisfaction (Gardner, Stark, Jackson, & Friedman, 1999). Participants are presented with 13 contour drawings of female bodies, and asked to chose the shape they think is closest to their perceived body-size. Following that, they are asked to chose the figure that is closest to their ideal body-size. Furthermore, even though it was not part of the original instructions, participants were also asked to indicate the size they think they should be (see Appendix I). The contour drawings represent a range of ± 30 around the average weight for women in Canada (145 lbs) in 5% equal interval increments (Gilmore, 1999). The drawings are typically presented on 13 separate cards, but for the purposes of testing large groups of women, the 13 drawings were presented on one page. Test-retest reliability of the Thirteen-Figure Contour Drawing Ratings Scale is robust: $r = .87$, $p < .0005$ (Gardner et al., 1999). Concurrent validity was established by comparing participants' reported weight on a demographic questionnaire at the beginning of the experiment to their ratings of their perceived weight on the Thirteen-Figure Contour Drawing Ratings Scale. Gardner et al. found that ratings on the Thirteen-Figure Contour Drawing Ratings Scale were highly correlated with reported weight ($r = .62$, $p < .0005$) and Body Mass Index ($r = .70$, $p < .0005$). Scores range from 0 to 12, and higher scores indicate greater discrepancy between actual body size and either ideal body size, or the body size participants feel they should be. Because the Thirteen-Figure Contour

Drawing Ratings Scale measures actual-ideal or actual-ought discrepancy, it is useful for testing the predictions of Self-Discrepancy Theory.

Eating Attitudes Test-26 (EAT-26)

The Eating Attitudes Test-26 (EAT- 26) is a measure of abnormal eating behaviours and attitudes (Garner, Olmstead, Bohr, & Garfinkel, 1982). Participants respond to statements about eating attitudes and behaviours on a 6-point Likert scale from "Always" to "Never" (see Appendix J). The EAT- 26 is an abbreviated version of the original 40-item EAT scale (Garner & Garfinkel, 1979). Factor analysis of the 40-item scale revealed three factors: dieting, bulimia and food preoccupation and oral control. Fourteen items did not load on any of the factors and were eliminated to form the EAT-26. In studies assessing the psychometric properties of the EAT-26, Garner et al. (1982) found that the EAT-26 is highly predictive of the total score on the EAT-40 ($r = .98$), and the internal consistency reliability (Cronbach's alpha) of the EAT-26 is high ($\alpha = .90$). They also found that the discriminant validity of the EAT-26 was supported, as it was able to significantly distinguish between the anorexia nervosa restricter and bulimia subtypes and the female comparison group. Furthermore, concurrent validity is supported as the EAT-26 correlates significantly with clinical and psychometric measures that match those of the EAT-40: Body size estimate ($r = .42$, $p < .001$), Ideal size estimate ($r = -.38$, $p < .001$), Body Dissatisfaction Scale ($r = .44$, $p < .001$), Hopkins Symptom Checklist ($r = .42$, $p < .001$).

Forbidden Food Survey (FFS)

The Forbidden Food Survey (FFS) is a 45-item self-report measure that assesses the fear of "forbidden foods" and the anticipated emotional reaction to eating different

food types and caloric levels (Ruggiero, Williamson, Davis, Schlundt, & Carey, 1988). The food items are derived from one of five food groups (milk, meat, fruit & vegetables, grain, beverages), and subcategorized by caloric level (low, medium and high). Participants are asked to rate how they would feel about themselves after eating each food for the 45 food items. Participants respond on a 5-point Likert scale from 0 "I would feel very good about myself after eating this food," to 4 "I would feel very badly about myself after eating this food" (see Appendix K). Internal consistency reliabilities (Cronbach's alphas) for the scales range from $\alpha = .52$ for the Beverage scale to $\alpha = .85$ for the High calorie, Grain, and Meat scales. Test-retest reliability coefficients for the scales range from $r = .63$ for the Milk scale to $r = .90$ for the Meat scale. Discriminant validity of the FFS was established as groups defined as "binge-eaters," "binge-purgers" and "normals" had significantly different anticipated emotional reactions to the various food groups ($F = 4.07$, $p < .001$) and caloric levels ($F = 2.29$, $p < .02$) (Ruggiero et al., 1988).

Penn State Worry Questionnaire (PSWQ)

The Penn State Worry Questionnaire (PSWQ) is a 16-item self-report questionnaire designed to assess the tendency, uncontrollability and intensity of general worry (Meyer, Miller, Metzger, & Borkovec 1990). Items are rated on a Likert scale from 1 ("not at all typical of me") to 5 ("very typical of me") (see Appendix L). In studies assessing the reliability and validity of the PSWQ, Meyer et al. found that test-retest reliability is high: $r = .92$. They also found high concurrent validity, as the PSWQ correlates significantly with other clinical measures of anxiety: State Trait Anxiety Inventory-Trait, $r = .64$, $p < .001$; Cognitive Somatic Anxiety Questionnaire, $r = .69$, $p < .001$. Moreover, in a group of individuals with Generalized Anxiety Disorder (GAD), in

which general worry is a central component, the PSWQ was able to discriminate between levels of severity of GAD ($F = 94.25$, $p < .001$). In a further demonstration of discriminant validity, the PSWQ was able to differentiate between individuals with Post Traumatic Stress Disorder and individuals with GAD ($F = 3.67$, $p < .05$). Furthermore, in a study of the psychometric properties of the PSWQ in a community sample, the internal reliability of the PSWQ was found to be high $\alpha = .88$ (Rijsoort, Emmelkamp, & Vervaeke, 1999).

Positive and Negative Affect Scale (PANAS)

The Positive and Negative Affect Scale (PANAS) is comprised of two 10-item scales that assess positive and negative affect (Watson, Clark, & Tellegen, 1988). Participants are instructed to rate the degree to which they have experienced 20 mood states on a 5-point Likert scale, from 1 "Very slightly or not at all" to 5 "Very much" (see Appendix M). Internal consistency reliabilities (Cronbach's alpha) for both the positive and negative affect scales are $\alpha = .87$. The test-retest reliabilities for the positive and negative affect scales are $r = .48$ and $r = .58$ respectively. Concurrent validity of the PANAS was established by its relationship with other measures of affect: Hopkins Symptom Checklist (PA $r = -.19$, NA $r = .74$) Beck Depression Inventory (PA $r = -.36$, NA $r = .58$) State-Trait Anxiety Inventory State Anxiety Scale (PA $r = -.35$, NA $r = .51$) (Watson et al., 1988).

Stanford 7-day Physical Activity Re-call Scale (PAR)

The Stanford 7-day Physical Activity Re-call Scale (PAR) is a re-call estimate of free-living physical activity (Blair et al., 1985). Participants are asked to report the average number of hours they slept each night for the last week, as well as the average

number of hours spent in moderate, hard, and very hard activity each day during the past week (see Appendix N). The PAR was first described as an interview; however, there are high correlations between the self-administered re-call, and the interview administered re-call ($r = .83, p < .01$), and between the self-administered 7-day re-call and a daily diary of physical activity ($r = .82, p < .01$) (Dishman & Steinhardt, 1988). There is also high test-retest reliability for the interview PAR for hard activities ($r = .31, p = .021$), and very hard activities ($r = .61, p = .0001$) (Sallis, Haskell, Wood, Fortmann, Rogers, Blair, & Paffenbarger, 1985). Dishman and Steinhardt (1988) found similar test-retest results for the total score on the self-administered PAR at 3 and 7 weeks: ($r = .58, p < .01$; $r = .42, p < .01$). They also found that the discriminant validity of the self-administered PAR was supported, as the PAR distinguished between self-defined "trained" and "untrained" groups: (M trained = 279.9, M untrained = 212.6, $p < .01$). Furthermore, the discriminant validity results of the PAR were consistent with results of measured cardiopulmonary fitness (VO_{2max}): (M trained = 56.9, M untrained = 39.9, $p < .01$).

Information and Demographic Questionnaires

Also included in the measures are questions relating to how often participants seek information about weight control, feedback about overall appearance, feedback about weight, how often they attempt to diet, and how often they compare their bodies to other women's bodies (see Appendix O). Participants will respond to various statements about appearance-related behaviour in the past week on a 6-point Likert scale from 0 "Never" to 5 "Always." These additional scales do not have reliability and validity information, as they were created specifically for this study. These measures will, however, be useful in bolstering our understanding of the impact of the intervention.

Participants will also be asked to fill in a series of demographic variables including height, weight, age, marital status, income, educational background, and occupation.

Procedure

Initially, to determine whether the study conditions elicited the intended beliefs about the controllability of obesity, a pilot study was completed with a small group of students (See Appendix P). All pilot participants read all three media articles and answered a series of Likert-type questions about the articles inquiring about whether the articles conveyed the impression that weight is controllable and whether they resembled real newspaper articles.

The formal study was advertised as assessing the effect of health-related media. Testing took place in large groups in a classroom setting. Participants were given a consent form describing the purpose of the study to read and sign prior to the commencement of the study (See Appendix Q). They were also informed that they would be completing some of the questionnaires more than once and were instructed to complete the questionnaires as honestly as possible even if their two sets of responses were inconsistent. Participants then completed all questionnaires, the Drive for Thinness Subscale of the Eating Disorder Inventory-2, the Self-Classified Weight subscale of the Multidimensional Body-Self Relations Questionnaire, the Antifat Attitudes Questionnaire, the Body Shape Questionnaire, the Eating Attitudes Test-26, the Forbidden Foods Survey, the Thirteen-Figure Contour Drawing Ratings Scale, the Penn State Worry Questionnaire, the depression subscale of the Positive and Negative Affect Scale, the Stanford 7-day Physical Activity Re-call Scale, and the demographic questionnaire, following which the booklets containing the questionnaires were collected.

Participants were then randomly assigned to one of three study conditions and given the appropriate booklet. Those in condition 1 read an anti-obesity message delineating the dangers of obesity. Those in condition 2 read an anti-obesity message describing the dangers of obesity in addition to information about weight control strategies (anti-obesity plus controllability of weight). Those in condition 3, an health-anxiety placebo condition, read about the rise of a healthcare problem known to be infrequent in university students (rickets). Immediately after the experimental manipulation, all participants completed for a second time the Antifat Attitudes Questionnaire, the Body Shape Questionnaire, the Eating Attitudes Test-26, the Thirteen-Figure Contour Drawing Ratings Scale, the Forbidden Foods Survey, the Penn State Worry Questionnaire, and the depression subscale of the Positive and Negative Affect Scale. They also completed the questions about the newspaper articles to assess for understanding and retention of the information they read. At one-week follow-up, participants completed all questionnaires, the Antifat Attitudes Questionnaire, the Body Shape Questionnaire, the Eating Attitudes Test-26, the Thirteen-Figure Contour Drawing Ratings Scale, the Forbidden Foods Survey, the Penn State Worry Questionnaire, the depression subscale of the Positive and Negative Affect Scale, and the Stanford 7-day Physical Activity Re-call Scale. Following the completion of the study, participants were given a debriefing form explaining the purpose of the study (See Appendix R).

Results

Pilot Study

Pilot data was collected using a sample of 21 female University students (Mean age = 23.42 years, SD = .55) who read all 3 newspaper articles and responded to 5 questions about each article. The dependent variables consisted of participants' responses to each of the 5 pilot questions. Data was tested with a series of 5 repeated measures ANOVA procedures for the 5 questionnaire items. In order to meet the conditions of the repeated measures ANOVA, Mauchly's test of sphericity was used to test the assumption that the error covariance matrix of the orthonormalized transformed dependent variables was proportional to an identity matrix. If the assumption was not met, the Greenhouse-Geisser statistic was substituted to adjust for the degrees of freedom.

As shown in Table I, after controlling for Type 1 error using Tukey's honestly significant difference comparison, participants found the length and reading level of the 3 newspaper articles to be equivalent. As expected, results also showed that the 3 conditions were viewed as different than one another in terms of personal responsibility for weight and the degree to which the articles might make someone feel they should lose weight. Specifically, participants reported that the article about obesity and the controllability of weight (condition 2), conveyed the message that individuals are responsible for their weight, and that individuals should lose weight more than the article about obesity (condition 1), and the article about rickets (conditions 3). Perhaps unexpectedly, participants rated the rickets article as less authentic than the articles on obesity, possibly due to the widespread exposure to articles about obesity in the media.

Table I

Description of pilot data

	Condition							
	Obesity		Controllability of weight		Rickets			
Pilot Questions	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
1. To what extent did the article focus on how individuals should take personal responsibility for their weight?	1.43_a	.51	3.95_b	.87	1.00_c	.00	117.77	.00
2. Might someone read this article and feel that they should lose weight?	2.62_a	.59	4.33_b	.58	1.00_c	.00	250.92	.00
3. Were the articles similar in length?	3.86_a	.73	4.00_a	.71	3.90_a	.77	.34	.66
4. Were the articles similar in reading level required?	4.05_a	.74	4.10_a	.70	3.90_a	.54	.72	.50
5. Were the articles that you read similar to the kind of article you would read in a newspaper?	4.05_a	.74	4.05_a	.81	3.48_b	.68	4.07	.03

Note. $N = 21$ per group

$_a$ Means in the same row that do not share subscripts differ at $p < .05$.

Formal Study

The initial study sample consisted of 220 participants. Missing data were as follows: one participant was removed from the initial dataset because they did not complete the post test measures. See Table II for description of participant groups. There were 23 participants that did not complete the week 1 follow-up survey, 7 from condition 1 (obesity), 9 from condition 2 (obesity plus controllability of weight), and 7 from condition 3 (rickets). Multiple regression analysis was used to estimate missing values on the follow-up measures for the participants. Missing values were replaced with predicted values generated by a multiple linear regression equation. For the few cases that contained individual missing data points, mean substitution using the scale mean was employed to replace the missing values. Results of a Chi Square analysis showed that there were no significant differences between the study groups in terms of missing data: χ^2 (2, N = 219) = .220, p = .896.

There were 11 univariate outliers in the study sample and 7 multivariate outliers, 4 of which did not overlap with the univariate outliers. Results from univariate t-tests showed that the outliers were not significantly different than the other participants in terms of age, occupation, level of education, income, height or weight, ps > .05. Outliers were significantly more likely to be living with their partner than the other participants, t = 2.24, p = .026. Specifically, 21% of the outliers and 5% of the non-outliers reported that they were living with their partners. However, after correcting for multiple t-tests, this effect was no longer significant. The 14 outliers were removed from the analysis, which resulted in an N of 205.

Table II

Description of participant groups

Demographic Variables	Condition					
	Obesity		Controllability of weight		Rickets	
	M	*SD*	*M*	*SD*	*M*	*SD*
Age (years)	19.77	.30	19.73	.49	20.50	.60
Weight (pounds)	129.15	2.88	139.71	3.32	134.58	3.62
Height (feet and inches)	5'4"	.03	5'6"	.03	5'5"	.03
		%		%		%
Highest education completed						
High school		83.33		94.67		87.50
University degree		2.78		0		4.16
Trades or other certificate		13.88		5.33		8.33
Occupation						
Student		94.44		96.00		94.44
Other		5.56		4.00		5.56
Marital Status						
Single		93.06		89.33		88.89
Married or common-law		5.56		10.67		9.72
Divorced or separated		1.39		0		1.39
Household income						
Less than 20,000		20.83		46.67		36.11
20,000 to 39,000		4.16		5.33		6.94
40,000 to 59,000		6.94		4.00		1.39
60,000 or higher		9.72		12.00		15.28
Don't know		44.44		22.67		30.56
Prefer not to answer		13.89		9.33		9.72

Treatment integrity results were assessed by examining the percentage of respondents in each condition who were able to correctly answer questions about the articles. Of participants, 100% were able to accurately identify the main theme of the article when asked an open ended question (What was the main theme of the article?). Participants were also asked 3 questions specific to each of the 3 articles to test their knowledge of the article they read. These items were scored based on the criteria that responses within 10% of the correct response were viewed as correct, and a total score was calculated for participants' responses to the 3 items. The mean percentage correct for the 3 items was 89%, 87%, and 86% for conditions 1, 2 and 3 respectively, a non significant difference. Please see Appendix A for the items and Appendix S for discussion of additional treatment integrity results. In summary, the evaluation of treatment integrity suggested that the study conditions were delivered as intended.

MANCOVAs

It was initially determined that randomization of the groups was successful, as the pre-treatment group means on the dependent variables were not significantly different from one another *p*s > .05. Change scores from pre-test to post-test and from pre-test to follow-up were computed for each of the dependent variables. The study hypotheses were tested using 4 multivariate analysis of covariance procedures. The first MANCOVA evaluated whether there was change in the primary measures, the Antifat Attitudes Questionnaire, the Body Shape Questionnaire and the Thirteen-Figure Contour Drawing Ratings Scale, from pre test to post test. The second MANCOVA tested whether there was change in the secondary measures, the Eating Attitudes Test, the

Forbidden Foods Survey, the Penn State Worry Questionnaire, and the Positive and Negative Affect Scale, from pre test to post test. The third MANCOVA tested whether there was change in the primary measures, from pre test to follow-up. The fourth MANCOVA tested whether there was change in the secondary measures used in the second MANCOVA, in addition to the Stanford 7 day Physical Activity Recall Scale, from pre test to follow-up. The Stanford 7 day Physical Activity Recall Scale was only measured at pre-test and follow-up because it is a measure of physical activity in the past two weeks.

There were three covariates, Drive for Thinness, Self-Classified Weight, and the interaction between the two. If the interaction term was not significant, it was removed from the MANCOVA and the procedure was conducted again with two covariates. The assumptions of the MANCOVA, normality, homogeneity of covariance matrices, linearity, homogeneity of regression, and multicollinearity were evaluated. The Wilk's statistic was employed except in instances when there was a violation of the homogeneity of regression assumption. If such a violation occurred, Pillai's criterion was used as it is robust to these violations (Tabachnick & Fidell, 1996). Analyses were done using SPSS GLM Multivariate.

MANCOVA with Pre-Post Change Scores of Primary Measures

For the first analysis, a 3 x 2 between subjects multivariate analysis of covariance was performed on the change scores of the primary measures from pre-test to post-test: the Antifat Attitudes Questionnaire, the Body Shape Questionnaire and the Thirteen-Figure Contour Drawing Ratings Scale. The independent variable was condition type (obesity, obesity plus the controllability of weight, and rickets). The observed power was

.82. See Table III for means and standard deviations of the primary dependent variables at pre-test and post-test.

With the use of Wilk's criterion, the combined DVs were significantly related to the main effect of condition type $F(6, 396) = 2.42$, $p = .026$. The interaction between the covariates was not significant, and was removed from the procedure. The effects of study conditions on the DVs after adjustment for covariates were investigated in univariate analysis. Results of this analysis are summarized in Table IV. Unexpectedly, scores on the Antifat Attitudes Questionnaire, the Body Shape Questionnaire, and the Thirteen-Figure Contour Drawing Ratings Scale decreased in all study conditions after presentation of the stimulus materials. After adjusting for the covariates, the effect of the study conditions on the change in the Antifat Attitudes Questionnaire scores was significantly different, whereas there was no significant effect of condition on the Body Shape Questionnaire and the Thirteen-Figure Contour Drawing Ratings Scale.

To determine the degree of importance of individual dependent variables, results were also investigated using a Roy-Bargman step-down analysis, in which the Antifat Attitudes Questionnaire was given the highest priority in an a priori hierarchy of importance among the DVs. Second highest priority was given to the Body Shape Questionnaire, so that adjustment was made for the Antifat Attitudes Questionnaire as well as the two covariates. Last in the hierarchy was the Thirteen-Figure Contour Drawing Ratings Scale, adjusted for the Antifat Attitudes Questionnaire, the Body Shape Questionnaire and the two covariates. Homogeneity of regression was satisfactory for this analysis, and DVs were judged to be sufficiently reliable to act as covariates. An experimentwise error rate of 5% for each effect was achieved using the Bonferroni

Table III

Mean Scores and Standard Deviations of Primary Dependent Variables as a Function of Condition

	Condition					
	Obesity (N = 67)		Controllability of weight (N = 71)		Rickets (N = 67)	
Dependent Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pre						
AFA	41.21	15.81	42.55	16.80	40.58	18.40
BSQ	45.11	16.32	45.56	14.52	39.29	13.82
CDRS	.90	1.88	1.15	1.69	.91	2.07
Post						
AFA	35.24	18.06	39.99	19.06	34.52	18.36
BSQ	43.37	17.19	44.87	16.33	37.33	14.15
CDRS	1.06	1.89	1.32	1.75	.85	2.21
Follow-up						
AFA	35.99	16.95	37.67	17.48	35.33	17.15
BSQ	42.38	16.79	42.61	14.94	36.70	13.80
CDRS	.82	1.67	.95	1.59	.75	2.00

AFA (Antifat Attitudes Questionnaire), BSQ (the Body Shape Questionnaire) CDRS (the Thirteen-Figure Contour Drawing Ratings Scale)

Table IV
Univariate Multiple Analysis of Covariance Results for Primary Dependent Variables as a Function of Condition

Source	*df*	*SS*	*MS*	*F*
Pre-Post				
AFA	2	485.21	242.60	4.55*
BSQ	2	41.96	20.98	.77
CDRS	2	2.75	1.38	2.33
Error	200			
Pre-Follow-up				
AFA	2	9.81	4.90	.05
BSQ	2	1.31	.65	.01
CDRS	2	.63	.31	.21
Error	200			

*$p < .05$.

AFA (Antifat Attitudes Questionnaire), BSQ (the Body Shape Questionnaire), CDRS (the Thirteen-Figure Contour Drawing Ratings Scale)

correction. After statistically adjusting for differences in Drive for Thinness and Self-Classified Weight, the effect of the Antifat Attitudes Questionnaire was significant, $F = 4.34$, $p = .01$. After controlling for the effects of the covariates and the Antifat Attitudes Questionnaire, the remaining dependent variables failed to reach significance, $ps > .05$. Together, these results suggest that the significant multivariate effect was principally due to the influence of the Antifat Attitudes Questionnaire.

Using the Bonferroni test, all possible pairwise contrasts between the 3 conditions were investigated for each of the primary dependent variables. The Bonferroni test, based on Student's t statistic, adjusts the observed significance level for multiple comparisons. Antifat attitudes were significantly more reduced in the group that read about obesity relative to those who read about obesity plus controllability of weight (condition 2), *M difference* = 3.36, $p = .02$. Antifat attitudes were also significantly more reduced in the group that read about rickets relative to those who read about obesity plus controllability of weight, *M difference* = 3.13, $p = .04$. Therefore, for participants in the obesity plus controllability of weight condition, antifat attitudes were maintained, whereas for participants in the obesity or rickets study groups (conditions 1 and 3), antifat attitudes decreased from pre-test to post-test. No other pairwise comparisons were significant, $ps > .05$.

Further analysis of the significant univariate effect of the Antifat Attitudes Questionnaire, was accomplished by substituting the change scores of the subscales of the Antifat Attitudes Questionnaire into the MANCOVA procedure. Results demonstrated that the Willpower subscale accounted for the majority of the change in the Antifat Attitudes Questionnaire $F = 4.25$, $p = .02$. The effects of the other subscales,

Dislike and Fear of fat, were not significant, *p*s > .05. Thus, the media impacted change in perceptions of responsibility for weight, and not dislike of the obese or fear of obesity. Results were also analyzed using simple contrasts with the rickets condition (condition 3) as the reference group. There was a significant effect of condition type for the Antifat Attitudes Questionnaire $F(2, 200) = 4.20$, $p = .02$, indicating that participants in the obesity conditions combined (conditions 1 and 2) experienced more of a decrease in Antifat attitudes than participants in the rickets condition. The effects of the other DVs were not significant, *p*s > .05.

The multivariate test between the Drive for Thinness subscale covariate and the DVs was also significant $F(3, 198) = 3.54$, $p = .016$. The multivariate test between the Self Classified Weight covariate and the DVs failed to reach significance $F(3, 198) = 1.65$, $p = .18$. Further inspection of the impact of the significant covariate, Drive for Thinness, showed that those with greater drive for thinness experienced a reduction in body image disturbance as measured by the Body Shape Questionnaire, $F(1, 200) = 5.34$, $p = .02$, but not in antifat attitudes, $F(1, 200) = 1.53$, $p = .22$, or in discrepancy score as measured by the Thirteen-Figure Contour Drawing Ratings Scale, $F(1, 200) = 1.53$, $p = .22$. A multiple linear regression with drive for thinness and condition type as predictor variables and the Body Shape Questionnaire as a criterion variable showed that there was no significant interaction between the covariate and condition type *Fchange*$(1, 201) = .08$, $p = .78$, *AdjR-squared* = .02, suggesting that the impact of drive for thinness on body shape satisfaction did not depend on the type of media presented (obesity-related or rickets).

MANCOVA with Pre-Post Change Scores of Secondary Measures

For the second analysis, a 3 x 2 between-subjects multivariate analysis of covariance was performed on the change scores of four secondary dependent variables from pre-test to post-test: the Eating Attitudes Test, the Forbidden Foods Survey, the Penn State Worry Questionnaire, and the Positive and Negative Affect Scale. The independent variable was condition type (obesity, obesity plus the controllability of weight, and rickets). The observed power was .71. See Table V for the means and standard deviations of the secondary dependent variables at pre-test and post-test.

With the use of Wilk's criterion, the combined DVs were not significantly related to the main effect of condition type $F(8, 392) = 1.63$, $p = .12$. Also, there were no significant univariate effects of condition type on the secondary dependent measures. Results of this analysis are summarized in Table VI. The interaction between the Drive for Thinness and Self-Classified Weight covariates was significant, $F(4, 196) = 3.91$, $p = .00$, and there was a significant univariate interaction effect on the Positive and Negative Affect Scale $F(1, 199) = 10.33$, $p = .00$. There was no significant interaction effect for the other DVs, $ps > .05$. Graphical representation of the covariates showed that participants with low self-classified weight, and high drive for thinness had less change on the Positive and Negative Affect Scale from pre-test to post-test, indicating that they maintained their level of negative affect from pre-test to post-test. In contrast, when both covariates were high, or when both covariates were low, participants had more change on the Positive and Negative Affect Scale, and this reflected a decrease in negative affect from pre-test to post-test.

Table V

Mean Scores and Standard Deviations of Secondary Dependent Variables as a Function of Condition

	Condition					
	Obesity (N = 67)		Controllability of weight (N = 71)		Rickets (N = 67)	
Dependent Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pre						
EAT	10.33	13.23	10.96	12.15	7.34	8.08
FFS	122.82	25.05	118.39	21.82	115.02	21.39
PSWQ	54.99	13.54	50.82	13.08	55.11	13.20
PANAS	23.48	9.05	21.89	8.81	21.96	7.13
PAR	10.69	7.56	11.09	6.26	10.40	6.18
Post						
EAT	10.63	14.27	12.48	13.84	7.36	9.11
FFS	122.49	26.74	120.38	23.96	116.49	23.07
PSWQ	53.97	14.06	50.20	13.17	53.70	13.37
PANAS	21.48	9.22	20.58	8.79	20.05	7.64
Follow-up						
EAT	11.04	13.82	10.14	9.87	8.33	8.73
FFS	121.05	26.29	116.52	24.13	114.56	24.30
PSWQ	46.26	9.42	43.66	9.37	45.45	9.39
PANAS	21.92	9.02	19.62	6.84	19.71	6.58
PAR	11.01	7.06	11.14	6.89	10.52	6.85

EAT (Eating Attitudes Test), FFS (the Forbidden Foods Survey), PSWQ (the Penn State Worry Questionnaire), PANAS (the Positive and Negative Affect Scale-negative affect subscale), PAR (the Stanford 7 day Physical Activity Recall Scale)

Table VI

Univariate Multiple Analysis of Covariance Results for Secondary Dependent Variables as a Function of Condition

Source	*df*	*SS*	*MS*	*F*
Pre-Post				
EAT	2	62.10	31.05	2.87
FFS	2	236.07	118.03	2.52
PSWQ	2	25.59	12.79	.79
PANAS	2	15.72	7.86	.87
Error	199			
Pre-Follow-up				
EAT	2	79.75	39.88	1.06
FFS	2	102.68	51.34	.25
PSWQ	2	309.98	154.99	2.15
PANAS	2	33.62	16.81	.34
PAR	2	5.09	2.54	.06
Error	200			

*$p < .05$.

EAT (Eating Attitudes Test), FFS (the Forbidden Foods Survey), PSWQ (the Penn State Worry Questionnaire), PANAS (the Positive and Negative Affect Scale-negative affect subscale), PAR (the Stanford 7 day Physical Activity Recall Scale)

Additionally, there was only one other main covariate effect. Those with a high Drive for Thinness score were significantly more likely to have more change on the Forbidden Foods Survey, $F(1, 199) = 5.12$, $p = .03$, indicating that avoidance of forbidden foods decreased from pre-test to post-test. A multiple linear regression with drive for thinness and condition type as predictor variables, and the Forbidden Foods Survey as criterion variable, showed that there was no significant interaction between drive for thinness and condition type *Fchange* (1, 201) = .39, $p = .54$, *AdjR-squared* = .02, suggesting that the relationship between drive for thinness and reaction to forbidden foods did not depend on the type of media presented.

MANCOVA with Pre-Follow-up Change Scores of Primary Measures

For the third analysis, a 3 x 2 between subjects multivariate analysis of covariance was performed on the change scores of the primary dependent variables from pre-test to follow-up: the Antifat Attitudes Questionnaire, the Body Shape Questionnaire and the Thirteen-Figure Contour Drawing Ratings Scale. The independent variable was condition type (obesity, obesity plus the controllability of weight, and rickets). The observed power was .07. See Table III for the means and standard deviations of the primary dependent variables at pre-test and follow-up. The interaction between the covariates was not significant, and was removed from the procedure. With the use of Wilk's criterion, the combined DVs were not significantly related to the main effect of condition type $F(6, 396) = .09$, $p = .99$. Additionally, there was no significant univariate effect of condition type on the primary dependent variables. Results of this analysis are summarized in Table IV.

The multivariate test between the DVs and the Self Classified Weight covariate was significant $F(3, 198) = 4.82$, $p = .00$. The multivariate test between the DVs and the Drive for Thinness subscale covariate failed to reach significance $F(3, 198) = .64$, $p = .59$. The Self-Classified Weight Scale was significantly associated with scores on the Thirteen-Figure Contour Drawing Ratings Scale $F(1, 200) = 7.24$, $p = .00$. Those with a higher self-classified weight had less change on the Thirteen-Figure Contour Drawing Ratings Scale indicating that their level of body image disturbance was maintained from pre-test to follow-up, whereas those with lower scores on the Self-Classified Weight Scale tended to experience a decrease in body image disturbance from pre-test to follow-up. Results from a multiple linear regression with self-classified weight and condition type as predictors and the Thirteen-Figure Contour Ratings Scale as criterion variable was non-significant, *Fchange* $(1, 201) = 2.22$, $p = .14$, AdjR-squared = .04. Thus, the influence of perceived weight on body image disturbance was not impacted by the type of media presented.

MANCOVA with Pre-Follow-up Change Scores of Secondary Measures

For the fourth analysis, a 3 x 2 between subjects multivariate analysis of covariance was performed on the change scores of five secondary dependent variables from pre-test to follow-up: the Eating Attitudes Test, the Forbidden Foods Survey, the Penn State Worry Questionnaire, the Positive and Negative Affect Scale, and the Stanford 7 day Physical Activity Recall Scale. The independent variable was condition type (obesity, obesity plus the controllability of weight, and rickets). The observed power was .43. See Table V for the means and standard deviations of the secondary dependent variables at pre-test and follow-up.

With the use of Pillai's criterion, the combined DVs were not significantly related to the main effect of condition type $F(10, 394) = .82, p = .61$. There was no significant univariate effect of condition type on the secondary dependent measures. Results of this analysis are summarized in Table VI. The interaction between the covariates was not significant, and was removed from the procedure. The multivariate test between the DVs and the Drive for Thinness covariate was significant $F(5, 196) = 5.11, p = .00$. The multivariate test between the DVs and the Self Classified Weight covariate failed to reach significance $F(5, 196) = 1.03, p = .40$.

The significant covariate effect of Drive for Thinness was investigated through examination of univariate F scores. From pre-test to follow-up, results showed that those with a high drive for thinness were more likely to maintain their pre-existing negative eating attitudes (EAT scores) $F(1, 200) = 19.55, p = .00$, and levels of worry (PSWQ scores) $F(1, 200) = 5.14, p = .02$ compared to participants with lower Drive for Thinness scores who tended to experience a decrease in negative eating attitudes and levels of worry. The remaining DVs failed to reach significance, $ps > .05$. Using 2 multiple linear regressions, the interactions between scores on the Eating Attitudes Test and condition type, and scores on the Penn State Worry Questionnaire and condition type were not significant, $ps > .05$ suggesting that the impact of drive for thinness on disturbed eating and worry was not influenced by the type of media presented.

MANOVA for the Additional Information Questionnaire

The additional information scale developed for the present study was also investigated as a function of condition type. The information scale had a high internal consistency coefficient (Cronbach's alpha) at both pre-test ($\alpha = .93$) and follow-up ($\alpha =$

.94). Change scores from pre-test to follow-up were computed for each of the six information questions: information about weight, feedback about overall appearance, feedback about weight, attempts at weight loss, social comparison, and controllability of weight. See Table VII for means and standard deviations of the information variables at pre-test and follow-up. There were 10 univariate and 9 multivariate outliers. Results from univariate t-tests showed that the outliers were not significantly different than the other participants in terms of age, occupation, level of education, income, height or weight, $ps > .05$. The 19 outliers were removed from the analysis, which resulted in an N of 200. The observed power was .31.

A MANOVA was computed with the information change scores as a function of group. With the use of Wilk's criterion, the combined DVs were not significantly related to the main effect of condition type $F(12, 396) = .54$, $p = .89$. Additionally, there was no significant univariate effect of condition type on the primary dependent variables. Results of this analysis are summarized in Table VIII.

Table VII

Mean Scores and Standard Deviations of Information Variables at Pre-test and Follow-up as a Function of Condition

	Condition					
	Obesity (N = 67)		Controllability of weight (N = 71)		Rickets (N = 67)	
Dependent Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
Pre						
Information	8.33	8.54	7.83	6.58	5.81	6.17
Appearance feedback	4.82	4.66	4.48	2.83	4.31	3.47
Weight feedback	3.34	4.42	3.07	3.08	2.54	2.98
Weight loss	12.52	8.68	12.86	7.52	11.69	7.16
Comparison	9.09	7.17	9.80	7.19	7.72	6.16
Control	2.31	.97	2.39	.84	2.37	1.00
Follow-up						
Information	7.07	7.09	7.28	6.67	4.61	5.69
Appearance feedback	4.56	4.63	4.74	3.23	3.62	3.09
Weight feedback	3.44	4.71	3.49	3.64	2.23	2.91
Weight loss	12.94	8.81	12.49	7.65	10.97	6.81
Comparison	8.40	7.76	8.92	6.77	6.13	5.36
Control	2.38	.92	2.42	.82	2.48	.90

Table VIII

Univariate Multiple Analysis of Covariance Results from Pre-test to Follow-up for Information Questionnaire Variables as a Function of Condition

Source	*df*	*SS*	*MS*	*F*
Pre-Follow-up				
Information	2	21.08	10.54	.29
Appearance feedback	2	31.82	15.91	1.78
Weight feedback	2	18.42	9.21	1.23
Weight loss	2	45.47	22.74	.71
Comparison	2	29.62	14.81	.49
Control	2	.22	.11	.17
Error	202			

*$p < .05$.

Discussion

The present research examined whether exposure to anti-obesity media contributes to body image disturbance and antifat attitudes, and whether attributing obesity to internal factors, an event often provoked by anti-obesity media, leads to more negative evaluations of body image and more antifat attitudes. Past research supports the connection between greater exposure to media espousing the thin ideal and greater body image disturbance, however, obesity media has been largely overlooked. This study was the first one of its kind to evaluate the impact of obesity media and one of the first to evaluate the effect of such media on self-perceptions. This study was carefully controlled for both attributions of responsibility over weight (condition 1) and health-related anxiety (condition 3), and, statistically, for the impact of drive for thinness and perceptions of overweight (covariates). Furthermore, the study used a large sample size that provided adequate power to test the study hypotheses.

Predictions were that, those who received a message warning of the dangers of obesity (conditions 1 and 2), relative to those who did not (condition 3), would report an increase in body image disturbance and anti-obesity attitudes from pre-test to post-test and from pre-test to follow-up. Further, it was predicted that those who were exposed to a warning about the dangers of obesity plus the message that weight is controllable (condition 2), relative to those who were exposed to only a warning about the dangers of obesity (condition 1), would report greater body image disturbance and anti-obesity attitudes from pre-test to post-test and from pre-test to follow-up.

Contrary to predictions, there was no discernible negative effect of exposure to health-related (including obesity) media. Results indicated that obesity media may not be detrimental for body image or antifat attitudes, and in fact may help to improve them. Possible explanations for this surprising finding include the need to present in a socially desirable way, a pre-test

sensitization effect, regression toward the mean, or downward social comparison. First, anti-obesity attitudes may have decreased in the current study because participants might have been apprehensive to respond in a prejudiced manner. Filling out questionnaires about their perceptions of themselves may have made participants more empathic toward the feelings of others, and they may therefore have chosen to respond to the anti-obesity attitudes measure in a more socially desirable manner. Socially desirable responding consists of over-reporting attractive qualities and under-reporting qualities that are considered socially undesirable (Hancock & Flowers, 2003). Research on socially desirable responding has been conducted with other forms of prejudice, including racism, and authors have found that individuals avoid expressing obviously racist attitudes (e.g., Dovidio & Gaertner, 1991). If similar socially desirable responding occurred in the present study, then the measure of explicit antifat attitudes, the Antifat Attitudes Questionnaire, may not have sufficiently captured true anti-obesity attitudes. A more subtle measure of anti-obesity attitudes may therefore be needed to assess exact levels of responding.

Second, completing the battery of questionnaires about weight, shape, and feelings about the body may have encouraged participants to respond more neutrally to the dependent measures at post-test and follow-up. Third, regression toward the mean, the tendency for later observations of a random variable to be closer to the mean than the first, may also have contributed to the decrease in scores on the dependent measures. Accordingly, scores at post test may have been lower in part because of the trend for scores to be closer to the mean upon subsequent testing.

Fourth and finally, downward social comparison processes may also help to explain these findings. The average weight of participants in the present study (137.81 pounds) was lower than

the average weight of Canadian females (145 pounds) (Gilmore, 1999). Consequently, when participants read the articles about obesity, they may have felt somewhat relieved that they were not obese and may therefore have improved their perceptions about themselves. Indeed, research in other health domains has found that downward social comparison is often employed to improve mood (e.g. Affleck, Tennen, Urrows, Higgins, & Abeles, 2000).

However, results of the current study showed that exposure to media suggesting that weight is controllable attenuated the positive effect of downward social comparison which was observed when participants were exposed to information about obesity or about a health problem unrelated to weight. This result may have occurred because, when participants read about possible weight loss strategies, their focus may have shifted onto themselves. Participants may have been reminded that, if they did not implement the weight control strategies described in the obesity plus controllability of weight article, they may risk weight gain. The reminder of personal responsibility for preventing the negative outcome of weight gain may have extinguished the positive effects of downward social comparison. This idea is further supported by another pattern of results observed in the present study. There was a significant interaction effect between the covariates and the negative affect subscale of the Positive and Negative Affect Scale. Specifically, participants with low self-classified weight, and high drive for thinness had less change on the Positive and Negative Affect Scale from pre-test to post-test, indicating that they maintained their level of negative affect, whereas other participants experienced a decrease in negative affect. It would stand to reason that those with low self-classified weight and high drive for thinness would be particularly invested in thinking that they have a great deal of control over their weight. Consequently, they were less likely to engage in downward social comparison

compared to other participants because their focus was consistently on their personal responsibility for weight, regardless of the message in the newspaper article.

Results of the present study demonstrated that, the degree to which media espoused the idea that individuals are responsible for their weight influenced participants' levels of anti-obesity attitudes. Results also showed that, after exposure to any kind of health-related media, levels of body image disturbance were affected depending on individuals' drive for thinness and perceptions of personal weight status.

Anti-obesity attitudes

It was not entirely unexpected that participants who were encouraged to think that individuals are personally responsible for their weight would experience no change in anti-obesity attitudes. Indeed, others, including Dejong and Grosko have reported similar findings. For instance, Dejong (1980; 1993) performed several experiments in which he directly manipulated perceptions of controllability of weight. Participants were presented with a description of a female, and were given a short explanation as to why the female was either of average weight or obese. Dejong found that participants rated the female who was obese less favorably than the female of average weight, unless a thyroid condition was cited as the reason for her obesity. Furthermore, Grosko (2002) found that exposing participants to a brief psycho-educational intervention stressing that weight is not entirely controllable improved their attributions and affective reactions toward an individual who was obese. Therefore, when participants believed that the target female could control her weight, they rated her more negatively than when they believed she could not control her weight.

Similarly, in the present study, highlighting the message that weight is controllable affected attitudes toward those who are obese. Somewhat unexpectedly, scores on the Antifat

Attitudes Questionnaire decreased in all study conditions after presentation of the stimulus materials. However, anti-obesity attitudes were significantly more reduced in the groups that read about obesity alone or rickets, relative to those who read the article about obesity plus controllability of weight. Therefore, for participants in the obesity plus controllability of weight condition, anti-obesity attitudes were maintained, whereas for participants in the obesity or rickets conditions, anti-obesity attitudes decreased. This effect was especially pronounced on the Willpower subscale of the Antifat Attitudes Questionnaire, a measure of the perceived controllability of weight. Indeed, the three questions on the Willpower subscale ("People who weight too much could lose at least some part of their weight through a little exercise," "Some people are fat because they have no willpower," and "Fat people tend to be fat pretty much through their own fault") accounted for the majority of the change in the Antifat Attitudes Questionnaire. These results indicate that media emphasizing the controllability of weight may have reinforced the perception that weight is controllable, which led to the maintenance of anti-obesity attitudes.

Anti-obesity attitudes did not increase in response to the message that weight is controllable, and therefore, the results of the present study are equivocal regarding Weiner's theory (Weiner, 2000; Weiner et al., 1988). However, the anti-obesity attitudes of those that read the article about obesity plus controllability of weight were maintained, while they decreased for those that read either the article about obesity alone or the article about rickets. These results suggest that the component of controllability in the article may have contributed to the perception that people are personally responsible for their weight, which served to maintain levels of anti-obesity attitudes. However, Weiner's theory predicts that internal attributions for negative events lead to negative outcomes, which was not the case in the present study.

Therefore, it is uncertain whether Weiner's theory may be applicable for situations in which media suggests that a particular problem is controllable, a message often embedded in anti-obesity media.

In addition to the effects found for the newspaper article media used in the present study, it has been demonstrated that other forms of media impact anti-obesity attitudes. For instance, in a study looking at the depictions of female bodies in television programs, Fouts and Burggraf (2000) found that females of below-average weight were over-represented in the programs, and heavier female characters were subjected to negative comments which were reinforced by positive audience reactions such as laughter. Fouts and Burggraf argued that the message of this type of media is that obese females should and will be punished, and that this message may contribute to the internalization of gender and weight stereotypes. The results of the present study suggest, however, that anti-obesity media that does not contain the message that weight is controllable, may help to improve body image disturbance and reduce stigma toward the obese.

Body image disturbance

Drive for thinness.

The present study also found that those with greater drive for thinness, relative to those with less drive for thinness, experienced improvements in body image disturbance, negative eating attitudes, worry and food avoidance, after exposure to health-related media. These results are important to consider in the context of those found by Stice et al. (2001) who employed a thin ideal manipulation in a naturalistic setting. They assigned adolescent girls to either receive a subscription to a fashion magazine, or to a no subscription control condition. Stice et al. found that participants in the fashion magazine subscription group did not have increased scores on body image disturbance measures unless they initially had a score that was one standard

deviation above the mean on a scale measuring pressure to be thin. This study suggests that in a natural setting, thin ideal media may only have a detrimental effect on females with preexisting vulnerabilities. The present study may be similar to a naturalistic setting because, according to the results of the pilot study, the newspaper articles about obesity in the present study were comparable to real articles about obesity to which we are exposed daily. The present results, however, are not in accord with those of Stice et al. (2001) in that exposure to health-related media was associated with improvements in body image and eating attitudes in those with higher drive for thinness.

Self-classified weight.

Following exposure to health-related media, results also demonstrated that those who perceived themselves as more underweight had improvements in body image disturbance (from pre-test to follow-up), whereas those who perceived themselves as more overweight had little or no change in level of body image disturbance. These results indicate that those who perceived themselves as underweight had less of a disparity between what they look like and what they think they should look like, and so less body image disturbance, compared to those who perceived themselves as more overweight.

The present findings are important to consider in the context of a study conducted by Harrison (2001) in which she used self-discrepancy theory to predict body image disturbance following media viewing. Harrison found that exposure to media in which an obese girl was punished increased ought discrepancies, which in turn increased body image and eating disturbances. Harrison proposed that ideal discrepancies mediate the relationship between exposure to thin ideal media and body image disturbance, whereas ought discrepancies mediate the relationship between anti-obesity media and body image disturbance. Self-discrepancy

theory therefore suggests that depictions of rewards for thinness and punishment for obesity increase body image disturbance and eating pathology differentially.

In the present research, participants who initially classified themselves as overweight, compared to those who initially classified themselves as underweight, were more likely to experience greater ought discrepancy, a disparity between what they look like and what they think they should look like. However, the results of the present study did not support the results obtained by Harrison (2001), because participants exposed to media in which obesity was punished did not experience a significantly greater increase in ought discrepancy relative to those exposed to a more general health warning. Those who perceived themselves as overweight maintained their pre-existing level of body image disturbance, and those who perceived themselves as underweight had a decrease in level of body image disturbance.

Anti-obesity media vs. thin ideal media.

The present study found that anti-obesity media had a different impact than thin ideal media on individuals' perceptions of themselves. Research has found that exposure to thin ideal media generally serves to increase body image disturbance, whereas in the present study, anti-obesity media had no specific effect on individuals' perceptions of themselves. However, the current study demonstrated that health-related media affected perceptions of the self for those with pre-existing characteristics. Specifically, for those with higher preexisting drive for thinness, health media served to decrease body image disturbance. Furthermore, for those who initially perceived themselves as underweight, health-related media served to decrease the disparity between what they look like and what they think they should look like.

Covariates.

The two covariates in the present study showed a different pattern of findings: the Drive for Thinness scale affected scores on the Body Shape Questionnaire, the Eating Attitudes Test, the Penn State Worry Questionnaire, and the Forbidden Foods Survey, whereas the Self-Classified Weight scale affected scores on the Thirteen-Figure Contour Drawing Ratings Scale. The questions on the Drive for Thinness subscale are very direct, and clearly pertain to body image disturbance, whereas the Self-Classified Weight scale is less obvious as a measure of body image disturbance. Similarly, it is clear what the Body Shape Questionnaire, the Eating Attitudes Test, the Penn State Worry Questionnaire, and the Forbidden Foods Survey are measuring, whereas it may not be clear what the Thirteen-Figure Contour Drawing Ratings Scale is measuring. It may be that the less subtle covariate, Drive for Thinness, affects scores on less subtle measures of body image disturbance whereas the more subtle covariate, Self-Classified Weight, affects scores on the more subtle dependent measure, the Thirteen-Figure Contour Drawing Ratings Scale.

Summary and Implications

The present study found that reading newspaper articles about obesity improved anti-obesity attitudes except when the message that weight is controllable was embedded. Following exposure to health-related media, results also demonstrated that high drive for thinness is a characteristic that tends to improve body image disturbance, negative eating attitudes, worry, and food avoidance. Additionally, after exposure to health-related media, those who initially perceived themselves as underweight were more likely to have improvements in body image disturbance.

The results of the present study have implications for the ways in which obesity media should be presented to the public. Clearly, obesity is an important problem to address, as there are many negative health outcomes associated with obesity. In addition, it is true that rates of obesity are on the rise. The consequences of anti-obesity media are important to consider given that media about obesity has become increasingly prevalent in recent years (International Food Information Council, 2003). The results of the current study indicate that obesity media may help to improve body image and antifat attitudes, when there is no message that weight is controllable. Media concerning obesity could therefore potentially be improved by promoting a healthier message about weight, emphasizing that not all people can fall into a predetermined weight range determined by the Body Mass Index, and that a healthy weight is one that the body adopts as a result of a healthy lifestyle, and with the help of a health professional (Weight Realities Division of the Society for Nutrition Education, 2003). As a consequence of featuring realistic information about obesity in the media, the focus of obesity media would shift from self-righteous messages about what people *should* do to supportive messages about what may help to combat the problem of obesity. In order to capitalize on the possible positive impact of anti-obesity media, a healthier message about weight should be used in relation to body image regardless of the size of the target population instead of promoting the idea that weight is entirely controllable.

Limitations

A potential limitation in the present study is the fact that, in the pilot study, participants rated the articles about obesity as more authentic than the article about rickets. This finding may suggest that the article about rickets was not an adequate control condition. However, this finding may be a result of the fact that participants are widely exposed to articles about obesity

and weight control, whereas they are not frequently exposed to articles about rickets. This difference in familiarity with the content of the articles may have led some participants to rate the obesity articles as more authentic.

Another possible limitation in the present study is that participants were taken from a University sample, who were young and therefore may have had less personal experience with obesity. Also, The University sample may be different than a non-University sample in terms of levels of body image disturbance and anti-obesity attitudes. Accordingly, it may not be appropriate to generalize the results of the present study to other populations.

Future research

In the current study, participants that read about rickets (condition 3) experienced the same decrease in anti-obesity attitudes as those that read about obesity alone (condition 1). Participants that read about obesity plus controllability of weight (condition 2), however, maintained their initial level of anti-obesity attitudes. The fact that participants in the rickets condition experienced a decrease in anti-obesity attitudes suggests that responding to the dependent measures about eating habits and attitudes toward the obese, may have sensitized participants to obesity, and to the unacceptability of responding in a prejudiced manner. As a result, participants may have been responding in a way they deemed socially desirable. Therefore, future research may benefit from including a control condition in which participants are not exposed to the dependent measures before being exposed to the manipulation, such as a Solomon 4-group design. This type of control condition may also help to determine whether regression toward the mean may have influenced the results.

The propensity for responding to the dependent measures in a socially desirable fashion could also be controlled for in future studies by including a scale measuring social desirability. Furthermore, because research has found that individuals avoid expressing obviously prejudiced attitudes, the measure of explicit anti-obesity attitudes used in the present study, the Antifat Attitudes Questionnaire, may not have accurately captured levels of anti-obesity attitudes. Consequently, future research could employ a more subtle measure in order to assess true levels of anti-obesity attitudes. Similarly, including a specific measure of downward comparison processes, or attempting to control for comparison processes, would help to elucidate the true impact of obesity media.

Because the present study was conducted with University students, it is unknown whether the results would be the same in the general public. Future research could therefore test the results of the present study in a random sample of the population to see if the results could be extended to the general public. It may also be useful to investigate the impact of anti-obesity media on a clinical sample of individuals with eating disorders.

Furthermore, future studies could test the results of the present study with males in addition to females. Although body image disturbance is more prevalent among females, it may also be informative to learn how the body image, or exercise and eating habits of men may be affected by anti-obesity media. In addition, this study should be replicated to see if males also maintain their level of anti-obesity attitudes when exposed to media about obesity plus the controllability of weight.

Even though participants rated the obesity articles written for the present study as authentic, they rated the rickets article as less similar to a newspaper article. Accordingly, future

research could also look at whether the results of the present study could be replicated using newspaper articles to see if the results could be extended to real-world stimuli.

In addition, future research could look at ways to modify existing anti-obesity media messages so that they are constructive, and will not contribute to the maintenance of anti-fat attitudes. It is imperative to understand the impact of obesity media because there is a need to get the message about obesity as a serious health issue to the public without helping to maintain anti-obesity attitudes.

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Appendix A: Questions about the newspaper articles

News article--Obesity

Please answer the following questions about the news article that you read.

	Did not like it at all	Liked it a little bit	Liked it a fair bit	Liked it a lot	Really liked it
1. What did you think of the article?	O	O	O	O	O

2. What was the main theme of the article? (please print--one letter per box)

	20%	30%	40%	50%	60%
3. According to the article, approximately what percentage of Canadians are overweight or obese?	O	O	O	O	O

	$1 million	$2 million	$1 billion	$2 billion
4. The article states that the Canadian health care system spends approximately how much money on obesity annually?	O	O	O	O

	Poor	Fair	Good	Very good	Excellent
5. According to the article, most Canadians consider their health to be:	O	O	O	O	O

	Not at all	A little bit	A fair bit	A lot	Completely
6. To what extent do you think the focus of the news story was on weight?	O	O	O	O	O
7. To what extent did the article focus on individuals being personnally responsible for their weight?	O	O	O	O	O
8. How common are media messages about weight or obesity?	O	O	O	O	O
9. Do you think that media messages about weight should be changed?	O	O	O	O	O

10. Please write any suggestions you may have about weight-related media in the space provided below (please print--one letter per box):

w

News article--Controllability

Please answer the following questions about the news article that you read.

	Did not like it at all	Liked it a little bit	Liked it a fair bit	Liked it a lot	Really liked it
1. What did you think of the article?	O	O	O	O	O

2. What was the main theme of the article? (please print--one letter per box)

	$1 million	$2 million	$1 billion	$2 billion
3. The article states that the Canadian health care system spends approximately how much money on obesity annually?	O	O	O	O

	20%	30%	40%	50%	60%
4. According to the article, approximately what percentage of Canadians are overweight or obese?	O	O	O	O	O

	Not eat fast food	Cut down on sugar	Exercise	Reduce fat intake	All of the above
5. According to the article, in order to lower weight, you should:	O	O	O	O	O

	Not at all	A little bit	A fair bit	A lot	Completely
6. To what extent do you think the focus of the news story was on weight?	O	O	O	O	O
7. To what extent did the article focus on individuals being personal lyresponsible for their weight?	O	O	O	O	O
8. How common are media messages about weight or obesity?	O	O	O	O	O
9. Do you think that media messages about weight should be changed?	O	O	O	O	O

10. Please write any suggestions you may have about weight-related media in the space provided below (please print--one letter per box):

wc

News article--Rickets

Please answer the following questions about the news article that you read.

	Did not like it at all	Liked it a little bit	Liked it a fair bit	Liked it a lot	Really liked it
1. What did you think of the article?	O	O	O	O	O

2. What was the main theme of the article? (please print--one letter per box)

	Decreased	Stayed the same	Increased
3. The article suggests that recently, the number of cases of rickets has:	O	O	O

	Lack of Vitamin C	Virus	Lack of Vitamin D	Genet	Lack of Vitamin E
4. According to the article, what is the cause of rickets?	O	O	O	O	O

	1,000	2,000	3,000	4,000	5,000
5. According to the article, if everyone consumed adequate amounts of vitamin D annual cases of cancer would be reduced by:	O	O	O	O	O

	Yes	No
Do you, or does anyone you know have rickets?	O	O

	Not at all	A little bit	A fair bit	A lot	Completely
6. To what extent do you think the focus of the news story was on weight?	O	O	O	O	O
7. To what extent did the article focus on individuals being personnally responsible for their weight?	O	O	O	O	O
8. How common are media messages about weight or obesity?	O	O	O	O	O
9. Do you think that media messages about weight should be changed?	O	O	O	O	O

10. Please write any suggestions you may have about weight-related media in the space provided below (please print--one letter per box):

r