

OBESITY STIGMA REDUCTION

BY

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Abstract

The prevalence of overweight and obesity is on the rise. Being overweight or obese is associated with serious medical, psychological, and social consequences. The main social consequence of being overweight or obese is stigma, which is detrimental to overweight and obese people. Three types of obesity stigma reduction interventions have been proposed and tested: changing attributions, increasing empathy, and social consensus. The purpose of this study was to compare the effectiveness of these interventions and to determine the effectiveness of an intervention that incorporates major elements of the three interventions. Three hundred eighty one University of Manitoba undergraduate students participated in this study. They were randomly assigned to one of five intervention groups: status quo group, changing attributions group, increasing empathy group, social consensus group, and multi-level intervention group. The interventions involved presenting participants with information intended to influence participants' perceptions of overweight and obese individuals. Pre-test and post-test ratings were obtained on participants' attributions about weight, feelings about obese people, and endorsement of positive and negative stereotypes of obese people. Analyses of these ratings revealed that the empathy and multi-level interventions are the only interventions that improved attributions, feelings, and endorsement of stereotypes, and this suggests that the multi-level and empathy interventions were the most powerful. On the other hand, the attribution intervention had the largest overall effect and affected attributions, feelings, and negative stereotypes. Therefore, there are reasons to believe that the attribution intervention was the most powerful in this study.

Participants were subsequently asked to rate a target overweight person. Half of all participants were informed that the target was overweight because of medical reasons, while the other half were informed that the target was overweight because of regular overeating and a sedentary lifestyle. Surprisingly, the intervention groups did not significantly differ in target ratings on any variable. Reasons for this lack of effect are discussed. A main effect did occur in the ratings of the target for controllability information. Specifically, participants who were informed that the target was overweight for uncontrollable reasons (e.g., glandular disorder) reported more favorable ratings in liking her and not blaming her, as compared to participants who were informed that the target was overweight for controllable reasons (e.g., regular overeating and sedentary lifestyle). Ratings of the target's characteristics and physical attractiveness did not change with this manipulation. Overall, this study provided logical and consistent results, while adding specific information to the literature. Further, this study offered a new, effective intervention for obesity stigma reduction, as well as providing some support for the empathy and attribution interventions. These three interventions proved to be the strongest in this study, and perhaps they will one day be used as part of a more global intervention to reduce stigma and discrimination toward overweight and obese people.

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Obesity Stigma Reduction

The purpose of this study was to compare four obesity stigma reduction interventions. First, overweight and obesity will be defined, and prevalence rates will be presented. Then, medical, psychological, and social consequences of being overweight and/or obese will be delineated. One of the main social consequences of being overweight or obese is social stigma, which proves to be harmful to overweight and obese individuals. A rationale will be provided for reducing stigma toward overweight and obese individuals, and three current obesity stigma reduction interventions will be described. Next, hypotheses will be presented, followed by a depiction of the current study. The remainder of this paper will involve presenting results and discussing the findings.

Overweight and obesity: definition and prevalence.

Obesity is defined by an excess of body fat. Healthy and recommended ratios of body fat are 25% of total body mass for women and 18% for men (Spence-Jones, 2003). There are several methods to measure body fat, but the current most popular measure is the Body Mass Index (BMI; Spence-Jones, 2003). BMI is calculated as weight in kilograms divided by the square of height in meters or as weight in pounds divided by square of height in inches multiplied by 704. A person is classified as “underweight” with BMI at less than 18.5, “normal weight” between 18.5 and 24.9, “overweight” between 25.0 and 29.9; “obesity class 1” with BMI between 30.0 and 34.9, “obesity class 2” between 35.0 and 39.9, and “obesity class 3” over 40.0 (Spence-Jones, 2003).

The prevalence of overweight and obese people is on the rise in North America (Spence-Jones, 2003). Research indicates that 35% of Canadian men and 27% of

Canadian women can be considered obese (Spence-Jones, 2003). Moreover, about 50% of Canadian men and women are considered to be overweight or obese and at risk for weight related health problems (Sibbald, 1998; Strychar, 2006). Nawaz and Katz (2001) reported that 55% of Americans are overweight or obese. The prevalence rate for overweight and obese individuals in North America has been corroborated by other authors (e.g., Friedman, 2004; Padwal, Li, & Lau, 2003; Spence-Jones, 2003).

Furthermore, Nemerson, Danowski, and Trilling (2004) indicated that more than one billion people throughout the world are overweight, one third of whom are considered obese. Therefore, overweight and obesity are a global health problem in developed (e.g., Canada, United States, and United Kingdom) and developing (e.g., Latin America, China, and Africa) areas. The medical, psychological, and social consequences of obesity are discussed below.

Medical consequences of obesity.

Bray (2004) reviewed the medical consequences of obesity and indicated that the associated disorders are related to the excess energy that is stored in fat cells that enlarge (hypertrophy of fat cells) and/or increase in number (hyperplasia of fat cells). Further, the pathologies of excess fat fall into two categories. The first category of disorders results from an increased mass of fat and includes psychosocial consequences; breathing difficulties; and diseases of the bones, joints, muscles, connective tissue, and skin. The second category of disorders results from the metabolic changes associated with excess fat and includes diabetes, liver disease, gallbladder disease, hypertension, heart disease, some types of cancer, and endocrine changes.

Psychological consequences of obesity.

Friedman and Brownell (1995) reviewed studies designed to uncover psychological correlates of overweight and obesity. They first evaluated studies that compared obese and nonobese groups on a single variable. They called these types of studies the “first generation of research.” Meta-analyses of these studies demonstrated no relationship between obesity and depression or anxiety in the general population; a moderate effect size ($d = .52$) in the relationship between obese individuals presenting for weight loss treatment and depression, as compared to general population and controls; a large effect size ($d = .85$) in the relationship between overweight/obesity and body image dissatisfaction; and a moderate effect size ($d = .55$) in the relationship between obesity/overweight and body image distortion. In general, they found that results were inconclusive. Yet, they emphasized the heterogeneity of the overweight and obese groups and attributed inconclusive findings to methodological limitations.

Friedman and Brownell (1995) analyzed studies that examined why some overweight and obese individuals experience psychological difficulties and why others do not. The researchers identified these types of studies as the “second generation of research” and suggested that the studies target the heterogeneity of this population. Meta-analyses demonstrated that psychological difficulties associated with overweight and obesity are positively related to the following risk factors: dieting, binge eating, weight cycling, and teasing. Restrained eating has been shown to increase bingeing behavior. Binge eating has been associated with increased levels of obesity. Friedman and Brownell (1995) described studies which demonstrated greater incidence of psychological distress and a greater lifetime prevalence of affective disorders among

obese binge eaters, as compared with obese non-bingers. Additionally, the obese binge eaters reported more psychological distress than normal weight binge eaters, leading researchers to suggest an interaction with weight and binge eating.

Weight cycling was also identified as a risk factor for psychopathology. Friedman and Brownell (1995) found that weight cycling was related to lower levels of life satisfaction in women only. Weight cycling was also associated with more binge eating behavior.

Newer research examined by Friedman and Brownell (1995) identified being teased as a child as a potential risk factor for psychological disturbance among the obese. Having been teased in childhood has been shown to be positively related to body image disturbance. Fitzgibbon (2004) discussed the teasing of obese children and its subsequent impact on their psychological well-being. She identified several risk factors that moderated the relationship between psychopathology and obesity in children. These risk factors include: depression, anxiety, dieting history, parental preoccupation with shape and weight, ethnicity, and culture.

Friedman and Brownell (1995) proposed that, based on these findings, future research will be able to identify cause and effect relationships among obesity and psychological disturbances. The purpose of this proposed “third generation of research” would use multiple measures and frequent assessments to test cause and effect models, using structural equation modeling. Friedman and Brownell (1995) suggested that the third generation of research will eventually clarify questions regarding psychological etiology and consequences of overweight and obesity.

Social consequences of obesity.

Despite the ever-growing prevalence of overweight and obese people, overweight and obese individuals are not seen as socially acceptable by North Americans. Being overweight or obese is associated with being unhealthy as well as not being aesthetically attractive. Indeed, individuals who have been overweight and have lost weight with the help of bariatric surgery were found, if given the choice, to choose to be blind or deaf, rather than be overweight again (see Rand & McGregor in Lyons & Miller, 1999, p. 1142). Overweight and obese people harshly judge themselves for their conditions and are similarly judged by others. Both adults (Lerner, 1969; Lerner & Korn, 1972; Felker, 1972) and children (Richardson, Hastroff, Goodman, & Dornbusch, 1961; Staffieri, 1967) evaluate overweight and obese individuals more negatively than they evaluate normal-weight individuals. Recent studies have demonstrated that the stigmatization of obese children and adults is getting worse (Bell & Morgan, 2000; Latner & Stunkard, 2003; Myers & Rosen, 1999).

Normal-weight and overweight individuals are equally likely to evaluate overweight people negatively (Maddox, Back, & Liederman, 1968; Crandall & Biernat, 1990) and to blame them for their conditions (DeJong, 1980; Hebl & Heatherton, 1998; Weiner, Perry, & Magnusson, 1988). Evaluations are especially negative when evaluators are satisfied with their own bodies, when perceptions of their bodies are central to their self-concepts (Pingitore, Dugoni, Tindale, & Spring, 1994), and when their ideologies rest on the assumption that people get what they deserve (Crandall, 1994a; 1994b). In terms of self-indulgence, self-discipline, laziness, goodness, and warmth, overweight individuals are evaluated more negatively and are less liked than normal-weight

individuals (DeJong 1980; 1993), and this is especially true for young women (Hebl & Heatherton, 1998).

Moreover, overweight and obese individuals are discriminated against in a variety of ways. They are less likely to be enrolled in college (Crandall, 1995) and to be hired as employees (Pingitore et al., 1994). Overweight women are less desired as romantic partners than are recovering drug addicts (Sitton & Blanchard, 1995). Obese students are less likely to be wanted as tenants by building managers than are normal-weight students (Karris, 1977). In general, attitudes toward overweight and obese individuals are more negative than toward normal-weight individuals. These negative attitudes are reflected in discriminating behavior toward overweight and obese individuals.

How do obese people cope with stigma?

Puhl and Brownell (2003b) reviewed the coping strategies obese people use to deal with stigma. The strategies reviewed differ in terms of being problem focused versus emotion oriented, having adaptive or maladaptive reactions, and targeting the obese individual versus others. The strategies described can also be classified by the extent to which obese individuals accept the stereotypes. Accepting the stereotype of obesity may be responsible for some obese individuals' tendencies to conform to that stereotype, try to lose weight, and/or avoid stigmatizing situations. Partially accepting the stereotype of obesity may account for some obese individuals' tendencies to compensate for their obesity, negotiate their identities, make personal attributions, and/or protect themselves from stigma. Rejecting the stereotype of obesity may allow some obese individuals to confront individuals who stigmatize them, take advantage of communal coping strategies, and engage in social activism. (Please see Puhl & Brownell (2003b) for more details.)

Myers and Rosen (1999) investigated strategies obese individuals used to cope with stigmatization. Some of the most common strategies included: positive self-talk; using faith, religion, and prayer; self-love and self-acceptance; negative self-talk; and eating. The researchers identified that coping techniques were more frequently used by individuals who experience more discrimination. They also found that “disengaged” coping strategies (e.g., self-criticism and avoidance) were associated with higher levels of distress, while “positive” coping strategies (e.g., self-acceptance and not hiding oneself) were associated with lower levels of distress. The difficulty obese individuals have with coping with stigma provides some rationale for reducing stigma toward obese people. Additional reasons to reduce obesity stigma are described below.

Rationale for reducing stigma toward obese people.

Overweight and obese people are at risk for severe medical, psychological, and social consequences. The notion that stigma toward overweight and obese people should be reduced has been supported by several researchers (Brownell & Puhl, 2003; Grosko, 2002; Puhl & Brownell, 2001). The rationale given to support the reduction of stigma toward overweight and obese individuals does not imply that obese people should not engage in healthy behaviors, such as healthy eating and regular exercise. Rather, a decrease in stigma is advocated to help support obese people in maintaining a healthy lifestyle (Ernsberger & Koletsky, 1999).

Discrimination is detrimental and has lasting effects on a person (Puhl & Brownell, 2001). The increase in prevalence of obesity means that the stigma of overweight and obese individuals affects millions of people (Puhl & Brownell, 2001). Brownell and Puhl (2003) reviewed the degree of stigma toward overweight individuals

by health professionals. They reported that obese people are less likely to use preventative health care services. Among other things, being stigmatized by health care professionals may deter obese people from seeking health care, and this may put obese individuals at risk for even more health problems (Puhl & Brownell, 2001). Brownell and Puhl (2003) advocated for a decrease in stigma among health care professionals with the goal of offering the same level of care to obese people as to everyone else.

Puhl and Brownell (2001) also reviewed the negative effects of stigma toward obese individuals in employment (e.g., discrimination in hiring, wages, promotion opportunities, and termination practices) and educational settings (e.g., peer rejection and poor evaluations by teachers). Puhl and Brownell (2001) strongly suggested further research in this area, including the development and testing of stigma reduction interventions.

Further support for decreasing stigma toward overweight individuals involves the causes of obesity, which are multi-dimensional. Swinburn and Egger (2004) proposed a model of obesity in their article entitled “The runaway weight gain train: Too many accelerators, not enough brakes.” The authors suggested that obesity is caused and maintained by a sequence of vicious circles. Specifically, the obesogenic environment enables unhealthy food choices, overconsumption, and a sedentary lifestyle. People with heavier bodies are prone to physical challenges, which make it harder for them to be active. People with heavier bodies also tend not to feel good about themselves and are prone to psychological difficulties, which sometimes leads to increased energy intake (e.g., bingeing behavior or comfort foods) and subsequent weight gain. Moreover, many diets are restrictive and low in energy, which make them difficult to adhere to for longer

periods of time and lead to consequent discouragement in the overweight person. Jeffery, Drewnowski, Epstein, Stunkard, Wilson, Wing, & Hill (2000) concluded that long-term maintenance of weight loss is difficult and rare.

Additionally, obesity is associated with low socioeconomic status, especially among women. Swinburn and Egger (2004) suggested that this relationship is bidirectional: overweight people are less likely to have good jobs, and their low incomes limit the types of food they can buy. The authors asserted that in the face of all these strong “accelerators” for obesity, the “brakes,” including stigma and personal discomfort, are ineffective. The inter-related and multi-dimensional causes of obesity support increased compassion and decreased blame and stigma toward obese individuals.

Reducing stigma toward overweight and obese people is an important goal. Researchers have attempted to reduce stigma toward obese people using three separate methods: changing attributions, increasing empathy, and presenting social consensus information. The theoretical rationale, description, and effectiveness of these three methods will be delineated below.

Previous attempts in bias reduction: Changing attributions.

Weiner (2000) presented two related attribution theories of motivation: the intrapersonal theory deals with self-directed thoughts and feelings, and the interpersonal theory deals with other-directed thoughts and feelings. The intrapersonal theory of motivation from an attributional perspective posits that outcomes elicit affective responses, which in turn influence expectations, motivations, and behavioral reactions. Typically when an outcome is negative, surprising, and/or important, cognitive processes occur to uncover the cause of the outcome. The outcome of obesity will now be used as

an example of this process. Consider an obese woman who is dissatisfied with her weight. She considers the outcome of obesity as negative and feels bad about it. If she attributes her obesity to internal, stable, and controllable causes, she will determine that her weight is caused by something inside of her that is unlikely to change even though she has control over her weight. Thus, she may attribute her obesity to laziness and a lack of willpower, which is an inherent trait that she should be able to overcome. She will probably get messages from others and the media that confirm this belief. This will cause her to feel guilty and to blame herself for her condition. She will suffer a decrease in her self-esteem that was mediated by personal causality.

The interpersonal theory of motivation from an attributional perspective posits that others' outcomes elicit affective responses, which in turn influence behavioral reactions toward those others. Simply, the way we treat other people is determined by how we judge them. Consider a person's attributions about an obese woman's weight. If the person deems that the woman is obese because of controllable causes, he/she will hold her responsible for that outcome and blame her. If the person deems that the woman is obese because of uncontrollable causes, he/she will not hold her responsible for that outcome and express sympathy toward her. Indeed, this phenomenon has been demonstrated in research (DeJong, 1980; 1993; Grosko, 2002; Weiner, Perry, & Magnusson, 1988). Specifically, participants who were informed that the person was overweight because of uncontrollable reasons (e.g., glandular disorder) rated the overweight person more positively than participants who were informed that a person was overweight because of controllable reasons (e.g., regular overeating and sedentary lifestyle) or than participants who were not given any information about the cause of the

person's weight. Changing one's own or others' attributions can influence emotions, expectations, motivations, and behaviours.

The basic assumptions of attribution theory are that individuals want to understand themselves and their worlds and that a realistic understanding promotes healthy cognitions and behaviors (Forsterling, 2001). With regard to stigma against obese individuals, changing perceptions of controllability about weight is likely to decrease stigma against obese people. Indeed, it is commonly believed that weight is more controllable than it is. Research has demonstrated that weight is not as controllable as commonly believed, with genetic and social factors playing a large role in the etiology of obesity.

Stigma, prejudice, and discrimination toward obese individuals have been extensively substantiated (Wang, Brownell, & Wadden, 2004). Obese people are commonly stereotyped as lazy, stupid, ugly, amoral, asexual, unhappy, and weak-willed (Quinn & Crocker, 1999). Obese individuals have been discriminated against in employment and social settings, and they have been vulnerable to exploitation by the diet and fitness industry, difficulties with the medical profession, and public ridicule (Myers & Rosen, 1999). Further, it is commonly believed that people are responsible for their weight (Crandall, 1994a).

The belief that weight is controllable is important in understanding the stigmatization of obese people. According to attribution theory, people tend to blame themselves and others for negative outcomes that are deemed controllable. Research has shown that weight is seen as controllable (Crandall, 1994a), that people blame themselves and others for being overweight (Crandall, 1994a), that changing beliefs about

controllability of weight may protect overweight people's self-esteem (Blaine & Williams, 2004), and that changing beliefs about controllability of weight ameliorates people's responses to overweight people (DeJong, 1980; 1993; Grosko, 2002; Weiner et al., 1988).

Effects of changing control beliefs about weight. Blaine and Williams (2004) demonstrated the effects of changing control beliefs about weight on an intrapersonal level. They conducted a study in which they manipulated perceived controllability of weight in overweight women. Following a negative evaluation from a male evaluator, the women who were informed that weight is less controllable than commonly believed were more likely to attribute the negative evaluation to prejudice than women who were not informed that weight is less controllable than commonly believed. This effect occurred only for participants who thought they were seen by the evaluator and did not occur for participants who thought they were not seen by the evaluator. Thus, persuading people that weight is less controllable than commonly believed is effective in facilitating overweight individuals to attribute negative evaluations to prejudice. Although there were no significant effects on participants' state self-esteem in this study, attributing negative evaluations to prejudice has been demonstrated to protect individuals' self-esteem (Crocker & Major, 1989). Thus, believing that weight is less controllable than commonly believed can protect overweight people from being damaged by stigma by helping them to attribute negative evaluations to stigma rather than internalizing the negative evaluations.

Changing control beliefs about weight on an interpersonal level has the following effects. DeJong (1980; 1993), Weiner et al. (1988), and Grosko (2002) demonstrated that

manipulating the perceived cause of a target person's obesity resulted in varying responses to the obese person. Specifically, the participants who were informed that the obese person was overweight because of controllable reasons (e.g., sedentary lifestyle and regular overeating) expressed more negative thoughts and feelings toward the overweight target than participants who were informed that the obese person was overweight because of uncontrollable reasons (e.g., glandular disorder). As predicted by Weiner's (2000) theory of attribution in interpersonal situations, attributing a negative outcome to controllable factors results in negative evaluations and attributing a negative outcome to uncontrollable factors yields positive evaluations of others. Crandall (1994a) and Grosko (2002) attempted to change participants' perceptions of controllability about weight by informing them that weight is not as controllable as commonly believed, with the goal of decreasing negative evaluations of overweight people.

Crandall (1994a) conducted a study in which he persuaded participants (by asking them to read and listen to an experimenter read a two-page information sheet about the genetic determinants of weight) that weight is highly determined by genetics. These participants were more positive in their evaluations of an overweight target than participants in the control condition who were not informed about any weight-related concerns. Specifically, participants who were persuaded that genetics strongly influences weight did not judge the overweight target as harshly in terms of willpower and expressed more liking toward the overweight target than participants in the control condition. This experiment "does show that assumptions about discipline and self-control can play a causal role in antipathy toward fat people. Changing this belief reduces antifat attitudes" (Crandall, 1994a, p. 888).

Grosko's (2002) study examined whether or not participants' causal attributions about weight influenced their evaluations of an overweight target. Participants of this study were presented with a lecture: half of this group listened to a lecture that confirmed the common perspective that weight is controllable, and the other half of this group listened to a lecture that offered an alternative perspective. The alternative perspective lecture served as a psycho-educational intervention and emphasized the degree to which weight is influenced by heredity and the challenges of long-term weight loss. Participants were then presented with a picture of an overweight female undergraduate student. Half of the participants were informed that the target was overweight because of controllable reasons (e.g., regular overeating and sedentary lifestyle), and the other half of the participants were informed that she was overweight because of uncontrollable reasons (e.g., glandular disorder). All participants then rated the target on several scales.

The four resulting groups of ratings were compared to determine whether or not perceptions of controllability influenced individuals' evaluations of the overweight target. Results demonstrated that the participants who were informed that the target was overweight because of a glandular disorder rated her more favorably in terms of personality impressions (e.g., self-control and activity) and emotions toward her (e.g., anger and pity) than participants who were informed that she was overweight because of regular overeating and a sedentary lifestyle. This finding replicates DeJong's (1980; 1993) and Weiner et al.'s (1988) findings that manipulating controllability information influences evaluations of overweight targets.

Grosko's (2002) psycho-educational intervention aimed to change controllability information of overweight people in general, not just those who have a glandular

disorder. This intervention also had an effect on participants' ratings of the target. Specifically, the participants who heard the alternative lecture (i.e., weight is less controllable than commonly believed) reported more positive emotions toward the target than participants who heard the traditional lecture (i.e., it is important to be thin to be healthy).

Changing attributions about weight by persuading people that weight is less controllable than commonly believed has helped to reduce stigma toward overweight and obese individuals. There has been some support for this obesity stigma reduction intervention. Another attempt at reducing obesity stigma includes increasing empathy toward obese people.

Previous attempts in bias reduction: Increasing empathy.

Empathy refers to understanding another person's concerns, situation, and feelings by projecting oneself into that person's subjective state (Webster's New Collegiate Dictionary, 1974). Teachman et al. (2003) addressed the question about the effects of increasing empathy on participants' responses to overweight individuals. Teachman et al. (2003) attempted to increase participants' levels of empathy toward overweight individuals by having participants read a first-person account of an obese woman's experience with weight discrimination and answer questions to make feelings salient. No significant differences were found on participants' implicit or explicit bias measure responses, as compared to control groups. However, Teachman et al. (2003) found that overweight participants in the empathy group expressed lower bias than normal-weight participants. Teachman et al. (2003) discussed the possibility of an in-group phenomenon. Although empathy induction was not especially effective in reducing

obesity stigma in this study, the authors suggested a problem with the intervention. Specifically, the stories about discrimination likely made negative stereotypes associated with obesity more salient. Teachman et al. (2003) proposed that further research and refinement in this type of intervention is necessary. Yet another obesity stigma reduction intervention is the social consensus intervention.

Previous attempts in bias reduction: Social consensus.

Puhl and Brownell (2003a) examined social and psychological foundations of obesity stigma and reviewed methods of stigma reduction. They suggested that social consensus theory may be a useful basis in an obesity stigma reduction intervention. Puhl and Brownell (2003a) proposed that providing people with the information that others do not stigmatize obese people may help decrease stigma toward obese people. They supported their proposal by offering research from other domains of stigma research (e.g., racism) that shows that private and public reports of stigmatizing beliefs are related to perceptions of the stigmatizing beliefs of others. Intergroup relations research has demonstrated that individuals' tendency to share beliefs with others provides feelings of acceptance, security, attention, and a sense of belonging, as well as respect and approval from others (e.g., Haslam, Turner, Oakes, Reynolds, Eggins, Nolan, & Tweedie, 1998). A person's beliefs are influenced by the beliefs of his/her group members (Stangor, Sechrist, & Jost, 2001).

Stangor et al. (2001) emphasized that stereotypes are developed, maintained, and changed via direct contact* with people of the stereotyped group and indirect sources,

* Contact hypothesis (Allport, 1954) would likely predict that because normal weight individuals have a lot of contact with overweight and obese individuals, overweight and obesity stigma should be alleviated. Yet, overweight and obesity stigma persists. One possible explanation is one of the fundamental limitations of the contact hypothesis (Dixon, Durrheim, & Tredoux, 2005). Specifically, contact hypothesis focuses on

such as parents, peers, and media. They believe that the extent to which people are influenced by the beliefs of relevant others is underestimated. Their three studies demonstrated perceptions of others' beliefs have a significant impact on the expression of stereotypes of African Americans. Specifically, presenting social consensus information that others held more positive views of African Americans influenced participants to endorse more positive and fewer negative stereotypes. Presenting information that others held more negative views influenced participants to express more negative views.

Stangor et al. (2001) found that this effect was more powerful when the participants received information about the beliefs of an ingroup versus an outgroup and that these changes were observed even one week later. Further, Stangor et al. (2001) demonstrated that the changes to expressed beliefs of a stereotype that result from an intervention that highlights others' beliefs are resistant to subsequent attempts to change stereotypes that were based on presentation of beliefs not supported by others. Stangor et al. (2001) suggested that "research devoted to the consensual underpinnings of social stereotypes would be fruitful indeed, both in terms of stereotype formation and – in a more interventionist spirit – in terms of stereotype transformation" (p. 494). Puhl and Brownell (2003a) have applied these ideas to the stereotypes of obese individuals.

Puhl and Brownell (2003a) believe that the effects of social consensus on obesity stigma can explain the degree of stigma expressed toward obese individuals. Specifically, the prevalence of obesity in popular media may lead individuals to believe that it is the social consensus to stigmatize obese individuals. These researchers suggested that the social consensus model may help explain the degree of stigma toward obese people

individual interactions between group members, and this neglects the contribution of collective and institutionalized bases of prejudice and discrimination. The problem of overweight and obesity stigma needs to be addressed at a political, social, and economic level.

among obese individuals. Specifically, obese individuals may express negative beliefs about the obese to enhance their feelings of belonging to a valued ingroup and to feel more similar to the general culture. Puhl and Brownell (2003a) also suggested that the social consensus framework is important for the research of stigma obesity reduction. Puhl's (2004) dissertation focused on this approach.

Puhl (2004) conducted three experiments that explored whether perceived social consensus had an effect on endorsement of attitudes toward obese individuals. Study 1 revealed that participants' positive ratings increased and negative ratings decreased upon learning that others had more positive attitudes toward obese individuals. Study 2 demonstrated that changes in attitudes toward obese people in response to social consensus information were more likely when the information came from an ingroup source rather than an outgroup source. Study 3 compared two methods of stigma reduction: social consensus and causes of obesity. Results demonstrated that both methods were effective in reducing stigma toward obese individuals.

In Study 3, Puhl (2004) found that positive consensus information decreased negative stereotypes (e.g., lazy, undisciplined, and unattractive) and increased positive stereotypes (e.g., humorous, generous, and friendly) of obese individuals. Providing information about uncontrollable causes of obesity decreased negative stereotypes but had no effect on positive stereotypes. Providing controllable causes of obesity increased negative stereotypes but had no effect on positive stereotypes. Interestingly, social consensus feedback also had an effect on perceived causes of obesity. Puhl (2004) suggested that "attributions about causality could be a mediator in the process of attitude change, rather than a causal factor of negative attitudes" (p.46).

The aim of the present study is to compare four interventions of obesity stigma reduction compared to a status quo group: changing attributions, increasing empathy, social consensus information, and a combination of the three interventions. Indeed, one of Puhl's (2004) suggestions for future research was to develop an intervention that combined different strategies given the complexities of obesity stigma, as well as the pervasive anti-fat attitudes in our society. A further goal in the present study is to examine the processes of change using repeated measures analyses to identify why and how a particular intervention is effective.

Hypotheses.

- I: There will be no significant differences among the five intervention groups in the three pre-tests (a validity check).
- II: There will be significant differences among the five intervention groups in the three post-tests.
- III: For the status quo group, there will be no differences between pre-test and post-test responses for the attributions, feelings, and traits tests.
- IV: The attribution intervention will be effective in improving participants' attributions about weight. That is, participants who learn that weight is not as controllable as commonly believed will report less strong beliefs about controllability of weight in the post-test, as compared to the pre-test.
- V: The empathy intervention will be effective in increasing participants' positive feelings about obese people. That is, participants who learn about the difficult experiences of a hypothetical obese woman will report more positive feelings toward obese people in the post-test, as compared to the pre-test.
- VI: The social consensus intervention will be effective in increasing participants' endorsement of positive stereotypes and in decreasing their endorsement of negative stereotypes to obese people. That is, participants who learn that their peers hold more positive and less negative stereotypes will report more positive and less negative stereotypes of obese people in the post-test, as compared to the pre-test.

- VII: The multi-level intervention will be effective in improving participants' ratings on all three tests: attributions about weight, feelings of obese people, and endorsement of positive and negative stereotypes to obese people.
- VIII: For the ratings of the overweight target, it is hypothesized that participants in the four intervention groups will report more positive ratings of the overweight target, as compared to the status quo group.
- IX: The controllability information provided to participants about the overweight target will also have an effect on participants' ratings of the target. Specifically, participants who are informed that the target is overweight for controllable reasons will rate the target less favorably than participants who are informed that she is overweight for uncontrollable reasons.

Method

Participants.

Participants were 381 undergraduate students enrolled in introductory psychology courses at the University of Manitoba. The mean age of the students was 20.26, with ages ranging from 17 to 49 years. Sixty-one percent ($N = 228$) of participants were female, 38% ($N = 141$) of participants were male, and 1% ($N = 5$) of participants did not indicate their gender. Seventy-two percent indicated that they were normal weight, followed by 16% overweight, 10% underweight, and less than 1% obese. Participation took place in a classroom setting, with up to 60 individuals in each testing session. Participants were randomly assigned to one of 10 experimental conditions (Table 1). Seven protocols were not included in the final analyses because of too many missing data. The total number of participants who completed most of the questionnaires was 373. Missing cases were simply excluded from analysis.

Table 1

Number of participants per experimental condition

Intervention group	Number of participants (Excluded protocols)		
	Controllability Information		
	Controllable	Uncontrollable	Total
Status quo	37 (2)	33 (2)	70 (4)
Attribution	39	39	78
Empathy	36 (1)	35 (2)	71 (3)
Social consensus	40	38	78
Multi-level	38	38	76
Total	190 (3)	183 (4)	373 (7)

Interventions.

The purpose of this study was to compare and contrast four interventions designed to reduce stigma toward overweight people. There were five “intervention groups,” including the status quo group. The participants in the **status quo group** were presented with information that was not intended to change participants’ views of obesity (Appendix I). This involved a description of overweight/obesity and the importance of managing one’s weight through diet and exercise. The participants in the **attribution group** were presented with information designed to change their attributions about weight by asserting that weight is not as controllable as is commonly believed and that long-term weight loss is difficult to achieve (Appendix II). The participants in the **empathy group** were encouraged to be more empathic toward overweight/obese individuals by reading a personal story written by an obese woman (Appendix III). The participants in the **social consensus group** were presented with statistics informing them that undergraduate students typically do not report much negativity toward overweight/obese people (Appendix IV). The last intervention group was an amalgamation of the three groups described above. Participants in the **multi-level intervention group** were presented with information that highlights that weight is less controllable than commonly believed, that overweight/obese people deserve compassion and kindness, and that most undergraduate students at the University of Manitoba do not have much antipathy toward overweight/obese people (Appendix V).

Procedure.

Participants were randomly assigned to one of five intervention groups, which have been described above. They were asked to come in for a one-hour group testing

session. The experimenter conducting the testing sessions, the same in every session, was normal weight. Participants were asked to sign a consent form (Appendix VI), indicating their willingness to take part in this study. It was made clear to them that their responses would remain anonymous and they had the right to withdraw from the study at any point without penalty. Their first task was to complete the pre-test, which was intended to assess their attributions about weight, levels of empathy toward overweight people, and endorsement of positive and negative stereotypes of obese individuals. (Appendixes VII, VIII, & IX). Next, they were presented with one of five of the interventions. Participants were then asked to complete the post-test, which was identical to the pre-test.

Following the post-test, all participants were shown a picture of the target female, who was overweight (Appendix X). A picture of an overweight, young woman was selected, because women are more stigmatized for their weight than men (Hebl & Heatherton, 1998; Hiller, 1981). The results of Hiller's (1981) study show that using a picture (not a silhouette (Hebl & Heatherton, 1998, p.419) and a vignette produce outcomes of greater significance than using either a picture or a vignette. The target selected was a White, young woman because this is the group that is most stigmatized for being overweight (Hebl & Heatherton, 1998; Hiller, 1981).

Participants were also asked to read a vignette describing the reasons the target overweight woman became overweight (Appendix XI). The vignettes differed in controllability of onset of the target's overweight status. The onset of being overweight is deemed controllable if it is presented as a result of regular overeating and lack of physical activity. Conversely, it is considered uncontrollable if it is attributed to a glandular disorder (DeJong, 1980; 1993; Weiner et al., 1988).

Subsequently, all participants were asked to rate the target on five factors: attributions about weight, social disparagement, physical unattractiveness, feelings, and liking (Appendixes XII, XIII, & XIV). Finally, all participants received a debriefing form (Appendix XV) as they handed in their materials. The debriefing form was intended to clarify the description, purpose, and hypotheses of the study, as well as to provide a note of appreciation for their participation and contact information for those who wished to be informed about the results of the study. (Please see Appendix XVI for a flow chart describing the stages of these methods.)

Measures.

Pre- and post-tests. The pre-test and the post-test both involved the same three measures. First, the pre- and post-tests included a measure of beliefs about obese individuals: the *Beliefs About Obese Persons Scale (BAOP)*; Allison, Basile, & Yunker, 1991; Appendix VII). The *BAOP* consists of 8 items and has an alpha reliability range of .65 to .82 (Allison et al., 1991). The *BAOP* requires participants to demonstrate agreement with statements using a -3 (strongly disagree) to +3 (strongly agree) scale. Essentially the *BAOP* measures the degree to which participants believe that weight is controllable (e.g., “Obesity is rarely caused by a lack of willpower” and “Most obese people cause their problems by not getting enough exercise”). In this study, items 1, 3, 4, 5, and 6 were reverse scored so that higher scores corresponded with stronger perceptions of uncontrollability. The *BAOP* has face and content validity. Allison et al. (1991) reported that they have demonstrated high internal consistency, discriminant validity, and generalizability of the *BAOP*. In the current study, Cronbach’s $\alpha = 0.43$ at pre-test and

0.46 at post-test. This first part of the pre-test and post-test will be referred to as “attributions” about weight.

Second, Weiner et al.’s (1988) items (Appendix IX) measured the degree of responsibility, blame, liking, pity, anger, and assistance required that the participant assigned to obese people in general. The scale is a 9-point Likert scale, anchored at the extremes. In this study, items b, d, and e were reverse scored so that higher scores corresponded with more positive feelings. Although this scale has been used extensively by Weiner and colleagues, reliability and validity data are not available. In the current study, Cronbach’s $\alpha = 0.58$ at pre-test and 0.64 at post-test. This second part of the pre-test and post-test will be referred to as “feelings” about obese people.

Third, the pre- and post-tests included the Obese Persons Trait Survey (*OPTS*; Puhl, 2004; Appendix VIII). The *OPTS* requires participants to estimate the percentage of obese people that possess a particular trait (10 positive and 10 negative traits). Puhl (2004) reported that the scale has good internal reliability, with Cronbach’s $\alpha = 0.83$ for the positive traits subscale and Cronbach’s $\alpha = 0.73$ for the negative traits subscale. In the current study for the positive traits subscale, Cronbach’s $\alpha = 0.86$ for the pre-test and 0.90 for the post-test. For the negative traits subscale in the current study, Cronbach’s $\alpha = 0.85$ for the pre-test and 0.90 for the post-test. This third part of the pre-test and post-test will be referred to as endorsement of “stereotypes” of obese people.

Ratings of the target. Participants’ ratings of the target overweight person were obtained via three measures. First, participants were asked to rate the target overweight person on each item of the Antifat Attitudes Test (*AFAT*; Lewis, Cash, Jacobi, & Bubb-Lewis, 1997; Appendix XII). The *AFAT* requires participants to rate 47 items on a 5-point

Likert-scale. The psychometric properties of the *AFAT* have been reported as favourable (Lewis et al., 1997). The composite *AFAT* Cronbach's α is 0.95 (Lewis et al., 1997). Factor analyses demonstrated three internally consistent subscales: Social/Character Disparagement, Physical/Romantic Unattractiveness, and Weight Control/Blame (Lewis et al., 1997). These variables will be referred to as "character," "physical," and "blame," respectively. The *AFAT* measures individuals' respect for obese people (e.g., "Society is too tolerant of fat people" and "I prefer not to associate with fat people"), individuals' beliefs about obese people's attractiveness (e.g., "I would not want to continue in a romantic relationship if my partner became fat" and "Fat people are physically unattractive"), and individuals' beliefs about the controllability of weight (e.g., "There's no excuse for being fat" and "Fat people have no will power"). The *AFAT* has face and content validity (Lewis et al., 1997). Lewis et al. (1997) demonstrated that the *AFAT* ratings were not related to ratings on a *Social Desirability Scale* (Phares & Erskine, 1984). The items were modified to reflect participants' ratings of the target overweight person. In the current study, Cronbach's $\alpha = 0.87$ for character subscale, 0.85 for physical subscale, and 0.88 for blame subscale.

Second, participants were asked to rate the target overweight person using Weiner et al.'s (1988) items, described above. The items were modified (Appendix XIII) to obtain a rating of the target, rather than overweight people in general as in the pre- and post-tests. This variable will be referred to as "feeling." In the current study, Cronbach's $\alpha = 0.64$ for the feeling measure. Third, participants were asked to rate the target on 5 items on a 7-point Likert scale (Appendix XIV). These items were used by Grosko (2002), and they measure how much participants report liking the target overweight

person. This variable will be referred to as “liking.” In the current study, Cronbach’s $\alpha = 0.88$ for the liking measure.

Results

Results will be reported in the following order. First, the analyses of the pre-tests and post-tests will be described. The three pre-tests/post-tests included participants' reported attributions about weight, feelings about obese people, and endorsement of positive and negative stereotypes of obese people. Second, the effects of intervention group, controllability, gender, and weight on target ratings will be delineated. The variables that were used to measure participants' ratings of the overweight target were: feelings about the target, liking of the target, character assessment of the target, physical attractiveness ratings, and blame toward the target for lack of weight control. It is important to note that as many as 88 participants (24% of the sample) demonstrated difficulties in responding to items that were intended to change their endorsement of positive and negative stereotypes of obese people (OPTS, Puhl, 2004). These participants were included in the analyses. Caution is recommended in interpreting the results of the social consensus intervention.

As hypothesized, there were no significant differences between intervention groups for attributions, feelings, positive and negative stereotypes ($p > 0.05$) in the pre-tests (Hypothesis I). Significant differences were identified between intervention groups for attributions, feelings, and negative stereotypes ($p < 0.05$) in the post-tests (Hypothesis II). Please see Table 2 for F -values. Hypotheses III, IV, V, VI, and VII pertain to the effects of the status quo, attribution, empathy, social consensus, and multi-level interventions, respectively. These hypotheses were partially confirmed. A detailed description follows below.

Table 2

Statistics for differences between intervention groups in pre-tests and post-test

Pre-test/Post/test Variable	<i>F</i> -values (ANOVA)	
	Pre-test	Post-test
Attributions	$F(4, 364) = 0.62$	$F(4, 366) = 6.95^*$
Feelings	$F(4, 367) = 1.08$	$F(4, 367) = 3.34^*$
Positive Stereotypes	$F(4, 292) = 0.75$	$F(4, 294) = 1.69$
Negative Stereotypes	$F(4, 281) = 0.25$	$F(4, 282) = 4.74^*$

Note: Superscripts * indicate significant differences between intervention groups ($p < 0.05$).

Effects of interventions on post-tests.

Attributions. A 2 (within: pre-test/post-test) by 5 (between: intervention group) MANOVA indicated a main effect for pre-test/post-test ($F(1, 363) = 21.28, p < 0.01$) and a pre-test/post-test by intervention group interaction ($F(4, 363) = 14.54, p < 0.01$) for participants' reported attributions of obesity. Follow-up paired samples t-tests revealed significant differences for status quo ($t(1, 67) = 4.34, p < 0.01$), attribution ($t(1, 76) = 5.15, p < 0.01$), empathy ($t(1, 70) = 5.07, p < 0.01$), and multi-level ($t(1, 73) = 2.47, p < 0.05$) intervention groups. That is, from pre-test to post-test, the status quo intervention was effective in increasing participants' attributions of controllability regarding obese people; the attribution ($d = 0.67$), empathy ($d = 0.69$), and multi-level ($d = 0.67$) interventions were effective in decreasing participants' attributions of controllability regarding obese people; and the social consensus ($d = 0.28$) intervention had no significant effect on participants' attributions of controllability regarding obese people. Please see Table 3 for means and standard deviations for participants' reported attributions of obesity at pre-test and post-test.

Table 3

Means for attributions pre-test and post-test by intervention group

Intervention group	Time of Measurement	
	Pre-test	Post-test
Status quo	29.61 (3.80) ^a	31.06 (4.54) ^b
Attribution	30.21 (4.37) ^a	27.91 (4.53) ^b
Empathy	29.92 (4.39) ^a	28.14 (4.26) ^b
Social consensus	30.10 (4.40)	29.76 (4.59)
Multi-level	29.24 (4.49) ^c	28.37 (3.41) ^d

Note: Superscripts a & b within a row indicate that the two means are significantly different at $p < 0.01$.
 Superscripts c & d within a row indicate that the two means are significantly different at $p < 0.05$.

Feelings. A 2 (within: pre-test/post-test) by 5 (between: intervention group) MANOVA indicated a main effect for pre-test/post-test ($F(1, 366) = 33.01, p < 0.01$) and a pre-test/post-test by intervention group interaction ($F(4, 366) = 6.05, p < 0.01$) for participants' reported feelings about obese individuals. Follow-up paired samples t-tests revealed significant differences for attribution ($t(1, 77) = 2.39, p < 0.05$), empathy ($t(1, 69) = 5.83, p < 0.01$), and multi-level ($t(1, 74) = 4.56, p < 0.01$) intervention groups. That is, from pre-test to post-test, the attribution ($d = 0.47$), empathy ($d = 0.46$), and multi-level ($d = 0.29$) interventions were effective in increasing participants' positive feelings about obese people, whereas the status quo and social consensus ($d = 0.12$) interventions did not have a significant effect on participants' reported feelings toward obese people. Please see Table 4 for means and standard deviations of participants' reported feelings about obese individuals at pre-test and post-test.

Because the first item of the feelings test asked participants to rate their perceptions of controllability about weight, data were re-analyzed without this item. Paired samples t-tests revealed significant differences for empathy ($t(1, 69) = 3.37, p < 0.01$) and multi-level ($t(1, 74) = 3.97, p < 0.01$) intervention groups. That is, from pre-test to post-test, the empathy and multi-level interventions were effective in increasing participants' positive feelings (minus the controllability item) about obese people. Similarly, the second question on the feelings tests deals with feelings of blame toward obese people. Removing the first two items of the feelings test, paired samples t-tests revealed significant differences for empathy ($t(1, 69) = 2.33, p < 0.05$) and multi-level ($t(1, 74) = 4.32, p < 0.01$) intervention groups. That is, from pre-test to post-test, the

empathy and multi-level interventions were effective in increasing participants' positive feelings (minus the controllability and blame items) about obese people.

Table 4

Means for feelings pre-test and post-test by intervention group

Intervention group	Time of Measurement	
	Pre-test	Post-test
Status quo	23.40 (5.73)	23.79 (6.17)
Attribution	21.86 (5.59) ^c	20.74 (6.90) ^d
Empathy	22.99 (6.03) ^a	20.92 (6.22) ^b
Social consensus	23.51 (6.28)	23.03 (6.05)
Multi-level	23.42 (6.08) ^a	22.00 (6.34) ^b

Note: Superscripts a & b within a row indicate that the two means are significantly different at $p < 0.01$.
 Superscripts c & d within a row indicate that the two means are significantly different at $p < 0.05$.

Positive stereotypes. A 2 (within: pre-test/post-test) by 5 (between: intervention group) MANOVA indicated a main effect for pre-test/post-test ($F(1, 292) = 47.51, p < 0.01$) and a pre-test/post-test by intervention group interaction ($F(4, 292) = 7.93, p < 0.01$) for participants' reported endorsement of positive stereotypes to obese people. Follow-up paired samples t-tests revealed significant differences for empathy ($t(1, 57) = 3.03, p < 0.01$), social consensus ($t(1, 61) = 8.12, p < 0.01$), and multi-level ($t(1, 63) = 2.45, p < 0.05$) intervention groups. That is, from pre-test to post-test, the empathy ($d = 0.17$), social consensus ($d = 0.48$), and multi-level ($d = 0.25$) interventions were effective in increasing participants' endorsement of positive stereotypes to obese people, whereas the status quo and attribution ($d = 0.22$) interventions did not have a significant effect on participants' endorsement of positive stereotypes to obese people. Please see Table 5 for means and standard deviations of participants' endorsement of positive stereotypes for obese people at pre-test and post-test.

Table 5

Means for positive stereotypes pre-test and post-test by intervention group

Intervention group	Time of Measurement	
	Pre-test	Post-test
Status quo	58.60 (12.93)	58.99 (15.08)
Attribution	60.85 (13.86)	62.26 (14.56)
Empathy	57.46 (11.03) ^a	61.38 (12.16) ^b
Social consensus	58.14 (12.49) ^a	65.48 (11.90) ^b
Multi-level	60.29 (13.80) ^c	62.74 (15.25) ^d

Note: Superscripts a & b within a row indicate that the two means are significantly different at $p < 0.01$.
 Superscripts c & d within a row indicate that the two means are significantly different at $p < 0.05$.

Negative stereotypes. A 2 (within: pre-test/post-test) by 5 (between: intervention group) MANOVA indicated a main effect for pre-test/post-test ($F(1, 278) = 83.01, p < 0.01$) and a pre-test/post-test by intervention group interaction ($F(4, 278) = 21.13, p < 0.01$) for participants' reported assignment of negative characteristics to obese people. Follow-up paired samples t-tests revealed significant differences for attribution ($t(1, 54) = 2.55, p < 0.05$), empathy ($t(1, 52) = 6.191, p < 0.01$), social consensus ($t(1, 59) = 8.34, p < 0.01$), and multi-level ($t(1, 59) = 4.27, p < 0.01$) intervention groups. That is, from pre-test to post-test, the attribution ($d = 0.75$), empathy ($d = 0.23$), social consensus ($d = 0.70$), and multi-level ($d = 0.15$) interventions were effective in decreasing participants' endorsement of negative stereotypes to obese people, whereas the status quo intervention did not have a significant effect on participants' endorsement of negative stereotypes to obese people. Please see Table 6 for means and standard deviations of participants' endorsement of negative stereotypes for obese people at pre-test and post-test.

Table 6

Means for negative stereotypes pre-test and post-test by intervention group

Intervention group	Time of Measurement	
	Pre-test	Post-test
Status quo	59.99 (14.58)	61.06 (17.15)
Attribution	60.55 (14.47) ^c	62.26 (14.56) ^d
Empathy	62.08 (14.78) ^a	57.25 (15.45) ^b
Social consensus	62.16 (12.75) ^a	48.81 (17.69) ^b
Multi-level	61.45 (14.95) ^a	58.63 (15.12) ^b

Note: Superscripts a & b within a row indicate that the two means are significantly different at $p < 0.01$.
 Superscripts c & d within a row indicate that the two means are significantly different at $p < 0.05$.

Which intervention group was most effective? There are two different ways of comparing the interventions on their effects on all pre-test/post-test variables. The first and most parsimonious way of comparing interventions is assessing the largest overall effect. Effect sizes of the effects of the interventions on attributions, feelings, positive and negative stereotypes were computed and averaged across intervention (Table 7). The attribution intervention demonstrated the largest overall effect ($d = 0.53$), as compared to the average effect sizes for the empathy ($d = 0.39$), social consensus ($d = 0.40$), and multi-level ($d = 0.34$) interventions.

Another way of assessing which intervention performed best is by determining which interventions had a significant, positive effect on all versus some of the dependent variables. In this study, the empathy and multi-level interventions produced a significant effect on all pre-test/post-test variables, whereas the other interventions did not. Assessing individual effects demonstrated that the empathy and multi-level interventions were the strongest at having an effect on all four dependent variables. Change scores were computed and t -tests were performed to assess potential differences between empathy and multi-level interventions (Table 8). Effect sizes for the empathy intervention ranged from 0.17 to 0.69, and effect sizes for the multi-level intervention ranged from 0.15 to 0.67. Change scores for the empathy intervention ranged from -3.92 to 4.83, and change scores for the multi-level intervention ranged from -2.45 to 2.82. Although the differences between the empathy and multi-level means were not significant, the empathy intervention yielded overall larger effect sizes and greater change scores.

Table 7

Effect sizes of the effects of interventions on attributions, feelings, positive and negative stereotypes

Intervention	Attributions	Feelings	Effect size (Cohen's <i>d</i>) (compared with Status quo post-test)		
			Positive Stereotypes	Negative Stereotypes	Average Effect size
Attribution	0.67*	0.47*	0.22	0.75*	0.53
Empathy	0.69*	0.46*	0.17*	0.23*	0.39
Social Consensus	0.28	0.12	0.48*	0.70*	0.40
Multi-level	0.67*	0.29*	0.25*	0.15*	0.34

Note: Superscripts * indicate significant effects ($p < 0.05$).

Table 8

Comparing empathy and multi-level interventions

Post-test Variable	Change Score (95% CI)		<i>t</i> -test
	Empathy Intervention	Multi-Level Intervention	
Attributions	1.78 (0.35, 3.22)	0.87 (-0.40, 2.14)	<i>t</i> (1, 145) = 0.36
Feelings	2.07 (0.04, 4.10)	1.42 (-0.57, 3.41)	<i>t</i> (1, 144) = 0.68
Positive Stereotypes	-3.92 (-7.72, -0.07)	-2.45 (-7.11, 2.21)	<i>t</i> (1, 121) = 0.54
Negative Stereotypes	4.83 (-0.18, 9.85)	2.82 (-1.20, 7.64)	<i>t</i> (1, 113) = 0.48

Note: Superscripts * indicate significant effects ($p < 0.05$) for *t*-tests.

Effects of intervention group, controllability, gender, and weight on target ratings.

A 5 (intervention group) X 2 (controllability) X 2 (gender) X 4 (weight) MANOVA revealed no significant interaction effects of these four variables. Please see Tables 7, 8, & 9 for means and standard deviations. For intervention group and weight category, there were no significant main effects. That is, interventions (Hypothesis VIII disconfirmed) and weight categories did not significantly affect participants' ratings of the target.

For controllability information, there was a significant main effect, Multivariate $F(5, 293) = 19.75, p < 0.01$. At the univariate level, the main effect for controllability was significant for Feeling ($F(1, 293) = 20.24, p < 0.01$), Liking ($F(1, 293) = 7.82, p < 0.01$), and Blaming ($F(1, 293) = 45.98, p < 0.01$). Specifically, participants who were informed that the target is overweight because of uncontrollable reasons reported that they liked her more and blamed her less than participants who were informed that she was overweight for controllable reasons. Thus, Hypothesis IX was mostly confirmed.

In addition to the effects of controllability, analyses revealed some unexpected gender differences in participants' ratings of the target. At the univariate level, the main effect for gender was significant for Feeling ($F(1, 297) = 11.28, p < 0.01$), Liking ($F(1, 297) = 30.96, p < 0.01$), Character ($F(1, 297) = 9.54, p < 0.01$), and Physical ($F(1, 297) = 12.16, p < 0.01$). Specifically, women reported more positive ratings toward the target in terms of liking, characteristics, and physical ratings, as compared to men. However, gender neither significantly interacted with intervention group nor controllability.

Therefore, gender differences do not affect overall results.

Table 9

Means for target ratings by intervention group

Target Ratings	Intervention group <i>M (SD)</i>				
	Status quo	Attribution	Empathy	Social Consensus	Multi-level
Feeling	20.33 (6.42)	18.38 (6.66)	19.35 (6.03)	19.77 (6.12)	18.93 (5.60)
Liking	18.61 (6.24)	16.18 (5.67)	17.87 (6.41)	17.35 (5.96)	17.21 (6.17)
Character	23.33 (7.00)	21.84 (8.17)	23.06 (8.01)	22.62 (8.02)	22.64 (8.45)
Physical	22.64 (6.44)	21.77 (6.82)	23.23 (7.91)	22.03 (6.85)	22.21 (8.08)
Blame	20.09 (7.66)	19.71 (7.72)	19.55 (7.21)	20.14 (7.73)	19.52 (6.76)

Note: Analyses demonstrated that no means were significantly different at $p < 0.05$.

Table 10

Means for target ratings by controllability information

Target ratings	Controllability Information	
	Controllable	Uncontrollable
Feeling	21.47 (6.10) ^a	17.13 (5.46) ^b
Liking	18.02 (6.02) ^a	16.81 (6.15) ^b
Character	23.07 (7.99)	22.27 (7.87)
Physical	23.39 (7.21)	21.26 (7.10)
Blame	23.74 (6.12) ^a	15.72 (6.33) ^b

Note: Superscripts a & b within a row indicate that the two means are significantly different at $p < 0.01$.

Table 11

Means for target ratings by gender

Target ratings	Gender	
	Women	Men
Feeling	18.48 (5.63) ^a	20.61 (6.78) ^b
Liking	15.84 (5.67) ^a	20.06 (5.94) ^b
Character	20.99 (6.39) ^a	25.30 (9.39) ^b
Physical	20.99 (6.77) ^a	24.55 (7.42) ^b
Blame	19.76 (7.39)	19.67 (7.39)

Note: Superscripts a & b within a row indicate that the two means are significantly different at $p < 0.01$.

Effect sizes and power for target ratings by intervention group.

Effect sizes and power were computed for effects of interventions on target ratings (Table 12) to explore potential reasons for the lack of effect. Effect sizes were considerably small, ranging from 0.01 to 0.41. And, power was well below the typical standard for adequacy, ranging from 0.05 to 0.80.

Table 12

Effect sizes and power for target ratings by intervention group

Target Ratings	Effect size (Cohen's <i>d</i>) Power (1 - β)			
	Intervention group			
	Attribution	Empathy	Social Consensus	Multi-level
Feeling	0.30	0.16	0.09	0.23
	0.57	0.24	0.14	0.40
Liking	0.41	0.12	0.21	0.23
	0.80	0.17	0.35	0.39
Character	0.20	0.04	0.09	0.09
	0.33	0.08	0.14	0.13
Physical	0.13	0.08	0.09	0.06
	0.20	0.12	0.14	0.10
Blame	0.05	0.07	0.01	0.08
	0.09	0.11	0.05	0.12

Note: Analyses demonstrated that no means were significantly different at $p < 0.05$.

Discussion

The purpose of the current study was to compare four obesity stigma reduction interventions with one another, as well as with a status quo group. The status quo condition highlighted the controllability of weight and how important it is to lose weight for health purposes. The attribution intervention emphasized that weight is not as controllable as commonly believed. The empathy intervention involved presenting participants with the difficulties of being obese from an obese person's perspective. The social consensus intervention informed participants that their peers were more positive and less negative toward obese people. The multi-level intervention targeted attributions about controllability of weight, feelings about obese people, and beliefs about peers' evaluations of obese people. The pre- and post-tests included ratings of participants' attributions about weight, feelings toward obese individuals, and endorsement of positive and negative stereotypes to obese people. Following the interventions, participants were required to look at a picture of an overweight woman and to rate her on the following measures: how they felt about her (feeling), how much they liked her (liking), what they thought about her character (character) and levels of attractiveness (attractiveness), and how much they blamed her for being overweight (blame). Statistical analyses revealed significant effects when pre-tests were compared with post-tests, no differences between interventions for participants' ratings of an overweight target, and significant effects for differences in controllability information. A detailed discussion of these results will be presented below.

Effects of interventions on post-tests

The status quo intervention performed as hypothesized. Specifically, the status quo intervention group demonstrated no differences from pre-test to post-test on the feelings or stereotypes measures (Hypothesis III). Interestingly, an unexpected finding showed that the status quo group had a negative effect on the attribution measure. The status quo intervention emphasized controllability of weight, and it significantly increased participants' perceptions of controllability of weight. Thus, upon hearing that weight is controllable, participants in the status quo group reported that they believed that weight is more controllable than they originally indicated.

The attribution intervention had more impact than expected (Hypothesis IV), in that it was successful in decreasing participants' perceptions of controllability about weight, increasing positive feelings toward obese individuals, and decreasing endorsement of negative stereotypes to obese individuals. Further, the attribution intervention demonstrated the largest overall effect. The attribution intervention, however, had no effect on participants' endorsement of positive stereotypes to obese people. Puhl's (2004) study yielded similar results, in that the attribution intervention decreased participants' endorsement of negative stereotypes and had no effect on positive stereotypes. Puhl (2004) suggested that there may be different mechanisms for changing positive and negative stereotypes. Further research is needed to address this question.

The social consensus intervention was successful in increasing participants' endorsement of positive stereotypes and decreasing participants' endorsement of negative stereotypes to obese people (Hypothesis VI confirmed). This intervention had no effect on participants' attributions about weight and feelings about obese people. Puhl (2004)

found that the social consensus intervention improved participants' attributions about weight. Based on her findings, Puhl (2004) offered an interpretation that suggests that attitude change occurs through top-down processing. That is, favorable consensus information improves attitudes, which in turn positively affects attributions about controllability of weight. The results of the current study do not support her suggestion. The discrepancy in results between (Puhl's 2004) and this study needs to be addressed by further research.

The pattern of the results for the attribution and social consensus conditions in this study is interesting and logical, because it is possible that the attribution and social consensus interventions are effective at changing the variables that they were designed to change. That is, the attribution intervention changed attributions (as well as feelings and negative stereotypes), and the social consensus intervention changed endorsement of stereotypes. Conversely, the empathy and multi-level interventions were successful in changing participants' responses to all post-tests. The empathy intervention surpassed predictions (Hypothesis V) and the multi-level intervention performed as expected (Hypothesis VII).

A point of interest regarding the empathy intervention is that, in the literature, the empathy intervention was unsuccessful in reducing stigma toward obese individuals (Teachman et al., 2003). In creating the empathy intervention for this study, much emphasis was placed on making it clear that the person describing what it is like to be obese was simply sharing her experience, rather than complaining and feeling sorry for herself. It is likely that this focus improved the strength and effectiveness of the empathy intervention. It is also possible that the empathy intervention was effective because it

encouraged participants to feel and connect with another person's experience. This may have touched participants "at a gut level," which may be a helpful way of creating a change in attributions about weight, feelings about obese people, and endorsement of stereotypes to obese people.

The multi-level intervention used in this study was designed to target participants' attributions regarding controllability of weight, feelings toward obese individuals, and endorsement of positive and negative stereotypes toward obese individuals. The aforementioned results, which indicated that the two traditionally most successful interventions for reducing obesity stigma are effective in changing the variables which they target, suggest that it may be necessary to target as many variables as possible to maximize the success of an obesity stigma reduction intervention. It is likely that the most effective obesity stigma reduction intervention will be one that attempts to change people's attributions about weight, feelings about obese people, and endorsement of positive and negative stereotypes of obese individuals.

Further research is required to determine the absolute best obesity stigma reduction intervention. Comparing the effects of the empathy and multi-level interventions in this study, it seemed that the empathy intervention performed better than the multi-level intervention. That is, the empathy intervention demonstrated larger overall effect sizes and greater change scores. Selecting the empathy and multi-level interventions as the superior interventions in this study is appropriate when looking at individual effects. However, it is also important to acknowledge that the attribution intervention yielded the largest overall effect, as compared to the other interventions. The attribution intervention had a significant and positive effect on participants' attributions,

feelings, and positive stereotypes. If it were necessary to choose an intervention, based on the findings of the current study, this author would select the attribution intervention.

Effects of intervention on participants' ratings of target

Although the interventions demonstrated a positive effect on participants' ratings of their attributions about weight, feelings about obese people, and endorsement of positive and negative stereotypes of obese people, no significant differences were found among the intervention groups in participants' ratings of the target overweight person. That is, participants expressed differences in attributions, feelings, and stereotype beliefs, but these differences did not affect how they rated the overweight target person minutes later. This result was unexpected. In Grosko's (2002) similar design, where an intervention was presented and participants were asked to rate a target, this intervention had a positive effect on participants' ratings of the target overweight person.

One explanation for the lack of effect of all four interventions could be the principle that general attitudes do not predict specific behaviours very well (Weigel & Newman, 1976). However, Grosko's (2002) interventions focused on general attitudes, and these interventions had an effect on ratings of an individual. Additionally, the empathy intervention focused on the story of an individual obese person, and this intervention was unsuccessful. It is unlikely that the discrepancy between general attitudes and specific behaviours completely accounts for the lack of effect of the obesity stigma reduction interventions.

A more likely explanation is the low levels of power in this study, which can be addressed in future research by increasing the sample size and/or reliability of measures. It is quite likely that a ceiling effect occurred, in which high ratings of the overweight

target among the status quo condition were difficult to exceed by the intervention groups. The measures used, although modified, hung together well (Cronbach's $\alpha = 0.64$ to 0.88). A measure that can assess small differences in responses toward an overweight target needs to be developed. Additionally, it is recommended that future studies use behavioral measures that can detect differences in actions toward overweight and obese people. Yet another important factor to consider is the strength of the interventions. The interventions were short and were only presented to participants once. The interventions did elicit an effect, but they were not potent enough to affect participants' ratings of the target. It is possible that individuals who live in a society that promotes thinness require repeated interventions that target ingrained beliefs about weight.

Effects of controllability information on participants' ratings of target

Participants who were informed that the target was overweight for uncontrollable reasons reported more positive feelings toward the target and that they liked her more and blamed her less than participants who were informed that the target was overweight for controllable reasons. Controllability information had no effect on participants' ratings of the target's characteristics or physical attractiveness. Several studies have demonstrated positive effects of controllability information, regarding how an individual person became overweight, on ratings of overweight people (DeJong, 1980; 1993; Grosko, 2002; Weiner et al., 1988). The current study revealed more detailed findings than those found in previous research. Specifically, controllability information affected participants' reported liking and blaming but had no effect on ratings of characteristics and physical attractiveness. Thus, participants expressed more positive feelings toward the target, yet

their beliefs about her attractiveness and characteristics were maintained. These findings seem logical.

Limitations of this study

General. All participants in this study were undergraduate students enrolled in introductory psychology courses at the University of Manitoba. The results found in this study represent the beliefs of its participants. It is important to test generalizability of these results to other populations.

All measures used in this study were self-report measures, which have proven limits. It would be helpful to use different styles of measurement to determine how self-reported responses compare to genuine attitudes and how attitudes would affect behaviours. It is essential to test how the interventions affect people's thoughts, feelings, and behaviours toward overweight and obese people.

Another general limitation of the current study was that demand effects were not examined. Without a measure of demand effects in a study such as this, it is difficult to determine whether participants' responses are influenced by what they perceive is the correct response. Future studies should include measures of demand effects to address this concern.

Pre- and post-tests. An already mentioned limitation in this study is that many participants did not respond to the endorsement of stereotype items. In fact, as many as 24% of participants left these items blank or responded to items in a way that demonstrated that they did not understand the instructions. These cases were excluded from the analyses. Future use of the *OPTS* (Puhl, 2004) should ensure that participants understand the instructions before they are required to provide data. Puhl (2004) included

a task in her studies that guaranteed understanding among participants on how to respond to the items. The current study demonstrates that such a task is necessary.

In this study, the endorsement of stereotype items had high levels of internal consistency. This was not the case for the attribution (0.43 and 0.46 for pre- and post-tests) or feelings measures (0.58 and 0.64 for pre- and post-tests). The low reliability of the attribution and feelings scales indicates that the items used in these scales are not measuring a single concept. Since the items are measuring different things, they cannot be measuring what we intended to measure. Future studies should select measures with higher levels of internal consistency to maximize validity.

Target ratings. It may have been helpful to compare post-intervention ratings of the target overweight person with pre-intervention ratings, which were not obtained. Future, similar studies should gather pre-intervention ratings of the target, which can be compared to post-intervention ratings of the target. The lack of pre-intervention ratings of the target may have precluded significant findings in the rating the target portion of this study.

Items used to assess participants' ratings of the target overweight person were modified from measures designed to test beliefs about overweight and obese people in general. The modification of the items does not guarantee that the psychometric properties of these measures were maintained. In fact, this may also account for the nonsignificant findings in the rating the target portion of this study.

Having acknowledged some limitations of the current study, it is essential to also acknowledge that there is much support for the credibility of the design in the study. Specifically, the results are logical and consistent. For example, it is not surprising that

the attribution intervention most strongly affected participants' attributions about weight, while the multi-level intervention, which was designed to affect attributions, feelings, and endorsement of stereotypes, did indeed affect these variables. Further, many findings in this study are consistent with findings presented in the literature.

Implications for stigma reduction

The present study has provided an additional obesity stigma reduction intervention, which used a combination of existing interventions to strengthen effects. This study demonstrated that the multi-level intervention was effective in improving attributions about weight, feelings about obese people, and endorsement of positive and negative stereotypes to obese individuals. The multi-level intervention may be the most economical and strong obesity stigma reduction intervention. The present study also supports the effectiveness of an obesity stigma reduction intervention which aims to increase empathy toward overweight and obese people. The empathy intervention in this study proved to be as effective as the multi-level intervention. Furthermore, the current study provided strong support for the attribution intervention, which demonstrated a largest overall effect and affected attributions, feelings, and negative stereotypes. This finding matches the current trend in the literature, which supports the attribution intervention as the most successful to date for obesity stigma reduction.

Additional research is required to test the effectiveness, generalizability, and strength of these interventions, as well as to determine whether the interventions maintain their effects over time. Furthermore, it is imperative to find ways to extend the positive effects of the interventions to ratings of individual overweight and obese people in order to reach the end goal of decreasing obesity stigma and discrimination.

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Appendix I: Status Quo Intervention

(Puhl, 2004)

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The causes of obesity have been debated by researchers in the field. The following paragraph is an excerpt from a recent article in the *Free Press*. Please read the summary, and answer the questions on the following page when you are finished.

July, 2006

The Obesity Epidemic: Experts Search for Causes

Source: *Free Press*

It is certainly easy to become overweight in North America. Human obesity, a condition affecting over 1/3 of North Americans has begun to receive increasing attention over the past 25 years. In the last decade, obesity research has entered a new phase, where researchers are trying to get at the causes of appetite and body weight that are within personal control. Experts studying the causes of obesity have identified several lifestyle factors that are responsible for why people are overweight. These findings are the latest in a series of studies that are beginning to shed light on the causes of obesity.

In particular, findings recently published in the *Journal of Medical Epidemiological Research* and *Journal of Obesity Physiology* suggest that human obesity may be caused by an excessive build up of fat cells due to overeating and a lack of exercise. Today's fast food environment makes it easy for people to access high fat, high calorie foods that are inexpensive. Another key to obesity may be a sedentary lifestyle, where people are not exercising enough and are spending too much time watching television. Researchers indicate that trying to control weight will only be effective if individuals can stick to healthy meal plans and exercise every day. Experts from these studies conclude that body weight is influenced by these lifestyle factors which are within an individual's personal control.

Thus, in order to be healthy, obese people must take responsibility. They must become more physically active and eat smaller portions of healthier foods. It is up to each person to make sure that he/she is healthy. Part of being healthy means not being obese. It is very important for obese individuals to take charge of their lives and their health. They must begin today.

Please answer the following questions by circling your response using the scale provided:

1. How surprised were you by the research findings described in the passage?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

2. How much control do you think individuals have over the prevention of becoming obese?

No												Total
Control	1	2	3	4	5	6	7	8	9			Control

3. Using the following scale, indicate the degree to which you agree or disagree with the following statements:

1	2	3	4
Strongly	Somewhat	Somewhat	Strongly
Disagree	Disagree	Agree	Agree

a) Obesity is caused by factors outside personal control (e.g., hormones, thyroid problems) 1 2 3 4

b) Obesity is caused by factors within personal control (e.g., overeating, lack of motivation to exercise) 1 2 3 4

c) The causes of obesity are complex and variable 1 2 3 4

Appendix II: Attribution Intervention

(Puhl, 2004)

Copyright permission was obtained from author.

The causes of obesity have been debated by researchers in the field. The following paragraph is an excerpt from a recent article in the *Free Press*. Please read the summary, and answer the questions on the following page when you are finished.

July, 2006

The Obesity Epidemic: Experts Search for Causes

Source: *Free Press*

It is certainly easy to become overweight in North America. Human obesity, a condition affecting over 1/3 of North Americans, has begun to receive increasing attention over the past 25 years. In the last decade, obesity research has entered a new phase, where scientists are trying to get at the molecular and genetic causes of appetite and body weight. Experts studying the causes of obesity have identified several genetic and biological factors that are responsible for why people are overweight. These findings are the latest in a series of studies that are beginning to shed light on the uncontrollable causes of obesity.

In particular, findings recently published in the *Journal of Medical Epidemiological Research* and *Journal of Obesity Physiology* suggest that human obesity may be caused by a genetic deficiency. Scientists have identified a defect in genes that control body weight, as well as hormonal defects leading to thyroid problems which in turn can cause obesity. Another key is to decode signals from the body about how much fat the body is carrying. Experts from these studies conclude that body weight is influenced by biological and genetic influences outside of an individual's personal control.

In contrast to some views that obesity is caused by overeating and lack of exercise, these findings show that the causes of obesity are much more complex. It is inaccurate to conclude that obesity is simply the result of poor personal control, and society must realize that obesity is the result of a complex interaction of genetic and environmental factors. These recent findings provide good reasons to believe that obesity primarily occurs because of uncontrollable causes.

Please answer the following questions by circling your response using the scale provided:

1. How surprised were you by the research findings described in the passage?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

2. How much control do you think individuals have over the prevention of becoming obese?

No												Total
Control	1	2	3	4	5	6	7	8	9			Control

3. Using the following scale, indicate the degree to which you agree or disagree with the following statements:

1	2	3	4
Strongly	Somewhat	Somewhat	Strongly
Disagree	Disagree	Agree	Agree

- | | | | | |
|---|---|---|---|---|
| a) Obesity is caused by factors outside personal control
(e.g., hormones, thyroid problems) | 1 | 2 | 3 | 4 |
| b) Obesity is caused by factors within personal control
(e.g., overeating, lack of motivation to exercise) | 1 | 2 | 3 | 4 |
| c) The causes of obesity are complex and variable | 1 | 2 | 3 | 4 |

Appendix III: Empathy Intervention

Please read the following story that was written by a woman named Marie. It is an account of her experiences as an obese person. When you have finished, please answer the questions on the following page.

My name is Marie, and I have been obese since childhood. I have talked to many friends and read a lot about people's experiences with being unhappy about their weights. I know many people struggle with weight and body image. I would like to tell you how I have struggled.

My parents, grandparents, and siblings are all obese too. I really hate being this fat. I hate myself. That is the worst part of being obese. I try really hard to lose weight, but it is so difficult. I have tried hundreds of diets, and some have worked, but I just seem to regain the weight. I am disappointed in myself. It's not that I'm not motivated; it's just that it's so hard. Even when I've lost 50 pounds and my doctor said that was good, I didn't look that much better.

Another terrible part about being obese is people don't respect me. People either stare at me like I'm a monster or they ignore me altogether. This really hurts me. Every time I go out of the house, someone says or does something mean to me. I feel really sad that I am not accepted as part of society. I do have some good friends, but no one has ever been interested in me romantically. I understand why. I just wish that someone could look beneath the surface. My friends say that I am a good person and that I am smart and funny. Why is my weight such a problem to others?

When you are obese, it is hard to get good service from salespeople, restaurant servers, and even doctors. Think about this: half of all women are greater than a size 14, yet there are only three stores in this city that sell plus-sized clothes. And, it's so expensive. I don't like being fat, and I have not given up on trying to lose weight. I don't want to complain. Rather, I want to share my experiences as a fat person. I think that most people could understand if they tried. In fact, many people struggle with their weights. The main point is that I just want to be treated like everyone else. After all, I am a person, not a monster.

Please indicate how much you agree or disagree that the following statements describe your sentiments towards Marie on a scale from 1 (strongly disagree) to 7 (strongly agree).

1) Marie has no control over her weight.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
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2) Marie should be blamed for her being overweight.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

3) I like Marie.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

4) I am angry with Marie.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

5) I am disgusted by Marie.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

6) I pity Marie.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

7) The health-care system should help Marie.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

8) I have empathy for Marie's situation.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

Appendix IV: Social Consensus Intervention

(Puhl, 2004)

Copyright permission was obtained from author.

Extensive testing at the University of Manitoba has revealed the beliefs that STUDENTS have about OBESE PEOPLE. For each of the following traits, STUDENTS believe that the indicated percentage OBESE PEOPLE possess this particular trait. We are interested in YOUR reaction to this information. Therefore, for each of the traits, please CIRCLE A NUMBER to indicate how surprised you are by that percentage. There are no right or wrong answers.

1. Percent of students who believe obese people are HUMOROUS: 72%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

2. Percent of students who believe obese people are LAZY: 21%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

3. Percent of students who believe obese people are SELF-INDULGENT: 8%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

4. Percent of students who believe obese people are GENEROUS: 91%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

5. Percent of students who believe obese people are SOCIABLE: 81%

How surprised are you by the above information?

Not At All										Extremely
Surprised	1	2	3	4	5	6	7	8	9	Surprised

6. Percent of students who believe obese people are UNDISCIPLINED: 28%

How surprised are you by the above information?

Not At All										Extremely
Surprised	1	2	3	4	5	6	7	8	9	Surprised

7. Percent of students who believe obese people are FRIENDLY: 89%

How surprised are you by the above information?

Not At All										Extremely
Surprised	1	2	3	4	5	6	7	8	9	Surprised

8. Percent of students who believe obese people are GLUTTONOUS: 29%

How surprised are you by the above information?

Not At All										Extremely
Surprised	1	2	3	4	5	6	7	8	9	Surprised

9. Percent of students who believe obese people are OUTGOING: 90%

How surprised are you by the above information?

Not At All										Extremely
Surprised	1	2	3	4	5	6	7	8	9	Surprised

10. Percent of students who believe obese people are INTELLIGENT: 78%

How surprised are you by the above information?

Not At All										Extremely
Surprised	1	2	3	4	5	6	7	8	9	Surprised

11. Percent of students who believe obese people are UNHEALTHY: 31%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

12. Percent of students who believe obese people are HONEST: 75%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

13. Percent of students who believe obese people are SLUGGISH: 28%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

14. Percent of students who believe obese people are PRODUCTIVE: 81%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

15. Percent of students who believe obese people have LACK OF WILLPOWER:
29%

How surprised are you by the above information?

Not At All												Extremely
Surprised	1	2	3	4	5	6	7	8	9			Surprised

16. Percent of students who believe obese people are UNCLEAN: 12%

How surprised are you by the above information?

Appendix V: Multi-Level Intervention

The causes of obesity have been debated by researchers in the field. The following paragraph is an excerpt from a recent article in the *Free Press*. Please read the summary, and answer the questions on the following page when you are finished.

January, 2007

The Obesity Epidemic: Experts Search for Causes

Source: *Free Press*

Obese people are highly stigmatized in our culture. They are less likely to be hired as employees or selected as romantic partners, as compared to normal-weight individuals. Many people are rude to obese people, and derogatory jokes about obese people are commonplace. This hurts obese people's feelings and makes it difficult for them to feel good about themselves as people. To avoid stigma, obese people often avoid social situations, and this decreases their quality of life. Also to avoid stigma, many obese people even avoid going to the doctor (who also stigmatizes the obese person), and this has a negative effect on their health.

The stigmatization of obese people is unfortunate, because they are people too. The stigmatization of obese people is also unfair, because they are not entirely responsible for their obesity. Research has shown that genetics play a huge role in obesity. Also, it is very difficult to lose weight. If you have ever tried to lose weight, you know how difficult it is to stick to a diet and exercise program. Research has shown that of the 2/3 of people who are able to lose weight, 95% of them regain it. Thus, the interventions our society is providing to obese people are not effective. Why do we blame them and treat them badly?

Studies conducted at the University of Manitoba revealed that most students think that stigma is really harmful to obese people. Of course, obese people should be encouraged to eat healthy foods and have an active lifestyle. Most of the University of Manitoba students reported that (1) they do not entirely blame obese people for their obesity, (2) obese people should not be stigmatized in society, and (3) obese people should be treated as well as non-obese people. Further, University of Manitoba students reported that obese people, in general, are as intelligent, kind, and attractive as non-obese people. It seems that University of Manitoba students do not show the same bias as the overall population.

Please answer the following questions, based on the information you have just read.

1. How surprised were you by the research findings described in the passage about University of Manitoba students being less stigmatizing toward obese people than the general population?

Not At All Surprised	1	2	3	4	5	6	7	8	9	Extremely Surprised
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

2. How much control do you think individuals have over the prevention of becoming obese?

No Control	1	2	3	4	5	6	7	8	9	Total Control
---------------	---	---	---	---	---	---	---	---	---	------------------

3. How stigmatizing do you think you are toward obese people?

Not Stigmatizing	1	2	3	4	5	6	7	8	9	Very Stigmatizing
---------------------	---	---	---	---	---	---	---	---	---	----------------------

4. I have empathy for obese people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

4. I am disgusted by obese people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

6. I pity obese people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

7. I think stigmatization is harmful toward obese people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

8. I think obese people should have the same treatment as non-obese people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

Appendix VI: Consent Form

Researcher: Teresa Grosko, M.A.
Phone: 474-9338
Email: umgrosko@cc.umanitoba.ca

Advisor: Mike LeBow, Ph.D.
Phone: 474-9222
Email: mlebow@cc.umanitoba.ca

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more details about something mentioned here, or information not included here, please feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

This study is being conducted by Teresa Grosko for her Ph.D. thesis. The thesis is being supervised by Dr. Michael LeBow, a professor at the University of Manitoba in the Department of Psychology. This study will investigate young adults' perceptions of obesity; your interest in this study is very much appreciated. You will be asked to read information on the causes and consequences of obesity. The following questionnaire will ask you questions about your thoughts, beliefs, and feelings about obesity. You will be asked to consider your responses carefully and write your responses directly on the questionnaire. The study will take about 60 minutes to complete and, when finished, you will receive two credits for your participation and a debriefing form further explaining the study.

It is important to know that your participation in this study is entirely voluntary and you are free to discontinue your participation at any time, without penalty. You may decline answering any question you do not want to answer. Please remember that, at all times, your responses will be kept confidential. Your questionnaire will receive a number only, for identification and data entry purposes. Your name will not be associated in any way with these data and only the main researcher will have access to these data. The questionnaires will be stored in a locked cabinet in the main researcher's office. The data will be stored on her computer, which is password protected. All questionnaires and files will be destroyed two years after the researcher has defended her thesis. Though there are no obvious risks to participating, it is possible that thinking about this topic may prompt unexpected feelings of self-consciousness about your weight, since you will be reading about weight-related concerns. If you want to talk to someone about these feelings, there are resources listed on the back of this consent form that you can contact at any time.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering questions you prefer to omit, without penalty or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Teresa Grosko 474-9338 or Dr. Mike LeBow 474-9222

This research has been approved by the Psychology/Sociology Research Ethics Board. If you have any concerns or complaints about this project, you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122. A copy of this consent form has been given to you to keep for your records and references.

NOTE: This consent form will be separated from the questionnaire once you are done. No identifying information will be stored with the data. Providing your student ID below is optional; however, it will be used to ensure that your credit is assigned appropriately.

Participant's signature **Date**

Researcher's signature **Date**

Print name

Student ID (optional)

Please provide your email address if you wish to receive a summary of the study results, which will be available by July 2007 (estimated date).

Your email address: _____

If participation in this study has prompted unexpected feelings of self-consciousness about your weight and you wish to speak with a mental health professional about these feelings, please call the University of Manitoba Counselling Centre (474-8592 to make an appointment) or Klinik Community Health Centre Crisis Line (786-8686 to talk to someone on the phone in an emergency situation).

Appendix VII: Attributions pre-test & post-test
Beliefs About Obese Persons Scale (BAOP)
Allison et al. (1991)

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due to copyright
issues. To view
it, refer to its
source.**

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it, refer to its
source.**

Appendix VIII: Stereotypes pre-test & post-test

Obese Persons Trait Survey (OPTS)

Puhl, 2004

Copyright permission was obtained from author.

For each of the following traits, please estimate the percentage (any number between 0 and 100) of Obese People whom you think possess this particular trait. Afterward, please indicate how confident you are in your estimate by circling a number. There are no right or wrong answers. Please give your best estimate.

1. Humorous: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All										Extremely
Confident	1	2	3	4	5	6	7	8	9	Confident

2. Lazy: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All										Extremely
Confident	1	2	3	4	5	6	7	8	9	Confident

3. Self-indulgent: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All										Extremely
Confident	1	2	3	4	5	6	7	8	9	Confident

4. Generous: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All										Extremely
Confident	1	2	3	4	5	6	7	8	9	Confident

5. Sociable: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All										Extremely
Confident	1	2	3	4	5	6	7	8	9	Confident

6. Undisciplined: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All												Extremely
Confident	1	2	3	4	5	6	7	8	9			Confident

7. Friendly: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All												Extremely
Confident	1	2	3	4	5	6	7	8	9			Confident

8. Gluttonous: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All												Extremely
Confident	1	2	3	4	5	6	7	8	9			Confident

9. Outgoing: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All												Extremely
Confident	1	2	3	4	5	6	7	8	9			Confident

10. Intelligent: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All												Extremely
Confident	1	2	3	4	5	6	7	8	9			Confident

11. Unhealthy: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All												Extremely
Confident	1	2	3	4	5	6	7	8	9			Confident

12. Honest: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

13. Sluggish: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

14. Productive: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

15. Lack of willpower: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

16. Unclean: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

17. Warm: _____% of obese people possessing this trait
 My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

18. Insecure: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

19. Organized: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

20. Unattractive: _____% of obese people possessing this trait
My confidence in the above estimate:

Not At All											Extremely
Confident	1	2	3	4	5	6	7	8	9		Confident

Appendix IX: Feelings pre-test & post-test

Please indicate how much you agree or disagree that the following statements describe your sentiments toward fat people on a scale from 1 (strongly disagree) to 7 (strongly agree).

a) Fat people have no control over their weight.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

b) Fat people should be blamed for being overweight.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

c) I like fat people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

d) I am angry with fat people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

e) I am disgusted by fat people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

f) I pity fat people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

g) The health-care system should help fat people.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

Appendix X: Picture of Overweight Target

Permission to publish photograph not obtained. Please contact author for questions.

Appendix XI: Vignettes

(one of the following vignettes accompanied each picture)

Onset controllable:

This is a picture of Jen, a first year undergraduate student. She became overweight because of regular over-eating and living a sedentary lifestyle.

Onset uncontrollable:

This is a picture of Jen, a first year undergraduate student. She became overweight because of a thyroid condition, which is a medical condition that causes Jen to gain weight. There is nothing Jen can do to prevent being overweight.

AppendixXII: Ratings of target, part 1

Antifat Attitudes Test (AFAT)
Lewis et al. (1997)

Copyright permission was obtained from author and publisher.

Please circle the number that represents how much you agree or disagree with the following statements, using the following scale:

Strongly 1 2 3 4 5 Strongly
Disagree **Agree**

1. There's no excuse for being fat.

Disagree 1 2 3 4 5 Agree

2. If I were single, I would date a fat person.

Disagree 1 2 3 4 5 Agree

3. Jokes about fat people are funny.

Disagree 1 2 3 4 5 Agree

4. Jen probably buys too much junk food.

Disagree 1 2 3 4 5 Agree

5. Jen is physically unattractive.

Disagree 1 2 3 4 5 Agree

6. Jen shouldn't wear revealing clothing in public.

Disagree 1 2 3 4 5 Agree

7. If someone in my family were fat, I'd be ashamed of him or her.

Disagree 1 2 3 4 5 Agree

8. I can't stand to look at fat people like Jen.

Disagree 1 2 3 4 5 Agree

9. If Jen doesn't get hired, it's her own fault.

Disagree 1 2 3 4 5 Agree

10. Jen is disgusting.

Disagree 1 2 3 4 5 Agree

11. If I have the choice, I'd rather not sit next to Jen.

Disagree 1 2 3 4 5 Agree

12. Jen doesn't care about anything except eating.

Disagree 1 2 3 4 5 Agree

13. I'd lose respect for a friend who started getting fat.

Disagree 1 2 3 4 5 Agree

14. Jen is probably boring.

Disagree 1 2 3 4 5 Agree

15. I can't believe someone of average weight would marry a fat person.

Disagree 1 2 3 4 5 Agree

16. Society is too tolerant of fat people.

Disagree 1 2 3 4 5 Agree

17. When Jen exercises, she probably looks ridiculous.

Disagree 1 2 3 4 5 Agree

18. I hate it when fat people take up more room than they should in a theatre or on a bus or plane.

Disagree 1 2 3 4 5 Agree

19. Jen is lazy.

Disagree 1 2 3 4 5 Agree

20. Jen doesn't care about anyone but herself.

Disagree 1 2 3 4 5 Agree

21. Jen is just as competent in their work as anyone.

Disagree 1 2 3 4 5 Agree

22. If Jen really wanted to lose weight, she could.

Disagree 1 2 3 4 5 Agree

23. Being fat is sinful.

Disagree 1 2 3 4 5 Agree

24. It would be disgusting to see fat Jen eating.

Disagree 1 2 3 4 5 Agree

25. Jen has no willpower.

Disagree 1 2 3 4 5 Agree

26. I would prefer not to associate with Jen.

Disagree 1 2 3 4 5 Agree

27. Jen doesn't care about her appearance.

Disagree 1 2 3 4 5 Agree

28. Jen is moody and hard to get along with.

Disagree 1 2 3 4 5 Agree

29. If bad things happen to Jen, she deserves it because she is fat.

Disagree 1 2 3 4 5 Agree

30. Jen doesn't keep her surroundings neat and clean.

Disagree 1 2 3 4 5 Agree

31. Society should respect the rights of fat people.

Disagree 1 2 3 4 5 Agree

32. It's hard not to stare at Jen because she is so unattractive.

Disagree 1 2 3 4 5 Agree

33. If I owned a business, I would not hire Jen because of the way she looks.

Disagree 1 2 3 4 5 Agree

34. I'd feel self-conscious being seen in public with Jen.

Disagree 1 2 3 4 5 Agree

35. The idea that genetics cause Jen to be fat is just an excuse.

Disagree 1 2 3 4 5 Agree

36. I would not want to continue in a romantic relationship if my partner became fat.

Disagree 1 2 3 4 5 Agree

37. The existence of organizations to lobby for the rights of fat people in our society is a good idea.

Disagree 1 2 3 4 5 Agree

38. I don't understand how someone could be sexually attracted to Jen.

Disagree 1 2 3 4 5 Agree

39. If Jen knew how bad she looked, she would lose weight.

Disagree 1 2 3 4 5 Agree

40. Jen has as much physical coordination as anyone.

Disagree 1 2 3 4 5 Agree

41. Jen is unclean.

Disagree 1 2 3 4 5 Agree

42. Jen should be encouraged to accept herself the way she is.

Disagree 1 2 3 4 5 Agree

43. Jen will latch onto almost any excuse for being fat.

Disagree 1 2 3 4 5 Agree

44. It's hard to take Jen seriously because she is fat.

Disagree 1 2 3 4 5 Agree

45. Jen does not necessarily eat more than other people.

Disagree 1 2 3 4 5 Agree

46. Jen obviously has a character flaw, otherwise she wouldn't have become fat.

Disagree 1 2 3 4 5 Agree

47. It makes me angry to hear anybody say insulting things about Jen because she is fat.

Disagree 1 2 3 4 5 Agree

Appendix XIII: Ratings of target, part 2

Please indicate how much you agree or disagree that the following statements describe your sentiments towards Jen on a scale from 1 (strongly disagree) to 7 (strongly agree).

a) Jen has no control over her weight.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

b) Jen should be blamed for her being overweight.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

c) I like Jen.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

d) I am angry at Jen.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

e) I am disgusted by Jen.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

f) I pity Jen.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

g) The health-care system should help Jen.

Strongly Disagree	1	2	3	4	5	6	7	Strongly Agree
----------------------	---	---	---	---	---	---	---	-------------------

Appendix XIV: Ratings of target, part 3

Answer the following questions about Jen on a scale from 1 (not very much) to 7 (very much):

A) Do you think you would like Jen?

Not very									Very
Much	1	2	3	4	5	6	7		Much

B) If you met Jen at a party or in class, do you think you would become close friends?

Not very									Very
Much	1	2	3	4	5	6	7		Much

C) Do you think you would like to introduce Jen to your friends?

Not very									Very
Much	1	2	3	4	5	6	7		Much

D) How similar is Jen to yourself in wants, needs, and goals?

Not very									Very
Much	1	2	3	4	5	6	7		Much

E) Rate Jen's physical attractiveness.

Not very									Very
Much	1	2	3	4	5	6	7		Much

Appendix XV: Debriefing Form

Thank you for your participation in this study, which is being conducted by the Department of Psychology at the University of Manitoba. The investigators of this study are Teresa Grosko, a Ph.D. candidate, and Dr. Michael LeBow, a researcher and professor of psychology.

The purpose of this study is to contrast and compare different interventions that were designed to reduce stigma toward overweight/obese individuals. Overweight and obese people are highly stigmatized (e.g., they are less likely to be chosen as employees, friends, romantic partners, and tenants than are normal-weight individuals). The stigma overweight people experience is detrimental to them.

This study was designed to test the effectiveness of several obesity stigma reduction techniques. Specifically, informing people that weight is not as controllable as commonly believed may reduce stigma toward overweight people. Second, increasing levels of empathy toward overweight individuals, by informing people how difficult it is to be overweight in our society, may help alleviate stigma toward overweight individuals. The third intervention involves letting people know that similar others are not unkind in their ratings of overweight people. This may help people be more positive toward overweight individuals. Additionally, the three interventions were combined to determine whether the combination of interventions is most effective in reducing negative responses toward overweight people.

If you are interested in learning more details about this study or about the results, please do not hesitate to contact me by email (umgrosko@cc.umanitoba.ca). I thank you again for your participation.

Sincerely,

Teresa Grosko

Appendix XVI: Flow chart describing procedure

