Implicit Anti-Fat Bias as a predictor of Low Body Satisfaction: Do Males and Females Differ in Levels of Body Satisfaction and Implicit Weight Bias?

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Abstract

The aim of the current study was to examine the relationship between levels of implicit weight bias and levels of body satisfaction. Additionally, this study aimed to investigate whether there are gender differences in levels of body satisfaction, and whether there are gender differences in levels of implicit weight bias. There were 35 participants in this study (15 males and 20 females). The Participants were aged between 18 and 29. Each participant was examined on an individual basis throughout the course of one month. Participants were asked to complete an Implicit Associations Test (Weight IAT-bodies) to measure levels of implicit weight bias and the Body Image Satisfaction Scale (BISS) to measure levels of body satisfaction. Hypothesis 1 stated that lower levels of body satisfaction were related to higher levels of implicit weight bias against overweight individuals. Hypothesis 1 was not supported as results showed that there was an extremely weak, negative relationship. Hypothesis 2 stated that females score lower on levels of body satisfaction than males. Hypothesis 2 was supported as data from the study showed that females scored lower than males on levels of body satisfaction. Hypothesis 3 stated that females score higher on levels of implicit weight bias than males. There was no significant difference found between males and females in levels of implicit weight bias. However, as hypothesized, females scored higher than males on levels of implicit weight bias. It is recommended that future research obtains a larger sample in order to possibly find a significant difference between males and females. These findings also suggest that the relationship between high levels of implicit weight bias and low levels of body satisfaction may only exist among obese individuals. Findings from the current study have implications for knowledge of gender differences in levels of body satisfaction. Additionally, findings from the current study

contribute towards research into levels of implicit weight bias among 18-29 year olds and how it can affect levels of body satisfaction. These findings also further highlight the prevalence of implicit weight bias.

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1. Introduction

1.1 What is Body Satisfaction?

Body satisfaction refers to a combination of one's body-related self-attitudes and self-perceptions as well as one's thoughts, beliefs, behaviours and feelings about their bodies, as stated by Cash (2004). Furthermore, Cash (2004) described body satisfaction as the many different aspects of psychological experience of embodiment, particularly in one's physical appearance. Body satisfaction is affected by the picture one has in their mind of the size, shape and form of their bodies, and their attitudes concerning these characteristics and their constituent body parts (Slade, 1994). Gleaves, Williamson, Eberenz, Sebastian, & Barker (1995) proposed that fear of fatness, low levels of body satisfaction, and a preference for thinness were factors that contributed towards how one views one's body. Low levels of body satisfaction have been shown to have a very negative impact on both physical and mental health, for example, eating disorders have become a huge problem in Western society and the development of all major eating disorders can be influenced by low levels of body satisfaction (Thompson and Stice, 2001). Similarly, low levels of body satisfaction have been related to higher levels of dieting, extremely unhealthy weight control behaviours, smoking, lower levels of physical activity and low levels of fruit and vegetable intake for both males and females (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). This finding suggests that low levels of body satisfaction do not encourage people to engage in healthy weight controlling behaviours but rather it predicts the use of behaviours that place people at risk of poorer health. Studies have shown that low levels of body satisfaction can affect our mood states (Yamamiya, Cash, Melnyk, Posavac, & Posavac, 2005), which could lead to the development of depression or other mental health issues.

A study conducted by Nichter and Nichter (1991) found that females described the ideal body as being five foot seven, weighing one hundred pounds and being a size five in clothes (approximately a size six in the UK and Ireland). Groesz, Levine, and Murnen (2002) have suggested that the internalization of such precise and essentially unattainable standards of beauty can lead to low levels of body satisfaction, low self-esteem, negative affect and eating disorders.

1.2 Body Satisfaction and Gender

Low levels of body satisfaction have been seen in both males and females, as found by a previous study conducted by Furnham, Badmin, and Sneade (2002). Furnham and colleagues (2002) found that males were more likely to be dissatisfied with their bodies because they wanted to be heavier. Females desired to be thin and felt decreased levels of body satisfaction when exposed to thin and beautiful women in the media (Yamamiya et al., 2005). Additionally, females were found to be more likely to have low self –esteem, because of low levels of body satisfaction, than males (Furnham et al., 2002). Females also seem to invest more in their appearance than males (Muth and Cash, 1997). A moderate to low level of body satisfaction has been normal among women for many years, and this encourages them to diet, to the extreme in some cases, in order to change their body shape (Rodin, Silberstein, & Streigel-Moore, 1984; Kiefer, Rathmanner, & Kunze, 2005). Women have therefore been found to be more likely to engage in weight loss efforts than men, and this can sometimes lead to adverse health consequences (Pingitore, Spring, & Garfeildt, 1997). A substantial difference in incidences of eating disorders among men and women has been found, with women suffering more from the illness, and it seems to be significantly related to differences in the socio-cultural norms that promote thinness (Andersen & DiDomenico, 1992). The

study conducted by Andersen & DiDomenico (1992) also found that when the ten most popular magazines read by young men and the ten most popular magazines read by young women were compared, it was found that women's magazines contained 10.5 times more articles and advertisements promoting weight loss than the men's magazines. Interestingly, this study found that this same ratio had been reported for cases of anorexia nervosa between men and women. Similarly, a study conducted by Morry and Staska (2001) found that women reading beauty magazines increased internalization of societal ideals. Additionally, the study found that internalization predicted body shape dissatisfaction in women. Women were also found to be more likely to exercise for weight loss, tone and mood enhancement than men (Tiggemann & Williamson, 2000). Additionally, for both genders, levels of body satisfaction decreased as body mass index increased (Pingitore et al., 1997). Low levels of body satisfaction have also been shown to negatively affect successful weight loss in overweight individuals, as found by a ten -year longitudinal study conducted by Loth, Watts, van den Berg, and Neumark-Sztainer (2015). This study found that overweight teenage girls who displayed lower levels of body satisfaction had nearly three units greater BMI on follow up, and that no association was found between body satisfaction and BMI in overweight teenage boys.

1.3 Beauty and Morality in Relation to Thinness

Previous studies have shown that both beauty and morality have been associated with greater levels of thinness, meaning that a 'good' girl is thin (in Ireland and the UK a size 4 is seen as the fashion industry standard), and has control over her own desires (Rodin et al., 1984; Grogan, 2016). Singh (1994) found that women who had a low waist-to-hip ratio were considered to be more attractive and were assigned many

desirable personality attributes, therefore the measure of body fat distribution was found to be the most important variable associated with attractiveness and the associated personality attributes. This finding seems to be consistent with the assumption that people who are attractive possess socially desirable personality characteristics and higher moral standards (Tsukiura & Cabeza, 2011). Similarly, Rozin and Royzman (2001) have suggested that humans tend to give greater weight to negative entities that they experience. In keeping with this finding, a study conducted by Griffin and Langlois (2006) found that unattractiveness is a disadvantage as it was found to be highly associated with being labelled with negative attributes. Changes in perceptions of body size over the years seem to have influenced these stereotypes (Cogan, Bhalla, Sefa-Dedeh, & Rothblum, 1996). It was suggested by Cogan and colleagues (1996) that body weight used to be positively associated with wealth and affluence, rather than thinness, in the USA. However, it seems now that obesity is associated with low socioeconomic status, as McLaren (2007) found that lower socioeconomic status was related to larger body size for women in highly developed countries. Moreover, overweight individuals face discrimination when looking for a job as they are less likely to be hired by prospective employers (Friedman et al., 2005). It is reasonable to suggest, based on these findings, that thinness is a strived for beauty ideal in modern western society.

1.4 Gender Differences in Biases against Overweight or Obese Individuals

Harris, Walters, and Waschull (1991) found that women were more likely to endorse greater stigmatization of overweight people. However, a different study conducted by the same authors revealed that males expressed more concern over whether or not a potential date was overweight or not, and that women tended to indicate greater concern over their own weight (Harris, Walters, and Waschull, 1991). A study conducted by

Brochu and Morrison (2007) examined the prejudice towards overweight individuals, and they found that the overweight individuals faced more prejudice and derogation from both male and female participants than their average-weight counterparts did. The authors found that the male participants showed more negativity towards the overweight individuals than females. Crandall & Biernat (1990) suggest that negative attitudes towards overweight individuals seem to be based on ideology and unrelated to one's own weight situation. They suggest that male's anti-fat attitudes were more strongly linked to ideology and that anti-fat attitudes among females were due to more self-relevant factors, and females who held a conservative, anti-fat ideology, and were in the heaviest weight group, they were more likely to have low self-esteem. Anti-fat attitudes seem to stem from the widely-held assumption that the condition of obesity is under personal control and that obese individuals are personally responsible for their weight problems because of laziness and over-eating (Puhl & Heuer, 2010). Based on these findings it is reasonable to suggest that negative attitudes towards overweight individuals differ slightly in meaning between males and females, meaning that males tend to have a negative attitude towards others who are overweight. It seems that a woman's negative attitude towards overweight individuals tends to stem from their concern about becoming overweight due to societal pressures to be thin (Grover, Keel, & Mitchell, 2003).

Fikkan and Rothblum (2012) have suggested that in general, overweight women fare worse than thinner women and also worse than men, regardless of whether they are thin or fat. In a study conducted by Pingitore, Dugoni, Tindale, and Spring (1994), overweight individuals were recommended for employment considerably less by participants than the thinner individuals in a simulated interview process. Furthermore,

the study found that the overweight women were recommended for employment significantly less than the overweight males. Crandall (1991) found that only 53% of overweight women were given financial support from their parents in university compared to 74% of average-weight women. By contrast, this discrepancy was not found between average-weight and overweight males. It seems that overweight women tend to be discriminated against more than overweight men is because societal and cultural norms in the western world allow for much less deviation from beauty ideals for women than it does for men, meaning that women are more likely to feel bad about their bodies than men (Brown, 1989; Stice, Spangler, & Agras, 2001; Morry & Staska, 2001; Gilbert & Thompson, 1996). These differences appear to be because of the emphasis western culture places on thinness as a beauty ideal for women (Grover et al., 2003). To this day, images of women in the media (particularly in the fashion industry) remain slender and continue to represent a very restrictive range of cultural images of attractiveness (Grogan, 2016).

1.5 Implicit Attitudes

Implicit attitudes have been defined as "the automatic association people have between an object and evaluation (whether it is good or bad)" (Rudman, 2004). These attitudes usually refer to a preference that is inferred using an indirect, performance-based procedure (Hahn, Judd, Hirsh, & Blair, 2014). Implicit attitudes are usually measured using the Implicit Associations Test (IAT) developed by Greenwald, McGhee and Schwartz (1998). This test was developed to measure the differential association of two different concepts (e.g. 'thin people' and 'fat people') and an attribute (e.g. 'good' or 'bad'). The IAT is thought to capture aspects of human thought and attitudes that are not revealed by self-report measures of explicit attitudes, which are attitudes that are

consciously held by individuals (Rudman, 2004). Implicit biases are thought to occur outside of awareness and conscious control of the individual (Teachmann, Gapinski, Brownell, Rawlins, & Jeyaram, 2003). Therefore, it is thought that implicit biases are attitudes that people involuntarily form about others, but they may not be aware of these associations (Jolls and Sunstein, 2006). These attitudes can cause people to associate certain groups of individuals with certain traits that match the stereotypical characteristics of the group (van Nunspeet, Ellemers, & Derks, 2015). Implicit attitudes can be seen as automatic processes that don't always reflect one's explicit attitudes towards a certain group, according to a study conducted by Devine (1989), the participant's knowledge of these stereotypes can activate these automatic responses, even though they do not explicitly hold these prejudices. In contrast, Wittenbrink, Judd, and Park (1997) found that higher levels of implicit biases correlated with higher levels of explicit prejudices towards certain groups.

1.6 Implicit Weight Bias

It is clear that in today's society, we tend to look more favourably on those who are thin and belittle and chastise individuals who are overweight or obese (Brownell, 1992; Groesz et al., 2002; Monro & Huon, 2005). It is argued by O'Brein, Puhl, Latner, Mir, & Hunter (2010) that the sentiment against people who are overweight is increasing and it can have serious consequences for health and for social reasons. The health reasons that O'Brien and colleagues (2010) refer to are the negative impacts on an overweight individual's ability to successfully lose weight and on their mental health. It has been found that anti-fat prejudices mean that overweight or obese individuals are more likely to develop depression, anxiety, suicidality, maladaptive eating behaviours and have less successful outcomes in weight loss programmes (Puhl & Heuer, 2009; Carels et al.,

2010). These weight biases refer to the inclination to form judgements about an individual's personality attributes on the basis of the perception of excessive body weight (Brownell, Puhl, Schwartz, & Rudd, 2005). Anti-fat discrimination against individuals are pervasive across important life domains such as employment, education and healthcare, with 28% of teachers saying that becoming obese is the worst thing that can happen to a person, and 24% of nurses reported being 'repulsed' by obese people, as found in a study conducted by Puhl and Brownell (2001). One of the main findings of Puhl and Brownell's (2001) study was that parents would provide less college support for their overweight children than for their thin children. It has previously been suggested that negative attitudes towards overweight individuals were related to authoritarianism, meaning that "prejudice against fat people may be another manifestation of a collection of political and social attitudes predicated on conventionalism and a narrow latitude of acceptance of others' behaviours" (Crandall & Biernat, 1990).

Unlike the previous studies, prejudices towards overweight individuals are not always expressed explicitly but they can sometimes occur implicitly, as previous literature has often found that strong implicit weight bias can be present even though the participants did not report negative attitudes towards overweight persons (Teachmann & Brownell, 2001; Greenwald & Banaji, 1995). Among the most fundamental groups to which people belong to are their race, socioeconomic status, gender, religion, nationality and political orientations (Nosek, Banaji, & Greenwald, 2002). It is argued by Nosek and colleagues (2002) that the mere act of belonging to one of these groups can determine one's psychological, social and economic fates in significant ways, such as the manner in which a person who represents a certain group is perceived and treated by others.

Implicit weight biases were shown to influence behaviour around overweight individuals among a sample who were not selected based on their individual weight, but based on their scores on an explicit measure of anti-fat attitudes (those with the most extreme low and most extreme high scores were selected for the study), as found in a study conducted by Bessenoff & Sherman (2000). The study found that the participants with higher levels of implicit weight bias would place their chair at a greater distance away from an overweight individual. Furthermore, explicit attitudes were found to be unrelated to how far a participant would place their chair away from an overweight individual. It is reasonable to suggest that humans tend to categorize others in terms of their weight and size of bodies in a similar way that they categorize a person by their race, socioeconomic status or gender.

1.7 Implicit Weight Bias and its Effect on Body Satisfaction and Treatment of Obese Individuals

Carels and colleauges (2010) conducted a study among weight loss treatment- seeking adults who were either overweight or obese. The study found that the participants who showed higher levels of implicit weight bias were more likely to binge eat, have depression and they were more likely to have a negative attitude towards their bodies. Similarly, women who implicitly identified as being overweight, and negative implicit associations towards overweight individuals were correlated with low self-esteem (Grover et al., 2003). It is reasonable to suggest that high levels of body satisfaction are beneficial in managing one's weight long term, and being dissatisfied with one's body can hinder positive change. It has also been found that the amount of stigmatization one receives from being overweight can affect levels of body satisfaction, that is, those who

are overweight may be more likely to have low levels of body satisfaction if they are exposed to more stigmatization from others (Myers & Rosen, 1999).

Research has also suggested that healthcare professional's implicit biases about their patient's stigmatized social characteristics, such as obesity, can influence the quality of care that they provide to their patients (Phelan et al., 2014). Implicit weight biases have been found to be prevalent among health professionals who specialize in treating obese patients, as found in a study conducted by Schwartz, Chambliss, Brownell, Blair, and Billington (2003). The study found that the health professionals who took part in the study showed a significant implicit 'pro-thin' and 'anti-fat' bias, and they also endorsed the implicit stereotypes of stupid, worthless and lazy. As mentioned before, Puhl and Brownell (2001) found that 24% of nurses reported being 'repulsed' by obese individuals. Moreover, Miller and colleagues (2013) measured implicit weight bias among medical students against measures of explicit weight attitudes. The study found that 39% of the students showed an anti-fat bias and only 17% showed an anti-thin bias, and finally, only the male gender predicted explicit anti-fat bias. Two thirds of these students were unaware that they had an anti-fat bias. Miller and colleagues (2013) argue that anti-fat prejudices in medical professions can negatively affect the quality of care that obese patients receive. Health professionals have been shown to hold strong anti-fat biases, similar to those of the general population (Sabin, Marini, & Nosek, 2012). A study conducted by Foster and colleagues (2003) found that over half of the healthcare professionals in the study reported that they view overweight individuals as lazy, awkward, ugly and uncooperative in therapy. Therefore, these biases can damage the relationship between the patient and the physician, which can influence treatment decisions, and as a result, the quality of care the patient receives is negatively affected

(Miller et al., 2013). In contrast, Baker and colleagues (2016) found that on average medical students showed a positive implicit attitude towards thin as well as fat, as opposed to having anti-fat attitudes. Interestingly, the study also found that the students' implicit anti-fat biases decreased over the first two years of medical training. Additionally, college students who are studying to be physical educators show higher levels of implicit bias towards overweight individuals than those who study psychology (O'Brien, Hunter, & Banks, 2007). Moreover, O'Brien and colleagues (2007) also found that physical education students who were in their third year of study showed higher levels of implicit weight bias than those who were in first year. The study also found that these prejudices were supported by ideological beliefs about the body, and an over- investment in physical attributes.

1.8 Age Differences in Body Satisfaction

Tiggemann and McCourt (2013) have found significant differences in body satisfaction between younger and older adults. It has been suggested that importance of body shape and appearance decreases with age (Tiggemann & Lynch (2001). Previous studies have also shown that disturbances in body satisfaction usually begin at a younger age and carry into young adulthood (Stunkard & Burt, 1967; Abraham, 1999). Similar to this study, Demarest and Allen (2000) found that the participants who were under twenty-five were more likely to believe that the opposite sex were had more of a preference for thinness than was actually indicated. The participants who were over thirty were more accurate at guessing what the opposite sex found more attractive. These studies suggest that as women age, they become more appreciative of their health rather than their physical appearance (Augustus-Horvath & Tylka, 2011). Furthermore, older women are

less likely to relate their physical appearance to their overall self-worth (Tiggemann & McCourt, 2013).

1.9 Gaps in the literature

Evidently, the effects of implicit weight bias on body satisfaction seem to be focused only on individuals who were obese or overweight and were seeking treatment (Carels et al., 2010). It appears that other research has not investigated implicit weight attitudes and its effects on body satisfaction like Carels and colleagues' (2010) have done. Similarly, a study conducted by Durso and Latner (2008) found that internalized weight bias predicted low levels of body satisfaction. However, internalized weight bias is a different construct to implicit weight bias and does not use the IAT to measure the bias. Therefore, it would seem that research in the area of implicit weight bias and its effects on body satisfaction is scarce. It is reasonable to suggest that most of research focuses on how implicit weight biases effect levels of body satisfaction in overweight individuals. A thorough search of the relevant literature revealed that present studies do not focus on levels of body satisfaction and implicit weight bias among the general public, therefore it is not known if this relationship is present in obese treatment seeking people only or not. Previous studies on implicit weight attitudes have been undermined by methodological issues that have arisen, as they have only used pen and paper version of the Implicit Associations Test (IAT) (Schwartz et al., 2003). This method can impact the results as it does not allow for the immediate responses that the IAT requires. Therefore, the reaction time could not be reliably measured using a pen and paper version of the Implicit Associations Test. Additionally, most of the current research focuses on the attitudes of health professionals and physical educators rather than people from the general public who are non-professionals (Phelan et al., 2014; O'Brien

et al., 2007). There is not a lot of studies that have investigated whether or not males and females differ in levels of implicit weight attitudes apart from the study conducted by Brochu and Morrisson (2007), most research focuses on whether women or men face more derogation for being overweight (Pingitore et al., 1994; Grover et al., 2003).

1.10 Rationale/Hypotheses

The present study aims to investigate whether or not gender and Implicit Weight Attitudes have a relationship with body satisfaction in adults aged between eighteen and thirty. This study also aims to investigate whether there are differences in levels of Implicit Weight Bias between males and females.

It is of great importance that the things that may contribute towards low levels body satisfaction need extensive research. Previous studies have shown that one's attitudes towards one's body can have a negative effect on both mental and physical health, for example, Thompson and Stice (2001) found that one of the main factors that can influence the development of all major eating disorders is low levels of body satisfaction and this has become a huge problem in western society. Based on this it is reasonable to suggest that health professionals in particular should have an in-depth knowledge of the causes of low levels of body satisfaction is necessary for preventing eating disorders. As previously mentioned, a study conducted by Carels and colleagues (2010) found that obese individuals who held a strong implicit weight or "anti-fat" bias were more likely to be depressed, binge eat and hold a negative body image. It is clear that having a tendency towards high levels of this "anti-fat" bias can have a very negative effect on the mental wellbeing of people who are obese. This is important as Kasman, Hammond, Werman, Mack-Crane, and McKinnon (2015) reported that as well

as the health and mortality risks of obesity, obesity can have economic implications such as additional healthcare costs and productivity costs such as absenteeism from work as well as forgone taxes due to lower wages resulting from obesity. Therefore, hypothesis 1 states that higher levels of Implicit Weight Bias against overweight individuals are related to lower levels of body satisfaction. Implicit weight bias has even been found among health professionals who specialize in treating obese patients (Schwartz et al., 2003). It is reasonable to suggest that failure to reverse these harmful attitudes, particularly for people who are overweight or obese, can greatly hinder a treatment-seeking individuals' quality of care provided by health professionals, as well as their ability to successfully lose weight and maintain a healthy lifestyle. Furthermore, this study will be investigating these attitudes among 18-30 year olds, as most of the current literature suggests that body dissatisfaction is more prevalent among younger people, and this decreases with age (Tiggeman & Lynch, 2001; Stunkard & Burt, 1967).

As previously stated, societal and cultural norms in the western world allow for much less deviation from beauty ideals for women than it does for men, meaning that women are more likely to feel bad about their bodies than men (Brown, 1989; Stice, et al., 2001; Morry & Staska, 2001; Gilbert & Thompson, 1996). Furthermore, these differences appear to be because of the emphasis western culture places on thinness as a beauty ideal for women (Grover et al., 2003). Females have also been shown to have lower levels of body satisfaction than males and tend to invest more in their appearance (Muth and Cash, 1997). Therefore, hypothesis 2 states that females score lower on levels of body satisfaction than males.

Moreover, male's anti-fat attitudes were more strongly linked to ideology and that anti-fat attitudes among females were due to more self-relevant factors, such as concerns

over their own weight (Harris et al., 1991). Therefore, it would seem to be more likely that the relationship between low levels of body satisfaction and high levels of implicit weight bias could be more common among females. Therefore, hypothesis 3 states that females score higher than males in levels of Implicit Weight Bias against overweight individuals

2. Method

2.1 Participants

There were 35 participants in the present study (15 males and 20 females). The participants were aged between 18 and 29 (Mean= 22.91, Standard Deviation= 2.56), although the study was open to adults aged 18-30. All of the participants in this study were Irish and living in Dublin. Participants were asked not to take part if they had a history of body dysmorphia or an eating disorder (or if they had a current diagnosis of any of these disorders).

The present study used non-probability convenience sampling to obtain participants. The data was collected by contacting friends and peers by phone to ask them if they would like to take part in the study. Snowball sampling was also used as the participants who were contacted by phone were also asked to recruit people that they knew to take part in the study, if they met the criteria (aged between 18-30 with no history of body dysmorphia or an eating disorder).

2.2 Design

The present study is a quantitative research design. Part of the study is a quasi-experimental between- groups design, as it will be examining if there are differences in body satisfaction and implicit weight bias between two naturally occurring groups (males and females). The other part of the study will be a correlational design and it will examine whether there is a relationship between implicit weight bias and body satisfaction. There is no independent or dependent variable for hypothesis 1 as it will be using a pearson product moment correlation coefficient (r). The independent variable

for hypothesis 2 is gender and the dependent variable is body satisfaction. The independent variable for hypothesis 3 is gender and the dependent variable is Implicit Weight Bias.

2.3 Measures

2.3.1 Body Satisfaction

The Body Image Satisfaction Scale (Holsen, Jones & Birkeland, 2012) is a four item questionnaire that has a six-point answering scale. Participants must choose the answer that applies to them the most. The answer categories available are: does not apply at all, does not apply well, applies somewhat, applies fairly well, applies well, and applies exactly. Higher response scores indicated a more positive body image (see Appendix. A). Questionnaire items one and three are reverse coded. Reliability testing revealed that Chronbach's Alpha for the Body Image Satisfaction scale= .9

2.3.2 Implicit Weight Bias

The Implicit Associations Test (Weight IAT-Bodies) (Greenwald et al. 1998) will be used to measure how much of an implicit weight bias each of the participants hold. This

will be administered using PEBL Version 0.14 (Mueller & Piper, 2014) for windows on a laptop. The purpose of the test is to measure the strength of association between two concepts. One of the concepts would be part of a category and the other concept would be an attribute. The participants must use the number 1 and 2 keys to sort the stimuli into categories.

Part one of the test involves sorting picture stimuli of fat people or thin people into categories that relate to the concepts of 'fat people' or 'thin people', which show on the

left and right hand side of the screen respectively. For example, if a picture of a fat person appeared on the screen, the participants must press the key number '1' to match the picture to the 'fat people' category on the left side of the screen. Similarly, if a thin person appeared on the screen, the participants must press the number '2' key to match the picture to the 'thin people' category on the right side of the screen.

The second part of the IAT involves sorting words into categories that relate to attributions (good, bad). For example, the attribution 'good' is on the right of the screen and a 'good' word such as the word 'happy' appears on the screen, the participants must press the number '2' key. Similarly, if a bad word like 'disgust' appears, participants must press the number '1' key to match the word to the 'bad' attribute on the left side of the screen.

For part three of the IAT, the categories are combined. The task asks participants to sort both concept and attribution words. For example, the categories would be fat people/bad on the left hand side and thin people/good on the right hand side.

For part four of the IAT, participants are asked again to sort picture stimuli of fat people or thin people into categories that relate to the concepts of 'fat people' or 'thin people', which show on the left and right hand side of the screen respectively. For example, if a picture of a fat person appeared on the screen, the participants must press the key number '1' to match the picture to the 'fat people' category on the left side of the screen. Similarly, if a thin person appeared on the screen, the participants must press the number '2' key to match the picture to the 'thin people' category on the right side of the screen.

For the fifth part of the IAT, the participants were asked again to sort words into categories that relate to attributions (good, bad), but the attributes switched around to opposite sides of the screen. For example, the attribution 'good' is now on the left of the screen and if a 'good' word such as the word 'happy' appears on the screen, the participants now must press the number '1' key. Similarly, if a bad word like 'disgust' appears, participants must now press the number '2' key to match the word to the 'bad' attribute on the right side of the screen.

For the sixth and final part of the IAT, the two categories are combined in the opposite way to the way they were before. For example, the category on the left was previously fat people/bad, so this time it would now be changed to fat people/good, and on the right side of the screen, thin people/good is now changed to thin people/bad.

Each round of the IAT in the present study consisted of 80 stimuli presentations. The order of the stimuli presented for each administration of the IAT was randomised through the PEBL 0.14 software (Mueller & Piper, 2014), so that no two participants completed the exact same IAT.

2.4 Stimulus Materials

2.4.1 Picture Stimuli

The picture stimuli used for this version of the Implicit Associations Test (Weight) was Stunkard's Figure Rating Scale (Stunkard, Sørensen, & Schulsinger, 1983) (see Appendix B). The Figure Rating Scale consists of nine schematic figures each of both males and females that vary in body size, and it has been a widely used measure of disturbances in body satisfaction (Thompson & Altabe, 1991). The scale has previously been shown to be a valid measure of body satisfaction weight status index (Scagliusi et

al., 2006; Cardinal, Kaciroti, & Lumeng, 2006). For the purposes of the present study, the middle three body types for both the male and female scales were eliminated as they could be subject to interpretation from the participants as to whether they belong to the 'thin' or 'fat' category. Therefore, only the extremely thin and extremely fat images on the scale were included in the IAT (see Appendix C for picture stimuli included in the IAT).

2.4.2 Word Stimuli

The word stimuli used for this version of the IAT was taken from the 'Project Implicit' organization's version of the weight IAT (bodies), founded by Nosek and colleagues (2002). There were ten words each for 'good' and 'bad'. The word stimuli were as follows:

Good Words- cheerful, beautiful, pleasure, glad, terrific, celebrate, delight, love, peace, triumph.

Bad Words- awful, failure, sickening, angry, bothersome, disgust, selfish, nasty, evil, grief.

2.5 Apparatus

The Implicit Associations Test will be administered using PEBL Version 0.14 (Mueller & Piper, 2014) for windows on a Toshiba laptop.

2.6 Procedure

Each of the participants for this study were tested on an individual basis over the course of one month. The participants were given a copy of a note (see Appendix. D), which

explained in detail the nature and purpose of the study, the kind of tests they would be asked to complete and links to helpful websites about body satisfaction disturbances, should the participants feel that they need them. This study contained sensitive topics such as body satisfaction, which could potentially cause psychological harm and emotional distress. Therefore, in the note, the participants were reassured that they were free to discontinue answering questions in the study at any time. The note also advised that people who had or had been diagnosed in the past with an eating disorder or body dysmorphia should not take part in the study. The participants were also advised that they are free to discontinue taking part in the study at any time without penalty. The participants were informed that they were welcome to keep this note if they wished. The participants were then told what their participant number was. The participants were then given a copy of the Body Image Satisfaction scale (BISS) (Holsen et al., 2012). At the top of the sheet, the participants were first asked to fill in their age, gender, participant number and they were also asked to tick the box at the top of the page if they would like to give their consent to participate in the study (see also Appendix. A). This method of obtaining consent was to ensure that the identities of the participants were protected. The participant numbers were also included for the purposes of protecting the participant's identity. The participants then completed the Body Image Satisfaction Scale which took no more than two minutes to complete. After this, the participants were asked to complete the Implicit Associations Test (Weight) (Greenwald et al., 1998). The BISS took roughly five minutes to complete, and the IAT took approximately ten minutes to complete for each participant.

3. Results

3.1 Data Reduction:

The present study used the same methods of data reduction as Greenwald, McGhee and Schwartz (1998) paper on Implicit Associations. The data for each trial block contained response latencies in milliseconds. The data revealed extremely fast (less than 300 milliseconds) and extremely slow (more than 3000 milliseconds) response rates. Greenwald and colleagues (1998) suggest that these responses are problematic as they distort means and inflate variances. Therefore, for this study, response values below 300 milliseconds were recoded to 300 milliseconds and responses above 3000 milliseconds were recoded to 3000 milliseconds. These latencies were then log-transformed as Greenwald and colleagues suggest that this allows for a satisfactory stable statistic of variance to be used for analysis. Additionally, the first two trials for blocks three (trial 161 and 162) and six (401 and 402) were excluded because the latencies for these trials are typically lengthened. Error rates Blocks three and six were the important trial blocks as block three was the 'bad/fat' and 'good/thin' bias combination and block six was the 'good/fat' and 'bad/ thin' bias combination.

The IAT score is characterized as the mean latency between blocks three and six (Block6-Block3). A positive IAT score indicated an anti-fat bias. The log-transformed IAT scores were used for the purposes of conducting correlation analysis of the relationship between body satisfaction and implicit weight bias. The log transformed IAT scores were also used for conducting an independent samples t-test to investigate gender differences in levels of implicit weight bias, and gender differences in levels of

body satisfaction. The non log-transformed IAT scores were used for the purposes of testing normality and for reporting descriptive statistics.

For the Body Image Satisfaction Scale (BISS) (Holsen et al., 2012), items one and three were reverse coded as they were negatively phrased. The minimum possible score for the BISS was four. When adding up the total scores for the BISS, four was subtracted for the total score so the minimum score would equal to zero.

3.2 Descriptive statistics

There were 15 males and 20 females in this study (see Table 1). The mean age of the participants was 22.91 (SD= 2.56) (see Table 2). In the Kolmogorov-Smirnoff test of normality, the p-value for age was .06. When examining the histogram, it seems that there is a relatively normal distribution. Additionally, when examining the Q-Q plot, there is little to no deviation for the line. Based on this it is reasonable to suggest that the age range is normally distributed.

Table 1: Descriptive Statistics for Gender

Variable	Frequency	Valid Percentage
Gender		
Male	15	42.9
Female	20	32.3

Table 2: Descriptive Statistics for Age

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
Age	22.91 (22.04-23.79)	.43	23	2.56	18-29

The mean score for levels of body satisfaction was 10.14 (SD= 4.17) (see Table 3). In the Kolmogorov-Smirnoff test for normality, the scores for the Body Image Satisfaction have a p-value of .2, which is not a statistically significant value. When examining the histogram, it seems that there is a relatively normal distribution even though there is a slight negative skew. Additionally, when examining the Q-Q plot, the scores do not seem to deviate too much from the line. Based on this, it is reasonable to suggest that scores on the Body Image Satisfaction Scale are relatively normally distributed.

The mean score for levels of implicit weight bias was 107.5 (SD= 170.4) (see also Table 3). In the Kolmogorov-Smirnoff test for normality, the scores for the Implicit Association Test has a p-value of .16, which is not a statistically significant value. When examining the histogram, the distribution of scores seems to be very negatively skewed. Additionally, when examining the Q-Q plot, some of the scores seem to be deviating from the line. Based on this, it is reasonable to suggest that the scores for the Implicit Association Test are not normally distributed. Additionally, the vast majority of scores are positive, which indicates that an implicit anti-fat bias is present.

Table 3: Descriptive Statistics for Body Image Satisfaction Scale and IAT Scores

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
Body Image Satisfaction Scale	10.14 (8.7-11.6)	.71	10	4.17	2-18
IAT Scores	107.5(49-166)	28.8	132	170.4	-506.7 - 434

3.3 Gender differences in levels of body satisfaction

An independent samples t-test was conducted to compare levels of body satisfaction between males and females. There was a statistically significant difference in scores between males and females, t(33) = 4.02, p = .00, two-tailed.

Males (M = 12.9, SD = 3.8) scored higher than Females (M = 8.1, SD = 3.2) in levels of body satisfaction. The magnitude of the differences in the means (mean difference = -4.8, 95% CI: 2.35 to 7.17) was very large (Cohen's d = 1.4) (see Table 4).

Table 4: Independent Samples T-test (Gender differences in levels of Body Satisfaction)

Variable	*Group*	*N*	*M*	*SD*	*t*	*d*
Levels of Body Satisfaction	**Males**	15	12.9	3.8	4.02	1.4
	Females	20	8.1	3.2		

3.4 *Gender differences in levels of implicit weight bias*

An independent samples t-test was conducted to compare levels of implicit weight (anti-fat) bias between males and females. There was no statistically significant difference found between males and females, t(33) = -1.1, p = .28, two-tailed.
Females (M = .12, SD = .13) scored higher than Males (M = .06, SD = .2) in levels of implicit weight bias. The magnitude of the differences in the means (mean difference = -.06, 95% CI: -.18 to .05) was small (Cohen's d = .36) (see Table 5).

Table 5: Independent Samples T-test (Gender Differences in levels of Implicit Weight Bias)

Variable	*Group*	*N*	*M*	*SD*	*t*	*d*
Levels of Implicit Weight Bias (anti-fat bias)	**Males**	15	.06	.2	-1.1	.36
	Females	20	.12	.13		

3.5 Relationship between levels of body satisfaction and levels of implicit weight bias

The relationship between levels of body satisfaction and implicit weight bias was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. There was a very weak, negative correlation between the two variables ($r = -.11$, $n = 35$, $p = .54$). This indicates that the two variables share approximately 1.21% of variance, and lower levels of body satisfaction are associated with higher levels of implicit weight bias (see Table 6).

Table 6: Pearson product-moment correlation coefficient (r) (Relationship between levels of Body Satisfaction and Implicit Weight Bias

Variables	1	2
1. Body Image Satisfaction Scale	1	
2. Implicit Weight Bias	-.11	1

4. Discussion

The main objective of the current study was to investigate the relationship between implicit weight bias and body satisfaction. This study also aimed to investigate whether there are differences in levels of implicit weight bias between males and females, and also whether there are differences in levels of body satisfaction between males and females. Furthermore, this study was conducted among 18-29 year olds, as most of the current literature suggests that body dissatisfaction is more prevalent among younger people, and this decreases with age (Tiggeman & Lynch, 2001; Stunkard & Burt, 1967). There were 35 participants, 15 males and 20 females. The participants were aged between 18 and 29, although the study was open to adults aged 18-30. All of the participants were Irish and living in Dublin. The participants were not selected based on their BMI or weight status. Participation in this study was not advised if participants has a history (or current disgnosis) of body dysmorphia or an eating disorder.

4.1 Hypothesis 1

Hypothesis 1 states that higher levels of Implicit Weight Bias against overweight individuals are related to lower levels of body satisfaction. The results showed that although lower levels of body satisfaction were related to higher levels of implicit weight bias, the result was insignificant and the relationship was very weak. It could be argued, based on these findings, that there was little-to-no relationship between levels of body satisfaction and implicit weight bias. As previously mentioned, a study conducted by Carels and colleagues (2010) found that obese individuals who held a strong implicit weight or "anti-fat" bias were more likely to be depressed, binge eat and hold a negative body image. It is clear that having a tendency towards high levels of this "anti-fat" bias

can have a very negative effect on the mental wellbeing of people who are obese. It seems that the findings of hypothesis 1 do not corroborate with current literature regarding the relationship between low levels of body satisfaction and implicit weight bias.

4.2 Hypothesis 2

Hypothesis 2 states that females score lower on levels of body satisfaction than males. The findings from the current study indicate that there was a significant difference in levels of body satisfaction between males and females, with females scoring lower on levels of body satisfaction. As previously stated, societal and cultural norms in the western world allow for much less deviation from beauty ideals for women than it does for men, meaning that women are more likely to feel bad about their bodies than men (Brown, 1989; Stice, et al., 2001; Morry & Staska, 2001; Gilbert & Thompson, 1996). These differences appear to be because of the emphasis western culture places on thinness as a beauty ideal for women (Grover et al., 2003). Females have also been shown to invest more in their appearance than males (Muth and Cash, 1997). A study conducted by Yamamiya and colleagues (2005) found that females desired to be thin and felt decreased levels of body satisfaction when exposed to thin and beautiful women in the media. Females were also found to be more likely to have lower self -esteem because of low levels of body satisfaction than males (Furnham et al., 2002). Based on this, it is reasonable to suggest that the findings from hypothesis 2 are consistent with current literature regarding gender differences in levels of body satisfaction.

4.3 Hypothesis 3

Hypothesis 3 states that females score higher than males in levels of Implicit Weight Bias against overweight individuals. It was found that there was no significant difference in levels of implicit weight bias between males and females. However, it was found that females scored higher on levels of implicit weight bias than males. A study conducted by Harris and colleagues (1991) found that male's anti-fat attitudes were more strongly linked to ideology, and that anti-fat attitudes among females were due to more self-relevant factors, such as concerns over their own weight. Harris and colleagues (1991) also found that women were more likely to endorse greater stigmatization of overweight people. It seems that a woman's negative attitude towards overweight individuals tends to stem from their concern about becoming overweight due to societal pressures to be thin (Grover et al., 2003). Therefore, it would seem to be more likely that the relationship between low levels of body satisfaction and high levels of implicit weight bias could be more common among females. As there were no significant differences in levels of implicit bias between males and females, the findings from hypothesis 3 do not seem to be in agreement with current literature regarding gender differences in implicit weight bias. However, it should be noted that females scored higher in levels of implicit weight bias than males. Therefore, it is possible that there may be gender differences in implicit weight bias that data from the current study failed to generate. Normality testing for the IAT scores revealed that the vast majority of the results were positive figures, which indicated that implicit weight bias existed towards overweight individuals for both males and females.

4.4 Implications

As previously discussed, the effects of implicit weight bias on body satisfaction seem to be focused only on individuals who were obese or overweight and were seeking treatment (Carels et al., 2010). Moreover, research in this area appears to be scarce as other research has not investigated implicit weight attitudes and its effects on body satisfaction like Carels and colleagues (2010) have done. A thorough search of the relevant literature revealed that present studies do not focus on levels of body satisfaction and implicit weight bias among the general public, therefore it is not known if this relationship is present in obese treatment- seeking people only or not. Data from this study revealed an extremely weak relationship between low levels of body satisfaction and high levels of implicit weight bias among the general public. Based on this, it would seem that this relationship may be unique to those who are overweight or obese, although there is little research in this area. As a result, the current findings indicate that this relationship depends on one's own body weight or BMI status. This finding has implications for current knowledge of levels of implicit weight bias among obese individuals, and how this can affect their levels of body satisfaction and treatment outcomes.

The data from this study revealed that females have lower levels of body satisfaction than males. This finding seems to be in agreement with previous literature (Brown, 1989; Yamamiya et al., 2005; Furnham et al, 2002). Females have been found to be more likely to engage in weight loss efforts than men, and this can sometimes lead to adverse health consequences (Pingitore, Spring, & Garfeildt, 1997). A substantial difference in incidences of eating disorders among men and women has been found, with women suffering more from the illness, and it seems to be significantly related to

differences in the socio-cultural norms that promote thinness (Andersen & DiDomenico, 1992). Evidently, it is of great importance that the things that may contribute towards low levels body satisfaction need extensive research. Previous studies have shown that one's attitudes towards one's body can have a negative effect on both mental and physical health, for example, Thompson and Stice (2001) found that one of the main factors that can influence the development of all major eating disorders is low levels of body satisfaction, and this has become a huge problem in western society. Based on this it is reasonable to suggest that health professionals in particular should have an in-depth knowledge of the reasons why people may develop low levels of body satisfaction. This knowledge may be necessary for preventing eating disorders, and it would seem that females are at a particular risk of adverse health consequences caused by extreme dieting.

Most importantly, the data revealed that almost all of the participants displayed an implicit bias toward overweight individuals. The current data seems to have further highlighted the prevalence of anti-fat attitudes in today's society.

4.5 Recommendations for Future Research

As previously discussed, today's society puts a considerable amount of pressure on women to be thin, which seems to be the strived for beauty ideal (Brownell et al., 1992; Kiefer et al., 2005). Yamamiya and colleagues (2005) found that females desired to be thin and felt decreased levels of body satisfaction when exposed to thin and beautiful women in the media. In addition, a substantial difference in incidences of eating disorders among men and women has been found, with women suffering more from the illness (Andersen & DiDomenico, 1992), and it seems to be significantly related to

differences in the socio-cultural norms that promote thinness (Grogan, 2016). These studies seem to highlight that when women are exposed to content in the media that depicts thinness and promotes dieting, it can have a negative impact on their levels of body satisfaction, which may lead to an eating disorder. However, it would seem plausible that not all women are equally influenced by what they are exposed to in the media. Therefore, future research should also examine the extent to which participants are influenced by different forms of media and how this may affect the relationship between levels of body satisfaction and levels of implicit weight bias. This would involve measuring how many hours per day the participants engage in different types of media.

It seems that reducing anti-fat prejudices in overweight or obese individuals can increase levels of body satisfaction, which means that they may be less likely to have maladaptive eating behaviours and may be more likely to successfully lose weight and maintain that weight loss. This is important as Kasman and colleagues (2015) reported that as well as the health and mortality risks of obesity, obesity can have economic implications such as additional healthcare costs and productivity costs such as absenteeism from work, as well as forgone taxes due to lower wages resulting from obesity. For future research, it may be worth examining the relationship between levels of body satisfaction and levels of implicit weight bias based on weight and BMI status. This would mean comparing the strength of the relationship between those who are thin and average-weight and those who are overweight or obese.

Previous research has suggested that healthcare professional's implicit biases about their patient's stigmatized social characteristics, such as obesity, can influence the quality of care that they provide to their patients (Phelan et al., 2014). Implicit weight

biases have been found to be prevalent among health professionals who specialize in treating obese patients (Schwartz et al., 2003). The study conducted by Schwartz and colleagues (2003) found that the health professionals who took part in the study showed a significant implicit 'pro-thin' and 'anti-fat' bias, and they also endorsed the implicit stereotypes of stupid, worthless and lazy. A study conducted by Foster and colleagues (2003) found that over half of the healthcare professionals in the study reported that they viewed overweight individuals as lazy, awkward, ugly and uncooperative in therapy. Therefore, these biases can damage the relationship between the patient and the physician, which can influence treatment decisions, and as a result, the quality of care the patient receives is negatively affected (Miller et al., 2013). Based on this, it is reasonable to suggest that the anti-fat attitudes of health professionals and their approach to treating their obese patients could negatively impact the levels of body satisfaction in obese individuals, and this could be a contributing factor as to why obese individuals adopt anti-fat prejudices themselves. Evidently, further research into the anti-fat attitudes of health professionals is of great importance. It would seem that reducing anti-fat attitudes in health professionals is imperative to ensuring that obese people receive the best quality of care in order to successfully lose weight and maintain a healthy lifestyle. It has been suggested that educating health professionals on the uncontrollable reasons for obesity, such as genes and environmental factors, can reduce anti-fat prejudice among health professionals (O'Brien et al., 2010). Future research should focus on both the implicit and explicit attitudes of health professionals, and the effect that this may have on the care of their obese patients. The relationship between the levels of successful weight loss among the obese patients and the levels of explicit and implicit weight bias of the health professional should also be examined.

As previously stated, the sentiment against people who are overweight is increasing and it can have serious consequences for health and for social reasons (O'Brien et al., 2010). The health reasons that O'Brien and colleagues (2010) refer to are the negative impacts on an overweight individual's ability to successfully lose weight and on their mental health. It has been found that anti-fat prejudices mean that overweight or obese individuals are more likely to develop depression, anxiety, suicidality, maladaptive eating behaviours and less successful outcomes in weight loss programmes (Puhl & Heuer, 2009; Carels et al., 2010). Similarly, women who implicitly identified as being overweight and negative implicit associations towards overweight individuals correlated with low self-esteem (Grover et al., 2003). Based on this, it may be useful for future research to examine the relationship between levels of body satisfaction and implicit weight bias, while controlling for levels of dietary control, levels of depression, anxiety, and self -esteem. Additionally, it has been found that the amount of stigmatization one receives from being overweight can affect levels of body satisfaction, that is, those who are overweight may be less likely to have low levels of body satisfaction if they are exposed to less stigmatization (Myers & Rosen, 1999). Therefore, for future research, it may be worth controlling for levels of stigmatization from others that a person has experienced because of their weight.

Implicit attitudes can be seen as automatic processes that don't always reflect ones' explicit attitudes towards a certain group, according to a study conducted by Devine (1989), the participant's knowledge of these stereotypes can activate these automatic responses, even though they do not explicitly hold these prejudices. In contrast, Wittenbrink and colleagues (1997) found that higher levels of implicit biases correlated with higher levels of explicit prejudices towards certain groups. It would seem that it is

unclear whether or not implicit attitudes reflect one's explicit opinions. Therefore, for future research, it may be worth using explicit measures of anti-fat prejudice to compare with scores on the IAT.

4.6 Strengths

A positive aspect of the present study was that even though the target age group was adults aged 18-30, there was a wide age range within this target group as it was found that the age range for this sample was relatively normally distributed. Therefore, it could be argued that the sample for this study could be representative of the population. As there were 15 males and 20 females, it would seem that both genders were somewhat equally represented in this study. Additionally, data from the current study contributes towards knowledge of the relationship between implicit weight bias and body satisfaction. Further to previous discussions, thorough search of the relevant literature revealed that research in this area is scarce, particularly with participants who are not obese or, at least, were not chosen based on their weight or BMI status.

4.7 Limitations

There were a number of limitations in the present study. Prior to carrying out this study, the aim was to obtain a sample of at least 60 participants. However, due to time constraints, it was not possible to obtain a sample of more than 35 participants. Although previous studies that involved the use of the IAT obtained a similar amount of participants (Greenwald et al., 1998), for future studies it may be worth obtaining a larger sample as this may generate a significant finding for gender differences in implicit weight bias. Moreover, the sample size was quite small which means that data from the current study may not be representative of the population. Another limitation

was that there were a number of variables that were not controlled for. For example, as previously mentioned, it would have been useful to examine the relationship between levels of body satisfaction and implicit weight bias while controlling for depression, anxiety, level of stigmatization from others one has encountered, explicit attitudes towards overweight individuals, dietary control and weight status.

Each participant was tested on an individual basis in a quiet environment over the course of one month. However, due to a limited access to a quiet area where no other people were present in the room, a small number of the participants were tested in a room where there were moderate levels of noise. This may have affected their performance on the IAT. The most important limitation is that the Body Image Satisfaction Scale (Holsen et al., 2012) does not seem to have been widely used in previous research. Therefore, little is known about the quality of information that this scale can provide about body satisfaction. For future research, it may be worth using a more multi-dimensional measure of body satisfaction that reflects the cognitive, behavioural, and affective elements of body satisfaction, such as the Multidimensional Body-Self Relations Questionnaire (MBSRQ) (Cash, 2000). Restrictions in access to the MBSRQ meant that this measure could not be used in this study.

Finally, normality testing for the IAT results showed that there was a very negative skew. It is possible that this may have impacted on results and it may be a contributing factor as to why the data from the current study did not support hypothesis 1 and 3.

4.8 Conclusion

Data from the current study reveals that levels of body satisfaction do not seem to be related to levels of implicit weight bias among the general public aged between 18 and 29. It is reasonable to suggest that the relationship between low levels of body satisfaction and high levels of implicit weight bias is unique to obese or overweight individuals. However, there seems to be little knowledge of this area so it is clear that more research is needed to examine this relationship. Therefore, based on the data from this study, such a conclusion would be untimely. The majority of scores on the IAT were positive, indicating that an implicit anti-fat bias was present among adults aged between 18 and 29. Females are more likely to have lower levels of body satisfaction than males, and societal pressures to be thin could be the main contributing factor to this. There were no differences found in levels of implicit weight bias among males and females. However, further research is needed in this area as females scored higher than males in implicit weight bias. Future studies should aim to obtain a sample size of at least 60 in order to possibly find a significant difference between males and females. These findings further contribute towards existing knowledge of the gender differences in levels of body satisfaction. Finally, the data from the current study has gone some way towards enhancing knowledge of the relationship between levels of body satisfaction and levels of implicit weight bias, and the gender differences in implicit weight bias among the general public.

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Appendices

Appendix A: Consent Form and Body Image Satisfaction Scale (Holsen et al., 2012).

Gender: Age: Participant Number:

If you would like to give your consent to participate in the current study, please tick the box: ☐

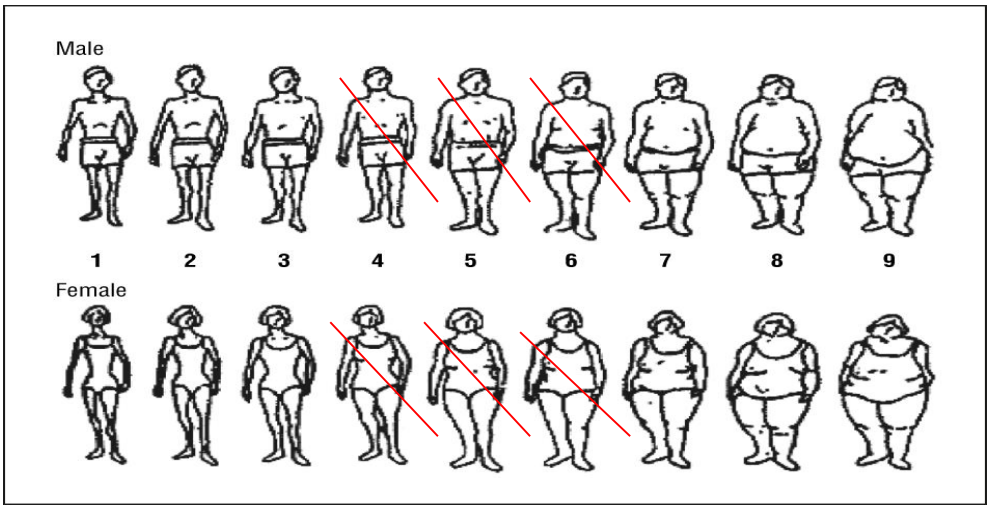
The Body Image Satisfaction Scale (Holsen et al. 2012) is a four item questionnaire that has a six-point answering scale. Participants must **CIRCLE** the answer that applies to them the most. The answer categories range from: (1) does not apply at all, (2) does not apply well, (3) applies somewhat, (4) applies fairly well, (5) applies well, and (6) applies exactly. If you make a mistake, please put a clear 'X' through the wrong answer and circle the correct one.

Question no.		**Does not apply at all**	**Does not apply well**	**Applies Somewhat**	**Applies fairly well**	**Applies Well**	**Applies Exactly**
1.	"I would like to change a good deal about my body":	**1**	**2**	**3**	**4**	**5**	**6**
2.	"By and large, I am satisfied with my looks":	**1**	**2**	**3**	**4**	**5**	**6**
3.	"I would like to	**1**	**2**	**3**	**4**	**5**	6

	change a good deal about my looks":						
4.	"By and large, I am satisfied with my body":	**1**	**2**	**3**	**4**	**5**	**6**

***Questionnaire items one and three are reverse coded**

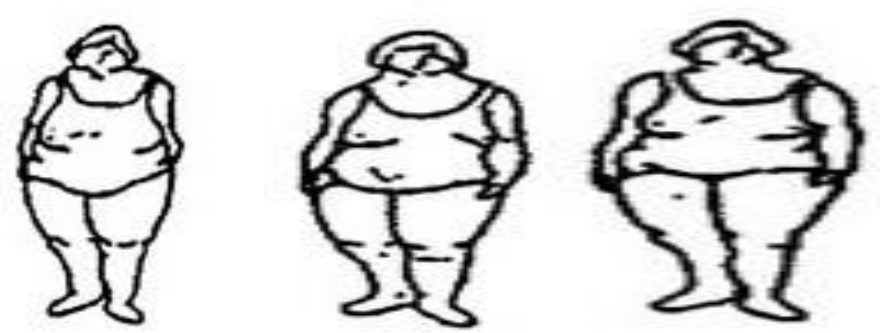
Appendix B: Stunkard's Figure Rating Scale (Stunkard et al., 1983)

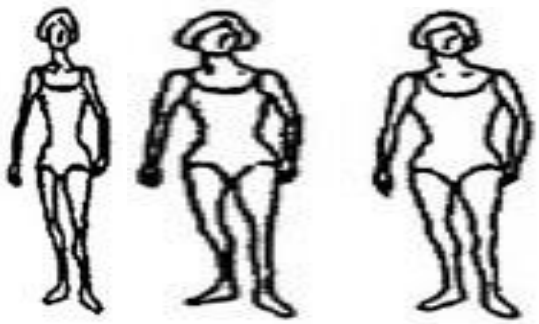


For the purposes of the present study, the middle three body types for both the male and female scales were eliminated as they could be subject to interpretation from the participants as to whether they belong to the 'thin' or 'fat' category (the exclusion is indicated by a red line). Therefore, only the extremely thin and extremely fat images on the scale were included in the IAT. The red lines indicate the images that were excluded from the IAT.

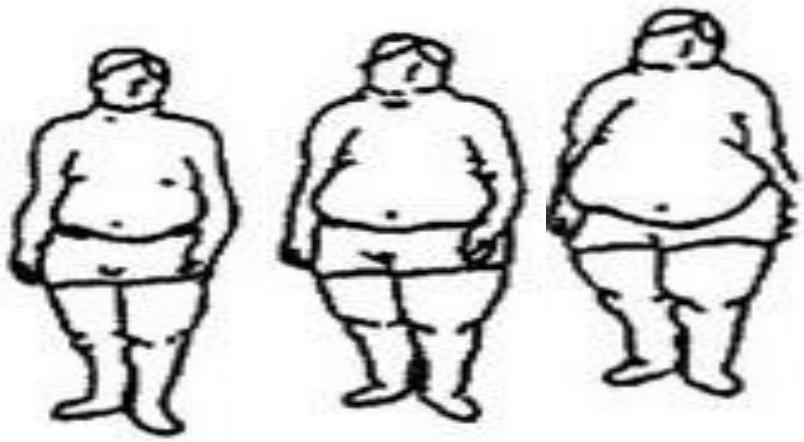
Appendix C: Picture Stimuli Included in the Implicit Association Test

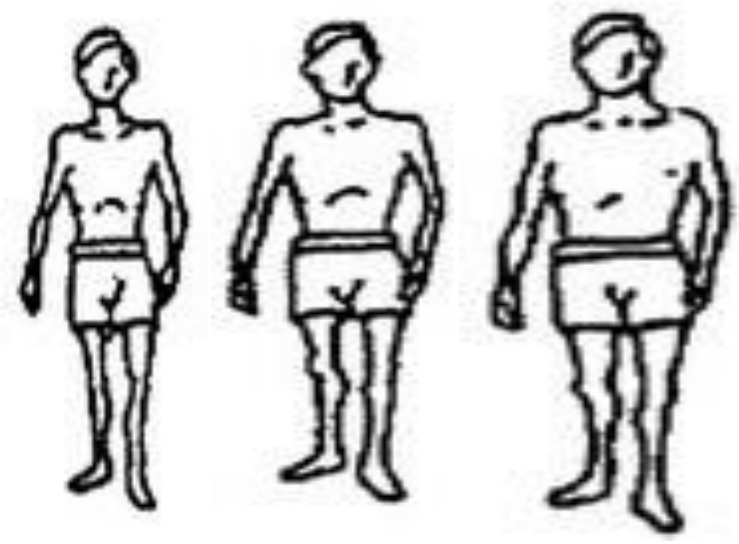
Females:





Males:





Appendix D: Note for Participants at the Beginning of the Study

My name is Kathryn Murray and I am currently in my final year studying Psychology at National College of Ireland. As part of my undergraduate thesis I am investigating the effect of implicit weight bias on levels of body satisfaction. I will also be investigating whether or not there are gender differences in levels of body satisfaction and implicit weight bias. The present study is being conducted under the supervision of Dr. Fearghal O'Brien. The present study has been approved by the Psychology Research Ethics Committee at National College of Ireland. One must be between the ages of 18-30 to take part in the present study.

Participants will firstly be asked to fill out their basic demographics such as age, gender and participant number, which will be provided to participants by me. Participants will also be asked to give consent to taking part in the study by ticking a box at the top of the questionnaire sheet. After this, participants will be asked to complete The Body Image Satisfaction Scale (Holsen et al., 2012), which will measure one's levels of body satisfaction. After this, participants will be asked to complete the Implicit Associations Test (Weight). This task will take roughly ten minutes. It is a computer-based task that involves matching sets of words and pictures of fat and thin people with attributes 'good' and 'bad' as well as 'fat people' and 'thin people'. Participants must match these concepts as fast as they can. This will measure one's level of implicit weight bias. Implicit weight bias refers to a prejudice that people form about other people of a certain weight category (usually overweight people) that is involuntarily formed and they may not be aware of the associations they are making.

Please note that the Implicit Associations test is mainly to develop awareness of stereotypes and biases and that one should not make judgements of one's own character based on the results of the test.

All the information you provide for this study is strictly confidential and anonymous as you will only be identified by a participant number and you will only be asked to tick a box to give your consent. However, please note that you may withdraw your consent at any time without explanation or without penalty. You have the right to ask that any data you have supplied to that point be withdrawn and destroyed. The data collected will not contain any personal information about you except your age and gender. There will be no unforeseen consequences of taking part in this study. The data you provide will be used for presentation, publication and examination purposes.

This study will measure levels of body satisfaction which may cause distress to the participants. If you currently have or have been diagnosed with body dysmorphia or an eating disorder in the past, I would ask that you do not take part in this study. **If you are struggling with issues regarding body satisfaction, I have provided links to support websites below, please feel free to take this sheet home with you:**

Bodywhys: http://www.bodywhys.ie/

Your Mental Health: http://www.yourmentalhealth.ie/about-mental-health/common-problems/mental-health-problems/eating-disorders/

If you have any issues regarding the study please do not hesitate to contact me (the researcher) at Kathryn.Murray@student.ncirl.ie