Attitudes towards Obesity in the Opposite Sex using The Implicit Relational Assessment Procedure

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Abstract

It is essential to understand the role of implicit attitudes when examining what drives human behaviour. Previous research highlighting attitudes towards obesity would suggest that self-reported measures can be easily influenced by socially desirable responding. The aim of this study was to assess implicit attitudes towards obesity in the opposite sex and to assess how these implicit attitudes may impact an obese person's ability to find a romantic partner. Thirty one individuals participated in this study. Male (*n*=14) and female (*n*=17) participants were given separate Implicit Relational Assessment Procedures (IRAP) to complete, each targeting attitudes towards obesity in the opposite gender. Participants completed the Behavioural attitudes towards dating the obese scale (BATOS) to measure discriminatory attitudes. Statistical analyses revealed no significant differences in implicit attitudes towards obesity between groups. No correlations were found between explicit discriminatory attitudes and implicit attitudes towards the obese. Analysis did reveal a significant pro-thin bias among both groups. These findings suggest that it may be pro-thin as opposed to anti-fat attitudes that are perpetuating discrimination against the obese. This lack of a relationship between the implicit and explicit measures is consistent with research that would suggest self-reported measures are heavily influenced by external factors.

Keywords: Implicit attitudes, explicit attitudes, IRAP, bias, discrimination

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Introduction

In 2016, 1.9 billion adults around the world were overweight (World Health Organisation, 2016). In Ireland 70% of men and 52% of women are overweight (Healthy Ireland survey, 2015). Obesity is a rapidly increasing epidemic around the world, (Ogden, Carroll & Flegal, 2014; Seidell, 2005; Prentice, 2005) not only does it have a negative impact on the physical health of those affected (Van Gaal, Mertens & Christophe, 2006) and the economic costs of our countries health services (Gregg & Shaw, 2017) but the 'anti fat' bias present in society could be detrimental to the mental health of overweight individuals (Crandall, Nierman & Hebl, 2009). Research has shown that among all minority groups, overweight individuals are particularly vulnerable to stigma (Wang, Brownell & Wadden, 2004) as they hold less favourable attitudes towards their own group than the general public.

Our attitudes do not only play a critical role in defining our views of the world but also guide our behaviour which shapes us into the people we are and the lives we will lead. Being overweight or obese largely increases vulnerability to maltreatment as obesity has been noted as one of the last acceptable forms of discrimination (Falkner et al., 1999). As a result of anti-fat attitudes, overweight individuals are provided with less college support from their parents compared to their thin siblings, and 24% of nurses report being 'repulsed' by obese people (Puhl & Brownwell, 2001). The implications of these finding suggest that overweight individuals are not only vulnerable to judgement and stigmatization but their quality of life and availability opportunities are limited as a result of their weight. The following review will examine how a large proportion of the hurdles faced by the overweight are perpetuated and maintained by anti-fat attitudes held widely by society whether conscious or not with a view to prominent gender differences and the implications that these attitudes are having on the ability of an obese individual to find a romantic partner.

Obesity and physical health

Weight bias may exacerbate the physical difficulties associated with being overweight. Latner et al. (2014) conducted a study examining the relationship between internalized weight bias and health-related quality of life. An association was found between higher BMI and poorer health related quality of life only in those individuals who reported high levels of internalized weight bias. These findings suggest that self-discrimination may be a primary factor contributing to the physical health impairments resulting from obesity rather than the weight itself.

Although self-discriminatory attitudes play a large role in fuelling weight bias, the opinions of the general public, overweight or not, also promote negative outcomes for the overweight. Health care professionals working specifically with the obese cannot avoid this implicit anti-fat bias; in a study examining both implicit and explicit attitudes towards obesity among healthcare professionals, explicit results showed only minimal bias in comparison with the implicit measure. Although it was lesser than that of the general population, the bias was strong and negative stereotypes were upheld by these professionals (Teachman & Brownell, 2001). These findings suggest that weight bias is so ingrained, that consistent exposure to obese individuals is not enough to extinguish stereotypes including the view that overweight individuals are lazy, even when provided with evidence to the contrary. It is possible that this lack of neutrality among care professionals could mean compromised healthcare for the overweight and obese. Research such as Teachman & Brownell (2001) allows us to understand how anti-fat attitudes are not simply opinions or personal views but are actively diminishing the quality of life of millions of people and could be contributing to subpar medical care.

Obesity and Employment

As well as experiencing discrimination from medical professionals, those who are overweight might also experience poorer employment outcomes due to weight-bias. Pingitore et al., (1994) conducted an experiment to examine how obesity affects hiring potential. Two actors, one male and one female acted as both the obese and the normal weight job candidates with the use of prosthetics to eliminate any bias related to attractiveness, disposition etc. Their applications were videotaped and judged by the potential hiring parties. It was found that a weight bias in hiring potential does exist and women are at a significantly higher disadvantage than their obese male counter parts. There are a number of studies that have continued to highlight issues relating to hiring potential among the overweight (Agerström & Rooth, 2011; Flint et al., 2016; Rooth, 2009). Agerström & Rooth, (2011) concluded that although job discrimination is inherently unfair in all aspects, it is job-irrelevant discrimination targeted at obese individuals that is cause for major concern; for example, some may say it would be practical and just to refrain from hiring an obese person to take on a role that requires much physical activity or passing through tight spaces (i.e. Personal trainer or air hostess) but this is not the case, this particular study found obese individuals to be at a significant disadvantage for most occupational fields. There is little evidence to suggest that obese individuals are any less competent at carrying out the majority of job roles excluding any which pose a physical barrier such as those for-mentioned.

Age and obesity

Research suggests levels of weight bias may differ depending on factors such as age or gender. Younger individuals are at a greater risk of weight discrimination which is unfortunate as this is a time when self-concepts such as self-esteem and self-efficacy are developing (Puhl, Andreyeva & Brownell, 2008); low self-esteem is linked to a myriad of problems that may arise as a result including dysphoric emotions, aggression and

irresponsible sexual behaviour which may have possible implications for maintaining a steady relationship in the future (Leary, Schreindorfer, & Haupt, 1995). These findings indicate that interventions should be targeted at younger populations to prevent early onset and long lasting negative mental and physical health outcomes. As well as age, gender may influence how an overweight person is perceived and treated.

Gender differences

There is a general consensus in the literature surrounding weight bias that women are judged more harshly than men for their weight (Hebl & Heatherton, 1998; Latner, Stunkard & Wilson, 2005; Pearl et al., 2012; Schvey et al., 2013). Examinations of implicit attitudes have found that women hold no specific anti-fat/ pro-slim attitudes towards other women indicating that much of the shame and judgement felt by women when it comes to their weight may originate from how they are perceived by the opposite sex (Expósito, López, & Valverde, 2015). It is a shame that there is a widely held belief that women judge each other constantly and harshly when in reality the research would suggest that this is a misconception (Nolan, Murphy & Barnes-Holmes, 2013).

Self-stigma has also been identified as a primary form of discrimination, particularly among women; fear of discrimination is what perpetuates this self-stigma (Palmeira, Pinto-Gouveia & Cunha, 2016). It may be possible to reduce levels of self-discrimination by first attempting to reduce fear of discrimination through education. Nolan, Murphy & Barnes-Holmes (2013) used the Implicit Relational Assessment Procedure (IRAP) to examine gender differences in implicit attitudes towards obesity examining both participant gender, and gender of the target stimuli. They found that male participants showed greater favourable bias towards male targets compared to female targets and female participants failed to show significant levels of bias. These findings indicate that it is not obesity in general that men view negatively, but specifically obesity in women. These findings aid in the explanation of

how and why obese individuals, specifically women, may be at a significant disadvantage when it comes to finding a romantic partner. Another study examining gender differences in attitudes towards obesity found that women had a preference for an image of a thinner figure as opposed to the one they has chosen as being the healthiest (Harris, Sandoval & Cortese, 1998) these findings imply that the damaging weight bias held by society encourages women to prioritize physical appearance over health.

Obesity and finding a partner

Puhl, Moss-Racusin, Schwartz & Brownell (2007) conducted a qualitative study that examining self-reported sources of weight stigmatization. The most commonly reported source of weight stigmatization was from close relationship partners including family members and spouses. These findings could perhaps be influenced by the amount of time close relationship partners spend with these individuals providing them with more opportunities to make potentially stigmatizing comments or inferences. These perceived stigmatizations could also be an attempt to motivate individuals to lose weight as they care about their health, but regardless of the reasons, these stigmatizations have serious consequences for the mental wellbeing of this vulnerable population and may prevent them from wanting to create more close relationships than absolutely necessary. Research also shows that men have more negative attitudes towards the overweight in general, regardless of sex (Brochu & Morrison, 2007). These findings outline the additional challenges overweight women must face as not only are they criticised more frequently for their weight, but the opposite sex, with whom they could potentially want to have a romantic relationship with, have specifically negative attitudes towards them.

When it comes to finding a romantic partner obese women seem to have all the odds against them. Aruguete, Edman & Yates (2009) found that both obese people and women are less selective about the physical traits of a romantic partner in comparison to non-obese

people and men. This means that obese men would have a better likelihood of being considered as a romantic partner by a woman than an obese woman would by a man. Due to the lack of literature on gender difference in obesity discrimination that use an implicit measure, it is difficult to know whether these findings are routed in true gender differences or if they are motivated by society putting pressure on men to have a slim and attractive partner and women to have a strong and masculine partner, which may include men who carry some extra weight.

The constant stigmatization and judgement of overweight individuals not only has a negative effect on mental wellbeing and distorts self-concepts but can also create additional difficulties when it comes to finding a partner. With regards to dating and body weight, research on anti-fat attitudes would suggest that obese individuals are not only less desirable and attractive to the opposite sex (Singh & Young, 1995) but a higher body fat is also associated with a lack of desire for one self to engage in dating. In adolescence, obese girls are less likely to date than their peers and obese individuals of both genders report being more dissatisfied with their dating status compared to adolescents of a normal weight (Pearce, Boergers & Prinstein, 2002). Attitudes towards obesity are not strictly personal opinions and beliefs as they have a direct impact on the lives of the overweight as these biases impact their behaviour whether it is conscious or not. One study by Harris, Walters and WaschulL (1991) found that men were more concerned about a date's weight than women.

Although women do report experiencing more weight stigmatization than men (Puhl, Andreyeva & Brownell, 2008; Pearl, White & Grilo, 2014) this does not necessarily mean that they do, these reports of stigmatization could simple be a perception driven by women's tendency to internalize more than men (Fouts & Burggraf, 2000) and/or due to the idea that women are more likely to perceive themselves as being overweight than men making them more frequently vulnerable to feeling stigmatized (Grover, Keel & Mitchell, 2003). Research

to date concludes that men have more negative attitudes to women than women do towards men, although not as much literature suggest these attitudes are specifically aimed at women. Some earlier research has found little to no gender differences in weight bias in relation to finding a partner (Stake & Lauer, 1987). The majority of research to date focuses on explicit measures of anti-fat attitudes (e.g. Anti-Fat Attitudes Scale) although the findings of those that have used implicit measures are mostly consistent with other explicit papers (Flint, Hudson, & Lavallee, 2015; Roddy, Stewart & Barnes-Holmes, 2010; Nolan, Murphy & Barnes-Holmes, 2013).

When gender differences in weight bias are considered in light of finding a romantic partner, the literature is lacking a general consensus and primarily focuses on gender differences in explicit attitudes towards the overweight. The previous findings in this area are of course relevant, but to date, they do not give us enough information to fully understand how implicit attitudes towards weight and the behaviour that results from these attitudes and directly impacting the dating lives of the obese. Further research is needed to examine the specific implicit attitudes of men and women, respectively, towards obesity in the opposite sex to understand how these attitudes may be impeding the ability of obese individuals to find a romantic partner.

Attitude Measurement

Attitudes towards obesity can be measured in many different ways. Explicit measures are commonly used including questionnaires or scales such as Morrison & O'Connors (1999) Unidimensional Anti-fat Attitudes Scale (AFS). Although these methods are useful in understanding how people interpret their own attitudes they are often influenced by socially desirable responding as people are reluctant to share opinions they may have that could be seen as socially or morally unacceptable (Friese, Hofmann & Wänke, 2008). They are also not useful in uncovering unconscious views that individuals may hold that they themselves

are not aware of (Mandelbaum, 2016). Implicit measures of assessing attitudes have become increasingly popular in recent decades. The implicit Associations Test is one of the most widely used implicit attitudes measures (Greenwald, McGhee & Schwartz, 1998). It works by measuring the strength of associations between concepts (e.g. black people/ white people) and evaluations (e.g. bad/good); the IAT approach suggests that if people are quicker to respond when white people and matched with good than when black people are matched with good, that this represents an implicit preference for white people. Similar to the IAT the Implicit Relational Assessment Procedure (IRAP) measures implicit attitudes and reportedly has better predictive validity than the IAT (Nicholson & Barnes-Holmes, 2012). When used in combination, explicit and implicit measures can provide us with an insight into the discrepancies between self-reported beliefs and subconscious attitudes.

With every passing decade comes new idealisations of what the perfect figure is and perhaps in the early 1990's preferences were different but this does not account for the fact that attitudes towards the obese and overweight have been and still are consistently negative (Flint, Hudson & Lavallee, 2015; Monroe & Adeyanju, 1995; Oberrieder, Walker; Vartanian. 2010). Further investigation is needed into how behaviour resulting from anti-fat attitudes negatively impacts dating prospects for the overweight. A large amount of literature is available highlighting the negative effects of weight stigmatization (Friedman et al, 2005; Hunger, Major, Blodorn & Miller, 2015; Major, Hunger, Bunyan & Miller, 2014) and its prevalence (Puhl, Andreyeva & Brownell, 2008) but not so much is known about the impact of these negative attitudes on an individual's ability to find a partner.

It could be assumed that overweight women would have a more difficult time finding a partner of the opposite sex due to stronger negative attitudes of men towards weight, although, no single study has specifically examined implicit attitudes towards obesity only in the opposite sex. In summary, the research to date suggests that obese individuals are

disadvantaged in many walks of life including employment (Pingitore et al, 1994), healthcare (Teachman & Brownell, 2001), and face extremely high levels of stigmatization (Wang, Brownell & Wadden, 2004), women are judged more harshly for being overweight than their male counterparts (Hebl & Heatherton, 1998) and obese people have a harder time finding a romantic partner as a result of their weight (Pearce, Boergers & Prinstein, 2001; Singh & Young, 1995). Most research in this area is explicit and does not focus on the specific attitudes of each gender respectively (e.g. Puhl, Andreyeva & Brownell, 2008). Finally, there is little literature available on how implicit bias relates to explicit reporting of discriminatory behaviours.

The Current Study

The main novelty of this study in light of previous literature is that the implicit attitude measure (IRAP) will be targeted specifically to the participant's gender to collect information that has specific implications for finding a partner. The current study will use the Implicit Relational Assessment Procedure to examine implicit attitudes towards obesity in the opposite sex. Explicit attitudes will then be measured using a scale that was developed for the purpose of this study (BATOS), which will be used to examine how self-reports of discriminatory behaviours and attitudes towards the obese are related to implicit attitudes. The overall purpose of this research is to examine the impacts of attitudes towards obesity on the ability of an obese individual to find a romantic partner.

The current study aims to investigate how gender differences in attitudes towards obesity may impact one's ability to find a romantic partner. The implicit attitudes towards obesity in the opposite sex of both men and women will be measured. The present study also looks at how these attitudes actively influence individuals dating behaviours. Specifically, the research questions for this study are (1) Do men or women have more negative implicit attitudes towards obesity in the opposite sex? (2) Are implicit attitudes towards obesity

related to explicit reports of discriminatory behaviour towards the obese in the context of selecting a romantic partner? It is hypothesised, based on previous research, that (1) men will have more negative implicit attitudes towards obesity in women than women will have towards men; (2) Those with more negative implicit attitudes will report higher levels of discriminatory behaviour towards the obese.

Methods

Participants

Thirty six individuals participated in this study. All participants were recruited via convenience sampling. Participants were divided into two groups based on gender; men (*n*=15*)* and women (*n*=21*)* completed two separate IRAPS. Participants were aged 18-56 (*m*=27.72, *SD*=12.02). None of the participants in this study had previous experience with the IRAP software. Participants were required to meet specific IRAP pass criteria for their data to be included in this study (see procedure). The data of five participants were excluded as they failed to move past the test block phase of the task. The final sample therefore consisted of thirty one participants, 14 males and 17 females, aged 18-56 (*m*=26.71, *SD*=10.98).

Design

The current study used a quantitative and cross sectional design. For hypothesis 1, the between participants independent variable was gender (male and female). The within-subjects independent variable was IRAP trial-type which consisted of 4 levels including Thin-Positive, Thin-Negative, Obese-Positive and Obese-Negative which were to be analysed using a 2x4 factorial design. The dependant variable was participants D-IRAP scores. For the second hypothesis, the independent variable is implicit attitudes towards obesity, measured using D-IRAP scores, and explicit attitudes towards obesity, measured using the questionnaire data.

Materials

Behavioural Attitudes towards dating the obese scale (BATOS). The BATOS is a five item self-report questionnaire developed for the purposes of the current study. This scale assesses negative attitudes towards obesity that promote discriminatory behavior. Each question or statement is answered on a 5 point Likert scale. Items 1 and 2 are reverse scored

from 5 – 1 (very unlikely & very rarely to very likely & very often). Items 3,4 and 5 are scored from 1-5 with strongly disagree scoring 1 and strongly agree scoring 5. A higher score indicates higher levels of discriminatory behavior. The lowest possible score is 5 and the highest possible score is 25. This measure also collected data on the age and sex of participants. (see Appendix A).

The Implicit Relational Assessment Procedure (IRAP). The implicit relational assessment procedure is a reaction time based computerized tool used for the direct assessment of implicit cognition. The IRAP was originally developed by Dermot Barnes-Holmes, at The National University of Ireland, Maynooth. The IRAP requires participants to respond to a specific set of stimulus associations in ways that are either consistent or inconsistent with their previous social learning. It is suggested that participants will respond faster when the stimulus and required response are consistent with their implicit beliefs. The length of the time latencies is used to assess the strength and direction of any potential biases. The IRAP has been seen to have good validity but the reliability has been, at times questionable (Golijani-Moghaddam, Hart & Dawson, 2013).

In the current study, the label stimuli consisted of the images of an obese and a thin male to be given to female participants and images of an obese and a thin female to be given to the male IRAP participants. The images were illustrations of figures sourced online as opposed to photographs which eliminated any attractiveness bias. The images were as neutral as possible only consisting of black and white colouring with a plain white background to ensure that no distracting elements would be introduced. The female and male silhouettes were depicted wearing only underwear so that their body shape is clearly visible. Ten words were used as targets, 5 positive (attractive, active, happy, popular, motivated) and 5 negative (unattractive, lazy, unhappy, unpopular and unmotivated) were used. In each IRAP trial participants were provided with 2 possible relational response options, ‘true’ and ‘false’.

A laptop was also required to download and programme, the GO- IRAP software and for participants to carry out this study.

Procedure

The National College of Ireland ethics board approved all procedures for the current study. A pilot study was used for this piece of research as the IRAP was programmed specifically for this study and the BATOS has not been used before. 4 participants, 2 males and 2 females completed the pilot study; their data has been excluded from the final sample. The pilot study highlighted a discrepancy between the 2 separate IRAP's in which the one that was given to male participants did not have the response options 'true' and 'false' but rather the letters 'd' and 'k' shown on screen. The pilot study consisted of 2 practice blocks and 2 test blocks. The current study consisted of 2 practice blocks and 3 test blocks to strengthen the data. The pilot study also provided valuable feedback on what was the most helpful way of explaining the IRAP procedure to participants in a comprehensible manor. The instructions given by the researcher were largely guided by pilot study participant's feedback.

Participants were recruited through convenience sampling. They were informed that they would be taking part in a study examining implicit attitudes towards obesity. All participants did not complete the study in the same location although all locations were in quiet rooms with only the participant and researcher present. The nature of the study and a brief description of what is required of the participant were explained before the participants were asked to provide informed consent (see Appendix C). Participants were then given verbal instructions on how to complete the IRAP and what it will entail (see Appendix B). In this study, men and women were given slightly different IRAP's. The one given to men had label stimuli of obese and thin women, and the IRAP given to women had label stimuli of obese and thin males. All other stimuli were the same. The researcher asked if the participant

had any final questions before leaving the room for the participant to begin the task independently.

The IRAP programme began by displaying onscreen instructions on how to complete the task. The implicit relational assessment procedure used in this study consisted of two practice blocks and three test blocks. Each block is presented in pairs. One block of each pair was obese bad/ thin good (congruent) and the other was obese good/ thin bad (incongruent). Participants had to meet standardized IRAP criteria of 80% accuracy in their responding and respond with a median time latency of less than 2000 ms. If the participant completed the first practice block in accordance with these criteria, they moved directly into the test block. If participants failed to meet the criteria in the first practice block they completed a further practice block. If participant do not meet the criteria on either of their practice blocks, the task will automatically end and the participant's data is discarded. If participants failed to meet these criteria in any of the test blocks there data was unusable. The blocks alternated from obese bad/ thin good to thin good/ obese bad in a fixed manor. For the IRAP given to women, the two label stimuli of male figures appeared at the top of the screen in an alternating semi random pattern. Below the figure appeared one word, either positive or negative and below this word were the responses of either 'true' or 'false' represented by the 'd' and 'k' keys on the keyboard. Participants are asked to respond in accordance to however this block has instructed them to (i.e. in the obese bad/ thin good condition, if an image of an obese man comes up with the word 'active' below, the participant is expected to answer 'false'). The procedure is identical for the IRAP given to males excluding the label images. Each block consisted of 20 trials of the 10 target stimuli (positive and negative words) each one being paired once with each of the label stimuli (images of obese and thin persons). If the participant responded incorrectly according to the instructions given at the beginning of the trial then a red 'x' would appear on screen until the correct response was given. After each

block, feedback appears on screen with the participant's accuracy percentage and median time latency.

After the IRAP was complete, the task instructed the participant to alert the researcher. The participant was then asked to complete the explicit measure (BATOS) which also gathered demographics such as age and gender. The participant was then given the debriefing form which provided information on support services and access to helplines. All ethical implications were considered and dealt with in the current study due to the sensitive subject matter (e.g. anti-fat attitudes, body weight, obesity etc.). Participants were briefed at two occasions. Prior to participation in the study participants were given detailed consent forms which outlined the purpose of the study, the role they would be playing and informed them of total participant confidentiality. Participants were also verbally informed that although this study appears to assume heterosexuality, the views of all sexualities and genders are welcome in this study. The reason for this design is because we are specifically examining gender differences in attitudes towards the opposite sex so if we were to include all sexualities the study would not be focused on the opposite sex; it was also require numerous different IRAP's and much more participants which is not feasible under the circumstances of this research. Participants were also fully debriefed following participation and provided will relevant support services (see appendix D). In total, participation in this study took approximately 15 minutes.

Results

Descriptive statistics

The mean score for the Behavioural Attitudes towards dating the obese scale was 17.29 (*SD*=3.97). D-IRAP scores for thin positive (*m*=.50, *SD*=.46), thin negative (*m*=.42, *SD*=.41), obese positive (*m*=-.09, *SD*=.44) and obese negative (*m*=.13, *SD*=.40) can be seen between genders on table 1 below.

Table 1. Descriptive statistics table

	Mean	*SD*	*Min*	*Max*	*t value*	*Sig.*
Age	26.71	10.98	18	56		
BATOS score	17.29	3.97	10	25		
Thin positive	.50	.46	-.83	1.19		
male	.52	.46	-.32	1.03	4.24	.00
female	.49	.47	-.86	1.19	4.29	.00
Thin negative	.42	.41	-.55	1.22		
Male	.51	.33	-.06	.92	5.77	.00
female	.34	.46	-.55	1.22	3.08	.01
Obese positive	-.09	.44	-1.04	.73		
male	.07	.34	-.63	.73	.77	.46
female	-.23	.47	-1.03	.66	-2.06	.06
Obese negative	.13	.40	-.76	.78		
male	.21	.44	-.53	.78	1.77	.10
female	.06	.37	-.76	.64	.72	.482

Inferential statistics

IRAP Data. The IRAP data consisted of participants' response latencies across all IRAP test blocks. Time was measured in milliseconds between the onset of an IRAP trial and a correct response. D-IRAP scores were obtained by transforming time latency scores as

outlines by the Greenwald et al. (2003) *D* algoritm (see Barnes-Holmes, Murtagh, Barnes-Holmes, & Stewart, 2010). Positive scores on the *thin-positive* and *obese-positive* trial types indicated that participants were faster to respond with the 'true' response option. Positive scores on the *thin-negative* and *obese-negative* trial types indicated that participants were faster to respond with the 'false' response option. (see Figure 2).

IRAP Analysis

The overall mean *D*-IRAP scores for each gender across each trial-type are presented in Figure 2. Four one samples T-tests were run to test the strength of responding. The graph shows that the Reponses of men suggest that thin people are positive '*thin-positive' t*(13) = 4.24, p = .001 and are not negative '*thin-negative' t*(13) = 5.77, p < .001. The female participants showed a similar pattern of responding with responses suggesting thin people are positive *'thin-positive' t*(16) = 4.29, p = .001, and not negative '*thin-negative' t*(16) = 3.08, p < .01. The male group failed to showed significant effects on either of the *'obese'* trial types ('*obese-positive' t*(13) = .77, p = .456, '*obese negative'* t(13) = 1.77, p = .100). The female group also showed no statistically significant effects for *'obese negative'* t(16) = .72, p = .482 although females were approaching significance for the trial indicating that obese people are positive '*obese-positive' t*(16) = -2.06, p = .056. An independent samples t-test revealed no significant differences on D-IRAP scores between groups (all p's > .05).

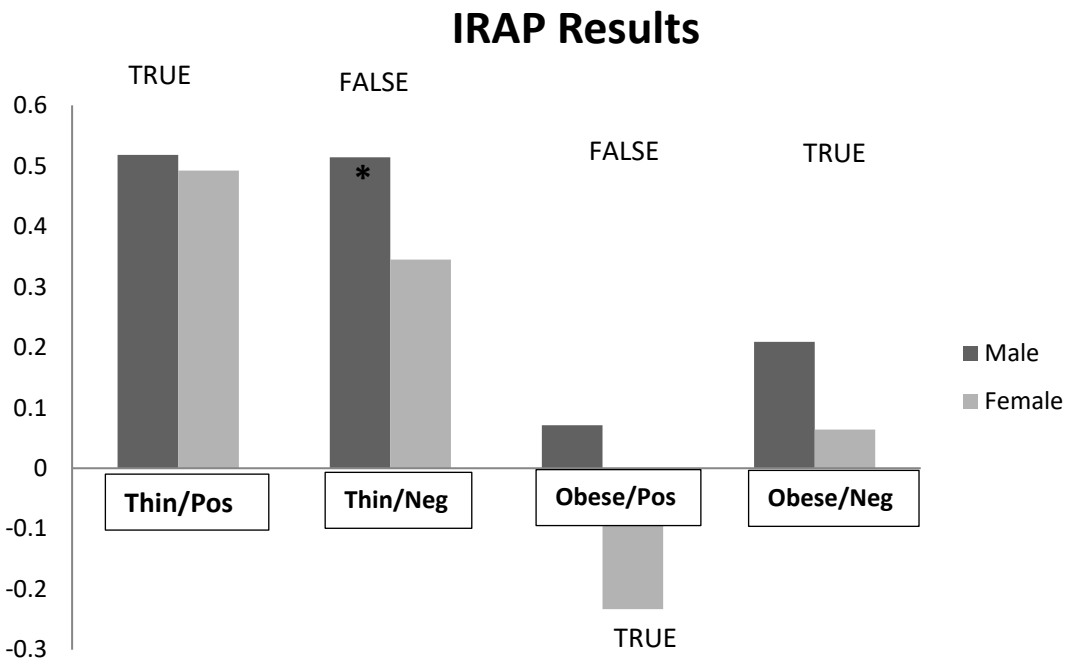

Figure 2: *The mean D-IRAP scores for males and females. Overall, both groups responded 'True' when presented with the Thin-is-Positive trial-type; 'False' for Thin-is-Negative; and 'True' for obese-is-Negative. Men responded 'False' for obese-is-Positive, whereas women responded 'True'.*

A 2x4 mixed ANOVA was conducted to assess the impact of gender (male, *n*= 14 and female, *n* = 17) on *D*-IRAP scores. The within participant factor was trial-type and the between participant factor was gender. The dependent variable was *D*-IRAP score. Results showed a significant main effect for trial-type, $F(3) = 16.55$, $p < 0.001$. No significant main effect was found for gender, $F(1) = 2.56$, $p = .121$. Results showed no significant interaction effect between gender and trial-type $F(3) = .74$, $p = .533$, indicating that Gender had no impact on trial-type scores. Pairwise comparisons showed that all trial-types differed significantly from one another (all *p*'s > 0.05) except the '*thin-positive'* and '*thin-negative*' trial-types (*p*=.423).

Correlational analysis

Shapiro-Wilk tests of normality indicated that the IRAP Trial-type scores were normally distributed. Analysis revealed no significant correlations between variables. (See table 3).These findings Indicate that implicit attitudes towards obesity are not associated with explicit reports of discriminatory attitudes towards obesity.

Table 3. Peasrson correlations showing the relationship between responses on the four IRAP trials, and subscales of the BATOS for both genders.

	Thin-Positive	Thin-Negative	Obese-Positive	Obese-Negative
BATOS1	.207	.128	.123	-.089
BATOS2	.198	.090	.149	.056
BATOS3	-.100	-.088	.193	-.251
BATOS4	.106	.093	-.057	-.120
BATOS 5	-.027	.103	.228	-.028

*p<.05; **p<.01

Discussion

The current study aimed to answer two questions, firstly, do men or women have more negative attitudes towards obesity in the opposite sex? And secondly, are implicit attitudes towards obesity related to explicit reports of discriminatory attitudes towards the obese in the context of selecting a romantic partner? It was hypothesised that men would have more negative implicit attitudes towards obesity in women than women would have towards obesity in men, and that those with more negative implicit attitudes would report higher levels of self-reported discriminatory attitudes towards the obese. No previous IRAP study has examined attitudes towards obesity specifically in the opposite sex.

In relation to hypothesis 1, results found that gender had no significant impact on implicit attitudes towards obesity in the opposite sex, which is inconsistent with much of the previous research that suggests men show more obesity related bias than women (Hebl & Heatherton. 1998; Latner, Stunkard & Wilson, 2005; Pearl et al. 2012; Schvey et al., 2013). Brochu and Morrison (2007) did find that men have more negative attitudes towards the overweight in general, with gender being immaterial, which could be a factor as to why no differences were found in attitudes towards obesity only in the opposite sex. Perhaps men's implicit attitudes towards obesity in other men accounted for a large proportion of previous

finding on male obesity-bias, which would agree with previous literature stating that self-stigmatization accounts for a certain amount of anti-fat attitudes (Chang, Chang & Cheah, 2009).

It could be speculated that the lack of gender differences found indicates that the reason many studies have found that men have more negative attitudes towards women is because many used explicit measures. The overwhelming pressure put on individuals to idealize very specific 'attractive' body types could influence how people respond when asked to share their attitudes towards various body types – including the obese (Van de Mortel, 2008). For example, on a questionnaire, men may show a preference for thin female bodies as a result of constant conditioning. The same is true for women; it can be assumed that the media promotes the ideal male body as being 'toned' and 'muscular' which are both associated with increased size; this observation could be the reason women's explicit reports of weight bias have been primarily less 'anti-fat' than men's (Tremblay et al., 2016). Put in simpler terms, the 'ideal' male body carries more weight than the 'ideal' female body, meaning women would likely be less explicitly negative about heavier set men than men would be towards heavier set women. When we take the influence of the media and popular opinion out of the equation by using an implicit measure of attitudes, we can see much less prominent gender differences. It could be speculated that the reason no significant differences between men and women were found in this study, is due to the implicit attitudes of individuals being much less influenced by socially normative ideals, and their true, autonomous personal preferences being unveiled. Although, it must be noted that these are post-hoc observations.

Results also showed that both men and women had significant pro-thin attitudes as opposed to anti-fat attitudes, these findings are consisted with previous IRAP findings (Roddy, Stewart & Barnes-Holmes, 2010). It is important to understand that pro-thin attitudes

are not indicative of anti-fat attitudes (Anselmi, Vianello & Robusto, 2013). Neither men nor women held any significant negative or positive attitudes towards obesity, although it is worth noting that the female group were approaching significance for the obesity-positive trial. This observation is not empirically valid but does outline a potential avenue for future research in this area. It is possible that the reason many previous studies have found a strong prevalence of anti-fat attitudes isn't just due to obesity-bias in and of itself but more likely driven by pro-thin attitudes (Carels, & Musher-Eizenman, 2010). If pro-thin attitudes are not measured or accounted for then they can simply reveal themselves in the form of an anti-fat bias leading to the obvious conclusion that most people have negative feelings towards the overweight. It is possible that these observations may indicate that the media's portrayal of 'thin' as attractive has a stronger impact than commonly spread idea that to be overweight is to be unattractive. Do people care more about what they want to look like as opposed to what they don't want to look like? It would be interesting for future research to investigate how strong the influence of the media is on our implicit cognitions. Perhaps research using an experimental design in which individuals and exposed to thin-positive and obese-positive stimuli in a media source, for example fashion magazines and are then asked to complete an implicit attitudes measure. There attitudes could be measured before and after exposure to each stimuli. The results could help to explain the effect of social conditioning on implicit attitudes. These pro-thin findings have broader implications that can and do still put obese individuals at a disadvantage. If the population holds general pro thin attitudes, this would indicate that thin people are probably more likely to be treated better and have better outcomes in occupational fields, education and healthcare which is consistent with previous research that has found obese individuals to be significantly disadvantaged in these fields (Pingitore et al. 1994; Crosnoe, 2007; Kaminsky & Gadaleta 2002). Perhaps previous

findings were more influenced by pro thin attitudes rather than anti-fat ones but this possibility had not been considered or measured.

It is important to consider the findings of this study in light of finding a romantic partner. It was originally hypothesized that men would have more negative attitudes towards obesity in women that women would towards obesity in men, which would lead to the conclusion that women would have a harder time finding a romantic partner. The current study found that this is not the case. Obese and overweight individuals of both genders may find it equally as difficult to find a romantic companion. There is literature suggesting that younger individuals are more impacted by weight stigmatization in their interpersonal relationships (Ames & Leadbeater, 2017). It is possible that the primarily younger sample used in the current study had an impact on the lack of significant findings. The idea that younger overweight people face more bias could eliminate some of the potential gender differences. As individuals get older and are less influenced by the opinions of their peers their attitudes are likely to change possibly revealing stronger gender differences. Further research could look at gender differences in the area of anti-fat attitudes using a longitudinal design.

Although it was not found that women were judged more harshly than men, the finding that people have pro thin attitudes still has relevant implications for obesity and dating. If people have inherently pro-thin attitudes this would indicate that thin people would be more likely to be seen in a positive light and more attractive as a dating prospect than the overweight. Even with the finding that people have no significant positive or negative attitudes towards the obese, in comparison to positive attitudes towards the thin this leaves a gap in opinions towards the obese and the thin. The lack of negative implicit attitudes towards the obese does not infer that this population is not discriminated against; it simply

suggests that this discrimination is driven by pro-thin attitudes as opposed to anti-fat attitudes.

These findings have serious implications in the lives of the obese. It seems unfair that weight should be a deciding factor in a person's eligibility to date. Previous research that has looked at ways of reducing bias and stigmatizing behaviour has found two of the most effective methods of reducing discrimination to be direct social contact with those whom you hold a bias towards and social marketing at the population level (Thornicroft, Brohan, Kassam & Lewis-Holmes, 2008). These interventions should be implemented through the education system to target the younger population before biases worsen. Schools could host a speaker, perhaps an individual who has experienced weight related discrimination to speak to the students. Social media platforms should also be utilized as a tool for discrimination reduction, mainly considering the rapid growth of social media usage among the youth. Online campaigns could be employed to spread awareness about the detrimental effects of weight discrimination.

It was also hypothesized that those with more negative implicit attitudes towards the obese would report higher levels of explicit discriminatory attitudes, indicating that the anti-fat bias some people have, directly influences the dating lives of obese individuals. No correlation was found between implicit attitudes and reports of discriminatory attitudes. This means that negative implicit attitudes do not imply discriminatory attitudes or behaviour. It is very plausible that the reason for these findings is due to the fact that one measure was implicit, and hence more 'true', and the other was self-reported leaving much more room for socially desirable responding. Although many people have negative attitudes towards the obese, it may seem more shameful for a person to explicitly admit that they actively discriminate against these individuals. Leading to potentially less genuine responses on the explicit measure employed in this study. An abundance of research has been conducted on

the relationship between implicit and explicit measures and the findings range from a non-existent to a strong positive correlation (Nosek, 2007).

With regards to the current study, it is reasonable to suspect that another reason for the lack of any significant findings is because the implicit measure and the explicit measure were too dissimilar. The IRAP measured specific implicit attitudes towards obesity in the opposite sex whereas the BATOS aimed to measure discriminatory attitudes towards obesity to make inferences about a person's likelihood of engaging in discriminatory behaviour towards the obese. Perhaps a more appropriate method would have been to use a previously validated and reliable discriminatory attitudes scale. Much of the research that looks at the relationship between explicit and implicit measures focuses on simply comparing two different methods of attitude measurement with each other (Vartanian, Herman & Polivy, 2005; McConnell, Rydell, Strain & Mackie, 2008) whereas the current study compared implicit attitudes with self-reports of discriminatory behaviour, which both measure different things. Research would suggest that much of the time attitudes do predict behaviour (O'Brien, Latner, Ebneter & Hunter, 2013; Sheeran, Norman & Orbell, 1999), although it is possible that in this case, attitudes towards obesity do not directly imply that one will act in a discriminatory manner towards the obese.

As with most research, there are several notable limitations to this study. This piece of research was to be completed in a specific time frame restricting the number of participants that could have potentially been recruited and limiting the amount of time spent on the pilot study, specifically in relation to testing the reliability and validity of the newly developed scale employed in this research. Due to time restrictions and methodology the number of participants collected also posed an issue. Although the number of participants collected was sufficient to get reliable results from the IRAP, this number was likely much less than would be necessary to collect any powerful data from the BATOS scale. It is well known in research

that questionnaires usually require a substantially higher amount of participants than implicit measures or experimental designs although this was simply not feasible for the current study. This limitation could have been the cause of the insignificant findings for the second hypothesis. Future research in this area should employ a larger and more variable sample size with a time-frame that allows for more preparation.

Conclusion

Overall the results were not consistent with much of the research in this area and neither hypotheses were accepted. The findings of the current study suggest that there are no significant gender differences in implicit attitudes towards obesity in the opposite sex; and that there is no significant relationship between implicit attitudes towards obesity and explicit reports of discriminatory attitudes. It was found that both men and women hold a significant pro-thin bias which supports the idea that obese individuals are disadvantaged as a result of this favourable bias towards the thin. These findings have implications in areas such as education, employment and healthcare and could indicate that obese individuals are at a disadvantage when it comes to finding a romantic partner although gender differences are less prominent than suspected. Measures should be taken to minimise bias by managing the medias portrayal of body image and through direct social contact with victims of weight related discrimination mediated through the education system. Further research is necessary in this area to obtain a deeper understanding of the relationship between implicit obesity attitudes and mate selection.

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Appendix A

Behavioural Attitudes towards Dating the Obese Scale (BATOS)

Age:

Gender:

Participant code:

Please indicate your response by circling one line on the 5 point scales

1. How likely would you be to date an obese person?

Very unlikely neutral very likely

2. How often do you find obese individuals attractive?

Very rarely sometimes very often

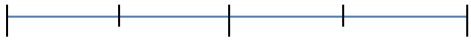
3. Weight matters more than an attractive face.

Strongly disagree neutral strongly agree

4. I would be embarrassed to introduce an obese partner to my friends and family

Strongly disagree neutral strongly agree

5. I would be more likely to date a thin person that I had less in common with than an obese person that I had more in common with.



Strongly disagree neutral strongly agree

Appendix B

Instructions given to participants on how to complete the IRAP:

1. The purpose of the task you are about to complete is to uncover any implicit attitudes you may have towards obesity in the opposite sex (towards males/ females). Implicit attitudes refer to any bias or views you may have towards something or someone. These attitudes may be implicit because you either choose to hide them consciously or unconsciously, or because you simply are not aware that you hold them at all.
2. When you begin the task instructions will appear on screen explaining briefly how to complete the task. Once the trials begins an image of either an obese or thin individual will appear at the top of the screen, below this image will appear two words, one on the right and one on the left, one of these words will be positive and one will be negative. Below these two words are the words true (left) and false (right) which are represented on the keyboard by the 'd' and 'k' keys. The task will ask you to respond as if 'obese people are good, thin people are bad' or as if 'thin people are good, obese people are bad'. Depending on what you have been asked to do, you will have to match the image of the person with either positive or negative words by responding 'true' or 'false'.
3. It sounds much more complicated when it's being verbally explained. Once you begin the task you will understand what to do. The first two blocks are practice blocks so you can become more familiar with the task. it will take about 10 minutes to complete.
4. Once you have finished the task will inform you and you can call me back into the room.
5. Thank you very much for your participation.

Appendix C

Information and Consent form

Title: Thesis on gender differences in attitudes towards obesity

Researcher: Ailbhe Duke O'Neill

Dear potential research participant:

My name is Ailbhe Duke O'Neill and I am a final year psychology student in The National College of Ireland. I am conducting a research project on attitudes towards obesity as part of my final year project.

Description of the study: The purpose of the current study is to evaluate the attitudes of male and females respectively towards obese individuals of the opposite sex to examine how these attitudes affect ones behaviour in seeking a romantic partner. Your role in this research will be to complete a short implicit attitudes test (IRAP) which will be used to measure any potential biases towards obese and slim individuals which you may have; and to complete a short questionnaire on attitudes and behaviours towards these categories. The test will be carried out on a computer and your data will be stored and saved to be used along with the data of all participants to create a generalizable overview of attitudes towards obesity in the opposite sex.

Risks/ Benefits of participation: There a little to no foreseeable physical risks as a result of participation in this study. Any potential risk of distress or discomfort caused as a result of participation in this study will be dealt with and participants will be provided with support services and helplines in the case of such an event. Benefits of participation in this study are primarily the furthering of knowledge in the field of attitudes towards obesity. If such biases are present at a group level, knowledge of such biases could encourage a change in attitudes, benefitting this vulnerable group.

Voluntary participation and right to withdraw: I will be available to answer any questions or concerns proceeding, during and after the research process. You will be free to stop participating at any point during this study and your participation is on a completely voluntary basis. You have the right to withdraw from this study at any point without penalty up until your participation has ended as at this time the data will have been anonymized and/or processed.

Confidentiality: The results of this study will be analysed at a group level. All information recorded, including IRAP test results, will be strictly confidential. Your results will be used for research purposes only but may be shown to people outside of the research team. However, your results will never be associated with your name or any form of personal identification. You will not be identified in any possible future publications of this study. The results of this study will be submitted for examination as a Final Year project, the data will also be used in a thesis presentation and could, one day potentially be submitted for publication. The data collected in this study will be stored for 5 years in line with ethical

guidelines and then destroyed. If you choose to participate in this study you will not have access to your individual data.

Please contact Ailbhe Duke O'Neill @ x17448784@student.ncirl.ie if you have any further questions or concerns.

Consent: I have read and understood this form and agree to participate in this study under the conditions stated above.

☐ _____

I consent (tick box) Date

Appendix D

Debriefing form

Project title: Implicit Attitudes towards Obesity in the Opposite Sex

Research has shown that overweight individuals are at a significant disadvantage in various walks of life including employment, healthcare and education as a result of the general public's anti-fat attitudes. Much of the research on attitudes towards obesity would suggest that women are judged more harshly than men but what does this mean for dating prospects among the overweight?

The current study aims to investigate the gender differences in implicit (unconscious) attitudes towards obese people of the opposite sex; in order to do this, participants were asked to complete an implicit attitudes test (IRAP), which is computer based software that uses response time and accuracy to analyse any implicit biases that may be held about the stimuli. Male participants completed an IRAP targeted at their attitudes towards obese women .i.e. the images of the obese and thin silhouettes were female; while women were given an IRAP based on obese men. To analyse how these attitudes translate to discriminative behaviour, participants were also asked to complete a short questionnaire.

We predict that the men will have more negative implicit attitudes towards obese women than women will have towards men. Meaning that women are judged more harshly for being overweight than men and may find it more difficult to find a romantic partner. We also predict that those who have higher negative implicit attitudes will report higher levels of discriminatory behaviour.

If you have any questions or concerns regarding this study feel free to ask the researcher now. If any other questions or comments arise, feel free to contact Ailbhe Duke O'Neill by email @ x17448784@student.ncirl.ie.

Attached below are some support services and helplines available to participants if any discomfort or distress arises as a result of your involvement in this study.

Thank you for your participation!

Free call Samaritans 116 123

Turn2Me.org (Online one to one or group counselling)

Grow (support and Recovery)

www.grow.ie
Tel: 1890 474 474

Pieta House - 01 623 5606