# The Social Psychological Study of the Development of Weight Stigma: Testing Interventions to Reduce Weight-Based Prejudice in Children and Adults.

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## Terminology

Interventions designed to reduce weight stigma are often problematic in that they are unintentionally stigmatising, due to the language used. Attempts have been made through research and roundtable discussions with experts, scholars, medical professionals, and affected individuals to reach a consensus on appropriate terminology in the fight against weight stigma (e.g. Meadows & Daníelsdóttir, 2016; Thomas, Hyde, Karunaratne, Herbert, & Komesaroff, 2008; Wadden & Didie, 2003).

Some professionals (academic and medical) advocate the use of person-first language for those with obesity, claiming that calling someone an "obese person" is more stigmatising (Fruh et al. 2016). Yet people-first language is employed to talk about disease and originates from disability advocacy (Blaska 1993), thus taking this approach is argued to be more stigmatising as it implies that individuals are burdened with the disease of obesity, when in reality that may not be the lived experiences of many (Meadows & Daníelsdóttir, 2016). For example, Meadows and Daníelsdóttir note that many research attempts at identifying an appropriate, non-stigmatising term to address "obese" individuals have in fact been biased themselves by setting out with a negative origin, "the very act of labeling is a process of othering, one that creates a distinction between us and them" (Meadows & Daníelsdóttir, 2016, pg. 1).

The term "obesity" is used as an objective and neutral term, yet when asking individuals of higher-weight what they prefer, the majority find the term offensive and much rather prefer "fat" or "overweight" (Thomas et al., 2008), however other studies have found that some individuals strongly dislike the term "fat" (e.g. Wadden & Didie, 2003). Further, the terms "overweight" or "average-weight" suggest that there is an ideal weight that all should aspire to be, and that anything above this weight is bad. Whilst the term "obese", is a medical term implying disease and when

used to describe all larger bodied individuals, comes with an attached stigma (see for e.g.; Calogero, Tylka, & Mensinger 2016). For further understanding of why fat or larger body types are not necessarily unhealthy or 'bad' see the Health at Every Size® theory (Bacon, 2010).

Despite such efforts, there remains little consensus on the most appropriate terms to use in research to identify a larger-bodied individual. However, the term "fat" seems as though it may be moving towards higher acceptance in the body equality movement (Meadows & Daníelsdóttir, 2016). This thesis will therefore use terms such as "fat", "fat bodies", "higher-weight", "larger-bodied" in an attempt to be mindful of the potential harm that these labels cause. The terms "obese", "overweight" and "average-weight" will be used when necessary to describe existing research using such terms, and the terms will appear in inverted commas.

## Thesis Abstract

The prevalence, strength, and impact of weight stigma is demonstrated throughout this thesis. Observational, factual, and empirical evidence is provided to highlight the pervasiveness of weight bias and the need to address this kind of stigma. The thesis draws on social psychological literature to identify a suitable intervention to reduce weight stigma, namely the imagined intergroup contact intervention (Crisp & Turner, 2009). The research carried out also examine and acknowledge the function of one's group in determining attitudes and behaviour towards others.

Study 1 used the Developmental Subjective Group Dynamics model (Abrams, Rutland, Cameron, & Marques, 2003a) to examine the development of children's weight stigma in an intergroup context. The study explored the ways in which children's attitudes and behavioural intentions towards fat peers may differ dependent on the peer's attributes, such as group membership, and also how these attitudes and intentions change with age.

The imagined contact intervention was employed in Study 2 in an attempt to reduce 6-11-year-old's anti-fat attitudes and behavioural intentions. Considering the findings from Study 1, Study 2 also examined whether the intervention was more or less successful in reducing stigma towards an ingroup or outgroup member. Study 3 extended on Study 2 by examining the transfer of imagined contact effects from the imagined target to unimagined ingroup and outgroup targets.

Following several unexpected findings from the interventions carried out with children; Studies 4-6 examined the effectiveness of the imagined contact intervention in reducing adults' weight stigma. In Study 4, the role of prior contact with fat people was examined and specifically how prior contact influences the imagined interaction. Study 5 replicated the findings of Study 4 and provided new

evidence for the role that disgust plays in the effectiveness of imagined contact. Finally, Study 6 again replicated the findings of Studies 4 and 5 and employed a novel 'layered stigma' approach to examine the effectiveness of imagined contact in reducing weight stigma, in comparison to homophobic attitudes.

This thesis presents studies that examine weight stigma and approaches to reduce weight stigma, in ways never employed before. The influence of group dynamics in children's weight biases are determined, as well as the influence of disgust, prior contact and weight stigma itself on adults' weight biases. The use of a 'layered stigma' approach to imagined contact for the first time, provides an opportunity to examine the intervention's ability to target more than one type of prejudice; as well as the chance to compare the strengths of two types of stigma. Overall, this thesis highlights the stubborn and problematic strength of weight stigma in terms of prejudice-reduction strategies. Further theoretical implications and future directions for research are discussed in Chapter 6.

## Thesis Aims and Overview

This thesis aims to examine the development of children's weight stigma in an intergroup context, and test the effectiveness of the imagined contact intervention in reducing children's weight stigma.

Chapter 1 provides an introduction to the existence of weight stigma through contemporary examples, along with empirical evidence for the existence and strength of weight stigma across different contexts and ages. Chapter 1 details the existence of weight stigma in children and adults, as well as the findings of experimental studies that demonstrate the strength of weight stigma in comparison with other prejudices. The consequences of weight stigma for children and adults are also examined in Chapter 1, through empirical evidence of the effects on personal relationships as well as physical and mental health. And finally, existing interventions to reduce weight-based prejudice and the evidence for their effectiveness are detailed.

Chapter 2 focuses on the Imagined Intergroup Contact intervention. This chapter briefly details the background of the intervention, including explanations of direct and extended contact. Detailed evidence is then provided for the effectiveness of imagined contact in reducing multiple types of prejudices in both children and adults. Chapter 2 finishes with a focus on the use of imagined contact as a tool to reduce weight-based prejudice and discrimination.

Chapter 3 presents the first study of the thesis, which sets out to examine children's weight stigma in an intergroup context. Children aged between the ages of 6-11 were asked to evaluate attitudes and behavioural intentions towards slim or fat targets who belonged to an ingroup or an outgroup. The design of Study 1 is based upon similar previous research grounded in the Developmental Subjective Group Dynamics model, which allows for the measurement of prejudice and discrimination

towards a target based on group norms, group membership and other aspects, such as body size.

In Chapter 4, two studies seek to reduce children's weight stigma using the imagined contact intervention, whilst paying attention to the age and group-related trends identified in Study 1. Both Studies 2 and 3, test the effectiveness of the imagined contact intervention by measuring children's attitudes and behavioural intentions towards slim and fat targets.

Chapter 5 present three studies, all of which are conducted on adult populations. The purposes of these studies are to explore and answer questions regarding the imagined contact intervention that were raised from the findings of Studies 2 and 3. Study 4 examines the effectiveness of imagined contact in reducing adults' weight stigma, whilst Study 5 also does with the additional consideration of the disgust emotion. Finally, Study 6 compares the effectiveness of imagined contact in reducing weight bias and homophobia.

Chapter 6, the final chapter of this thesis presents the general discussion. This chapter draws together the learnings from each of the empirical chapters, highlighting the novel contributions of this thesis, and also makes suggestions for the future interventions and research into weight stigma.

# Chapter 1: An Introduction to Weight Stigma: The Existence, Consequences, and Attempted Reduction, of Weight Stigma in Children and Adults

*This first chapter provides a comprehensive introduction to weight stigma. The existence and strength of weight stigma across different contexts and age groups is presented first. Anecdotal and empirical evidence demonstrate the pervasiveness of weight stigma in; contemporary society, education, healthcare and employment. Next, the consequences of weight stigma for both children and adults are presented; including the impact on healthcare and education. Finally, empirically tested interventions designed to reduce weight-based prejudice in both children and adults are detailed.*

## What is Weight Stigma and how Pervasive is it?

According to body mass index (BMI) calculations, 61% of adults and 23% of children aged 4-5 were classed as "overweight" or "obese" in the UK in 2016 (Baker, 2018). In fact, obesity rates are on the rise with more than 1.9 billion adults classed as "overweight" worldwide – almost three times as many as in 1975 (WHO, 2018); and the number of 'obese' children globally has risen tenfold in just four decades (from 1975 to 2016; Abarca-Gómez et al., 2017). With increasing prevalence of obesity comes increasing numbers of people at risk of discrimination because of their body size. Indeed, studies have shown that weight-based discrimination is on the rise, with an increase of 66% in just one decade (1995-1996 data compared with 2004– 2006 data, Andreyeva, Puhl, & Brownell, 2008). Moreover, whilst research has focused attention on the rising obesity rates and accompanying stigma in the global north; new research shows that the stigmatisation of fat individuals has spread to the global south also, including in countries where severe undernutrition remains a public crisis and where fat-positivity is the cultural norm (Brewis, Sturtz Sreetharan, & Wutich, 2018). Furthermore, as will become

evident throughout this chapter, the stigmatisation of fat individuals is omnipresent and the consequences dire, yet, there are no laws to protect against the discrimination of individuals based upon their body size.

The following sections will present evidence of the strength and pervasiveness of weight stigma in; contemporary society, education, healthcare, and employment.

**Weight Stigma in Contemporary Society**

Arguably, one of the main reasons for the strength and prevalence of weight stigma is the social acceptability of prejudice and discrimination of fat bodies, as highlighted in an experimental study in which a confederate making racist remarks was rated as significantly less favourable than a confederate making anti-fat remarks (Crandall & Thompson, 1993). The norm or social acceptance of weight-based prejudice stems from the perpetuation of this prejudice by official sources or people in influential positions, such as the National Health Service (NHS), research and charity organisations, and mainstream journalists and celebrities. For example, in recent news, a research team from the University of Oxford were advocating for a meal replacement diet, consisting of shakes and soups, to be implemented by the NHS and GPs as a treatment for obesity (Astbury et al., 2018; BBC, 2018). Though the research team claim that the diet is effective in long-term weight loss, other evidence exists to suggest that these types of diets are not only ineffective in the long-term (López, Bacardí, De, & Jiménez, 2011; Sumithran et al., 2011) but more importantly they are highly stigmatising as they assume personal responsibility for weight gain, rather than other medical or genetic determinants (Mattingly, Stambush, & Hill, 2009). Furthermore, the study in question (Astbury et al.) reports adverse effects in an astonishing 51% of patients, whilst stating that the meal replacement diet produces better results than traditional GP referred programmes; yet the only

benefit reported is weight loss, other measures of physical and mental health are ignored for the sake of the promotion of the diet.

The danger of focusing on the weight loss of 'overweight' persons rather than other indicators of health, is also evident in the instances of eating disorders. Despite the National Institute for Health and Care Excellence (NICE) guidelines stating that a low BMI is just one of the 14 signs of an eating disorder, adults in the UK are not diagnosed with anorexia if they have a BMI above 17.5. However, cases do exist of larger-bodied individuals with eating disorders such as anorexia. Unfortunately though, the inability to see past the body weight of these individuals is extremely harmful; as is evident in the case of a woman who, despite unintentionally dropping 4 dress sizes in a year, along with other symptoms, was still not diagnosed with anorexia due to her high BMI (Francis, 2018).

The social derogation of fat individuals, and the normality of this derogation, was once again perpetuated earlier this year, in a campaign by Cancer Research UK. The adverts (see Figures 1.1 and 1.2) posted by the charity on billboards and bus stops aimed to educate the public that obesity was the second leading cause of cancer. Instead, however, the adverts were insensitive and stigmatising of fat individuals, and further perpetuate the social acceptance of weight-based discrimination as they signal that obesity is personally controllable and that 'obese' persons are a burden on the NHS. Furthermore, anecdotal evidence shows that larger-bodied individuals with cancer are often diagnosed late or misdiagnosed altogether, resulting in the need for more aggressive cancer treatment, or even death. Stigmatised individuals argue that it is the combination of reluctance to visit the doctors for fear of being judged about body size and having symptoms ignored or misdiagnosed as 'fat symptoms' that lead to these tragic cases and perhaps even

contribute to the correlation between obesity and cancer prevalence (Tovar, 2016; Frazer, 2017).

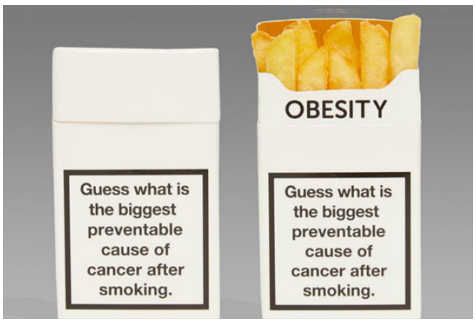


*Figure 1.1* . Chapter 1 An example image from Cancer Research UK's obesity campaign. Image obtained from Campaign Live website (2018).

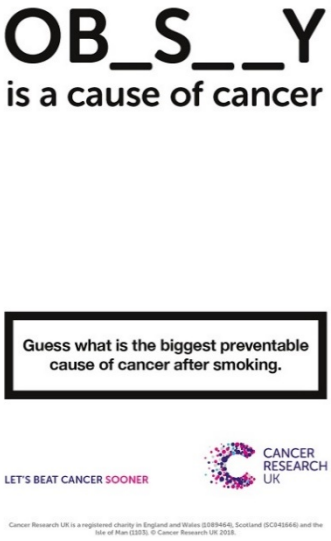


*Figure 1.2.* Chapter 1. An example image from Cancer Research UK's obesity campaign. Image obtained from Cancer Research UK website (2018).

Another example of the way in which research on obesity has been presented in a derogatory manner, is an article in the Wall Street Journal magazine which reports on a study examining the weight stigma experienced by company CEOs (Kwoh, 2016). The study, conducted by King and colleagues (2016) found that despite holding prestigious, high positions in the company hierarchy, CEOs with a larger waist circumference were still susceptible to weight stigma. Specifically, larger-bodied CEOs were rated more negatively by employees on evaluations such

as task performance and conscientiousness. The aim of King et al.'s study was to highlight the prejudice that even successful individuals are susceptible to due to their physical appearance; however, the Wall Street Journal reported the findings of this study in a manner opposing the original aims of the study. Instead of highlighting the stigma faced by larger-bodied CEOs, the Journal used the opportunity to further perpetuate the discrimination of fat people, by suggesting to aspiring CEOs that a necessary requirement for achieving their career goals is to lose weight. Moreover, the journal scaremongers aspiring business people by naming several 'overweight' CEOs who died early – many of whom died of causes unrelated to obesity – and therefore implying that being fat certainly leads to a premature death as well as unfulfilled career expectations.

A review of multiple forms of media found that the majority of media outlets portray larger-bodied individuals in a stigmatising manner (Ata & Thompson, 2010). In addition, a more recent content analysis of online news imagery revealed that 72% of images portrayed 'overweight' and 'obese' individuals in a stigmatising manner; with a focus on the stomach area, sometimes with heads cut out of the images and were significantly more likely to be shown eating or drinking than in images of thinner individuals (Heuer, McClure, & Puhl, 2011). Findings that this thesis can attest to – the experimental studies of this thesis intended to use real images of thin and fat bodied individuals, rather than pencil drawn sketches and silhouettes. However, searches of the top image databases such as iStock, Shutterstock and Bigstock were unsuccessful in obtaining neutral or positive images of larger models. When an explicit search was made for a full body picture of a 'fat' adult model, the search results returned images of fat adults either eating or exercising (for example, see Figure 1.3). Worse still, when conducting a search for the same types of images of child models, the results were images of fat children eating or depicted as sad and

struggling to find clothes to fit (See for example, Figure 1.4). Whilst not a scientifically rigorous investigation, the fact that such images were difficult to obtain for the use of empirical research does highlight the lack of non-stigmatising images readily available in the media. Similarly, analyses of 349 articles from 6 different UK newspapers found that newspapers focus on the controllable causes of obesity (e.g. eating and exercise behaviour) and accompanying images or drawings of obesity are negative and likely contribute to the public's anti-fat attitudes (Flint, Hudson, & Lavallee, 2016). Indeed, an experimental study shows just this, that anti-fat attitudes can originate from stigmatising images, as participants who viewed stigmatising portrayals of fat individuals expressed more negative attitudes towards 'obese' people, than people who viewed positive pictures (McClure, Puhl, & Heuer, 2011).

Weight stigma is also perpetuated through mainstream media and prominent figures, such as popular news sites and celebrity journalists. In 2017, Giles Corren, a reporter for The Times newspaper wrote a 'comical' article in response to the NHS' proposal of building Healthy New Towns[1]. In the article Corren contributes his ideas for the proposals, where he calls for narrowed doors into pubs and restaurants, and "Heffalump traps" on the outskirts of upmarket parts of town, that will see anyone weighing over 14 stone fall down the trap and into a fiery pit (Corren, 2017). When these types of comments are published in a popular British newspaper, particularly in a humorous manner, not only do they permit the stigmatisation of larger-bodied people, but they also demote the severity of such comments. Another prominent figure in the UK press is Piers Morgan. Recently, Morgan wrote an open letter, to plus sized model Tess Holliday, after she featured on the front cover of

[1] Healthy New Towns are purpose-built new towns and communities designed to improve and maintain residents' health in terms of mental health and physical health which includes; plenty of green space for improved air quality, mental health and physical activity.

Cosmopolitan magazine. Morgan wrote that Holliday should feel shame over her body size and should lose weight (Morgan, 2018).

Attitudes such as those expressed by Corren and Morgan in a public sphere legitimise and increase the social acceptability of stigmatising remarks against fat people. Popular and easily accessible social media platforms such as Twitter, provide a public forum for the expression of such remarks. An analysis of tweets about obesity revealed that humorous tweets were the most frequently retweeted tweets, and of these derogatory tweets about obesity were more likely to be retweeted than non-derogatory tweets (So et al., 2016). Furthermore, coding of over four and a half thousand tweets containing the word ‘fat’ that were tweeted within a four-hour time period revealed only 11% positive tweets, compared with 57% negative tweets, which included fat-stereotypical themes of; gluttony, unattractiveness and stupidity (Lydecker et al., 2016). These findings are particularly important considering the potential influence on young people as the majority of Twitter users are young people (Hootsuite, 2018).


*Figure 1.3.* Example from image searches conducted for larger-bodied adult models. Image obtained from Shuttershock (2018a).


*Figure 1.4.* Example from image searches conducted for larger-bodied child models. Image obtained from Shuttershock (2018b).

Media portrayals of larger-bodied individuals are negative in TV and film as well as newspapers and online articles. Himes and Thompson (2007) found that larger-bodied individuals are more likely to be cast as minor characters who are portrayed as engaging in fat-stereotypical behaviours (such as consuming junk foods), are ridiculed, and are less likely to have romantic relationships. A recent content analysis of popular television shows revealed that 50% of shows analysed contained at least one instance of weight-stigma. Of more concern, is the finding that compared with 8% of adult-target shows, over 55% of shows targeted at teens contained weight-stigmatising comments. Moreover, in almost half (41%) of instances, stigmatising comments towards fat targets was followed by audience laughter (Eisenberg, Carlson-McGuire, Gollust, & Neumark-Sztainer, 2016). In August 2018, a Netflix programme titled “Insatiable” was released (despite a petition demanding its removal) in which a larger-bodied teenage girl is bullied and

physically attacked at school. However, the girl transforms into a popular teen after the summer holidays following weight loss. The message being sent to young people here is that; being thin is better than being fat, to expect to be bullied if you are a fat and expect to be loved by all if you are thin. Shows such as Insatiable are not only permitting the discrimination of people based on their body size but they are also sending dangerous messages to young people who are at a vulnerable stage in their lives in terms of body confidence and who also highly value social status and the opinions of their peers.

Sadly, these messages are aired at a much younger age also. For example, "Peppa Pig", a pre-schoolers' TV show that has become popular with children and parents worldwide, with a dedicated theme park in the UK; regularly shames "Daddy Pig" for being fat. Specifically, Peppa Pig and her friends frequently make fun of Daddy Pig's "big belly". In one episode, Daddy Pig gets stuck in the tree house (where the password to enter is "Daddy's big tummy") because his stomach is too big. In another episode, Daddy Pig claims that he feels fit and healthy, but Peppa Pig refuses to accept this and states that he does not look fit because he has a big tummy and proceeds to create an exercise regime for him. As research such as Health at Every Size evidence, a person's weight is not indicative of their health status (Bacon, 2010). Even aside from health issues, the characters in Peppa Pig openly laugh and discriminate against Daddy Pig because of his size and is something that parents are noticing that their very young children are absorbing and applying to those in their own lives (see for example, McCombs, 2017). Research examining weight stigma in popular children's movies found that out of 32 children's movies from recent years, an astonishing 84% contained instances of weight stigma. The pervasiveness of weight stigma in these movies is exemplified by one rater's observation that the larger-bodied character in a particular children's movie was frequently complaining

about their feet hurting when walking and "frequently depicted as being stupid and lazy" (Howard et al., 2017, p. 5). Young children's education is also being negatively affected by fat stigma, as is evident in an article published in the Daily Mail, where a mother admits that despite her child's nursery's good credentials; she moved her child to a different nursery for fear of a lack of good role models as the nursery workers were 'overweight' (Freeman, 2017).

**The Relative Strength of Weight Stigma**

As evidence of the strength and prevalence of weight stigma, multiple studies have examined weight-based prejudice in comparison with other targeted prejudices. For example, compared with judgements of 15 other stigmatised social groups (including; gay people, mentally ill, drug addicts and welfare recipients), 'obese people' were rated more negatively than 11 other social groups, but less negatively than; politicians, homeless people, smokers, and drug addicts (Vartanian, 2010). Another study revealed that bias against larger-bodied individuals was significantly stronger than bias against Muslims and gay people (Latner, O'Brien, Durso, Brinkman, & Macdonald, 2008). Women reported similar frequencies of weight discrimination as they did age and race-related discrimination, with weight discrimination the fourth most common type of discrimination experienced by both men and women in a survey of over 2200 adults (Puhl, Andreyeva, & Brownell, 2008). In experimental studies, adults are more negative towards fat targets than non-fat targets on measures of traits, behavioural intentions and implicit and explicit attitudes (Brochu & Morrison, 2007) – a finding that is consistent across nations (Puhl, Latner, O'Brien, Leudicke, Daníelsdóttir, & Forhan, 2015). In fact, weight stigma is so ingrained that participants who were shown pictures of fat or non-fat women for a mere 15 milliseconds, assigned more negative traits to the larger target than the thinner target (Bessenoff & Sherman, 2000). Further, odourless substances

were rated as fouler smelling when participants viewed larger-bodied individuals than when they viewed lower-weight individuals; an effect that was stronger amongst larger-bodied participants themselves (Rodriguez, Tomiyama, & Ward, 2015). And most concerning, is the finding that fat individuals were less likely to be helped in a serious traffic incident that thinner individuals (Swami, Chan, Wong, Furnham, & Tovée, 2008).

The comparative strength of weight stigma is evident in children also; with children showing least preference for 'overweight' peers and aggressive peers, compared with several other peers with undesirable characteristics (8-14 yr. olds; Barnett, Sonnentag, Livengood, Struble, & Wadian, 2011) and in comparison to peers with different forms of disability (Latner, Stunkard, & Wilson, 2005). Research has shown that children are less accepting of 'obese' peers than adults are, highlighting the need for early intervention (Latner, Stunkard, & Wilson, 2005). In fact, children as young as two years old assign more negative traits to larger-bodied play dolls than to 'average-weight' dolls (Turnbull, Heaslip & McLeod, 2000) and show preference for looking at 'average-weight' figures longer than 'overweight' figures (Ruffman, O'Brien, Taumoepeau, Latner, & Hunter, 2016). By four-years-old, children show distrust in an 'obese' person compared with a 'non-obese' person (Jaffer & Ma, 2015) and studies conducted on 5-11-year-olds revealed children's preference for thinner playmates (Palmer & Rutland, 2011; Penny & Haddock, 2007). Primary school aged children also assign more negatives traits to larger-bodied targets and show least preference for 'overweight' targets when asked to pick a target to; be friends with, play with at school, and play with at home. Even more concerning is children's subscription to the 'thin-ideal'– the concept that the ideal girl or women should have a 'thin' body type - as shown by their preference of the 'underweight' target as a playmate compared with both the 'average-weight' and

'overweight' targets (Palmer & Rutland, 2011). Examining the development of children's weight stigma, Solbes and Enesco (2010) found that as children age they exhibit less explicit prejudice, but the strength of their implicit anti-fat prejudice does not change; suggesting that children become socially smart about what type of behaviour or attitude to display.

It is not surprising that anti-fat attitudes are held from such a young age when one considers the sources of such attitudes. Along with doctors, family were found to be the most frequent sources of weight bias (Puhl & Brownell, 2006), with 37% of children who attended a weight-loss camp reporting that their parents had teased or bullied them about their weight (Puhl, Peterson, & Leudicke, 2013). Another study found that individuals with a higher BMI at age 21 experienced a continued decline in family support and increases in family strain, in comparison to individuals with a lower BMI (Carr & Friedman, 2006). In fact, the influence of parental biases starts very early on; with maternal anti-fat attitudes positively related to and predictive of children's anti-fat attitudes (Holub, Tan, & Patel, 2011) and infant looking preferences (Ruffman et al., 2016).

**Weight Stigma in Education**

Anti-fat attitudes are held by children of all ages, however a study examining the developmental differences in anti-fat attitudes revealed that negative attitudes towards larger-bodied individuals were strongest amongst pre-schoolers (Iobst et al., 2009). Additionally, pre-school children show preferences for thinner playmates; with less than 6% of children choosing 'obese' targets as playmates, compared with 39% choosing a thin playmate, and the majority (55%) choosing a playmate of 'average-weight' (Kornilaki, 2014). The concerning finding that young children overwhelmingly prefer thinner playmates was further examined in a study of young children's (aged 3-5) internalisation of the thin-ideal. Girls as young as 3 years old

showed most negativity towards the fat targets and most positivity towards the thin targets, as opposed to the 'average-weight' targets, on measures of attitudes and playmate preferences. Furthermore, pre-school girls demonstrate internalisation of the thin-ideal by preferring a thin character to represent themselves in game play over the fat or 'average-weight' characters. The girls also showed strong investment in their character decisions and the thin ideal, as they more readily switched their character pieces from an 'average-weight' or fat piece to a thin character piece when asked to do so, than they did from an 'average-weight' or thin character piece to a fat character piece (Harriger, Calogero, Witherington, & Smith, 2010).

Children's attitudes and social decision making towards fat peers are not formed solely on an interpersonal basis, instead it is clear that children consider group norms and the implications for group dynamics. Penny and Haddock's (2006) study demonstrated a 'mere proximity effect' for weight stigma in children – a phenomenon whereby a person is stigmatised for being in the presence of a stigmatised target. Specifically, children aged between 5 and 10 years showed preference for 'average-weight' playmates over larger-bodied playmates. However, when the 'average-weight' target was presented with 'overweight' targets in the background, female participants liked the 'average-weight' target significantly less, compared with when they were presented on their own. Girls were also more negative towards the 'overweight' target when presented with background 'average-weight' targets, than when they were presented alone. Not only does this study highlight the negative effects that weight stigma has on others who are not the original target of the stigma; but it also suggests that children are aware of who 'should' belong to particular groups. Increased derogation of an individual when they appear as part of a group of people who are not a similar body size as the target,

than when the target is presented alone, is evidence of the importance that children place on group membership and group homogeneity.

The consequences of distinguishing between peers who do and do not belong to the group because of their body size is made clear in studies examining social exclusion and weight stigma in the school environment. In a study of children aged 8-12, compared to non-fat children, 'overweight' children were reported to be less liked by their peers, more likely to be socially rejected and at higher risk of name-calling (Nabors et al. 2011). Adolescents (aged 11-16) also expressed a preference for spending time with thinner peers during academic, social and recreational activities, compared with a fatter peer (Greenleaf, Chambliss, rhea, martin, & morrow, 2006). According to over 5000 teachers and education professionals who reported on bullying issues in schools, weight-based bullying incidents were reported to be the most problematic types of bullying in the classroom; even above incidents of race and sexual-orientation based bullying (Bradshaw, Waasdrop, O'Brennan, 2013). Similarly, adolescents report being 'overweight' as the primary reason for students being bullied or teased in schools (Puhl, Leudicke, & Heuer, 2011), and 42% of teens reported this weight-based bullying to be instigated by teachers during physical activity classes (Puhl, Peterson, Leudicke, 2013). Weight-based discrimination goes beyond school age and into further education; where one study revealed that following face-to-face interviews; larger-bodied graduate school applicants were less likely to be offered a place than thinner applicants (Burmeister et al. 2013). Such widespread discrimination during school years, from peers, parents and teachers has devastating consequences for young people and their futures. A study examining the quality of life for severely 'obese' children and adolescents found that their quality of life was significantly ($p < .001$) lower compared to their lower-weight peers, and was comparable with the quality of life for children with

cancer. Their physical, social, emotional and school functioning were all negatively related to BMI (Schwimmer, Burwinkle, & Varni, 2003). Further evidence of the consequences of weight stigma for children are detailed in a later section of this chapter.

**Weight Stigma in Healthcare**

Evidence for obesity stigma in healthcare is abundant, see for example Phelan, Burgess, Yeazel, Hellerstedt, Griffin, and Van Ryn (2015). Healthcare professionals of all levels show varying degrees of prejudice and discrimination towards higher-weight individuals. Consequences of which are serious and include the avoidance of healthcare (Drury & Louis, 2002; Mitchell, Padwal, Chuck, & Klarenbach, 2008). Furthermore, health campaigns aimed at encouraging weight loss are often stigmatising and can result in increases in weight (Forhan & Salas, 2013; Udo & Grilo, 2016).

An example of a healthcare campaign that is unintentionally stigmatising comes from the National Institute for Health and Care Excellence (NICE), who provide evidence-based guidelines for healthcare professionals in England, to improve health and care services. One of the justifications for the need to encourage public weight loss as stated in the NICE guidelines on "Preventing Excess Weight Gain" (NG7) is that, those classed as 'overweight' or 'obese' on the BMI scale are at risk of "stigmatisation and discrimination because of their weight" (NICE, 2015, p. 7). Hann, Frawley and Spedding (2016) argue that this position, that the victim of weight stigma should lose weight in order to avoid discrimination, is itself an unfair and vilifying suggestion, making the target accountable for the perpetrator's actions. Further, coming from an official source, this encourages the beliefs that a) obesity is personally controllable, b) fat individuals have negative characteristics and are morally wrong, and c) stigmatisation and discrimination of fat individuals is socially

acceptable; expected even. Further, Hann and colleagues claim that this particular set of guidelines are not based on solid evidence, and the general advice of eating less (calories) and moving more is unhelpful, stigmatising, and will not result in the desired effects; as evidence shows that the dietary advice given by these guidelines contradict the scientific evidence. Nonetheless, the onus is continually placed on the individual and their lack of self-control, whilst a 'normal' and 'healthy' body size (based on BMI) is promoted. Thus, when adherence to these guidelines fail to reduce levels of obesity across the nation, it will not appear to be the fault of the NICE for disseminating inaccurate and stigmatising information, but instead it is the "stigmatised group's failure to heed the dominant group's proscriptions" (Hann et al., 2016, p. 428). Instead of making 'obese' individuals responsible for the prejudice they experience, and to reduce the negative health-related consequences of weight stigma, Carr & Friedman (2005) suggest that public health interventions should focus on the perpetrators of weight-based discrimination.

When an official body releases national guidelines for healthcare professionals that are (unintentionally) stigmatising and accusatory of fat people, it is not surprising then that the most frequent sources of weight bias experienced by fat individuals is from doctors and families (Puhl & Brownell, 2006). In fact, healthcare students reported a culture of acceptability of weight stigma, as negative attitudes and behaviour towards patients with obesity from other healthcare professionals - including from their professors, were commonly observed (Puhl, Leudicke, & Grilo, 2014). Healthcare professionals' endorsement of anti-fat stereotypes such as "lazy" and "uncooperative" has resulted in many larger-bodied individuals not receiving due health care and advice, as a result of doctors believing that these patients will not comply with advice or that the patients do not possess the resources to do so (DiGiacinto, Gildon, Stamile, & Aubrey, 2015). Even healthcare professionals who

specialise in obesity display explicit and implicit anti-fat biases, with explicit endorsement of anti-fat stereotypes such as “lazy”, “stupid, and “worthless” (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003).

These negative perceptions of ‘overweight’ and ‘obese’ individuals held by those in healthcare professions result in explicit discrimination and a danger to the health-related care and outcomes of such patients; arguably with women at even more risk, as is evident through studies of ‘obese’ women’s experience of reproductive healthcare. “You’re the obese patient. You’re the obese patient. You’re the obese patient. That’s all I heard” – a participant from one such study, describing her experience immediately after an emergency caesarean section, when the doctor was talking to a group of medical students about the patient and referred to her as “the obese patient”. Not only was the description of the patient as “obese” irrelevant to her medical situation but it also showed a lack of sensitivity towards the patient and disregard for her emotional state, post-emergency surgery – an event that has “haunted” her ever since (Bombak, McPhail, & Ward, 2016, p. 98). Another participant in Bombak et al.’s study described her doctor’s outright refusal of care due to her weight, when she requested the removal of a contraceptive device so that she could conceive a baby. The doctor refused her request, stating that “it would be a disaster, if [she] got pregnant” (p. 98), a statement that supports the finding that larger-bodied pregnant women are more likely, than other pregnant women, to be judged as bad potential mothers and classed as a risk to their future children and the state (McPhail, Bombak, Ward, & Allison, 2016).

**Weight Stigma in Employment**

A meta-analysis of 25 studies on weight stigma and employment/workplace outcomes provides evidence for a significant anti-fat bias on evaluative workplace outcomes, which include; hiring decision, promotion decision, predicted success,

suitability, or performance evaluation (Rudolph, Wells, Weller, & Baltes, 2008). An experimental study from the 70's revealed that fatter business executives were less likely to be promoted into higher-paid positions, compared to their thinner counterparts (Larkin & Pines, 1979) – a finding that still holds today, as recent research (detailed earlier) found that fat CEOs were perceived more negatively than slim CEOs (King et al., 2016). Indeed, a recent field experiment examining actual hiring decisions demonstrated a strong anti-fat bias in employment decisions. In the first study of its kind, Rooth (2009) designed a field experiment to evidence that larger-bodied individuals were less likely to be hired than slimmer individuals. Almost 1000 employers unknowingly participated in the field study, in which bogus applications, that were experimentally manipulated to have been completed by an 'average-weight' or an 'obese' person, were submitted to real jobs adverts. 'Obese' applicants received significantly fewer call-backs or invitations to interview than 'non-obese' applicants. Using this behavioural evidence, Agerström and Rooth (2011) later invited the same employers to complete implicit and explicit measures of anti-fat prejudice specific to workplace performance. Hiring managers' implicit (but not explicit) anti-fat bias was strongly related to and predictive of real-life decisions to interview applicants of different body sizes. That is, the stronger employers' association between heavier body weight and poor work performance was, the less likely they were to invite a person with a heavier body weight to interview. Whilst the hiring managers' explicit biases were not related to their hiring decisions; a lab-based study did find that when asking participants to honestly report whether or not they made hiring decisions based on the applicant's BMI, applicant's BMI was a significant and robust predictor of hiring decisions; with fatter individuals less likely to be employed by the participants (Swami et al., 2008).

In addition to being less employable, fatter individuals are consistently stereotyped with traits representative of an undesirable employee, such as; lazy, lacking willpower, indulgent, and undisciplined (Grant & Mizzi, 2014). A study examining both hiring recommendations and person-job matching in the fitness industry, revealed that fat applicants were not only rated more negatively on all measures (attributions, hiring recommendations and person-job fit); but thin and unqualified applicants were rated as more closely fitting to the job, and were recommended for employment over the highly qualified, larger-bodied applicants (Sartore & Cunningham, 2007). Similarly, Larkin and Pines (1979) found that in addition to differential hiring decisions and assignment of work-related traits; participants rated themselves as more likely to be hired for the role in consideration, after viewing the larger-bodied applicant than after viewing the smaller-bodied applicant. Furthermore, the aforementioned mere proximity effect found in children's social decision making is also evident in employment settings. Hebl and Mannix (2003) found that applicants were stigmatised, through more negative ratings on employment related traits, as a result of sitting next to a fat individual. This finding remained true regardless of; the perceived depth of the relationship between the applicant and the fat individual, the positivity of the fat individual, or the participant's own anti-fat bias.

**Summary of the pervasiveness of weight stigma**

The existence and strength of weight stigma across multiple contexts and age groups has been demonstrated through examples taken from mainstream media, social media, personal anecdotes, and empirical research. The evidence presented here shows that making fun of or discriminating against fat individuals is not only socially accepted, but it can also be expected. The fact that young children's TV shows and movies have been found to contain frequent and normalised instances of

fat-shaming and weight bias, suggests that the consequences for weight stigma may begin early. As empirical evidence also shows that children's anti-fat biases are stronger than adults (Latner et al., 2005), and that children as young as 2 hold negative weight biases (Turnbull et al., 2000), the need for early intervention is clear. The risk of being stigmatised because of body size is not limited to childhood however. The evidence presented above shows that adults are regularly stigmatised by other adults, including by prominent public figures (e.g. journalists). The evidence shows that larger-bodied individuals are affected by weight stigma and targeted in; the media (e.g. Ata & Thompson, 2010), healthcare (e.g. Cancer Research UK; Tovar, 2016), and at work - regardless of their position in the company even (King et al., 2016).

Some of the consequences of weight stigma for children and adults has been presented above. For example; the fact that children prefer to play with thinner peers (Harriger et al., 2010), or the finding that an individual's BMI has a role to play in their chances of employment (Swami et al., 2008). And of great concern, the viewpoint that weight stigma in healthcare can have fatal outcomes (Frazer, 2017). Other consequences of weight stigma for children and adults are presented in more detail in the following sections.

## The Internalisation of Weight Stigma

Many of the studies presented in the next section on the consequences of weight stigma, examine both weight stigma and internalised weight stigma. Therefore, a definition of internalised weight stigma is provided here first.

The internalisation of weight stigma can be defined as holding negative attitudes towards oneself because of one's body weight or size. It is the act of internalising negative social messages about weight, regardless of whether or not one has experienced instances of weight stigma (Durso & Latner, 2008; Latner, Barile,

Durso, & O'Brien, 2014). Internalised weight stigma can result in; changes in mood, self-esteem, and maladaptive health behaviours (WHO, 2017). For example, individuals may stop regulation of eating and weight management behaviours, which in turn continue to contribute to weight gain and weight stigma (Durso & Latner; Ratcliffe & Ellison, 2015). Furthermore, Essayli, Murakami, Wilson, and Latner (2017) demonstrate the risk that individuals of all body sizes are at of internalising weight stigma. Regardless of actual weight, when participants were labelled as "overweight" they were significantly more likely to internalise weight stigma. Yet for 'overweight' participants who were not labelled as "overweight" their levels of internalised weight stigma were similar to 'average-weight' participants who had not been labelled.

## Consequences of Weight Stigma

Synthesising the findings of multiple studies Guardabassi, Mirisola, & Tomasetto (2018) statistically tested the relationship between weight stigma and health-related quality of life in children aged 8–11. The results revealed that lower quality of life was not due to increases in weight or BMI; instead it is increases in experiences of weight-based bullying and discrimination that has a significant, negative impact on quality of life in areas of; physical, social, emotional and educational outcomes. The authors suggest that interventions and treatment programs targeting childhood obesity should prioritise interventions designed to reduce weight stigma, rather than the weight itself (Guardabassi, Mirisola, & Tomasetto, 2018). The remainder of this section will discuss in further detail the multiple consequences of weight stigma across domains of; social relationships and health, including; weight management, exercise, medical health, physical health and disordered eating.

**Social Consequences of Weight Stigma**

Some of the social consequences of weight stigma are clear in the examples in the above section on weight stigma in education. For example, the research presented above shows that compared to non-fat children, 'overweight' children were less likely to be socially included by their peers or chosen as a partner in a game (e.g. Harriger et al., 2010; Kornilaki, 2014; Nabors, et al., 2011). In secondary schools, teens report being 'overweight' as the primary reason for being teased (Puhl et al., 2011), and the instances of such bullying occur more often, even above racist and homophobic bullying incidents (Bradshaw et al., 2013).

Other research demonstrating the social effects of weight stigma focus on the psychological consequences of stigma, and the inevitable negative impact this has on children's ability to socialise. 'Obese' teens are more likely to be victims of peer aggression than their 'non-obese' peers, with 'obese' boys being more likely to experience overt forms of peer-aggression, such as name-calling and physical harassment. Whereas 'obese' girls are more likely to experience relational victimisation, such as social exclusion, which has been associated with further emotional and psychological difficulties such as depression and low self-esteem (Crick, 1997). This study also found that 'obese' teens reported far less satisfaction with their dating life, than 'non-obese' teens, with 'obese' girls reporting decreased likelihood of dating altogether (Pearce, Boergers, & Prinstein, 2002).

Adults too, experience negative impacts of weight stigma on their dating lives. Blodorn, Major, Hunger, and Miller (2016) found that higher-body weight women were likely to express emotions and behaviours that would be detrimental to their romantic life as well as their psychical and mental health. Specifically, they found that these women were more likely to expect social rejection from a potential

dating partner than lower-body weight women; which in turn predicted lower self-esteem and higher stress levels and displays of self-conscious behaviour.

## Health-Related Consequences of Weight Stigma

A review of the health consequences of weight stigma was recently conducted by Puhl and Suh (2015) with the finding that weight-based discrimination and stigma negatively effects areas of health including; binge eating, increased food consumption, physical activity, weight gain, weight loss, and stress. Internalised weight stigma predicted negative outcomes of; eating behaviours, self-esteem, body image and exercise, even when controlling for variables of age, gender, BMI and dieting behaviour (Meadows & Higgs, 2014). The evidence for health-related outcomes of weight stigma and internalised weight stigma across these different domains is vast; therefore, the evidence for health-related consequences are presented under the following sub-sections: Weight Management, Eating Behaviours, Exercise, Physical Health, and Mental Health.

**Weight management.** The internalisation of weight stigma decreases the likelihood of losing weight or maintaining any achieved weight loss. Puhl, Quinn, Weisz, and Suh (2017) found that the odds of maintaining weight loss decreased by 28% with every unit increase in levels of internalised weight stigma, supporting the critique of the NICE guidelines. Similarly, Udo and Grilo (2016) found that perceived weight discrimination in both men and women was associated with weight gain, rather than loss. A longitudinal study revealed that those who reported experiencing weight-based discrimination, and importantly, no other forms of discrimination, were up to three times more likely to be or become ‘obese’ over the course of the study - regardless of the baseline BMI of participants (Sutin & Terracciano, 2013). A second longitudinal study examining the impact of weight stigma on weight gain and related health outcomes tracked the discrimination of

individuals throughout adolescence and into adulthood over the span of 10 years. The study found that increases in weight-based teasing or discrimination during that time period, resulted in increases in the likelihood of being 'overweight' as an adult, for both men and women (Quick, Wall, Larson, Haines, & Neumark-Sztainer, 2013).

**Eating behaviours.** A 15-year longitudinal study examining the effects of weight-based bullying and teasing, from adolescence through to adulthood, showed that teasing in adolescence predicted increases in BMI in adulthood, along with negative outcomes for binge eating behaviours, unhealthy relationships with food and weight control, and body image (Puhl et al., 2017b). Furthermore, Zuba and Warschburger (2017) found that whilst BMI was associated with restrained eating and psychosocial problems in 7-11-year olds; weight stigma and stigma internalisation both mediated those relationships. These findings remained true regardless of the child's weight status, again, highlighting that weight stigma is detrimental to all children regardless of their body size, due to the risk of internalisation.

Puhl & Suh's (2015) review of studies examining weight stigma and associated eating behaviours found that the likelihood of binge eating increases as a consequence of stigmatisation and this is evident across genders, age groups, and majority and minority ethnic groups. One study included in the review highlights the contribution of the internalisation of weight stigma on eating disorders – Durso et al (2012) found that for 'obese' adults seeking weight loss treatment, internalisation of stigma significantly and independently predicted eating disorders, even when accounting for factors such as depression, self-esteem and anti-fat bias. Puhl and Suh's review highlighted that mere exposure to (not necessarily experience of) weight stigma, regardless of actual weight, is responsible for increases individuals' food intake and reduces feelings of control of food intake. In line with this, a recent

lab-based study revealed that weight-based discrimination affects both cognitive processing ability (specifically, inhibitory control) and eating behaviours. Participants made higher calorie food choices when exposed to a weight-based discrimination incident than when exposed to a race-based discrimination incident (Araiza & Wellman, 2018).

The social acceptability of weight-based discrimination also has a role to play in disordered eating. In one study, the social consensus of weight-based discrimination moderated the relationship between experiences of weight-based discrimination and a) disordered or emotional eating and b) body dissatisfaction. That is, the less acceptable the group deem weight-based discrimination to be, the weaker the effect of such discrimination on body dissatisfaction and emotional eating (Farrow & Tarrant, 2009).

**Exercise.** In a recent study, adolescents' experiences of weight-related teasing were found to have impacted their involvement in physical exercise activities both in school and outside of school. Weight-related victimisation negatively predicted teens' own perceptions of their physical abilities, which was positively related to their performance in physical education classes and to their involvement in physical activities outside of school. Other studies have similarly found that the internalisation of weight stigma reduced motivation and willingness to participate in physical activity (Schmalz, 2010; Vartanian & Novak, 2011).

**Physical health.** Individuals experiencing weight stigma are more likely to avoid healthcare; Phelan, et al., (2015) provide a narrative review of relevant studies and find that, individuals with experiences of, or expectations of poor treatment due to weight biases, experience stress and mistrust of healthcare professionals, resulting in avoidance of healthcare. A more recent study found that this was certainly the case for women with higher BMIs. Increases in BMI were related to greater

internalisation of weight stigma, which in turn resulted in higher levels of body shame, inducing health related stress, and ultimately resulting in healthcare avoidance (Mensinger, Tylka, & Calamari, 2018).

In addition to healthcare avoidance, weight-based prejudice has the ability to negative influence one's blood pressure and long-term increases in blood pressure increase the risk of conditions such as; stroke, heart disease, heat failure, and kidney disease (NHS, 2016). There is evidence of increases in blood pressure following the viewing of anti-fat, stigmatising stimuli, in both adults (along with increased cortisol levels; Schvey, Puhl, & Brownell, 2014) and adolescents (Rosenthal et al., 2013), regardless of BMI. In another demonstration of the risks to blood pressure health for individuals experiencing weight stigma, participants' blood pressure was monitored whilst they gave a speech on why they would make a good date. Those with higher BMI experienced increased blood pressure when their body size was visible (video-recorded speech) compared with when it was not visible (audio-recorded speech). Moreover, these participants also performed worse on a Stroop task following the video recording, highlighting cognitive depletion as a result of concerns over physical appearance-based judgements. 'Overweight' individuals experienced more stress related feelings when giving the speech on video than via an audio recording (Major, Eliezer, & Rieck, 2012).

**Mental health.** In addition to the stress, and negative impacts on cognitive competency detailed above (Major et al., 2012), weight stigma has serious consequences for mental health in terms of body dissatisfaction, depression, and anxiety, particularly in children and young people.

Experiences of weight stigma are associated with higher body dissatisfaction, desire for thinness and lower self-esteem (Pearl, Dovidio, Puhl, & Brownell, 2015). A 10-year longitudinal study found that girls who at baseline (aged 9-10 years) had

BMI that classified them as 'obese', but later entered into the 'normal weight' BMI range had lasting effects compared to girls who never entered the 'obese' BMI range. Specifically, these girls continued to hold higher body image discrepancies, and in White girls, self-esteem remained lower (Mustillo, Hendrix, & Schafer, 2012).

Highlighting the impact of weight stigma on all (not just the targets of weight bias), Lampard, MacLehose, Eisenberg, Neumark-Sztainer, and Davison (2014) found that prevalence of school-level weight-based teasing was associated with; lower self-esteem, more instances of depression (in boys) and body fat dissatisfaction (in girls) over and above individual-level teasing. In further support of the argument that it is not an individual's body weight per se that results in negative health-related outcomes, one study revealed that perceived weight-based discrimination in 7th grade (ages 12-13), contributed to increased body dissatisfaction, social anxiety and loneliness in 8th (ages 13-14) grade, more so than BMI in 7th grade did (Juvonen, Lessard, Schacter, & Suchilt, 2017).

**Summary of the Consequences of Weight Stigma**

Experienced, perceived (e.g. Udo & Grilo, 2016), internalised (e.g. Mensinger et al., 2018), and even witnessed (Araiza & Wellman, 2018) weight stigma can negatively impact on individuals' social lives and across all aspects of health. Larger-bodied individuals are more likely to suffer from poor health such as high blood pressure and anxiety as a result of weight stigma (Schvey et al., 2014), and are more likely to avoid healthcare due to fear of discrimination and mistrust of healthcare professionals (Phelan et al., 2015). Young people too, were found to experience increases in blood pressure after experiences of weight bias (Rosenthal et al., 2013. Adolescents are missing out on compulsory physical education in schools due to weight-based discrimination and a belief that they are less able in sporting

activities than their thinner peers (Maïano et al., 2018). The finding that the prevalence of weight-based teasing in schools negatively affects children's mental health more so than at the individual level suggests that interventions are required to reduce school-level weight bias (Lampard et al., 2014). A suggestion that is in line with Carr and Friedman's (2006) argument that interventions should be designed to target perpetrators of weight stigma rather than the victims (as suggested by Carr & Friedman, 2006).

Arguably, weight stigma reduction interventions are required more so in childhood than in adulthood, to address the potential long-lasting effects. A meta-analysis of 30 research papers with a total sample of over 100,000 participants confirmed that 'overweight' and 'obese' youths are more at risk of bullying than 'average-weight' youth (Geel, Vedder, & Tanilon, 2014). The damaging effects of weight stigma and the internalisation of weight stigma remain long after childhood, continuing to exist in adulthood, regardless of adult BMI or body size (Mustillo et al., 2012; Puhl et al., 2017b). The final section of this chapter therefore examines the effectiveness of existing interventions designed to reduce weight stigma and considers the suitability of such approaches for use with children.

## Empirically Tested Interventions to Reduce Weight-Based Prejudice

The following section details attempts made to reduce weight-based prejudices as published in peer-reviewed journals. A review of anti-fat prejudice reduction studies (Daníelsdóttir, O'Brien, & Ciao, 2010) found only 16 studies published in peer-reviewed journals, highlighting the need for research in this area. Many of the studies had methodological issues such as lack of experimental design. Perhaps most problematic though is the inconsistencies of measures used between the studies, preventing direct comparisons of the effectiveness of different interventions. The majority of the studies included in the review attempted to reduce

anti-fat bias through knowledge change strategies, such as providing information on the controllability of one's body size. However, the review found that where studies are successful in changing beliefs about obesity, they are not successful in changing attitudes or behaviours towards fat individuals. Instead, the review suggests that interventions based on social norms and social consensus as most promising in the battle against weight stigma. Notably, only four studies (out of 16) were conducted with children and even fewer (2) with adolescents.

A more recent meta-analysis of weight-stigma reduction studies included only 30 studies, all of which were conducted with adult populations (Lee, Ata, & Brannick, 2014). Due to limited intervention studies examining behavioural outcomes, the meta-analysis only included studies that had measured affective and cognitive outcomes. The authors of the meta-analysis suggest that future weight-bias reduction interventions should include standardised behavioural measures to allow for future comparison and inclusion in meta-analyses. Lee et al. also concluded that future interventions should be designed to target the general population, rather than specifically healthcare professionals and students (which is who the majority of the current interventions target). Similar to Daníelsdóttir and colleagues (2010), the authors of this meta-analysis (Lee et al.) also suggest that existing interventions grounded in the theories of causality and empathy are not effective, and the few interventions that do not fall into these theories, or that of social consensus seem to be performing similarly in effectiveness of reducing anti-fat prejudice. Therefore, to extend the current knowledge and effectiveness of future interventions designed to reduce anti-fat prejudice, Lee et al. encourage the design of interventions grounded in alternative paradigms.

Considering the vast amount of evidence presented earlier in this chapter on the occurrence and consequences of weight stigma in children; it is problematic that

only 25% of interventions have been carried out with children (see Daníelsdóttir et al., 2010). This thesis aims to contribute to the number of weight stigma interventions conducted with children, however due to the lack of previous studies with this population, interventions with both children and adult populations are reviewed below.

**Knowledge Change Strategy to Reduce Weight-Stigma**

Knowledge change strategies work to reduce anti-fat prejudice through education about the causalities of obesity. These strategies assume that providing information about the reason for one's higher-body weight, such as medical conditions or genetic determinants, reduces prejudice as it eliminates any perceptions of control over weight, and therefore responsibility for one's body size. In support of the controllability strategy to reducing weight bias, children's negative trait attributions towards 'obese' children and adults were found to be positively related to their beliefs in control over weight (Musher-Eizenman, Holub, Miller, Goldstein, & Edwards-Leeper, 2004; Tiggeman & Anesbury, 2000).

Evidencing the effectiveness of such a strategy, Diedrichs & Barlow (2011) implemented a knowledge change strategy via lectures given to students. Students in the intervention condition were given a lecture on obesity, weight bias and the multiple determinants of obesity. Whereas students in the comparison condition were given a lecture on obesity and the behavioural determinants of obesity (e.g. poor diet and lack of exercise), whilst students in the control condition did not attend any lecture on obesity. Students in the intervention condition did indeed rate larger-bodied individuals more positively, including on measures of attraction, and had lower beliefs of individual control of weight, in comparison to the control and comparison conditions. Importantly, these effects remained three weeks post-intervention. However, this study must be interpreted with caution due to sampling

issues – each condition employed only approximately 30 participants, the students were studying a health-related topic and were assigned to condition according to the stage of the degree. Thus, the prior learning of students in more advanced stages of their degree may have influenced their knowledge and attitudes towards obesity. However, other studies with larger sample sizes and more rigorous experimental methods provide support for this approach. For example, Hilbert (2016) experimentally tested the knowledge of genetic determinants of obesity and their interaction with environmental determinants; finding that participants levels of anti-fat prejudice reduced due to decreases in individual controllability and increases in genetic determinism of obesity.

Other studies show successful reductions in individual controllability or increases in knowledge of the determinants of obesity but were not successful in reducing negative attitudes and beliefs towards fat individuals. Anesbury and Tiggeman (2000) for example successfully reduced children's belief of personal controllability of weight via a verbal education presentation but did not reduce the negative stereotyping towards larger-bodied peers. In another study, adolescents' attitudes towards fat targets improved as a result of being informed of the target's thyroid condition. However, the extent to which targets with medical explanations for their weight were liked compared to targets without a medical explanation did not differ. Moreover, targets were rated as more 'good' when they had either lost weight or when they had a medical explanation for their body size. Whilst it may appear to be a positive outcome that ratings of 'good' increased for some targets, it is problematic as it demonstrates the importance that adolescents place on losing weight, and that teens rate individuals' morality on whether or not their body size is legitimised (by a medical condition). Indeed, a more recent study supports the praise given for losing weight, by demonstrating that negative weight bias towards larger

individuals was reduced when participants were given information about the target's efforts to lose weight. The more effort the target was seen to be putting in to losing weight, the less disgust that participants felt towards 'obese' individuals, resulting in lower anti-fat bias scores (Beames, Black, & Vartanian, 2016).

This approach though is stigmatising in itself as it legitimises prejudice and discrimination towards 'overweight' individuals who do not possess a biological or medical condition to explain their body size. In fact, a study comparing three different interventions provides support for this very argument. Participants were randomly allocated to one of three conditions explaining causes for obesity; behavioural, genetic, or psychological determinants. Compared to behavioural causes of obesity, psychological determinants did increase levels of empathy and decrease individual controllability beliefs, however levels of prejudice did not change. Moreover, compared with genetic causes, psychological causes for obesity resulted in greater prejudice towards 'obese' targets (Khan, Tarrant, Weston, Shah, & Farrow, 2017). Similar findings were obtained in another study whereby genetic factors did not change levels of empathy or implicit bias towards fat individuals, but concerningly, implicit bias scores increased in the behavioural information condition (Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003).

Two studies conducted with children aged between 8 and 12 years further demonstrate the danger of this approach to reduce weight stigma. One study found that information of biological causes had no effect on attitudes and behavioural intentions, yet information on environmental causes increased negative attitudes but not intentions (Fitzgerald, Heary, & Roddy, 2013). Whilst the findings from the other study showed that providing a medical explanation for obesity evoked stronger negative behavioural intentions in older children, but improved the attitudes of younger children (Bell & Morgan, 2000). The authors of both studies conclude that

strategies focused on causality and knowledge change are not effective approaches to reducing weight stigma and that future interventions of this type should be avoided.

**Empathy Strategy to Reducing Weight Stigma**

Attempts to reduce weight stigma by evoking empathy have often done so in combination with other strategies, such as that employed by Teachman et al. (2003), who found that reading about discrimination against 'obese' individuals did not evoke empathy, except in 'overweight' individuals. Yet, there was no significant effect of the intervention on levels of bias, therefore empathy levels were most likely increased in 'overweight' individuals as a result of lived experiences of weight discrimination. In another study, the strategy of evoking empathy was employed alongside multiple other strategies, including, a theatre programme, fictional books on bullying, family and school-involvement programmes, and presentations on body-confidence. The multi-component approach was not successful in improving attitudes towards weight-based bullying but was successful in reducing other forms of bullying (Haines, Neumark-Sztainer, Perry, Hannan, & Levine, 2006). Of more concern though, was the fact that in addition to promoting body confidence and demoting weight-based teasing, part of the intervention required children to participate in an hour-long exercise class and to consume low-calorie drinks and snacks. An act which seems highly contradictory of the 'body positive' approach employed and also one which sends the message that larger individuals *should* reduce their weight to avoid teasing.

Other studies that employed approaches solely aimed at evoking empathy however, have mixed findings. Irving (2000) presented children with a puppet show aimed increasing empathy towards stigmatised larger-bodied individuals and found that children assigned more positive traits to larger-bodied targets as a result. On the contrary however, viewings of a video showing fat individuals describing their

experiences of weight stigma resulted in increased prejudice in teens (Hennings, Hilbert, Thomas, Siegfried, & Rief, 2007)

**Social Consensus Strategy to Reducing Weight Stigma**

Social consensus strategies highlight the power of the social acceptability of weight stigma on individual endorsement of weight-biased beliefs. Multiple studies show that participants reduce their negative attitudes towards fat people after learning that their own anti-fat attitudes were more negative than the rest of society's, or a particular group's (Puhl, Schwartz, & Brownell, 2005), and these changes in attitudes are long-lasting (Zitek & Hebl, 2007). The studies conducted by Puhl and colleagues tested the importance of group dynamics and influence of group norms on weight bias. In particular, they found that participants reduced their anti-fat attitudes to be more in line with those of the group, only when the ingroup were seen to hold lower negative attitudes compared to their own, but not when the outgroup held lower anti-fat biases (Puhl et al., Studies 2 and 3). Following this finding, Puhl and colleagues tested the effectiveness of ingroup social consensus strategies against other strategies to reduce weight bias, including controllable and uncontrollable causes of obesity. Whilst information about the uncontrollable causes of obesity resulted in lower prejudice than the controllable causes condition, the ingroup social consensus strategy remained as the most effective in reducing weight bias (Puhl et al., Study 3). The effectiveness of social consensus strategy has also been tested in comparison with cognitive dissonance interventions, in a randomised controlled trial design. Participants in the cognitive dissonance condition were told that their anti-fat attitudes scores were higher than that of their personal core values of kindness and equality for example. Whilst participants in the social consensus condition were told that their anti-fat attitudes scores were higher than those of their peers, in the social consensus condition. In this instance social consensus strategy did not reduce

prejudice in comparison to the control group but cognitive dissonance strategy did (Ciao & Latner, 2011).

Nevertheless, another study highlights the protective power of social consensus against the consequences of weight stigma. When participants believed that ingroup norms were to be less accepting of weight-based discrimination and to hold more positive-fat attitudes; there was a weaker relationship between participants' perceived weight discrimination and body dissatisfaction and emotional eating (Farrow & Tarrant, 2009). Therefore, it seems that the social consensus approach to reduce anti-fat bias is an effective one, likely because it draws on individuals' needs to belong to a group and manage one's beliefs and behaviours in line with the group's.

**Positivity Strategy to Reducing Weight Stigma**

A more novel approach to reducing weight stigma is via the power of positivity. Not only do people show a preference for positive over negative images of 'obese' people (regardless of ethnicity and gender of the target) but viewing positive images of 'obese' people results in weaker social distance and anti-fat attitude scores (Pearl, Puhl, & Brownell, 2012). Furthermore, in comparison to viewing images of thin models, when viewing images of 'overweight' models women showed a reduction in anti-fat attitudes, despite both models being rated as equally attractive. The findings of this particular study provide strong resistance against the notion that larger women should not model (as discussed earlier in this chapter) and in fact demonstrate the benefits of larger-bodied models (Smirles & Lin, 2018).

**Intergroup Contact Strategy to Reducing Weight Stigma**

Up to this point, it appears that the most effective strategy in reducing weight stigma is that of social consensus, with emerging evidence for the use of positive

imagery. The role of positivity is important in intergroup relations, and in an examination of individuals' contact experiences with fat people, Jackson and colleagues found that positive contact played a key role in the endorsement of positive fat attitudes (Jackson, James, Poulsen, & Dumford, 2016). Specifically, it was found that individuals who possessed more agreeable personality types had more positive contact experiences with, and higher empathy for fat individuals, resulting in lower anti-fat attitudes. An earlier study also found that positive contact with fat people was associated with weaker anti-fat attitudes, regardless of participants' BMI. Importantly, this study also demonstrated that negative contact with fat people is associated with stronger anti-fat attitudes (Alperin, Hornsey, Hayward, Diedrichs, & Barlow, 2014).

Thus, it appears that interventions grounded in intergroup contact theory may prove successful in reducing anti-fat biases. As frequent contact with fat individuals is not rare, intergroup contact theory can be used to facilitate and encourage *positive* contact, rather than opportunities for contact alone. Both extended contact and imagined contact are such strategies that can be employed to manipulate the positivity of a given contact experience. Initial evidence for the effectiveness of this approach is provided by Turner and West (2012), who found improvements in behaviour towards 'obese' individuals, following a simple imagined contact intervention - specific details of this study are given in Chapter 5. The aim of this thesis therefore, is to contribute to the existing research on weight-bias interventions and extend the work of Turner and West, by using the imagined contact intervention with children.

## Chapter Summary

This chapter has demonstrated the prevalence and consequences of weight stigma and presented multiple approaches to combating such stigma. With weight

stigma permeating through every aspect of life - from media to employment to healthcare, to social relationships and education. The findings that all individuals, regardless of their body size and experiences of weight stigma, are at risk of internalising stigmatising beliefs and concepts such as the thin ideal is an important one. The consequences of weight stigma therefore are not unique to one particular group of people, instead all are at risk of health and social issues due to weight stigma, such as lower self-esteem (e.g. Pearl et al., 2015), anxiety (e.g. Major et al., 2012) and unsatisfactory personal relationships (Blodorn et al., 2016). Moreover, a vast amount of evidence highlights the need for early intervention, with children as young as two years old showing anti-fat preferences (Turnbull et al., 2000) and investment in the thin ideal (Harriger et al., 2010).

The potential consequences of weight stigma for children and young people make it clear that early intervention to reduce weight-based prejudice is needed, as arguably, children are disproportionately affected with negative impacts on their; emotional and physical health, personal relationships, academic achievement, and even future education and employment prospects. In fact, a survey examining the perspectives and opinions of 'overweight' women on stigma-reduction strategies revealed that, along with healthcare, of highest importance was the need for interventions in education settings (Puhl, Himmelstein, Gorin, & Suh, 2017a).

Comparatively little research has been conducted into the development of weight stigma and effective interventions to reduce anti-fat bias. The majority of interventions have employed a knowledge change approach, which has consistently been shown to produce null effects, and in many cases, increases in prejudice towards fat individuals. Other more successful interventions harness the power of the social group and group norms. A considerably under-researched approach to reducing weight stigma is the application of intergroup contact theory, and more

specifically, imagined contact. The current, albeit limited, evidence supports the use of imagined contact as an effective weight-stigma reduction tool (Turner & West, 2012). However, as is evident with the other approaches to weight stigma reduction, the effectiveness of an approach cannot be established with just one empirical study. Therefore, more empirical testing of imagined contact is required. Moreover, the imagined contact technique has the potential to incorporate aspects of other effective interventions, such as the power of positivity, and the role of group norms.

Henceforth, this thesis aims to establish the effectiveness of imagined contact as a technique to reducing weight stigma. As the need for early intervention is clear and no other existing study has tested this approach on children's weight stigma, this thesis aims to apply the intervention in a school setting. A full review of imagined intergroup contact theory is presented in the next chapter, Chapter 2, of this thesis. The empirical studies in this thesis will employ and test imagined contact interventions designed to reduce weight stigma, through positive imagined contact experiences.

## Chapter 2: An Overview of Imagined Intergroup Contact Theory

*This theoretical chapter briefly introduces Contact Theory, before providing more detail on Imagined Intergroup Contact. Empirical evidence is presented in support of imagined contact as an effective prejudice-reduction tool across age groups, contexts, and stigmas. Finally, the chapter addresses the gap in the literature, where evidence suggests that imagined contact can be employed to reduce children's weight stigma.*

Contact with members of an outgroup can improve intergroup relations, and as such, contact is a heavily researched area amongst social psychologists seeking to improve attitudes and reduce prejudice (Pettigrew & Tropp, 2006; Pettigrew, Tropp, Wagner, & Christ, 2011). The traditional contact hypothesis posits that intergroup contact can lead to reductions in prejudice and discrimination when contact is made under four optimal conditions. Specifically; contact should be made in a context which facilitates social norms of equal status between the two groups (*institutional support*), the two groups should meet under *equal status*, work towards a *common goal*, and there should be no place for *intergroup competition* (Allport, 1954). However, research has since confirmed that in fact, contact is the only real requirement and Allport's optimal conditions serve to enhance the contact effects, increasing the success of contact interventions, but are not essential (Brown & Hewstone, 2005; Pettigrew & Tropp, 2006).

### Direct Contact

The success of direct contact as a method of improving intergroup relations is evident in the findings of a meta-analysis of 515 studies conducted across 38 countries (Pettigrew & Tropp, 2006). Overall, the analysis revealed a significant negative correlation between direct contact and intergroup prejudice ($r$ = -.21), across age groups, genders, implicit and explicit forms of prejudices, and towards

multiple stigmatised groups such as; the elderly, gay people, minority-ethnic people, and disabled people. Direct contact influences not just attitude strength, but also trust (Tam, Hewstone, Kenworthy, & Cairns, 2009) and forgiveness of the outgroup (Tam et al., 2007), perspective taking (Hewstone, Cairns, Voci, Hamberger, & Niens, 2006), intergroup anxiety, support for particular outgroups' rights (Voci & Hewstone, 2003), and perceived homogeneity of the outgroup (Paolini, Hewstone, Cairns, & Voci, 2004).

Further, close direct contact experiences - cross-group friendships in particular, have been shown to produce more positive intergroup attitudes *(r* = .26; Davies, Tropp, Aron, Pettigrew, & Wright, 2011). Cross-group friendships are particularly effective perhaps because they meet Allport's optimal conditions (Allport, 1954). For example, friendships usually centre around two individuals of equal status, who share common goals and who are not in competition with one another (Pettigrew et al., 2011). Moreover, cross-group friendships are highly effective in reducing negative intergroup attitudes due to self-disclosure ($r$ = .26) and time spent together ($r$ = .27), along with other moderating factors such as inclusion of other in the self and closeness (Davies et al., 2011). In an examination of children's cross-group friendships, Aboud, Mendelson, and Purdy (2003) found that the quality of the relationships in cross-race friendship groups was no different to same-race friendships. Not surprisingly, racially prejudiced attitudes were detected in children who tended to avoid cross-race friendships and the least racially prejudiced attitudes were evident in children who were in good quality cross-race friendships. Furthermore, cross-group friendships have been found to influence both implicit and explicit prejudices. Both types of prejudicial attitudes were measured in non-immigrant adolescents who were involved in friendships with immigrant teenagers. Findings revealed that direct contact was negatively associated with both

implicit and explicit prejudices, with a stronger effect of direct contact on explicit prejudices (Olaizola, Diaz, & Ochoa, 2014). Finally, a longitudinal examination of children's cross-group friendships conducted over a period of seven months, confirmed that direct contact is a significant predictor of children's cross-race friendships over time (Feddes, Noack, & Rutland, 2009).

Whilst direct contact is unarguably an effective tool for the reduction of prejudiced attitudes and behaviours; it is not an intervention that can be widely applied. In areas where there is a lack of opportunity for direct contact, such as when there is high segregation between groups or in areas of high conflict, direct contact may not be possible or desired, and may even be dangerous for those involved. Henceforth, intergroup contact research has expanded to include indirect forms of contact that can produce similar positive outcomes between groups.

**Indirect Contact**

Two methods of indirect contact exist; extended contact and imagined contact. Extended contact can utilise existing relationships by asking participants to think about someone that they already know who has good relations with the target outgroup. Studies have demonstrated the effectiveness of this style of intervention in improving adults' attitudes towards; police officers, minority ethnic groups, immigrants, and religious outgroups (Eller, Abrams, Viki, & Imara, 2007; Tezanos-Pinto, Bratt, & Brown, 2010; Gomez, Tropp, & Fernandez, 2011; Paolini et al., 2004, respectively). These indirect relationships can also be produced in an experimental setting to produce the desired effects. For example, several studies have presented children with story books about an ingroup member making friends with an outgroup member. These studies have successfully improved children's attitudes and behavioural intentions towards; disable people, refugees, and

immigrants (Cameron & Rutland, 2006; Cameron, Rutland, & Brown, 2007; Cameron, Rutland, Brown, & Douch, 2006; Vezzali, Stathi, & Giovannini, 2012).

Central to this thesis though, is the indirect method of imagined intergroup contact – a technique that is "deceptively simple and remarkably effective" (Crisp & Turner, 2009, p. 231). Demonstrating the power of mental simulation, research has shown that when imagining being in a crowd, individuals display similar behaviours to those displayed by actual crowd members (Garcia, Weaver, Moskowitz, & Darley, 2002). Therefore, imagined contact was developed from the theory that there is something powerful about the mental conceptualisation of contact, without the need for actual contact. Participants of imagined contact imagine an interaction with an outgroup member, which simulates the feelings and thoughts associated with actual contact. Moreover, as imagined contact requires an intense personal involvement, with participants actively creating and responding to a scenario in their mental imagery, the salience of the contact experience is enhanced compared to other forms of contact, and thus it is conceivable that imagined contact may prove to be an effective and long-lasting technique.

There are two conditions which are absolutely necessary for imagined contact to work in reducing negative attitudes towards target groups. One is that a negative or even a neutral toned imagined interaction will not elicit positive attitudes, instead participants must imagine a *positive* interaction (Stathi & Crisp, 2008). The other condition requires participants to simulate an actual interaction, rather than just to think about the target member (Turner, Crisp, & Lambert, 2007a). To assist in creating imagined interactions, as opposed to simply thoughts, participants are encouraged to imagine details of the interaction such as; how they feel about the target or the situation they are in, what they expect to learn from the interaction, and what the target looked like (Crisp, Stathi, Turner, & Husnu, 2009).

Imagining a detailed, positive contact experience activates thoughts and feelings associated with actual contact such as; confidence in interacting, or reductions in anxiety, threat, or reluctance to have contact with the outgroup. Evidence for the effectiveness of imagined contact in reducing negative attitudes and behaviours via these mechanisms is abundant. For example, imagined contact has been successful in; reducing stereotype threat in older people (Abrams et al., 2008), increasing positive trait projection to outgroups (Stathi & Crisp, 2008), inducing higher ratings of warmth and competence towards an outgroup member (Cameron et al., 2011), creating social acceptance of the outgroup (West, Husnu, & Lipps, 2015) and increasing desire or willingness for actual future contact (Crisp & Turner, 2009).

Furthermore, a meta-analysis of over 70 imagined contact interventions studies (both published and unpublished) analysed the effects of imagined contact on four dependent variables of prejudice; attitudes, intentions, emotions, and behaviour (Miles & Crisp, 2014). The analysis showed significant support for imagined contact influencing all of these measures (overall $d+ = .35$). Moreover, imagined contact was found to be effective across contexts, with positive effects towards a variety of outgroups including; minority ethnic groups, disabled people, gay people, elderly people, religious groups, and the mentally ill. Findings were also consistent across studies for both implicit and explicit prejudices (see for example, Turner & Crisp, 2010). The meta-analysis also supported the notion that mental simulation links directly to behavioural intentions, as overall intervention effects were stronger for behavioural intentions than attitudes.

The imagined contact intervention is clearly most practical in settings where diversity is minimal, or opportunity for contact is reduced and thus, direct or extended contact techniques would not be suitable or effective. Indeed, field research shows that imagined contact can reduce prejudice towards specific outgroups in such

situations. Specifically, West and colleagues (2015) employed the intervention with participants in Cyprus and Jamaica, two countries where homophobic attitudes are high, and found improvements in attitudes towards gay men in both countries. Moreover, as a result of improved attitudes, there was an increase in participants' social acceptance of homosexuality in both countries.

Despite the overwhelming success of imagined contact in reducing multiple types of prejudice, the technique has rarely been applied to the issue of weight stigma. In fact, at the time of writing, only one published study of this nature exists. Turner and West (2012) successfully employed imagined contact in a lab study to improve behavioural responses towards fat individuals, whereby individuals in the experimental condition placed a smaller physical gap between their chair and that of an 'obese' person, than those in the control condition. Moreover, research into the reduction of children's prejudices via imagined contact is scarce relative to the vast amount of studies using adult populations. A fact that is surprising, considering imagined contact has been promoted as a tool highly suitable for education settings where it is more difficult to implement direct or extended contact interventions (Crisp et al., 2009).

The empirical evidence for the use of imagined contact with children is perhaps not as vast as the research with adults, however, where it has been employed with children has proved to be a rather fruitful prejudice-reduction tool indeed. As children may have more difficulty in focusing on the construction of a specific scenario in their mental imagery, imagined contact interventions with children require more assistance from researchers, through use of pictures for example (further details of the methods can be found in Chapter 4). Using more elaborate techniques, researchers have successfully reduced children's prejudice towards; disabled children, immigrants, and minority ethnic groups. Changes in children's

prejudice levels were measured through attitudes, friendship intentions, and perceived similarity with targets (Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011; Stathi, Cameron, Hartley, & Bradford 2014; Vezzali, Capozza, Giovannini, & Stathi, 2011). Furthermore, Cameron et al. (2011) found that imagined contact was more successful in increasing younger children's friendship intentions, than older children's, and in their meta-analysis, Miles and Crisp (2014) reported that the interventions produced stronger effects for children compared to adults.

**Summary**

Both direct and indirect contact interventions are effective in reducing prejudices against, minority ethnicities, religions, races, mental illness, homosexuality, ageism and disabilities (Pettigrew & Tropp, 2006; Miles & Crisp, 2014). Imagined contact is evidently a powerful technique for reducing prejudice across many different contexts and age groups. However, the intervention was designed primarily as a 'stepping stone' to actual direct contact, for instances where direct contact is initially low or impossible. Thus, it is understandable why imagined contact has scarcely been tested with fat stigma, as the majority of people across the globe have regular contact with fat individuals. Nevertheless, if direct contact alone was a powerful enough tool to combat weight stigma, the systematic and everyday discrimination of fat bodies highlighted in Chapter 1, would not be apparent to such an extent. Imagined contact then, can be used to reshape perceptions of fat people and prepare individuals for positive direct contact, by imagining positive aspects of interactions with fat people. As demonstrated by Turner and West (2012), imagined contact is indeed successful in reducing anti-fat behaviours. Moreover, the fact that imagined contact has been more successful than direct contact in reducing implicit biases (cf. Olaizola et al., 2014 and Miles & Crisp, 2014), suggests that it may be a

more powerful tool to address widely held stereotypic beliefs about fat people, such as “lazy”, “dirty”, and “stupid” (see for example, Bell & Morgan, 2000; Schwartz, Chambliss, Brownell, Blair, & Billington, 2003).

Finally, the success of imagined contact in reducing children’s prejudice is well-established, and it is a well-suited approach to reducing prejudice within applied settings such as schools. Thus far, imagined contact has only been applied to a limited range of prejudices held by children, and with the knowledge that imagined contact can reduces adults’ anti-fat biases; there is a clear gap in the literature, where imagined contact should be applied to test the effectiveness in reducing children’s anti-fat biases.

# Chapter 3: The Development of Children's Weight Stigma in an Intergroup Context

*The first study in this thesis empirically examines children's weight stigma through the Developmental Subjective Group Dynamics (DSGD; Abrams, Rutland, Cameron, & Marques, 2003a) framework. Specifically, the study measures the existence and strength of 6–11-year olds' weight stigma, expressed as their attitudes and behavioural intentions towards fictional peers whose body size has been experimentally manipulated. Further, the fictional targets either express loyalty or disloyalty to their ingroup (school), enabling the study of the influence of group and different types of deviances on children's weight stigma. Participants were split into two age groups (6-8-year olds and 9-11-year olds) to assess the development of weight-biased attitudes and behaviours. Children's attitudes towards fat-bodied and slim-bodied targets were measured through attribution of traits and ratings of favourability. Behavioural intentions towards the targets were measured by assessing the extent to which children wanted to participate in various activities with the target. Study 1 provides further evidence of children's use of weight-based stereotyping and contributes to the DSGD model with unique findings regarding the black sheep effect. Moreover, this chapter provides evidence for the design of a weight stigma reduction intervention, which is later tested, that acknowledges the influence of children's age and peer groups on evaluations of fat peers.*

## Introduction

Evidence of children's prejudice and discrimination towards larger-bodied individuals is abundant (see Chapter 1). Thus, the experiments in this thesis aim to reduce weight stigma by implementing an *intergroup* intervention. Yet, unlike many other types of discrimination, weight bias is not often tested or studied in an intergroup context. For that reason, it is important to understand the presentation of

weight bias in such a context. Research providing evidence for the developmental subjective group dynamics (DSGD) model (Abrams et al., 2003a) has recently begun to test weight stigma in an intergroup context (Abrams et al., 2016). Therefore, the study presented in this chapter will follow methods employed by Abrams and colleagues, to understand the implications of weight stigma in primary school aged children.

**The Development of Subjective Group Dynamics**

Belonging to a social group, be it a football club, a school, a group of friends and peers, or even a temporary group such as a team formed for a specific task; has great importance for an individual's self-esteem and identity. As a result, group members have the tendency to seek out and promote positive aspects of their own group and negative aspects of an outgroup, as a method of bolstering their social identity (Tajfel, 1978; Tajfel & Turner, 1979). However, this natural desire can be reversed when members of either the ingroup or the outgroup display non-normative behaviour. That is, when the individual appears to deviate in some manner from the norms or expected behaviour of the group to which they belong. There are two types of group norms; descriptive and prescriptive. Descriptive norms are ones that differentiate two groups, for example; age, race, eye colour, and so on. However, it is deviation from prescriptive norms that triggers this reverse ingroup bias effect, as prescriptive norms are expectations of behaviour or attitudes that serve to add value to the group. Thus, adherence to prescriptive norms ensures and maintains group membership.

Loyalty to one's group is an example of a prescriptive norm and deviance from this norm prompts judgements on an intragroup basis (Abrams & Rutland, 2008). In these instances, deviant ingroup members are disliked and even rejected from the group, as a means of maintaining a positive group image. Yet, a disloyal

outgroup member may be liked by the ingroup as their deviance is harmful to the outgroup image, thus, once again bolstering the ingroup image (Marques, Abrams, Paez, & Martínez-Taboada, 1998). When treatment of such deviant members is compared, it appears that the extent to which deviants are derogated compared with normative members, is larger in the ingroup, than it is in the outgroup. This effect is otherwise known as the black sheep effect (BSE; Marques, Yzerbyt, & Leyens, 1988).

This ability to make both intergroup and intragroup distinctions and judgements, develops with age, according to DSGD theory. In the first test of this theory, children between the ages of 6 and 11, evaluated normative and deviant members of either an ingroup or an outgroup (Abrams et al., 2003a). The group context in this study was the school to which the targets belonged. Normative targets made loyal comments about their school, whereas deviants displayed oppositional deviance by making disloyal comments about their school. In line with social identity theory (Tajfel & Turner, 1979), children displayed ingroup bias, by evaluating their own school more positively than the outgroup school. However, only older children (aged 10-11) made both inter- and intragroup distinctions by derogating the deviant ingroup member more so than the deviant outgroup member (BSE). Thus, demonstrating that whilst young children have the ability to distinguish *between* groups, and maintain a positive group identity, only as they age, do they gain the ability to consider the consequences of deviance *within* groups as well.

Replicating and extending these findings, Abrams, Rutland, and Cameron (2003b) confirmed that increasing intergroup bias impacts the ability to judge how other group members would evaluate specific target members. More specifically, children begin to understand that group members will make different inclusion and exclusion judgements about targets depending on both their displays of deviance and

their group membership; otherwise known as differential inclusion. Furthermore, Abrams et al. demonstrated that with age, differential inclusion also impacts on differential evaluation. That is, the ability to make both inter and intra group judgements, as is evident in the older age groups.

The developmental studies discussed so far have established that from around the age of five years old, children are capable of making intergroup judgements and displaying ingroup loyalty. Both studies showed that younger children are also more positive towards all targets, than older children are (Abrams et al., 2003a, 2003b). Furthermore, due to increases in cognitive abilities, such as theory of social mind and understanding of group norms, from around the age of eight years old, children gain the ability to make both inter and intragroup judgements (Abrams, Rutland, Pelletier, & Ferrell, 2009). The link between these two types of judgements increases with age, as a result of awareness of the group's likely differential inclusion. Thus, in line with the DSGD model, the BSE only emerges from around middle childhood, and not earlier.

The aforementioned studies examining group reactions to deviance have tested loyalty as a prescriptive norm. However, there are different types of prescriptive norms, with loyalty known as an *oppositional* prescriptive norm. This is because two groups should hold opposing norms, i.e., they expect ingroup members to be loyal to the ingroup and not the outgroup, and for outgroup members to be loyal to the outgroup. A second type of prescriptive norm is a *generic* norm, which applies across social groups. Research testing reactions to generic deviance has found that the DSGD model still holds with this type of prescriptive norm. That is, the BSE emerged in response to generic deviance, only in older children. Furthermore, the finding that the extent to which participants thought the target would fit well in their group mediated the BSE; is confirmation of the link between

differential evaluation and the understanding of group norms and other members' differential inclusion intentions (Abrams, Palmer, Rutland, Cameron, & Van de Vyver, 2014).

**Body Weight and Generic Deviance**

The studies described in the next section of this introduction, and the study conducted in this chapter conceptualise obesity as a generic deviance. It is important to note that the authors of these studies and of this thesis do not argue that it is wrong to be of a certain body size, or that one is a legitimate deviant if they are of a particular weight. Instead, however, it is an acknowledgment that society holds thinner bodies as the ideal norm for body weight, and therefore any deviations from this ideal norm are not tolerated. In fact, intolerance and rejection of fat people remain socially acceptable and largely unsuppressed (Crandall, 1994).

**Testing Double Deviance**

Unlike previous studies based on the DSGD model, the first study to test the consequences of both oppositional and generic deviance combined, was conducted with adolescents aged between 11 and 13 years (Abrams et al., 2016). This study examined adolescents' reactions towards normative and deviant peers, where deviants were either disloyal, 'overweight', or both disloyal and 'overweight'. Participants completed assessments of their attitudes towards the targets, their perception of how well the target would fit to the group, and ratings of targets' competence and inertia. The black sheep effect was evident across all measures, whereby ingroup deviants were judged more harshly than outgroup deviants, and again, perceived fit to the group was found to mediate this effect. A main effect of type of deviance revealed that oppositional deviants were favoured above generic and double deviants, implying that teens' judgements were strongly hinged on the body size of the target. This conclusion is qualified by the fact that outgroup

oppositional deviants were favoured over the normative, except for when they were also of a larger body size (double deviance).

## Study 1

The previous study (Abrams et al., 2016) is the first to examine weight stigma in an intergroup context and provides us with the important finding that already derogated individuals (disloyal ingroup members) are further stigmatised when they are of a larger body size. However, unlike the previous DSGD studies, the 2016 experiment was conducted with adolescents, as opposed to younger children. Therefore, the present study tests weight bias and double deviance within younger children (see Appendix A for evidence of ethical approval for all studies).

As the overall aim of this thesis is to reduce negative attitudes and *behaviour* towards fat individuals, the present study will also employ a measure of behavioural intentions – a first for the examination of DSGD theory. A key aim for this study also, is the exploration of negative language used. Abrams et al. (2016) found that double deviants were labelled as lazy more so than oppositional deviants were. The present study aims to extend this finding by identifying any additional negative words used to describe fat individuals as opposed to slim individuals.

As the previous DSGD studies have found that the BSE is not evident in children below the age of 8, a key question of the present study is therefore, whether this developmental trend will remain, or whether the strength of weight stigma is such that, even younger children will make intragroup distinctions.

Whilst the present study has drawn on the DSGD theory and experimental paradigms, the focus for this study is on weight biases of young children, rather than social exclusion of deviant group members more generally. Therefore, reactions to oppositional deviance (disloyalty) will not be examined in depth. Instead, the

oppositional deviant target is useful as a comparison to highlight the extent to which fat targets are derogated.

**Hypotheses**

**H1 Ingroup bias.** In line with social identity theory (Tajfel & Turner, 1979) and previous research on DSGD, it is expected that children of all age groups will show a preference for their own group over the outgroup.

**H2 Positivity of younger children.** In line with previous findings, younger children should be more positive, towards all targets, than older children.

**H3 Black sheep effect.** In line with key findings from the DSGD research, the BSE should emerge in the older age group, and not the younger. This will be evident through a Group x Target x Age interaction, where, relative to normative targets, the ingroup deviant is derogated more than the outgroup deviant, and this effect increases with age.

**H4 Weight stigma and black sheep effect.** A novel hypothesis based on the social acceptability of weight stigma, posits that younger children may make significant intragroup differentiation between normative and deviant targets when it concerns a fat target (generic or double deviant).

**H5 Double deviance.** In line with the findings from Abrams et al. (2016), and as evidence of weight stigma, responses to ingroup double deviants should be more negative than toward ingroup oppositional deviants.

**H6 Anti-fat stereotypes.** Abrams et al. (2016) found that generic and double deviants were labelled as lazier than oppositional deviants. Thus, it is expected that more negative, stereotypic traits will be assigned to generic and double deviants, than to oppositional deviant or normative targets.

**H7 Role of perceived fit.** The extent to which participants feel that the target fits their group, should mediate the BSE (differences in judgements of normative and

deviant targets). This will be tested via two mediation models, with attitudes and behaviour as the outcome variables.

## Method

### Participants

This study recruited 555 participants with an age range of 6–11 years ($M$ = 8.88, $SD$ = 1.54) from four primary schools in Kent. Fifty-four of these participants' data was withdrawn from the analyses due to failing manipulation checks and outliers. Of the 501 remaining participants, 250 (50%) were male. The majority of participants identified as White British (91%). As participants were recruited from school years 2, 3, 5 and 6 (none from year 4), a median split computation was used to group participants into two age categories; younger (aged 6-8 years, $N$ = 264, $M$ = 7.53 years, $SD$ = 0.77 years) and older (aged 9-11 years, $N$ = 232, $M$ = 10.23 years, $SD$ = 0.68 years).

### Design

The present study employed a 2 (Age: younger vs older) x 2 (Group: ingroup vs out) x 2 (Target: normative vs deviant) x 3 (Type: oppositional vs generic vs double) design, with target as a within-subjects variable. Dependent variables in this study were; ingroup bias, attitudes, competence, perceived fit, behavioural intentions, and anti-fat stereotypes; see Tables 3.3 and 3.4 for reliability statistics.

### Materials

Targets were presented to participants in the format of drawings, which were obtained from Collins (1991). The drawings are available in seven different body sizes, however the present study used only two different body sizes representing "average-weight" and "overweight". The two targets used for the current study were chosen after a pilot study conducted during prior research confirmed that children consider the targets to be of 'average-weight' and 'overweight', and that weight-

related stigma is present when considering the 'overweight' target (Purewal, 2013, unpublished manuscript). Furthermore, the drawings have been validated for examination of children's weight biases in other published studies, (see for example; Ricciardelli & McCabe, 2001; Harriger, Calogero, Witherington, & Smith, 2010). The two chosen targets were gender matched to the participant and slightly modified from the original format by adding colour to the clothing of the targets (see Appendix B for all materials).

Following previous work (Abrams et al., 2016) group bias was measured by asking "How do you feel about your school/Rosemary Green School[2]?" (5-point scale, *Very Bad – Very Good*). Two additional questions were added in this study to further measure group bias, "How much (do you like belonging/would you like to belong) to your school/Rosemary Green School?" (5-point scale, *Not at all – Very Much*). An ingroup bias score was calculated by subtracting the scores for the outgroup school questions from the ingroup questions, thus a positive score indicates bias towards the ingroup and a negative score indicates bias towards the outgroup.

To examine children's use of language and to detect any weight-related stereotypes, the Adjective Checklist (Siperstein, 1980) was employed. Participants were presented with 16 positive (e.g. Smart, Happy, Honest) and 16 negative adjectives (e.g. Lazy, Foolish, Ugly) and were instructed to select all of the adjectives that could be used to describe the target.

Participants also evaluated targets through measures of attitudes, competence, and perceived fit (as used in Abrams et al., 2009, Abrams et al., 2016). Attitudes towards targets were assessed through answering the questions "I like X", "X is nice", X is fun to be around". Perceived competence of targets was measured

[2] Rosemary Green is a fictional school, however participants were told "Rosemary Green School is another primary school near here and it is a lot like your school".

through responses to the statements “X is clever” and “X is good at school work”. Participants rated the targets’ perceived fit to the ingroup in response to the statement “X would fit into my school well”. All responses were provided on a 5-point scale (*Not at all – Very Much*).

Children’s behavioural intentions towards participants was measured using an adaptation of the Shared Activities Questionnaire-B (SAQ-B; Bell & Morgan, 2000). Some questions were adapted to suit the vocabulary of British school children rather than American school children. The SAQ-B presented participants with a variety of academic, active recreational, and general social activities (e.g. “Do homework with X”, “Ride bikes with X”, and “Invite X to my birthday party” respectively). Children responded to this measure by rating how much they would like to participate in each of these activities with the target (5-point scale, *Not at all – Very Much*).

**Procedure**

All participants completed the questionnaire using the survey tool Qualtrics. Older children completed the questionnaires in supervised sessions in the school computer rooms. Younger children were interviewed one-to-one by the researcher, who completed the Qualtrics survey with each child. Participants first answered demographic and ingroup bias questions. Four gender-matched targets (Persons A-D) were then presented on screen at the same time. These targets were all described as belonging to the same school; either the participants’ own school (ingroup) or Rosemary Green School (outgroup). The school to which the targets belonged (group condition) was randomised between participants, as was the type of deviance displayed by targets. In all conditions, three of the targets (Persons A – C) were presented as ‘normative’, and Person D was presented as the deviant. The normative targets were of ‘average-weight’ and made loyal statements towards their own

school (e.g. “My school is better than other schools, I like my school”). In the generic deviance condition, the deviant (Person D) was of higher body weight and made loyal comments about their school. However, in the *oppositional* condition Person D was of ‘average-weight’, but made disloyal statements towards their school (e.g. “I don’t like my school, there are lots of things about other schools that are better than my school”)[3]. In the *double* deviance condition, Person D was both of higher weight and disloyal to their school.

All participants first rated one normative target (Person C), followed by the deviant target (Person D) on measures of attitudes, competence, perceived fit, behavioural intentions, and anti-fat stereotypes. The order in which the targets were evaluated was not counterbalanced, however previous work has found no significant differences in the order in which participants considered and rated the targets (Purewal, 2014, unpublished manuscript).

## Results

### Preliminary Analyses

**Power analysis.** Effect sizes reported by Abrams et al. (2016) ranged from small to large, dependent on the interaction effect. A post-hoc power analysis was conducted to assess the current study’s power to detect a small effect. The power analysis confirmed that, given the sample size, this study had 99% power in detecting small effects.

**Ingroup bias (H1).** As predicted, children expressed ingroup bias, as confirmed with a one-way ANOVA. There was a significant difference between ingroup school favourability and outgroup school favourability $F$ (1, 500) = 1028.26,

[3] Note that in previous studies on children’s subjective group dynamics the disloyalty displayed by deviants was partial disloyalty (e.g. “I like being at this school, but the other school is better in other ways”; see Abrams et al., 2016).

$p < .001$, $\eta_p^2 = .673$ with participants expressing more favourability towards the ingroup ($M = 4.23$, $SE = 0.72$) than the outgroup ($M = 2.72$, $SE = 0.84$).

**Anti-fat stereotypes.** Descriptive analyses were conducted to obtain the rank and means of the adjectives for each target. The top five positive and negative adjectives for each target were then examined and are displayed in Tables 3.1 and 3.2. As is evident in Table 3.1, similar adjectives were most commonly assigned to each target. Interestingly, for all targets except the double deviant; the first five adjectives assigned were positive adjectives. Furthermore, examination of the means for the positive adjectives reveals that fewer children assigned positive adjectives to the double deviant, compared with all other targets (though this is not statistically tested).

Table 3.1. *Study 1. Top Five Positive Adjectives Assigned to each Target, along with the Rank Order and Mean for each Adjective*

| Position | Normative Target | Generic Deviant | Oppositional Deviant | Double Deviant |
|---|---|---|---|---|
| 1 | Friendly (1) [.78] | Friendly (1) [.78] | Friendly (1) [.61] | Friendly (2) [.56] |
| 2 | Happy (2) [.77] | Happy (2) [.75] | Nice (2) [.58] | Happy (3) [.56] |
| 3 | Kind (3) [.75] | Kind (3) [.75] | Healthy (3) [.58] | Honest (5) [.55] |
| 4 | Nice (4) [.74] | Nice (4) [.73] | Kind (4) [.57] | Kind (6) [.54] |
| 5 | Helpful (5) [.72] | Cheerful (5) [.66] | Honest (5) [.56] | Nice (8) [.52] |

*Note.* Rank order for each adjective is presented in parentheses and mean score for each adjective is presented in square brackets. Statistics displayed for the Normative Target are collapsed across all three conditions.

Of most interest is the differential assignment of negative adjectives to individual targets, as these may reveal anti-fat stereotypes. Indeed, examination of Table 3.2 reveals clear differences in the way in which children assigned negative

adjectives to the normative and deviant targets. Firstly, consideration of the rank order shows that for the double deviant the most popular adjective assigned was a negative one. Whereas for all other targets, almost all positive adjectives ranked before the negative adjectives. Moreover, examination of the mean scores for the negative adjectives reveals clear weight bias as more children assigned negative adjectives to the generic and double deviants, than to the normative and oppositional deviants.

Cross-examination of which negative adjectives were chosen for each of the targets reveals a set of negative traits stereotypically assigned to fat individuals (see for e.g. Puhl & Brownell, 2001; Greenleaf, Starks, Gomez, Chambliss, & Martin, 2004). The word ‘greedy’ is not only the most popular word chosen to describe the double deviant, but it is also the 3rd most popular negative word used to describe the generic deviant. Furthermore, ‘greedy’ does not appear at all in the top five negative adjectives for the oppositional deviant. Whilst ‘greedy’ is listed in the top five for the normative target, both the rank and mean score in comparison to those for the generic and double deviants suggests that the word ‘greedy’ is being used in response to the target’s weight. The same arguments follow for the use of the words ‘slow’ and ‘lazy’. The word ‘lonely’ however does not appear in the top five negative adjectives assigned to the generic deviant and was therefore not used to create the measure of anti-fat stereotypes. Finally, ‘careless’ had a similar mean score across all targets and was also disregarded for representation of the stereotypes measure. Therefore, the final adjectives that were used to compute a new variable of ‘anti-fat stereotypes’ to allow for the analysis of weight stigma were; ‘greedy’, ‘slow’, and ‘lazy’.

Table 3.2. *Study 1. Top Five Negative Adjectives Assigned to each Target, along with the Rank Order and Mean for each Adjective.*

| Position | Normative Target | Generic Deviant | Oppositional Deviant | Double Deviant |
|---|---|---|---|---|
| 1 | Careless | Slow | Unhappy | Greedy |
| | (16) [.31] | (13) [.50] | (15) [.37] | (1) [.61] |
| 2 | Selfish | Lazy | Careless | Slow |
| | (18) [.27] | (16) [.44] | (16) [.37] | (4) [.55] |
| 3 | Slow | Greedy | Sad | Lazy |
| | (19) [.24] | (17) [.44] | (17) [.37] | (7) [.53] |
| 4 | Lazy | Careless | Selfish | Lonely |
| | (20) [.23] | (19) [.34] | (18) [.34] | (12) [.47] |
| 5 | Greedy | Foolish | Lonely | Careless |
| | (21) [.22] | (20) [.30] | (19) [.34] | (16) [.42] |

*Note.* Rank order for each adjective is presented in parentheses and mean score for each adjective is presented in square brackets. Statistics displayed for the Normative Target are collapsed across all three conditions.

The statistics displayed in Tables 3.3 and 3.4 show that there was good to excellent reliability for all measures, and there were no concerns of floor or ceiling effects of the measures for either target. The dependent variables were suitably correlated with one another, with no concerns of excessive inter-correlations.

Table 3.3. *Study 1. Means, Standard Errors Reliability Statistics and Intercorrelations for All Dependent Measures of the Normative Target.*

| | Correlations | | | | | Descriptives | | |
|---|---|---|---|---|---|---|---|---|
| Measures | 1 | 2 | 3 | 4 | 5 | *M* | *SE* | α |
| 1. Attitudes | | .637*** | .567*** | .652*** | -.301*** | 3.02 | 0.04 | .781 |
| 2. Competence | | | .503*** | .607*** | -.284*** | 3.26 | 0.04 | .644 |
| 3. Fit | | | | .596*** | -.274*** | 3.20 | 0.06 | - |
| 4. Behavioural Intentions | | | | | -.282*** | 2.82 | 0.04 | .945 |
| 5. Anti-fat Stereotypes | | | | | | 0.19 | 0.01 | .849 |

*Note*. The reported reliability statistic for Competence is the Spearman-Brown Coefficient, as this measure only has 2 items. All other reliability statistics reported are the Cronbach's Alpha.

Table 3.4. *Study 1. Means, Standard Errors Reliability Statistics and Intercorrelations for All Dependent Measures of the Deviant Target.*

| | Correlations | | | | | Descriptives | | |
|---|---|---|---|---|---|---|---|---|
| Measures | 1 | 2 | 3 | 4 | 5 | *M* | *SE* | α |
| 1. Attitudes | | .706*** | .659*** | .793*** | -.452*** | 2.66 | 0.05 | .861 |
| 2. Competence | | | .553*** | .707*** | -.418*** | 2.89 | 0.05 | .799 |
| 3. Fit | | | | .628*** | -.396*** | 2.88 | 0.06 | - |
| 4. Behavioural Intentions | | | | | -.479*** | 2.59 | 0.05 | .965 |
| 5. Anti-fat Stereotypes | | | | | | 0.33 | 0.02 | .904 |

*Note*. The reported reliability statistic for Competence is the Spearman-Brown Coefficient, as this measure only has 2 items. All other reliability statistics reported are the Cronbach's Alpha.

The following analyses employed a Target x Group x Type x Age mixed MANCOVA, with target as a within-subjects variable and gender as a covariate across all DVs (attitudes, competence, perceived fit, anti-fat stereotypes, and behavioural intentions). There were no significant interaction effects with Gender, therefore this variable will not be discussed further. This analysis revealed significant main effects of; Type, Age, and Target, along with significant interaction effects of; Target x Group, Target x Type, Target x Age, Target x Group x Type, and a marginally significant interaction effect of Target x Group x Age (see Table 3.5 for MANOVA statistics). All means and standard errors are reported in Table 3.6.

Table 3.5. *Study 1. Multivariate Tests.*

| Effect | *F* | Df 1 | Df 2 | *p* | $\eta_p^2$ |
|---|---|---|---|---|---|
| Group | 1.67 | 5 | 479 | .146 | .017 |
| **Age** | **32.80** | **5** | **479** | **< .001** | **.255** |
| **Type** | **2.44** | **10** | **60** | **.007** | **.025** |
| **Target** | **4.02** | **5** | **479** | **.001** | **.040** |
| Group x Age | 0.99 | 5 | 479 | .426 | .010 |
| Group x Type | 1.46 | 10 | 960 | .152 | .015 |
| Age x Type | 1.08 | 10 | 960 | .379 | .011 |
| **Age x Target** | **3.15** | **5** | **479** | **.008** | **.032** |
| **Target x Group** | **14.62** | **5** | **479** | **< .001** | **.132** |
| **Target x Type** | **4.57** | **10** | **960** | **< .001** | **.045** |
| Group x Age x Type | 1.05 | 10 | 960 | .396 | .011 |
| **Group x Target x Type** | **3.20** | **10** | **960** | **< .001** | **.032** |
| *Target x Group x Age* | *2.10* | *5* | *479* | *.064* | *.021* |
| Age x Target x Type | 0.54 | 10 | 960 | .864 | .006 |
| Age x Target x Group x Type | 1.15 | 10 | 960 | .321 | .012 |

*Note.* Statistically significant multivariate effects are highlighted in bold. Marginally significant effects are highlighted by italics.

Table 3.6. *Study 1. Means and Standard Errors for All Measures, by Age of Participant, and Group and Type of Target.*

| | | | | Attitudes | | Competence | | Perceived Fit | | Behavioural Intentions | | Anti-Fat Stereotypes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age | Type of Deviant | Group | Target | *M* | *SE* | *M* | *SE* | *M* | *SE* | *M* | *SE* | *M* | *SE* |
| Younger (6 – 8 years) | Generic | In | N | 3.29 | 0.14 | 3.51 | 0.14 | 3.66 | 0.20 | 3.15 | 0.14 | 0.29 | 0.05 |
| | | | D | 3.02 | 0.16 | 3.34 | 0.16 | 3.34 | 0.20 | 3.00 | 0.15 | 0.45 | 0.06 |
| | | Out | N | 3.24 | 0.14 | 3.51 | 0.14 | 3.29 | 0.21 | 3.25 | 0.14 | 0.17 | 0.05 |
| | | | D | 3.06 | 0.17 | 3.44 | 0.17 | 3.32 | 0.21 | 3.10 | 0.16 | 0.36 | 0.06 |
| | Oppositional | In | N | 3.43 | 0.16 | 3.70 | 0.15 | 3.87 | 0.22 | 3.45 | 0.15 | 0.31 | 0.06 |
| | | | D | 2.73 | 0.18 | 3.32 | 0.18 | 2.86 | 0.22 | 2.90 | 0.17 | 0.39 | 0.07 |
| | | Out | N | 2.95 | 0.15 | 3.29 | 0.15 | 2.63 | 0.22 | 2.87 | 0.15 | 0.33 | 0.05 |
| | | | D | 3.23 | 0.18 | 3.61 | 0.18 | 3.79 | 0.22 | 3.43 | 0.17 | 0.26 | 0.06 |
| | Double | In | N | 3.61 | 0.15 | 3.63 | 0.15 | 3.86 | 0.21 | 3.34 | 0.15 | 0.27 | 0.05 |
| | | | D | 2.39 | 0.17 | 2.95 | 0.17 | 2.32 | 0.21 | 2.51 | 0.16 | 0.51 | 0.06 |
| | | Out | N | 3.05 | 0.15 | 3.20 | 0.14 | 2.94 | 0.21 | 3.05 | 0.14 | 0.27 | 0.05 |
| | | | D | 3.10 | 0.17 | 2.95 | 0.17 | 3.37 | 0.21 | 3.13 | 0.16 | 0.56 | 0.06 |
| Older (9 – 11 years) | Generic | In | N | 2.87 | 0.16 | 3.01 | 0.16 | 3.30 | 0.23 | 2.44 | 0.16 | 0.14 | 0.06 |
| | | | D | 2.62 | 0.19 | 2.81 | 0.19 | 3.00 | 0.23 | 2.20 | 0.17 | 0.42 | 0.07 |
| | | Out | N | 2.65 | 0.14 | 3.00 | 0.14 | 2.95 | 0.20 | 2.63 | 0.14 | 0.18 | 0.05 |
| | | | D | 2.51 | 0.16 | 2.66 | 0.17 | 2.49 | 0.20 | 2.26 | 0.15 | 0.57 | 0.06 |
| | Oppositional | In | N | 2.78 | 0.15 | 3.03 | 0.14 | 3.25 | 0.21 | 2.49 | 0.14 | 0.26 | 0.05 |
| | | | D | 2.51 | 0.17 | 2.57 | 0.17 | 2.34 | 0.21 | 2.38 | 0.16 | 0.34 | 0.06 |
| | | Out | N | 2.55 | 0.14 | 2.95 | 0.14 | 2.62 | 0.20 | 2.41 | 0.14 | 0.16 | 0.05 |
| | | | D | 2.56 | 0.16 | 2.54 | 0.17 | 3.56 | 0.20 | 2.42 | 0.15 | 0.26 | 0.06 |
| | Double | In | N | 2.95 | 0.15 | 3.05 | 0.15 | 3.35 | 0.21 | 2.32 | 0.15 | 0.18 | 0.05 |
| | | | D | 2.07 | 0.17 | 2.32 | 0.17 | 1.71 | 0.21 | 1.77 | 0.16 | 0.58 | 0.06 |
| | | Out | N | 2.81 | 0.15 | 3.21 | 0.15 | 2.67 | 0.22 | 2.39 | 0.15 | 0.22 | 0.05 |
| | | | D | 2.09 | 0.18 | 2.22 | 0.18 | 2.48 | 0.22 | 1.96 | 0.17 | 0.60 | 0.07 |

**Positivity of Younger Children (H2)**

Children in the younger age range were consistently more positive towards targets, than older children were (all *p*s < .001). This is evident through the main effect of Age on; attitudes $F$ (1, 483) = 60.96, $p < .001$, $\eta_p^2 = .112$, competence $F$ (1, 483) = 74.86, $p < .001$, $\eta_p^2 = .139$, perceived fit $F$ (1, 483) = 27.00, $p < .001$, $\eta_p^2 = .053$, and behavioural intentions $F$ (1, 483) = 125.71, $p < .001$, $\eta_p^2 = .207$. Interestingly, there was no effect of age on use of anti-fat stereotypes ($p = .376$), suggesting that younger children used anti-fat stereotypes in the same manner as older children.

**Black Sheep Effect (H3)**

The BSE was evident through significant Target x Group interactions on measures of; attitudes $F$ (1, 483) = 13.59, $p < .001$, $\eta_p^2 = .027$, perceived fit $F$ (1, 483) = 57.44, $p < .001$, $\eta_p^2 = .106$, and behavioural intentions $F$ (1, 483) = 11.04, $p = .001$, $\eta_p^2 = .022$. In fact, a crossover effect, where the outgroup deviant is preferred over the ingroup deviant, was evident across all three measures ($p_{attitudes} = .041$, $p_{fit} < .001$, $p_{intentions} = .006$).

The BSE hypothesis for this study however focused on differences between ages. Specifically, that the BSE would not be evident amongst younger children, but would be for children aged 9 – 11 years. Significant Group x Target x Age interactions were found for; attitudes $F$ (1, 483) = 5.18, $p = .023$, $\eta_p^2 = 0.11$ (see Figure 3.1), competence $F$ (1, 483) = 4.19, $p = .041$, $\eta_p^2 = .009$, and behavioural intentions $F$ (1, 483) = 9.13, $p = .003$, $\eta_p^2 = .019$, suggesting a developmental trend for the BSE. On examination of the comparisons however, an unexpected pattern emerges.

Older children made more positive ratings towards the ingroup normative than the ingroup deviant across all three measures. However, this age group also preferred the outgroup normative over the outgroup deviant ($p_{attitudes} < .001$, $p_{competence} < .001$, $p_{intentions} = .007$). Furthermore, there was no significant difference between ratings for the ingroup deviant and outgroup deviant, showing that the older children did not make both inter- and intragroup judgements simultaneously ($p_{attitudes} = .922$, $p_{competence} = .522$, $p_{intentions} = .477$).

Even more surprising however, was that younger children did appear capable of making both inter- and intragroup judgements. Specifically, this age group made more positive judgements across the three measures (attitudes, competence, behavioural intentions) towards ingroup normative members, than towards ingroup deviants ($p_{attitudes} < .001$, $p_{competence} = .002$, $p_{intentions} < .001$) and outgroup normative members ($p_{attitudes} = .003$, $p_{competence} = .018$, $p_{intentions} = .033$). Evidencing effects beyond the black sheep effect, younger children held more positive attitudes towards, and wanted to participate in activities more with, the outgroup deviant, than towards and with the ingroup deviant, regardless of the deviant type ($p_{attitudes} = .003$, $p_{intentions} < .001$).

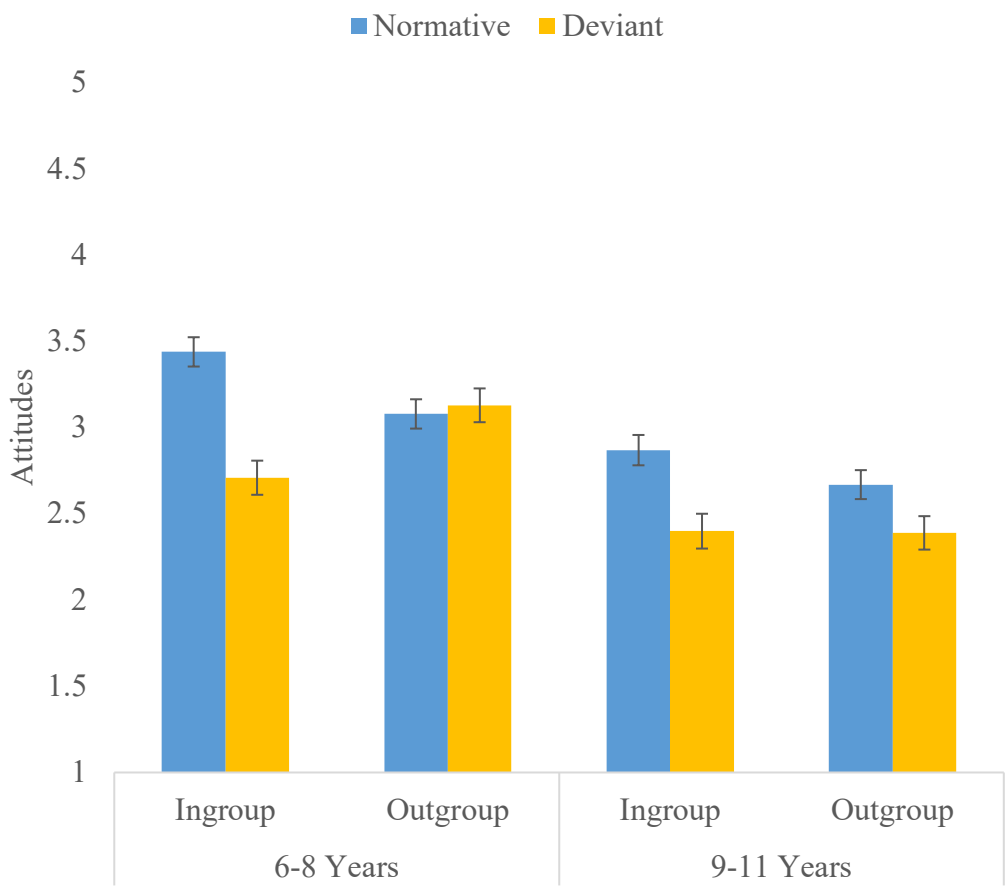


*Figure 3.1.* Study 1. Participants' attitudes towards the target as a function of the target's group membership, by participant age.

**Weight Stigma and Black Sheep Effect (H4)**

This hypothesis theorised that the BSE may emerge for younger children, as is evident above. However, it was stated that this would be an effect of weight stigma, and therefore only in the case of generic and double deviants. Yet, no significant Target x Group x Age x Type interactions existed. Therefore, this hypothesis was not met.

**Double Deviance (H5)**

In line with Abrams et al.'s (2016) findings, the double deviants were derogated more so than any other target, and importantly, more than oppositional deviants. This is evident through significant Target x Type and Target x Group x Type interactions.

The Target x Type interaction was significant across all dependent variables [attitudes $F$ (2, 483) = 6.54, $p$ = .002, $\eta_p^2$ = .026, competence $F$ (2, 483) = 5.36, $p$ = .005, $\eta_p^2$ = .022, perceived fit $F$ (2, 483) = 7.25, $p$ = .001, $\eta_p^2$ = .029, behavioural intentions $F$ (2, 483) = 4.93, $p$ = .008, $\eta_p^2$ = .020, anti-fat stereotypes $F$ (2, 483) = 15.17, $p$ < .001, $\eta_p^2$ = .059]. The double deviant was more negatively rated on all measures, in comparison to; the normative target ($p_{attitudes}$ < .001, $p_{competence}$ < .001, $p_{fit}$ < .001, $p_{intentions}$ < .001, $p_{stereotypes}$ < .001), generic deviant ($p_{attitudes}$ = .001, $p_{competence}$ < .001, $p_{fit}$ < .001, $p_{intentions}$ = .009, $p_{stereotypes}$ = .013), and oppositional deviant ($p_{attitudes}$ = .004, $p_{competence}$ = .001, $p_{fit}$ < .001, $p_{intentions}$ < .001, $p_{stereotypes}$ < .001).

The double deviance effect is further evident upon examination of group membership of the targets, that is, the significant Target x Group x Type interaction on variables of perceived fit $F$ (2, 483) = 12.70, $p$ < .001, $\eta_p^2$ = .050 (Figure 3.2), and behavioural intentions $F$ (2, 483) = 4.11, $p$ = .017, $\eta_p^2$ = .017 (Figure 3.3). To fully understand the extent of the derogation of double deviants, it is helpful to first consider the treatment of the oppositional deviant, as the only difference between the two targets is body size.

As expected, due to violations of loyalty norms, ingroup oppositional deviants were deemed as fitting less well to the group ($p$ < .001), and participants were less likely to want to engage in activities with oppositional deviants ($p$ = .014), in comparison to normative targets. The same pattern of derogation occurred for double deviants when compared with normative targets ($p_{fit}$ < .001, $p_{intentions}$ < .001). In support of the double deviance hypothesis, the ingroup double deviant was also rated as less well fitting to the group ($p$ = .007), and participants were less likely to want to engage in activities with them ($p$ = .002) in comparison to the ingroup oppositional deviant.

In line with the black sheep effect and as evidence of the crossover effect earlier presented, the outgroup oppositional deviant was perceived as fitting better to the ingroup, than the ingroup oppositional deviant ($p < .001$). Due to weight stigma however, the outgroup double deviant was perceived as less well fitting than its slimmer counterpart, the outgroup oppositional deviant ($p < .001$). As for behavioural intentions, whilst there was no evidence of a crossover effect for oppositional deviants, there was still evidence of the BSE. However, once again, participants wanted to engage with the outgroup double deviant significantly less than they did with the outgroup oppositional deviant ($p = .019$).

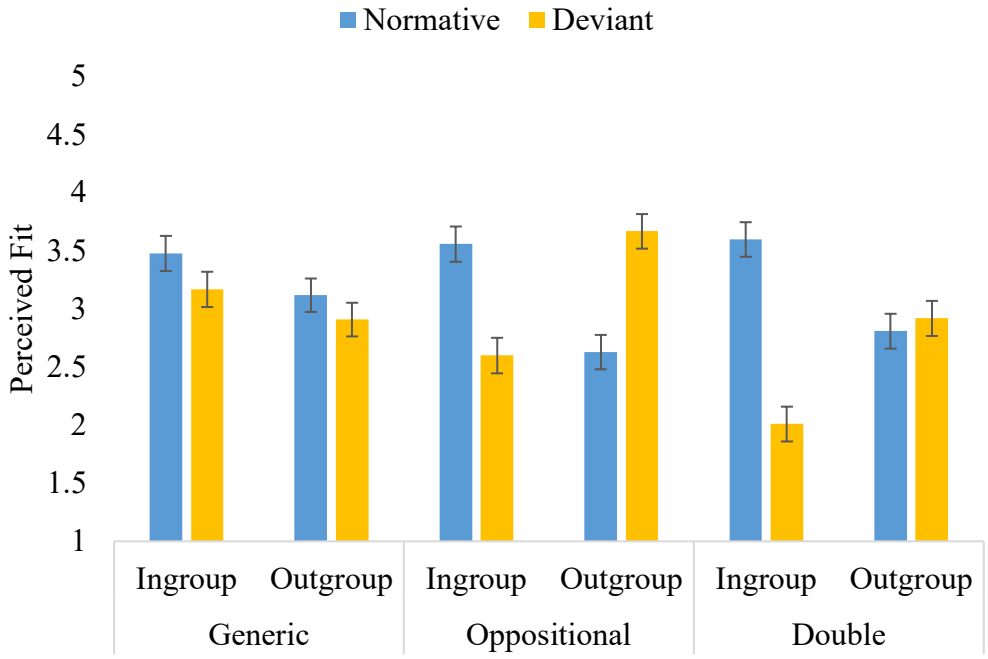


*Figure 3.2.* Study 1. Perceived fit of the target to the ingroup as a function of the target's group membership and deviance type.

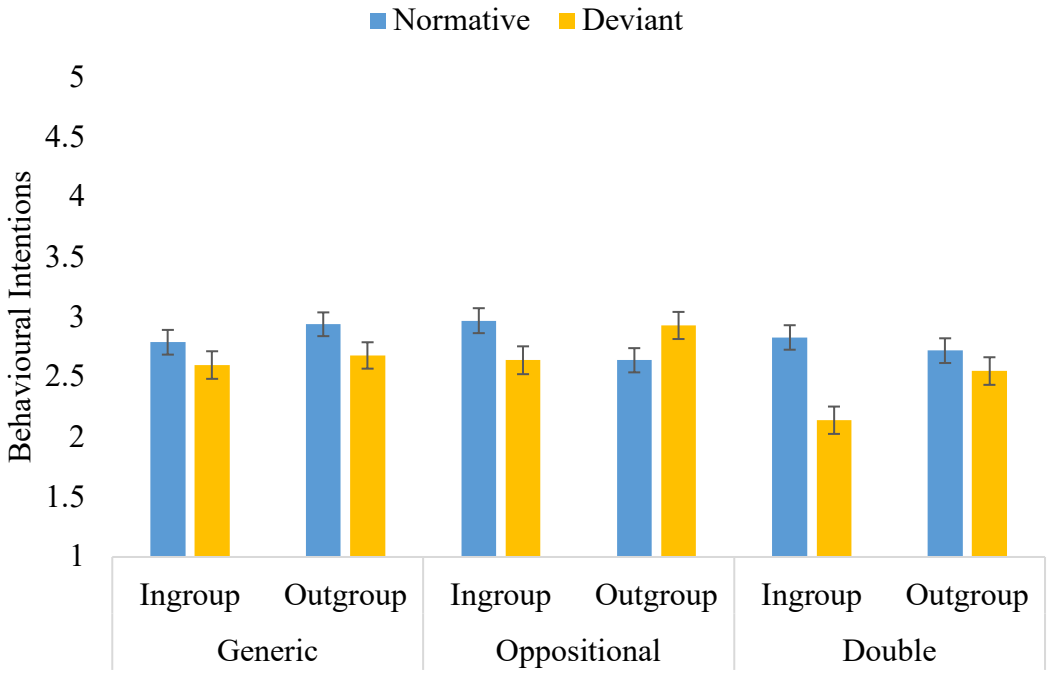


*Figure 3.3.* Study 1. Behavioural intentions towards the target to the ingroup as a function of the target's group membership and deviance type.

**Anti-Fat Stereotypes (H6)**

It was hypothesised that generic and double deviants would be assigned more anti-fat stereotypes than any other targets. Indeed, the significant Target x Type

interaction detailed above showed that; both generic and double deviants were assigned these traits significantly more than their normative counterparts ($p_{generic} <$ .001, $p_{double} <$ .001) and the oppositional deviants ($p_{generic} =$ .002, $p_{double} <$ .001). Double deviants were also assigned these traits significantly more than the generic deviant ($p =$ .013).

In addition to these findings and the findings in support of the double deviance hypothesis; as further evidence of weight stigma, it is important to note here that the generic deviant was also treated more negatively, compared with the normative target on measures of attitudes ($p =$ .058) and behavioural intentions ($p =$ .014).

**Role of Perceived Fit (H7)**

**Calculating differential scores.** For the remainder of the analyses, differential scores were calculated for attitudes, perceived fit and, behavioural intentions variables. These differential scores were calculated by subtracting the score for the deviant target from the score for the normative target. Therefore, scores above zero indicate that the normative target was rated higher on that particular variable, over the deviant target. The group variable was coded as '0' for outgroup targets and '1' for ingroup targets.

To test for the hypothesis that perceived fit to the ingroup would mediate the relationship between the Group x Target interaction, two mediation analyses were conducted using Hayes PROCESS macro (Hayes, 2012), model 4 with 5000 bootstraps. In the first mediation model, group condition was the predictor, with differential perceived fit as the mediator, and differential attitudes as the outcome variable. The second model was identical; except for the outcome variable was differential behavioural intentions. As the mediator and outcome variables were repeated measures, the mean scores of these variables were included in both models

as covariates, to account for any within-subjects effects (as suggested by Judd, Kenny, & McClelland, 2001).

The first model (Figure 3.4) revealed that perceived fit significantly mediated the relationship between group and attitudes, $b = 0.58$, $SE = 0.09$, 95% CI [0.416, 0.755]. Specifically, the significant total effect of group on attitudes, $b = 0.50$, $SE = 0.13$, $t = 3.81$, $p < .001$, was reduced to non-significance in the direct effect $b = -0.08$, $SE = 0.11$, $t = -0.72$, $p = .471$. That is, the group membership of a normative or deviant target is no longer predictive of attitudes towards the target, when their perceived fit to the group is accounted for. Children's attitudes towards normative and deviant targets are driven by the extent to which these peers are perceived to fit within the ingroup, rather than by the targets' group membership alone.

The second model (Figure 3.5) also revealed that perceived fit significantly mediated the relationship between group and behavioural intentions, $b = 0.48$, $SE = 0.07$, 95% CI [0.346, 0.638]. Specifically, the significant total effect of group on intentions, $b = 0.32$, $SE = 0.11$, $t = 3.02$, $p = .003$, was reduced to non-significance in the direct effect $b = -0.16$, $SE = 0.09$, $t = -1.78$, $p = .075$. That is, the group membership of a normative or deviant target is no longer predictive of behavioural intentions towards the target, when their perceived fit to the group is accounted for. Children's behavioural intentions towards normative and deviant targets are driven by the extent to which these peers are perceived to fit within the ingroup, rather than by the targets' group membership alone.

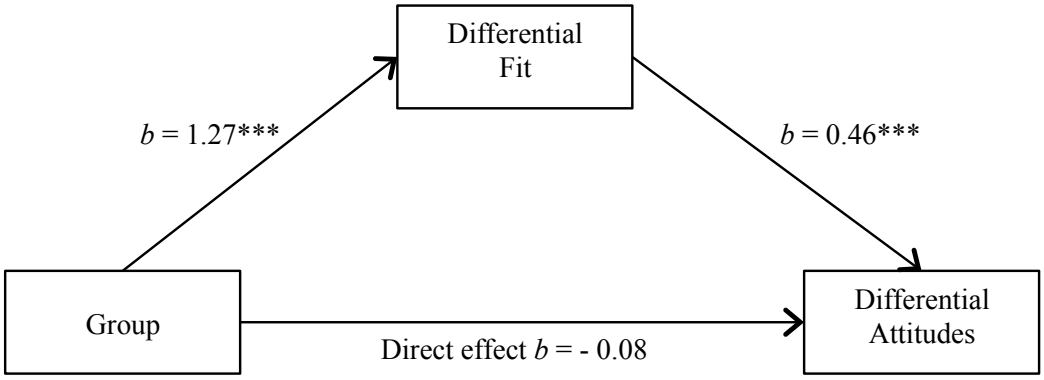


*Figure 3.4.* Study 1. Perceived fit mediates the relationship between group and differential attitudes.
*** p < *.001*.

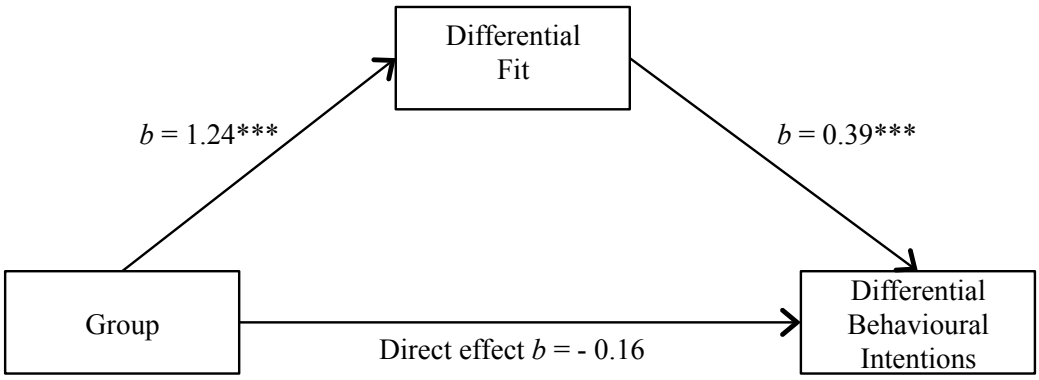


*Figure 3.5*. Study 1. Perceived fit mediates the relationship between group and differential behavioural intentions.
*** p < *.001*.

## Discussion

The present study aimed to detect and explore the presence of children's weight biases in an intergroup context. The DSGD theory was used to inform the research design and allow for the examination of weight stigma within different contexts (group and displays of deviance). It is the first time that this model has been applied to test young children's weight biases. Furthermore, this study extends previous DSGD research by measuring children's inclusion intentions as well as attitudes.

Weight bias was examined and confirmed through; children's attitudes towards larger-bodied peers, the extent to which they perceived that the peer would fit into their group, stereotypic trait attributes, and finally, inclusion intentions.

Moreover, the influence of children's peers and group membership on their attitudes and intentions towards others was highlighted. This discussion section will first focus on the findings most revealing of children's weight stigma, followed by consideration of findings that support and extend the DSGD model.

Examination of children's use of traits to describe individual targets revealed that children did not simply view the adjectives as either positive or negative. Instead, negative traits were differentially assigned, dependent on the target being evaluated. Abrams et al. (2016) found that the word 'lazy' was used to describe generic and double deviants significantly more than oppositional deviants. The present study identified a set of three adjectives, including 'lazy', that appeared to represent anti-fat stereotypes. In support of the findings by Abrams and colleagues and the anti-fat stereotypes hypothesis; findings revealed that these stereotypes were used to describe generic and double deviants significantly more than their normative counterparts, or the oppositional deviant.

A novel hypothesis in this study was the prediction that a black sheep effect pattern could emerge with younger children, when judging fat-bodied targets. Interestingly, this pattern did emerge amongst the younger children, however it did not differ by deviance type. A more detailed discussion of this novel finding follows. Nevertheless, the significant Target x Type interactions did demonstrate children's weight biases against larger-bodied peers. At first, it may seem as though children did not treat the generic deviant any differently to the normative target, as there was no such interaction effect on attitudes, fit, competence or stereotypes. However, the fact that children chose not to include the generic deviant in social activities as much as they did the normative, is suggestive of children's sophisticated understanding of prejudice and exclusion. That is, in the generic deviance condition; the children may have been aware that they were being asked to evaluate two individuals on the basis

of their body sizes and therefore made a conscious effort to conceal prejudices, or at least to appear fair. However, the reality is evident when the children are asked to think about socialising with the targets. This finding supports Solbes and Enesco's (2010) finding that with age children's implicit anti-fat attitudes do not change, but their expression of explicit prejudice reduce, as they become 'socially smart'.

Further, children may be justifying their blatant prejudice and derogation of larger-bodied peers when evaluating the ingroup double deviant, as the deviant's disloyalty is enough of a reason for children to condemn the target. However, the strength of weight stigma once again becomes evident upon the finding that evaluations and behavioural intentions towards the ingroup double deviant are far more negative than towards any other target. Particularly, when the oppositional deviant and double deviant are compared. If a peer's body size was of little importance, we would expect that the double deviant and oppositional deviant be treated similarly. However, the ingroup double deviants fit even less well to the ingroup and are excluded more so, than the ingroup oppositional. In further support of the double deviance hypothesis and prior findings (Abrams et al., 2016), outgroup oppositional deviants who were welcomed to the ingroup through being perceived as fitting better to the group than ingroup oppositional deviants, were then derogated and deemed as less well fitting when their body size was larger (outgroup double deviant).

In addition to confirming young children's weight biases, the present study also provided new insights into the DSGD model. Firstly, in line with the model, all children held ingroup bias, and younger children were overall more positive to all targets than older children were (Abrams et al., 2003a; 2003b). Furthermore, extending Abrams et al.'s (2014; 2016) findings, the present study found that not only did perceived fit mediate the differentiation between targets for attitudes, but it

also did for behavioural intentions. This is an important finding as it shows that children's attitudes towards fat individuals, and their intentions to exclude such peers are driven by their group bias and understanding of group norms and values. Crucially, this effect did not differ by age, suggesting that younger children are aware of and can act upon such group dynamics.

The present study provided further evidence of young children's understanding of group nous through the interaction effect of age and the BSE (Age x Target x Group). In contrast to previous DSGD research (Abrams et al., 2003a; 2003b; 2009; 2014; 2016), this study found that young children are able to distinguish on both an inter- and intragroup basis; as shown by their derogation of ingroup deviants, and promotion of outgroup deviants. More surprisingly perhaps, is the finding that the older children in this study (aged 9-11 years) did not differentiate between targets in this manner. Specifically, the older children seemed to evaluate and derogate deviants, regardless of group membership, suggesting that these children were basing evaluations solely on displays of deviance, and not group membership. However, the BSE emerged across both age groups for the extent to which targets were perceived as fitting to the ingroup. Thus, it is not the case that older children are no longer concerned with the effects of deviance on the group; instead, it seems as though the displays of deviance themselves are offensive enough that the target's group membership is no longer relevant when judgements and inclusions decisions need to be made. However, it is clear that within the same contexts, adolescents actively make evaluations of oppositional and generic deviants based upon both inter- and intragroup dynamics (Abrams et al., 2016). Therefore, considering the recent and past DSGD research conducted across age groups, the findings from the present study are indeed distinctive. Nevertheless, one can be confident in the findings of this study, due to the large sample size and more than

adequate power. In conclusion then, it seems that it may be the specific generic deviance of obesity that is disrupting the usually reliable pattern of children's evaluations and judgements.

**Limitations and Future Work**

Following from the unexpected findings regarding age and the BSE, an obvious avenue for future research then is to further explore this finding. Whilst Abrams et al. (2014) found evidence for a BSE when adolescents judge 'overweight' targets, a study conducted with pre-school children found no difference in strength of weight stigma between an outgroup and ingroup 'overweight' member (Cramer & Steinwert, 1998). Therefore, a future research piece should aim to test and establish the occurrence and developmental trend of the BSE, when judging 'overweight' or fat targets, with age as a continuous variable through childhood and adolescence.

A limitation of this study is that the targets which children are asked to consider and evaluate are fictional drawings. It is plausible that the use of such targets prevents children from expressing their true feelings and intentions, especially as they get older, as children may place less importance on fictional or 'imaginary' situations. Future work should address issues of validity therefore, by implementing a design in which the targets are perceived as real peers. Whilst this study was the first to explicitly measure children's behavioural intentions towards normative and deviant peers (within the DSGD framework); next steps would be to utilise an actual behavioural measure; a task that should be facilitated by the use of more realistic targets.

Finally, children's own body size may conceivably influence their attitudes and behaviour towards peers of different body sizes and this is not something that was tested or controlled for in the present study. Evidence for the influence of children's own body size on their judgements of others is mixed (Cramer &

Steinwert, 1998; Kornilaki, 2014) yet a study employing the same measures as the present study found no difference in strength of weight stigma between children of different body sizes (Greenleaf, Chambliss, Rhea, Martin, & Morrow, 2006). However, to account for any possible influence, the following study, Study 2, will take children's body size in to consideration.

Most importantly, the current research presents obvious instances of weight bias in children aged 6-11 years old. Thus, whilst understanding the specific contexts in which weight bias occurs and develops is important; what is more important is that attempts are made to reduce the stigmatisation of fat children by their peers – the key aim of this thesis. Moreover, the current study has provided insight into the development of weight stigma and the influence of peer groups on attitudes and behavioural intentions towards larger-bodied peers. Study 2 will therefore test the effectiveness of an intervention designed to reduce weight stigma, whilst giving consideration to the influence of group dynamics and the age of participants.

# Chapter 4: Can Imagined Contact Reduce Children's Weight Stigma?

*The strength and persistence of children's weight stigma has been established in Study 1, along with the importance of group membership and dynamics on evaluations and intentions towards fat peers. The present chapter presents two studies. The first study attempts to reduce children's weight stigma by employing a method that has not yet been used to combat children's weight biases – imagined contact. Study 2 also extends the imagined contact and weight stigma literature by introducing a group context. The results from this study suggest that imagined contact is not effective in reducing children's weight biases. Furthermore, the age-related trends support those observed in Study 1. The purpose of Study 3 was to empirically assess the suitability of the design employed in Study 2, and to determine the generalisation of imagined contact effects to the group. Mixed findings both support the design of Study 2 and bring into question inconsistencies of the success of imagined contact. Finally, recommendations are made for future studies to further explore the imagined contact paradigm for weight stigma, in light of the present findings.*

## Study 2

As detailed in Chapter 2, imagined contact is an established method of reducing prejudices and discriminatory behaviour, for both children and adults. Whilst imagined contact has been applied to reduce weight stigma in adult populations (Turner & West, 2012), it has not yet been tested as an effective intervention for reducing children's weight stigma. As described in chapter 2; imagined contact interventions with children have targeted prejudices against disabled children, immigrants, and non-white children. The methods employed in each of these interventions are detailed below.

The first study to test imagined contact with children did so with the target outgroup of disabled children, and found participating children to hold less intergroup bias, and more intended positive behavioural intentions towards the disabled children (Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011). Participants were presented with an A3 picture of a park and laminated drawings of park objects (such as a swing, a slide etc.). They were also presented with a picture of a, gender-matched, ingroup child and outgroup child. The participants were told to imagine themselves as the ingroup child, and then to imagine interacting with the outgroup child pictured, in the park. Participants were instructed to imagine a positive interaction (detailed wording of the instructions is listed in the methods section of the present study). The participants engaged in the imagined contact task and completed subsequent dependent variable measures one-to-one with the researcher. The intervention was delivered in one session only, and the interview to complete the measures was held immediately after the intervention.

Research conducted by Vezzali and colleagues (Vezzali, Capozza, Giovannini, & Stathi, 2012a; Vezzali, Capozza, Stathi, & Giovannini, 2012b) employed a slightly different approach; whereby the intervention was carried out once a week, over a 3-week period, with the dependent measures completed one week after the final imagined contact session. Children were not given pictures of the ingroup or the outgroup, nor were they provided with a picture of a scene (e.g. park) to assist with the task, instead they were simply asked to imagine the positive interaction with the outgroup member. To avoid sub-typing of the imagined target however, the scene/context in which they were asked to imagine the interaction varied each week between; a school, in the neighbourhood, and at the park. Moreover, children participated in the imagined task in groups of 5-6 children, rather than individually. Following the imagined task, children were given 15 minutes to

write down what they had imagined, then engaged in a 10-minute group discussion about their imagined interactions, as a method of enhancing the imagined contact effects. Despite different methods of employing the intervention; Vezzali and colleagues also found improved attitudes and behavioural intentions in the experimental condition, along with a reduction of implicit bias in the study which employed an implicit association test (Vezzali et al., 2012a).

Finally, in a combination of the methods detailed above; Stathi, Cameron, Hartley and Bradford (2014) implemented a 3-week IC intervention to reduce White children's prejudices towards Asian children. Participants were provided with pictures of an ingroup and outgroup target, as well as an A3 drawing of the scene in which the imagined contact should take place. As the intervention was delivered over the course of three weeks, the scene varied between; a park, a birthday party, and a beach. The children participated in the imagined contact task individually, rather than in small groups, and the dependent measures were also completed individually on the fourth week. Once again, the imagined contact intervention proved to be a success in improving children's attitudes, and future intentions, along with increases of perceived similarity with the target outgroup.

As previously mentioned, imagined contact has not been tested as an effective prejudice reduction tool for children's weight stigma. Yet, the results from Study 1, and the literature presented in Chapter 1, highlight the need for such an intervention. However, imagined contact is an *intergroup* intervention. As such, the prejudices typically targeted with this intervention are those where there is a clear and likely permanent distinction between the ingroup and the outgroup. For example, to target racial prejudice the ingroup may be White people, and the outgroup Black people, and they are permanent distinctions as one cannot change their ethnicity. With body size however, an individual's body size can change considerably and

constantly. Thus, an argument could be made that an intergroup intervention such as imagined contact is not suitable for this particular prejudice. Nevertheless, Turner and West (2012) did successfully apply the technique to combat adults' weight stigma (see Chapter 5 for details). For the purposes of the present study however, a clear intergroup context is applied, which will also help to address the findings of Study 1.

Specifically, the presence of the black sheep effect, and the role of perceived fit to the group, in judgements of larger-bodied peers; is evidence of children's use of group norms and group understanding in their social decision making. Therefore, whilst attempting to reduce children's weight stigma, it is logical to consider the implications of group membership and group dynamics. As a display of the BSE, Study 1 found that the ingroup deviant target was derogated more, or like significantly less, than the outgroup deviant. With this in consideration, it is unclear how the effects of imagined contact will differ on the attitudes and intentions towards the larger-bodied ingroup target versus the larger-bodied outgroup target. It is possible that the imagined contact intervention will result in more positive effects towards the outgroup target, as the consequences for deviance are not as serious for an outgroup member as they are for an ingroup member. Therefore, with the outgroup member already held in a more positive light than the ingroup member, it may be easier with the help of the imagined contact intervention to increase positivity towards the outgroup member. On the other hand, however, there is more room for improvement in attitudes and intentions towards the ingroup target than the outgroup target. Therefore, the imagined contact intervention may be more successful in the ingroup condition, as will be seen by a greater increase in attitudes and intentions.

Study 1 also found that perceived fit was an important factor in children's social decision making, with increases in perceived fit of the target to the ingroup relating to increases in positive social attitudes and behaviours towards the target. It is reasonable, therefore to expect that any change in positive attitudes and behaviours as a result of the imagined contact intervention, will also see an increase in the perceived fit of the target.

Other findings from Study 1 highlight the implications of age on children's attitudes and behaviour towards fat individuals. Firstly, in line with previous studies (e.g. Abrams, Rutland, Cameron, & Marques, 2003a) discussed in Chapter 3, younger children were found to show more positive attitudes towards all targets than older children did. Hence, one possibility is that due to their more positive stance, younger children may be more susceptible to the effects of the intervention and thus show better attitudes and intentions post-intervention, compared to the older group. The alternative however, is also possible. That is, older children are the age group for which imagined contact is most needed and therefore there may be a greater improvement in attitudes and intentions, compared with the younger age group.

Another age-related finding from Study 1 was that the black sheep effect was only evident in younger children, unlike other studies that have established that the BSE emerges later in childhood (e.g. Abrams et al., 2003a; Abrams, Rutland, & Cameron, 2003b; Abrams et al., 2014). Therefore, it is not easy to hypothesise how the combination of age and group membership will affect the process and outcomes of the imagined contact intervention. It may be that any effects of group membership, as shown by more or less success of the intervention for the ingroup or outgroup targets, will only be evident in the older age group. However, considering the findings of Study 1 and the uniqueness of weight stigma in comparison to other prejudices (in terms of its strong and early emergence and resistance to prejudice-

reduction methods); it is also possible that the younger age group will be more sensitive to group differences.

Moreover, children's own weight or body size could indeed impact the extent to which the imagined contact is effective in reducing children's weight stigma. As discussed in the previous chapter, the evidence for the influence of children's BMI on weight stigma is mixed. In particular, a recent study conducted on pre-school children found that children's BMI did not influence their attitudes towards 'overweight' peers. However, their BMI did influence their decisions of playmate preferences, with higher BMI children showing strong preferences for a thinner playmate (Kornilaki, 2014). Therefore, the present study will also consider participants' body size as an influencing factor in the effectiveness of the imagined contact intervention.

**Aims and hypotheses**

**H1 Imagined contact hypothesis.**

Compared with the control condition, participants who participate in the imagined contact should show more positive attitudes (implicit and explicit) and behavioural intentions towards the target, as well as an increase in the perceived fit of the target to the ingroup. This will be detected by a main effect of condition across all dependent variables.

**H2 Age and imagined contact hypothesis.** The effects of age on an imagined contact intervention have not yet been established. Nevertheless, as Study 1, and several other DSGD studies found, that younger children are more positive overall towards targets, than older children are; an Age x Condition interaction effect can be expected. However, the direction of these effects is not clear.

**H3 Body size and imagined contact hypothesis.** Participants' own body size may enhance or inhibit the effects of imagined contact. Specifically, the

intervention may be more effective with larger bodied individuals than with smaller bodied individuals, as a result of similarity and empathy. However, as mentioned earlier, evidence exists to show that heavier-weight children holder stronger anti-fat and pro-thin biases. Therefore, it is expected that participants' body size will be a significant covariate in the main analyses of the intervention. Further, following from Kornilaki's (2014) findings, it is possible that body size will correlate with behavioural intentions but not attitudes.

**H4 Effect of group membership hypothesis.** The occurrence of the black sheep effect in Study 1 demonstrates that group membership and considerations of group dynamics may influence the effectiveness of the intervention. Whether the intervention is more successful in reducing weight-based prejudice towards the ingroup or the outgroup member is currently unknown. Any effects of group will be evident in the Condition x Group interaction on all dependent variables as well as in the mediating role of perceived fit in this interaction.

**H5 Age and group membership hypothesis.** Should there be any effects of group on the imagined contact intervention (H4), it is conceivable to hypothesise that these effects will differ by age group. As discussed above, previous studies have found that older children, as opposed to younger children, display attitudes and behaviours in line with the black sheep effect; yet, Study 1 found the opposite effects. Any effects of group on the imagined contact intervention should therefore be more pronounced in the younger age group than the older. This is because from Study 1, it is clear that younger children are more concerned with group dynamics in this specific context (weight-based stigma) than older children are. Therefore, it is expected that the effect of group membership described in H4 will only apply to the younger age group, as displayed by a Condition x Group x Age interaction.

## Method

### Participants

Two hundred and thirty-two[4] participants from two different Primary schools in Kent took part in the present study. A-priori power analyses based on the effect size obtained by Stathi et al. (2014) required a sample size of 197, for 80% power. The participants ranged from age six to 11 ($M$ = 8.98 years, $SD$ = 1.66 years), participants were split into two age categories, younger ($M$ = 89.54 months, $SD$ = 8.49 months) and older ($M$ = 125.30 months, $SD$ = 19.93 months). The gender split in this sample was almost equal with 114 females and 118 males.

### Design

The present study employed a 2 (Intervention Condition: No imagined contact vs imagined contact) x 2 (Group: Ingroup vs Outgroup) x 2 (Age: Younger vs Older) between-subjects design, see Table 4.1 for $n$ of each condition. All children in one school were assigned to the imagined contact condition and children from the second school were assigned to the control condition with no imagined contact intervention. The independent variable 'Group' was manipulated by altering the group membership of the target member. Ingroup targets were presented as attending the participant's own school and outgroup targets were presented as attending a different primary school, 'Rosemary Green School'.

Dependent variables in the present study were; attitudes, perceived fit, behavioural intentions, and an implicit association test (IAT). Participants' group bias and perceptions of their own body size (or body image) were also measured.

[4] Owing to missing data, the analyses were conducted on data from 222 participants.

Table 4.1. *Study 2. Number of Participants within each Condition*.

| | | Group condition | |
|---|---|---|---|
| | | Ingroup | Outgroup |
| Age group | Condition | N | N |
| Younger (6-8 years) | Control | 27 | 31 |
| | Experimental | 30 | 26 |
| Older (9-11 years) | Control | 31 | 27 |
| | Experimental | 28 | 32 |

**Materials**

Implementing an imagined contact intervention with young children requires a more elaborate design than the traditional imagined contact instructions. To assist children in using their imagination to construe a social interaction, three different scenic images were created and printed out on laminated A3 sheets (similar to those used by Stathi et al., 2014). The three different scenes were of; a park, a beach, and a birthday party. Pictures of the ingroup and outgroup members were not used (as in Cameron et al., 2011 and Stathi et al., 2014) due to difficulties in finding suitable pictures for the fat target, and also in complications of sourcing a picture that all children could identify with as the ingroup member. Therefore, a silhouette of a fat child was used instead, along with a stick person to represent the child participant. This allowed for the participant to customise their own stick person to increase the likelihood that the participant truly identified the character as themselves. Computers were also required in this study as the dependent variables were measured via an online survey. For the IAT, headphones were required along with yellow and blue stickers for the keyboards which assisted children in completing the IAT.

Children's group bias, attitudes towards the target (Cronbach's $\alpha$ = .72), perceived fit of the target, and behavioural intentions (Cronbach's $\alpha$ = .95) towards the target were all measured using the same items as those used in Study 1. The same cartoon drawings used in Study 1 were used in the present study, as the target which participants rated. In this study however, the target was given the initials "J.S.", rather than named "Person A" (See Appendix C for all materials and measures of Study 2).

**Participants' weight.** Arguably an individual's own weight or body size may contribute to the weight biases they hold against others. As it was not possible to obtain children's weight or BMI, children participating in the project were asked to identify their own body sizes. Children were presented with a 7-point scale of drawings of a child whose body size gradually increased with the scale (see Figure 4.1). Children were instructed to choose the image that they felt they looked most like. Not only does this measure provide an estimate of the individual's body size but it can also be used as a measure of children's body image.

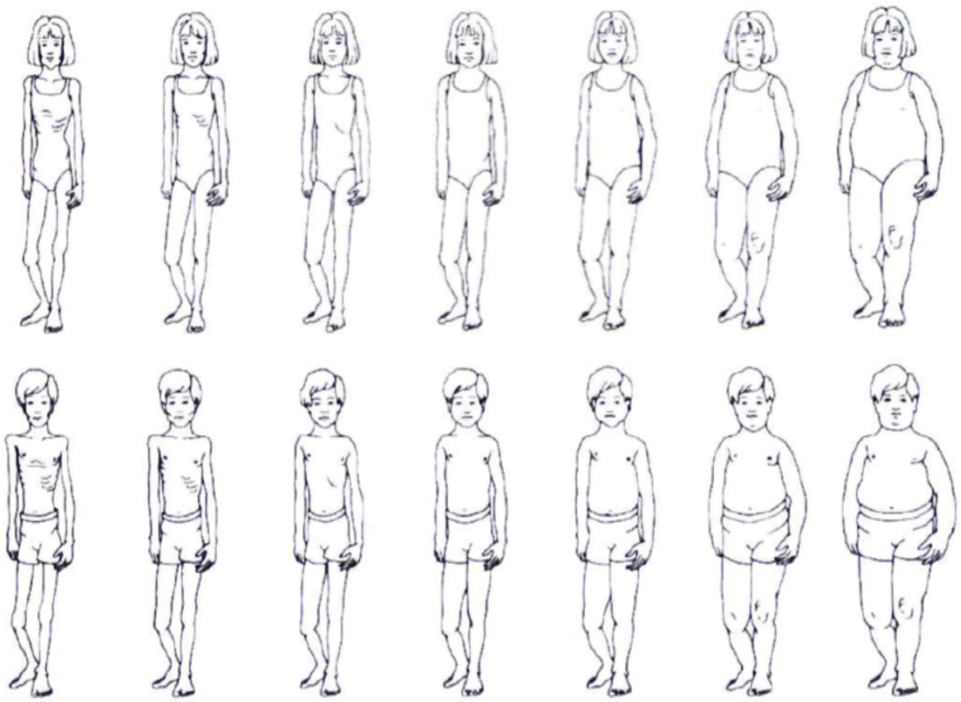

*Figure 4.1.* Study 2. Gender-matched body size scale used to measure participants' perceived body size.

**Implicit biases.** Children's implicit weight bias was measured using an implicit association test (IAT, Greenwald, Mcghee, & Schwartz, 1998). The IAT assesses implicit biases by testing how strongly one holds associations between a particular target group and emotion or evaluation. The strength of the association is measured by the speed at which the participant responds to pairings of the target and evaluation using a specific key on the computer keyboard. For example, if a person holds an implicit prejudice against Black people, the time taken to associate 'Black people' with a positive word (by pressing the correct key) would be longer than the time taken to associate 'White people' with a positive word.

The present study used two different IATs; the Child IAT (Baron & Banaji, 2006) and the Child Weight IAT. Both IATs contained five blocks, each with practice rounds. To choose the left side of the screen participants were required to hit the 'E' key on the keyboard and to choose the right side of the screen participants were required to hit the 'I' key on the keyboard. To assist children in this, the left

side of the screen was coloured in yellow and the right side of the screen was coloured in blue; the ‘E’ key had a yellow sticker on it and the ‘I’ key had a blue sticker.

The Child IAT (Baron & Banaji, 2006) measures the strength of the association between insects or flowers and negative or positive words. Naturally people tend to associate flowers with more positive words and insects with more negative words. Henceforth there should be a clear difference between the time taken to associate positive words with flowers than with insects, and a difference in the time taken to associate negative words with insects than with flowers. The purpose of this IAT is to ensure that the IAT is a sound measurement for capturing children’s implicit preferences. If the expected difference between flowers and insects is not seen, then the IAT as a measurement can be considered flawed for both the insect-flower associations as well as weight biases.

The Child Weight IAT is a novel measure created for the purposes of the current study. The script from the Child IAT was adapted to include pictures of thin and fat children instead of pictures of flowers and insects. Furthermore, the categories to which the participants were required to assign the pictures of the people were labelled as ‘Big’ and ‘Small’, with a larger font size for ‘Big’ and a smaller font size for ‘small’. Unlike the Weight IAT (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003) used for adult participants, the current study did not use the reference categories ‘thin’ and ‘fat’ as these explicit categories were not deemed suitable for children of primary school age.

The first block in the IATs randomly displayed one of eight images at a time, in the middle of the screen. Four of the images belonged to one target group (either flowers or fat people) and four to the other target group (either insects or thin people). The task in this block was to categorise the target to the correct target

grouping either on the left or the right-hand side of the screen. For example, participants should assign pictures of different insects to the side of the screen labelled with the word “insects”. To assist the children, the categories listed on each side of the screen also had a picture as an example of the category, as well as the written word.

During the second block, children had to correctly categorise positive and negative words, such as ‘happy’, ‘fun’, ‘mean’, and ‘yucky’, to the categories of “good” and “bad” (also represented with happy and sad smiley faces). The same four positive and same four negative words were used in both IATs and the order in which they appeared was randomised. The words appeared on the screen for children to read and were also heard through headphones worn by the participants.

The third block combined both the target images and the words. For example, if in block one the insects had appeared on the left side and in block two the negative words also appeared on the left side; in block three both negative words and insect images were both assigned to the left side. Whereas, flowers and positive words, for example, would have been assigned to the right-hand side. The side to which targets and evaluation words were categorised varied and was counter-balanced across participants, so that some participants would experience pairings of insects-negative and flowers-negative first; whereas others would experience insects-positive with flowers-negative first.

During the fourth block, only the target images appeared again, this time the side to which they were assigned was switched. Following the above example, insects would now be assigned to the right-hand side of the screen and flowers would be assigned to left-hand side of the screen. Importantly the number of trials in this block is increased to counter any practice effects.

Finally, the fifth block tasks participants to categorise both target images and evaluation words again, with the alternate version to what was experienced in block three. For example, continuing with the previous example, the fifth block would now see participants categorise insects and positive words to the right-hand side of the screen and flowers and negative words to the left-hand side of the screen.

An individual's implicit bias score is then calculated by the difference between the time taken to make associations in the third and fifth blocks. Participants were given the opportunity to take a break from the IAT for as long as necessary in between blocks.

**Procedure**

Following the procedure of previous imagined contact research involving young children (Vezzali et al., 2012b), participants assigned to the imagined contact condition took part in imagined contact sessions once a week over three weeks. Children were randomly allocated to a researcher in groups of 5-6 children to take part in the imagined contact. In the first session, after introducing themselves, researchers provided each child with a stick person. The children were told, *"I want you to imagine that this stick person is you. Now, at the moment the stick person doesn't look a lot like you. So, I want you to spend the next 2-3 minutes making the stick person look like you. You might want to add hair or clothes or anything else you can think of to make the drawing look like you".* After the children had customised the stick people to look more like themselves, they were each provided with a silhouette of the fat child and presented with one A3 scene. The scene was randomly selected, and records were kept to ensure that participants saw a different scene each time. Based on instructions given by Cameron et al. (2011), the researcher then told the group of children *"Here is a picture of another child. I want you to spend the next three minutes imagining that you have never met this child*

*before and then one day you meet them at this [birthday/park/beach]. Imagine that you have a good time with this child, think of all the fun and interesting things that you do together".* During the three minutes if children became distracted the researcher gently reminded them of what they were supposed to be imagining, and suggested that the child could close their eyes or stare at the pictures if it helped them to concentrate.

After the three minutes, a group discussion was held in which the researcher asked the children to take it in turns to tell the group about all of the fun and interesting things that they imagined doing with the other child. The group discussion lasted approximately five minutes. The purpose of the group discussion was not only to reinforce the imagined contact but also to allow the researcher to be certain that the children imagined an interaction with the silhouette child. Finally, children were given a further five minutes to write about, or draw, the interaction they imagined having with the silhouette child. This activity also served to reinforce the imagined interaction.

This process was repeated for a further two weeks, with the exception of customising the stick person as children were given the stick person they originally customised in the first session. One week after the third and final imagined contact session, children were presented with the online survey and IATs. Children in the control condition with no imagined contact intervention only participated in the survey and IATs. Younger children, aged 6-8 years old, completed this part of the experiment one-to-one with a researcher. The researcher filled out the survey on behalf of the child and handed over the laptop to the child only for the IAT. Older children, aged 9-11 years old, completed both the survey and the IAT by themselves, in the school computer room. The computer room contained 15 computers and

therefore one researcher supervised groups of up to 15 children whilst they completed the tasks.

The survey first asked for participants' demographic information (age, gender, and ethnicity) followed by the group bias measures. Participants were then presented with a cartoon drawing of a gender-matched, larger-bodied child (known as J.S.) and were told that J.S. belonged to either their own school, or Rosemary Green School (randomised). Participants then completed the measures of attitudes, fit, and behavioural intentions with the target in mind. The next measure in the survey was the body size / body image measure, when presented with this page children were reminded of their anonymity and the confidential nature of the survey and were instructed not to look at any other child's screen. On completion of the survey, participants were automatically redirected to the IAT.

The first IAT presented to children was the Child IAT with pictures of flowers and insects (Baron & Banaji, 2006). On completing the Child IAT, participants were automatically redirected to the Child Weight IAT. Instructions for the IAT were both read by the participants themselves and also read out loud by the researcher for clarity. Finally, participants were thanked for their time and were given the opportunity to ask the researcher any questions and were provided with a debrief letter for parents.

# Results

## Preliminary Analyses

**Presence of Bias (IATs).** To test for the presence (not direction) of bias amongst participants, one-sample t-tests were carried out on both sets of IAT data, split by condition (control and experimental). A significant difference from the score of zero would indicate the presence of bias, all means and standard deviations are reported in Table 4.2.

The flowers and insects IAT revealed a significant bias whereby participants associated flowers with positive words and insects with negative words. This finding was true for both control $t$ (111) = 3.85, $p$ <.001 and experimental groups $t$ (114) = 5.48, $p$ <.001. Furthermore, there was no significant difference of bias scores between control and experimental groups, $t$ (225) = -1.14, $p$ = .255. As these findings match the expected findings for the flowers and insects IAT, it can be concluded that all participants understood the IATs and could successfully complete them, thus there is no cause for concern over the IAT as a measurement in this study.

The weight IAT also revealed a significant bias, whereby participants associated positive words more strongly with 'average-weight' silhouettes, and negative words with fat silhouettes. This finding was apparent for both the control $t$ (110) = 5.31, $p$ <.001 and experimental groups $t$ (112) = 8.61, $p$ <.001. Analysis of between group differences are reported in the main analyses.

Table 4.2. *Study 2. Means and Standard Deviations of both IATs by Experimental Condition.*

| Condition | IAT | *M* | *SD* |
|---|---|---|---|
| Control | Flowers/Insects | 0.13 | 0.36 |
| | Weight | 0.16 | 0.32 |
| Experimental | Flowers/Insects | 0.19 | 0.36 |
| | Weight | 0.23 | 0.29 |

**Group bias.** A paired samples t-test was conducted to test for participants' bias towards the ingroup. The t-test revealed a significant difference between preference for the ingroup ($M = 8.34$, $SD = 1.50$) and preference for the outgroup ($M = 5.63$, $SD = 1.75$), $t\ (230) = 17.99$, $p < .001$, with participants favouring the ingroup over the outgroup.

**Testing the Imagined Contact Intervention (H1 and H2)**

A 2 (Condition: Control vs Experimental) x 2 (Group membership of target: Ingroup vs Outgroup) x 2 (Age: Younger vs Older), with Gender and participants' Body Image as covariates, between-subjects MANCOVA was conducted on the dependent variables; Attitudes, Perceived Fit, Behavioural Intentions and Weight IAT.

Multivariate tests revealed only a main effect of Age $F\ (4, 209) = 7.20$, $p < .001$, $\eta_p^2 = .121$, and no other significant effects. The main effect of age showed that younger participants were more positive towards the target than older children, on measures of; explicit attitudes ($M_{younger} = 3.53$, $SE_{younger} = 0.08$, $M_{older} = 2.92$, $SE_{older} = 0.08$), behavioural intentions ($M_{younger} = 3.35$, $SE_{younger} = 0.10$, $M_{older} = 2.84$, $SE_{older} = 0.09$), and perceived fit ($M_{younger} = 3.53$, $SE_{younger} = 0.12$, $M_{older} = 3.01$, $SE_{older} = 0.12$; all $p$s $< .01$). The effect of experimental Condition was not significant, meaning that the imagined contact intervention was not effective $F\ (4, 209) = 2.00$, $p$

= .095, $\eta_p^2$ = .037 (for all multivariate effects, see Table 4.3 and for simple means and SEs, see Table 4.4).

Table 4.3. *Study 2. Multivariate Effects of the 2 x 2 x 2 MANOVA.*

| Effect | *F* | *df* | Error *df* | *p* | $\eta_p^2$ |
|---|---|---|---|---|---|
| Gender | 0.57 | 4 | 209 | .688 | .011 |
| Body Image | 0.73 | 4 | 209 | .575 | .014 |
| Condition | 2.00 | 4 | 209 | .095 | .037 |
| Group | 1.37 | 4 | 209 | .244 | .026 |
| Age | 7.20 | 4 | 209 | .000 | .121 |
| Condition*Group | 0.92 | 4 | 209 | .456 | .017 |
| Condition*Age | 0.98 | 4 | 209 | .418 | .018 |
| Group*Age | 1.24 | 4 | 209 | .294 | .023 |
| Condition*Group*Age | 0.70 | 4 | 209 | .596 | .013 |

Table 4.4. *Study 2. Means and Standard Errors for Explicit Measures, by Experimental Condition.*

| | | Attitudes | | Perceived Fit | | Behavioural Intentions | |
|---|---|---|---|---|---|---|---|
| Condition | Group Condition | *M* | *SE* | *M* | *SE* | *M* | *SE* |
| Control | Ingroup | 3.14 | 0.11 | 3.47 | 0.17 | 2.98 | 0.13 |
| | Outgroup | 3.26 | 0.11 | 3.31 | 0.17 | 3.21 | 0.13 |
| Experimental | Ingroup | 3.38 | 0.11 | 3.31 | 0.17 | 3.14 | 0.13 |
| | Outgroup | 3.11 | 0.11 | 2.99 | 0.17 | 3.04 | 0.13 |

**Correlations**

To further understand the null effects of imagined contact, correlational analyses were conducted (see Table 4.5). Contrary to the expected findings (H3), children's own body size was not related to any other variable.

Whilst implicit attitudes (IAT) were not related to any other variable; the explicit measures did positively correlate with one another, and negatively correlate with age and group bias. The correlation with age further supports the findings from the main analyses, Study 1 and other published works, that younger children are more positive overall towards targets (Abrams et al., 2003a; Abrams et al., 2003b; Rizzo, Elenbass, Cooley, & Killen, 2016).

The correlation between group bias and the explicit measures suggest that group membership still influences children's attitudes and behavioural intentions. Thus, the effect of group membership hypothesis (H4) can still be tested, despite no main effect of condition.

Henceforth, moderation and mediation analyses were conducted to further understand the relationships between; group bias and attitudes and intentions, and perceived fit and attitudes and intentions, with group condition and age as possible moderators of such relationships.

Table 4.5. *Study 2. Pearson's Correlation Coefficients for all Independent and Dependent Variables*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Condition | - | .000 | .017 | -.017 | .103 | -.072 | .030 | -.082 | .007 | .111 |
| 2. Group Condition | | - | .000 | .017 | -.024 | .042 | .037 | .096 | -.032 | .025 |
| 3. Age Group | | | - | .034 | .145* | -.063 | -.351*** | -.200** | -.264*** | .005 |
| 4. Gender | | | | - | -.147* | .164* | -.019 | .038 | 0.38 | -.017 |
| 5. Body Image | | | | | - | -.061 | -.043 | .019 | -.054 | -.048 |
| 6. Group Bias | | | | | | - | -.130* | -.147* | -.174** | .017 |
| 7. Attitudes | | | | | | | - | .638*** | .730*** | .004 |
| 8. Perceived Fit | | | | | | | | - | .644*** | .027 |
| 9. Behavioural Intentions | | | | | | | | | - | -.057 |
| 10. IAT | | | | | | | | | | - |

*Note*. *$p < .05$, **$p < .01$, ***$p < .001$

**Moderations**

To examine whether a target's group membership influenced to what extent they are judged negatively, three separate moderation analyses were conducted (using PROCESS, model 1) to test for Group as the moderating variable in the negative relationship between Group Bias and the measures of; attitudes, fit and intentions. Inspection of the overall model tests reveal that Group did not moderate the relationships between; Group Bias and attitudes $p = .216$, Group Bias and Perceived Fit $p = .077$, or Group Bias and Behavioural Intentions $p = .071$. Therefore, it seems that whilst ingroup bias may be related to children's weight biases, group membership of the target who is judged is not important. However, the influence of perceived fit of the target to the ingroup can still be explored, as in Study 1, through mediation analyses.

**Mediations**

The hypothesis that perceived fit and group are drivers of attitudes and intentions (H4) can be tested through mediation analyses. Specifically, two separate mediation analyses were conducted (using PROCESS model 4 with 5000 bootstraps) to test for Perceived Fit as a mediator of the relationships between; group bias and attitudes, and group bias and behavioural intentions.

Perceived Fit was found to be a significant mediator of the relationship between Group Bias and Attitudes $b = -0.04$, $SE = 0.02$, 95% CI [-0.07, -0.01]. Specifically, the significant total effect of Group Bias on Attitudes $b = -0.05$, $SE = 0.03$, $t = -2.02$, $p = .045$, was reduced to non-significance in the direct model $b = -0.02$, $SE = 0.02$, $t = -0.77$, $p = .441$.

Perceived Fit was also a significant mediator of the relationship between Group Bias and Behavioural Intentions, $b = -0.04$, $SE = 0.02$, 95% CI [-0.07, -0.00]. The significant total effect of Group Bias on Behavioural Intentions $b = -0.08$, $SE =$

0.03, $t$ = -2.65, $p$ = .009, was reduced to non-significance in the direct model $b$ = -0.04, $SE$ = 0.02, $t$ = -1.57, $p$ = .118.

In line with the DSGD model, the results of these mediation analyses suggest that children's evaluations and behavioural intentions are driven by an understanding of group norms and a perception of how well others will be received in the ingroup.

**Moderated Mediation**

With the mediating role of perceived fit established, the effect of age on this finding can be examined (H5). As the two age groups significantly differed in their evaluations of targets, and in Study 1 in their use of group norms to make judgements; moderated mediation analyses were conducted. PROCESS model 7 (5000 bootstraps) was used to test for the presence of age differences in the significant mediation models conducted above.

Age did not moderate the mediation model in which Perceived Fit mediated the relationship between Group Bias and Attitudes, 95% CI [-0.00, 0.13].

Age was however, a significant moderator on the mediation model where Perceived Fit mediated the relationship between Group Bias and Behavioural Intentions (see Figure 4.2), 95% CI [0.00, 0.14]. Specifically, the indirect effect of Group Bias on Behavioural Intentions, via Perceived Fit was only significant in the younger age group $b$ = -0.08, $SE$ = 0.03, 95% CI [-0.13, -0.03] and not the older age group $b$ = -0.01, $SE$ = 0.03, 95% CI [-0.06, 0.05].

Taking the above mediation and moderated mediation analyses together, this indicates that children's attitudes towards larger-bodied peers is driven by the extent to which the peer is perceived to fit within the ingroup. The drivers of children's behavioural intentions towards such peers however, differ dependent on the age of the child. The moderated mediation shows that the mediation analysis carried out for behavioural intentions is only significant in the younger age group. That is, younger

children's behavioural intentions towards larger-bodied peers are also driven by perceptions of fit to the group, whilst older children's intentions are not driven by perceived fit.

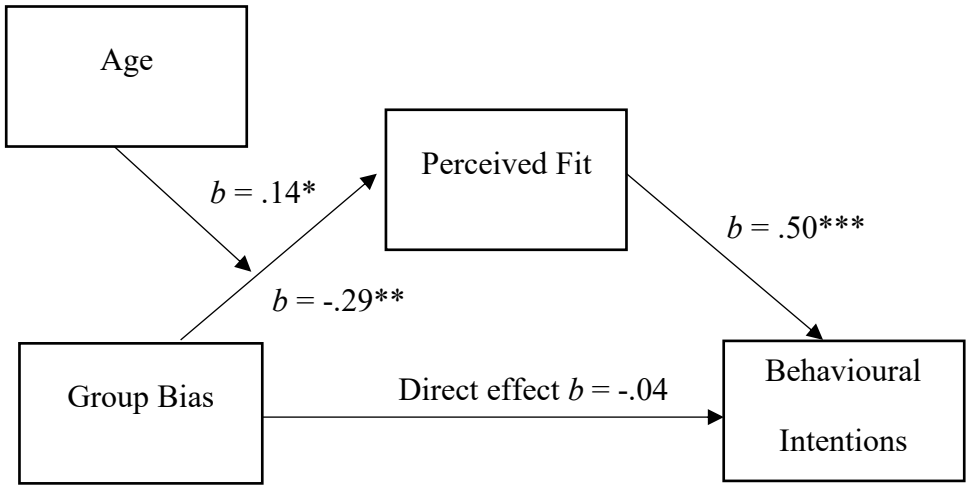


*Figure 4.2.* Study 2. Significant moderated mediation model.

**Discussion**

The present study set out to test imagined contact as a tool to reduce children's weight stigma, with consideration of participants' age and the influence of group membership. Imagined contact was found to be an ineffective intervention in increasing children's positive attitudes and behavioural intentions towards fat peers. Despite following previous successful methods of implementing IC with children, the current study did not find any effects of the intervention on; implicit or explicit attitudes, behavioural intentions, or perceived fit to the group. Nor were there any effects of the group to which the target belonged; a surprising finding considering the clear influence of the group in both Study 1 and the present study. In addition, there was no influence of the child's own body size on their attitudes or intentions towards fatter peers. One could argue that perhaps children of this age are not prejudiced towards fat individuals; however, it is clear from the IAT analyses that bias exists amongst this age group and from the results of Study 1 that the fat targets were clearly derogated and stigmatised. It is strange then, that an intervention that is

successful in reducing adults' weight stigma (Turner & West, 2012), does not show any promise in reducing children's weight stigma; despite consideration of proven influential factors of body size, age and group membership.

Nevertheless, as expected, and in line with Study 1, younger children appeared more positive across all measures, and towards both targets, than older children. It was expected that given younger children's positivity, the imagined contact intervention would see most success in this age range. Alas, there were no interacting effects of age and experimental condition, thus the intervention was not successful despite younger children's positive tone.

Moreover, it was clear that children's group memberships and group norms continued to influence their decisions with regards to the larger-bodied peer, as is evident through the positive correlations between group bias and the explicit measures. However, given that there was no main effect of group it is not surprising that the group to which the target belonged did not influence the relationship between children's group bias and their evaluations of and intentions towards targets. Instead, children's explicit attitudes and behavioural intention decisions can be examined with regards to their group membership and perceptions of how well the target fits to their group. Specifically, in line with the findings from Study 1, the present study found that despite implementing an intervention designed to reduce bias; children's attitudes and intentions continued to be driven by both their group bias and perceived fit. This finding was true for both age groups with regards to attitudes; however, for behavioural intentions, it appears that only younger children are driven by their group bias and perceptions of fit to the group. Once again, this is in line with the findings from Study 1, that contrary to previous findings (c.f. Abrams et al., 2003a), younger children are capable of making judgements and decisions based on both an inter and intragroup basis.

Given that group dynamics appear to have a strong influence on children's judgements and social inclusion decisions; perhaps it is the group context that is disrupting the imagined contact process in this instance. To be slim or of 'average' weight is a generic norm, applicable across social groups, and therefore deviation from this norm is penalised, regardless of the deviant's group membership. Whilst the present study employed an intergroup context in response to findings from Study 1, and also in an attempt to make weight stigma a clear intergroup issue; perhaps the salience of the group context made the generic deviance more offensive and less acceptable, than if group membership was not specified. Henceforth, future research should attempt to replicate the present research, without the group context.

**Limitations and Future Research**

In addition to the possible confound of the target's group membership, there are a few other possible limitations to consider, which may help to understand why the imagined contact intervention was not successful.

Whilst the intervention delivery method derived from previous successful interventions with children (Cameron et al., 2011; Vezzali et al., 2012a, 2012b; Stathi et al., 2014); a single standard method of implementing imagined contact with children has not yet been established, unlike with adult populations. As described earlier, the four studies that successfully used imagined contact to reduce children's prejudices did so in different ways. For example, two of the studies carried out the intervention in groups of 5-6 children (Vezzali et al., 2012a, 2012b); whereas the other 2 conducted the intervention one-to-one with the researcher (Cameron et al.; Stathi et al.). Whilst Vezzali and colleagues did not use any prompts to help the children to imagine the interaction, the other studies did. Moreover, Cameron et al.'s research was the only study in which the imagined contact task was completed once, as opposed to three times over three weeks. Despite such differences in techniques,

all studies successfully reduced prejudice and increased positive attitudes and future intentions. However, for imagined contact to be successfully used with children to combat a range of prejudices, future research must establish a standardised method of employment for this intervention.

The present study used silhouettes to assist children in imagining the interaction with a fat child but used gender-matched picture drawings as the target that participants were required to evaluate. As detailed in Study 1, prior pilot testing had established the validity of the target drawing, thus there is no question as to whether or not this material was suitable for the present study. Instead however, perhaps the fact that the imagined interaction was carried out with a different target to the one that the children evaluated did not allow for an accurate measure of the effects of the intervention. Usually, participants are asked to consider their feelings towards the target group rather than the specific target that they imagined interacting with. However, as it was deemed inappropriate to explicitly ask children their feelings towards "fat people", the use of another target for the dependent measures was justified. Nevertheless, future work could either replicate the present research using the same silhouette during the dependent measures task; or test for the generalisability of the imagined contact effects with the imagined target, to the target group.

## Study 3

Following from the possibility that the effects of the imagined contact intervention were not detected as a result of different targets being presented in the imagined interaction and for the dependent measures; the following study aims to investigate the generalisability of the intervention. That is, Study 3 seeks to confirm the effects of the imagined contact intervention in changing attitudes and intentions towards the target that participants imagined; and to examine the transfer of these

effects to another individual target of the same category. The present study measured children's attitudes and intentions towards a fat target that they had interacted with in an imagined contact task. Participants' attitudes and intentions towards a second, but unimagined, fat target who belonged to the ingroup or the outgroup school were then measured (as in Study 2). Differences in attitudes and intentions between the imagined and unimagined target will provide evidence of the effectiveness of the intervention on the imagined target. Further, establishing the relationship (of the DVs) between the imagined and unimagined targets will provide insight into whether or not any effects of the IC intervention are applied to other similar (unimagined) individuals. For example, more positive attitudes towards the imagined target than the unimagined target, can explain why the intervention was not effective in Study 2; as it may be the case that the intervention is only effective in changing prejudices towards the target with which the interaction was held.

Relatedly, research has established that *direct* positive contact with an outgroup target results in positive attitudes towards both familiar and unfamiliar members of the outgroup (Capozza, Vezzali, Trifiletti, Falvo, & Favara, 2010). Capozza and colleagues found that Italian nurses' and workers' emotions towards their immigrant colleagues predicted their emotions towards other, immigrant nurses and workers. In turn, these emotions towards other (or familiar) immigrant nurses and workers fully mediated the relationship between direct contact and emotions towards unfamiliar immigrants (immigrants who were not nurses or workers). This study shows that the positive effects of contact from one individual, can transfer to the outgroup at different levels of familiarity or even similarity. With this knowledge then, it is reasonable to expect that the imagined contact intervention employed to reduce children's weight stigma, may be effective with a familiar target group (fat

target from *ingroup* school, for instance) and has the potential to transfer to an unfamiliar group within the same social category (fat target from *outgroup* school).

A vast number of other studies detail the effects of contact (direct and imagined) with one outgroup and how it translates to other outgroups (secondary transfer effects; e.g. Pettigrew, 2009; Pettigrew & Tropp, 2006). As it has been established that the secondary transfer effects of contact apply to imagined contact, as well as direct contact (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011); it is possible that the findings from Capozza et al.'s (2010) study applies to imagined contact also. Thus, the present study, similar to Capozza et al.'s is concerned with whether or not the effects of imagined contact generalise from the *imagined* target to the target's social group or category. In other words, the present study seeks to test the assumed positive relationship between attitudes towards an individual and their social group, as a result of contact. Of course, the basis of Allport's (1954) contact theory and the extensive supporting research on intergroup contact that has followed (for meta-analyses see Pettigrew & Tropp, 2006; Miles & Crisp, 2014), is evidence that contact (real or imagined) with an individual promotes similar feelings towards the individual's group. However, as the stigmatisation of 'overweight' or fat individuals seems to be a unique prejudice in that it is emerges from a young age, interacts differently with group membership compared to other prejudices (see the BSE findings in Study 1), and is proving difficult to combat with otherwise effective prejudice-reduction methods; the purpose of the present study is to determine if the basic premise of contact theory holds true for weight stigma.

Indeed, it seems that larger-bodied individuals are not the only highly stigmatised category that seem to be an exception to the robust effects of contact. Fleva (2014) provides empirical evidence of the imagined contact intervention

improving behavioural intentions towards the imagined target, but not towards the target's group more generally.

Furthermore, despite the possibility that the group context hindered the imagined contact intervention in Study 2, the present study retains the group context in part. The reasons for this are; because both Studies 1 and 2 have established that group dynamics are an important influencing factor in children's social decision making, and to allow for a comparison with the results of Study 2, the present study should mimic the previous design where possible.

### Aims and Hypotheses

The aim of this study was to test the generalisability of imagined contact effects. In particular, any changes in attitudes towards an imagined target is expected to be reflected in a similar valence of attitudes towards the unimagined target from the same social category. Moreover, this study explores the effect of group membership on the generalisability of imagined contact effects. The specific hypotheses are listed below.

**H1.** Attitudes towards the imagined target will be positively related to, and predictive of attitudes towards the unimagined target.

**H2.** The relationship between attitudes towards the imagined and unimagined targets will be moderated by the unimagined target's group membership. The direction of this moderating relationship is unclear and therefore this is an exploratory hypothesis.

## Method

### Participants and Design

This study recruited 32 children (18 male), aged between 8 and 9 years old ($M$ = 9.33 years, $SD$ = 0.36), in a 2-condition study (ingroup vs. outgroup).

Unlike Study 2, there was no control condition for the imagined contact factor, instead; all children took part in the imagined contact intervention with a fat target and completed measures regarding the imagined target. Half of the children ($n$ = 16) then completed the same measures again whilst considering an unimagined, larger-bodied member of the ingroup school; and the other half did so whilst considering an unimagined, larger-bodied member of the outgroup school. Dependent variables were; group bias, body image, explicit and implicit (IAT) attitudes, fit, and behavioural intentions.

**Materials**

The imagined contact intervention in this study was presented in an online format. Instead of three possible scenes, only the park scene was used in this task. The silhouette used to represent the imagined target however, remained the same as that used in Study 2. The instructions to imagine the interaction remained the same, but there was no group discussion following the imagined interaction.

All measures were the same as those detailed in Study 2. The measures of; attitudes, perceived fit and behavioural intentions were presented to participants twice; once for the imagined target, and once for ratings of the unimagined (ingroup or outgroup) target.

**Procedure**

Fifteen children at a time, supervised by one researcher, completed the experiment in the school's computer room. Each child had a computer to themselves and was instructed to only look at their screen and to work through the task in silence, putting their hand up if there were any questions or issues. The researcher introduced the experiment as an 'imagination task' followed by some 'computer games'. The instructions for completing the demographics sections were read out loud by the researcher, and children were assisted where necessary.

The park scene and the fat silhouette then appeared on the screen in front of the children. The researcher also read out the imagined task instructions to all children, to ensure that they understood the task and that all children could complete the intervention at the same time.

After three minutes, the screen automatically moved on to a page where children were given the opportunity to write about what they had imagined. After three minutes and 30 seconds, the screen moved on automatically to the survey containing the measures regarding the imagined target (attitudes, fit and behavioural intentions). Participants were told to work through the rest of the survey by themselves, until they reached the last page where they were presented with onscreen information that they were going to play a game.

After the measures regarding the imagined target, the children completed measures of group bias. Following this, children were introduced to a new target, called J.S. This target was gender-matched to the participant and appeared the same as the fat targets used in Study 1. The on-screen information told the participant whether J.S. attended the participants' own school, or another school, the Rosemary Green School. Participants were then requested completed the attitudes, fit and intentions measures with this new target in mind.

The final survey task presented to the children was the own body image task, as presented in Study 2. Once all of the children had reached the final page, the researcher introduced the IAT as a computer game, helped the children to load the IAT website, and explained how to play the game. As in Study 2, the flowers and insects IAT (Child IAT) was completed first, followed by the Child Weight IAT.

## Results

To test for a difference in attitudes and intentions between the imagined and unimagined targets, a repeated measures MANOVA was conducted, a post-hoc

power analyses confirmed that there was 100% power for this analysis. There was a significant main effect of Target $F$ (3, 29) = 10.48, $p$ < .001, $\eta_p^2$ = .520, across all three explicit measures (all $p$s < .001, see Figure 4.3). Children held more positive attitudes and behavioural intentions towards, and perceived the imagined target as better fitting to the group, than the unimagined target. Thus, suggesting that the imagined contact intervention had a positive effect in this study, specifically on the imagined target. Whilst the IC intervention appears to have worked to reduce negative attitudes and intentions towards the imagined target and not the unimagined target; the extent to which this transfers from the former to the latter target is of key interest in this study.

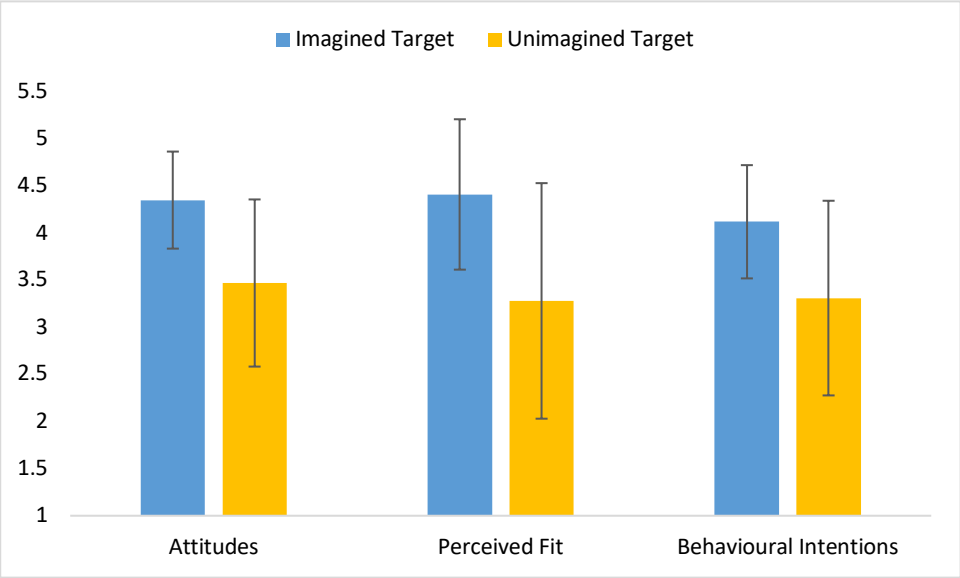


*Figure 4.3.* Study 3. Attitudes, intentions and perceived fit for the imagined and unimagined targets.

To test the hypothesis that the intervention effects will generalise to the wider target group, correlational analyses were conducted. First correlations were examined between all variables, for the imagined and unimagined targets, without consideration of the group membership of the unimagined target (see Table 4.6). All dependent variables for the imagined target were positively correlated with one another (attitudes, fit and intentions). And all DVs for the unimagined target were

positively correlated with one another. There was however, no correlation between the unimagined and imagined target variables, indicating that any IC effects do not generalise to the wider group.

Upon examination of the correlations split by group membership however, a different story emerges (see Table 4.7). When the unimagined target is an ingroup member, the perceived fit measures of both the imagined and unimagined targets are no longer related to all of the respective DVs (only perceived fit of the unimagined ingroup target is related to intentions towards the same target). Instead however, attitudes and intentions towards both targets are positively related to one another. That is, the effects of IC on the attitudes and intentions towards the imagined target, generalise towards the unimagined target, when that target is a member of the ingroup. However, perceived fit is not related to attentions or behavioural intentions towards either the imagined or unimagined targets.

When the unimagined target is in the outgroup however, there is no correlation between the imagined and unimagined targets for any of the DVs. Perceived fit however does appear to be an important consideration (see Table 4.8). That is, perceived fit of the unimagined outgroup target was significantly related to attitudes towards this target and marginally significantly related to children's behavioural intentions towards the same target ($p$ = .075).

Table 4.6. *Study 3. Correlations of all variables, between the imagined and unimagined targets.*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Body Image | - | -.302 | .014 | .190 | .276 | .356* | .028 | .059 | .298 |
| 2. Group Bias | | - | .032 | .255 | -.053 | .220 | -.246 | .107 | -.177 |
| 3. IAT | | | - | .061 | -.210 | -.145 | .086 | -.161 | .007 |
| 4. I.T. Attitudes | | | | - | .424* | .764*** | .198 | .108 | .156 |
| 5. I.T. Fit | | | | | - | .590*** | .102 | -.151 | .003 |
| 6. I.T. Intentions | | | | | | - | .190 | .197 | .278 |
| 7. U.T. Attitudes | | | | | | | - | .478** | .639*** |
| 8. U.T. Fit | | | | | | | | - | .506** |
| 9. U.T. Intentions | | | | | | | | | - |

*Note*. I.T. = Imagined Target, U.T. = Unimagined Target.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 4.7. *Study 3. Correlations between the imagined target variables and the ingroup unimagined target variables.*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Body Image | - | -.298 | -.031 | .204 | .305 | .380 | .205 | .055 | .382 |
| 2. Group Bias | | - | .124 | .238 | -.131 | .130 | -.192 | .155 | .089 |
| 3. IAT | | | - | .031 | -.565* | -.184 | -.091 | -.183 | -.196 |
| 4. I.T. Attitudes | | | | - | .273 | .814*** | .601* | .466 | .608* |
| 5. I.T. Fit | | | | | - | .476 | .098 | -.127 | -.026 |
| 6. I.T. Intentions | | | | | | - | .538* | .436 | .659** |
| 7. U.T. Attitudes | | | | | | | - | .397 | .712** |
| 8. U.T. Fit | | | | | | | | - | .631** |
| 9. U.T. Intentions | | | | | | | | | - |

*Note.* I.T. = Imagined Target, U.T. = Unimagined Target.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 4.8. *Study 3. Correlations between the imagined target variables and the unimagined outgroup target variables.*

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Body Image | - | -.288 | .117 | .235 | .315 | .434 | -.171 | .079 | .190 |
| 2. Group Bias | | - | -.239 | .162 | -.102 | .294 | -.306 | .049 | -.554* |
| 3. IAT | | | - | .047 | .263 | -.177 | .321 | -.183 | .304 |
| 4. I.T. Attitudes | | | | - | .560* | .600* | -.158 | -.233 | -.380 |
| 5. I.T. Fit | | | | | - | .767** | .180 | -.232 | .085 |
| 6. I.T. Intentions | | | | | | - | -.179 | -.064 | -.258 |
| 7. U.T. Attitudes | | | | | | | - | .544* | .582* |
| 8. U.T. Fit | | | | | | | | - | .457 |
| 9. U.T. Intentions | | | | | | | | | - |

*Note*. I.T. = Imagined Target, U.T. = Unimagined Target.
*$p < .05$, **$p < .01$, ***$p < .001$

Thus, it seems that the imagined contact intervention may work to reduce negative, fat-based biases towards the imagined target, and also towards an unimagined, fat target, but only when that target is a member of the ingroup. To confirm this group-specific finding and to test the predictive relationship between attitudes towards the imagined target and intentions towards the unimagined target; moderation and moderated mediation analyses were performed. A post-hoc power analysis revealed however, that due to the small sample size, the following analyses were under-powered, with 50% power. These analyses then, should be interpreted as an exploratory, rather than confirmatory, investigation into these relationships.

First, moderation analyses were conducted to examine the moderating role of group on the relationship between attitudes towards the imagined target and attitudes towards the unimagined target. Likely due to the lack of statistical power, the overall model fit test was not significant ($p = 0.16$). However, there was a marginally significant interaction effect of group x imagined target attitudes on the attitudes towards the unimagined target. This interaction was significant only in the ingroup condition, where attitudes towards the imagined target positively predicted attitudes towards the unimagined target ($b = 0.82$, $SE = 0.38$, $p = 0.039$). This suggests then, that imagined contact may work to increase positive attitudes towards unimagined targets only when those targets are framed as a part of the ingroup.

With the knowledge that attitudes predict behavioural intentions, it should follow then that attitudes towards the imagined target indirectly predict behavioural intentions towards the unimagined ingroup target, via attitudes towards this target (see Figure 4.4). That is, if imagined contact can increase positive attitudes towards an unimagined ingroup target (tested in the moderation above), then imagined contact should also work to change behavioural intentions towards an unimagined ingroup target. Using PROCESS model 7, a moderated mediation model was tested

and revealed the proposed mediation was significant only for the ingroup unimagined target ($b$ = 0.61, $SE$ = 0.37, 95% CI [0.18, 1.59]) and not for the outgroup unimagined target ($b$ = -.27, $SE$ = 0.50, 95% CI [-1.43, 0.67]). Therefore, suggesting that the imagined contact intervention may be effective in reducing negative biases, in the form of attitudes and behavioural intentions, towards an unimagined ingroup (but not outgroup) target, as a result of more positive attitudes towards the imagined target.

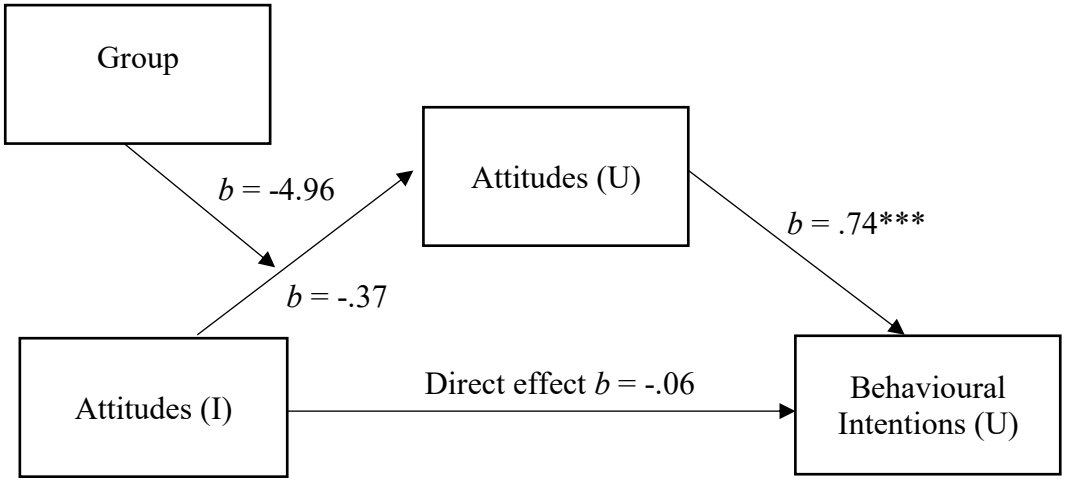


*Figure 4.4.* Study 3. Moderated mediation analysis.
I = Imagined Target, U = Unimagined Target.

**Discussion**

The aim of Study 3 was to understand why the imagined contact intervention was not successful in reducing weight bias, by examining the generalisability of any effects of the intervention. Specifically, the present study tested whether the intervention changed attitudes and intentions towards an imagined target, and secondly whether those changes were carried across to another target from the same outgroup as the imagined target.

Contrary to the results of Study 2; the significant difference in attitudes, intentions and perceived fit between the imagined and unimagined targets, suggests that the imagined contact intervention was somewhat successful in reducing bias. Evaluations and judgements of the imagined contact were more positive than those

of the unimagined contact. This difference not only indicates that imagined contact was successful, but also that the effects may not have generalised to the outgroup, or at least the effects were weaker.

Confirming the theory that the effects did not generalise to the outgroup; the correlational analyses revealed no relationship between the evaluations and judgements of the imagined and unimagined targets. Thus, it seems as though, much like the stigma against individuals with Asperger's Syndrome; imagined contact is only successful in so far as reducing bias to the specific target being imagined and not the group as a whole (Fleva, 2014).

However, on examining the correlations between the imagined target and the two unimagined targets, as split by their group membership, a different story emerges. It appears as though imagined contact effects do indeed generalise to the group, with the caveat that the group should also belong to an ingroup in some manner. Whilst the current study lacked statistical power to perform regression analyses, the moderation and mediated moderation models do suggest that this theory can be confirmed, when tested with a large enough sample. This fits with the finding that the salience of group or category membership of the contact target is important for generalisation of contact effects (Pettigrew & Tropp, 2006). Thus, to fully examine the generalisation of imagined contact effects on weight bias; future studies could explicitly vary the imagined target's membership as well as the unimagined target's membership. Furthermore, this finding provides some support for the campaign to combine imagined contact and common ingroup identity interventions, for effective prejudice reduction and intergroup relations improvements (Vezzali, Stathi, Crisp, Giovannini, Capozza, & Gaertner, 2015).

## Limitations and Future Research

The question remains then, if imagined contact can reduce prejudiced attitudes towards an ingroup 'deviant', then why were no main or interacting effects of Group obtained in Study 2? Examination of the mean scores for each of the variables in Study 2 does in fact show between groups differences to the same pattern as reported here in Study 3. Yet, Study 2 certainly had enough statistical power to detect significant effects, thus future research should consider other causes for such inconsistencies, such as the interference of the group context, as discussed in Study 2. For example, future studies should employ a third level of the Group condition where the group membership of the target is not specified.

The order in which the targets were rated were not counterbalanced as it is more intuitive to first rate the target which the participant has just imagined an encounter with, and then to rate the unimagined target. Hence an argument could usually be made for survey fatigue being responsible for the differences between the imagined and unimagined targets. However, it is clear that lack of counterbalancing was not an issue as the effects did generalise to a subset of the unimagined targets (the ingroup).

## General Discussion

The initial objective of this chapter was to test the effectiveness of imagined contact in reducing children's weight stigma. The first study presented in this chapter revealed that imagined contact was not successful in meeting this objective. Due to the null results of Study 2, a second study was conducted to assess the suitability of the design employed in Study 2, and the generalisability of any effects of imagined contact. Findings from Study 3 partially supported the design of Study 2 and to some extent explained the null results. That is, the finding that the imagined target was rated more positively than the unimagined target in Study 3, suggests that the effects

of IC were not detected in Study 2 as only the unimagined target was rated by participants, and not the target that they had been imagining the interaction with. Whilst this explains the null findings, the design for Study 2 is supported as Study 3 demonstrates a difference in the effects of IC on the unimagined target, dependent on their group membership. As discussed above, the discrepancies of this finding between the two studies requires further exploration.

What is undeniably clear though, is that imagined contact is not as effective for reducing weight stigma as it is for other prejudices. Certainly, the attraction of imagined contact is that it is an effective and adaptable prejudice reduction technique. The present studies, along with Fleva's (2014) for example, are evidence however, of instances where this is not the case.

Furthermore, Studies 2 and 3 have demonstrated that group dynamics and children's understanding of group norms are an important factor in children's social evaluations and intentions. Nonetheless, it is arguable that the group context may be complicating matters in the effort to drive down the stigmatisation of fat individuals. With the caveat that Study 3 did not employ a control condition for the imagined target, the evidence suggest that imagined contact may be having a positive effect on the imagined target. However, both Studies 2 and 3 measured attitudes and intentions towards unimagined targets who belonged to either an ingroup or outgroup. There was no third 'group' condition in either study, which could test the attitudes and intentions towards an unimagined, larger-bodied target whose group membership was not specified. Therefore, future research may wish to avoid the group context altogether, or as previously suggested, should include a 'no group' condition for comparisons.

Another consideration with regards to group is the possibility that children do not consider weight to be a group category, and therefore struggle to generalise any

effects of imagined contact to the unimagined target when the target's group membership is made salient. However, the importance of perceived fit of the target to the group, when making judgements and social inclusion decisions is clear from both Studies 2 and 3. Therefore, if weight was not considered as a social category or relevant to the group context, then perceived fit of the target would not be an influential factor in children's decision making.

Finally, it is clear that removing or further manipulating the group context will not be sufficient to make IC an effective strategy to reduce weight stigma, nor will it provide enough insight into the intervention's lack of success. Therefore, future research needs to consider other elements to weight-based prejudice, such as; prior contact, attitudes towards dieting, controllability beliefs and emotions such as disgust. Studies 4 – 6 in this thesis examine some of these factors, however due to resource constraints and the inappropriateness of testing some of these concepts with children; they are conducted with an adult population.

# Chapter 5: An Investigation into the Barriers and Facilitators of the Imagined Contact Intervention in Reducing Weight Stigma: The Roles of Disgust, Prior Contact, and Weight Stigma.

*Chapter 5 presents three studies that aimed to reduce weight bias in adults, and understand the mechanisms facilitating or preventing effective imagined contact, following the null results obtained in Study 2. This chapter first presents a pilot study which confirms the suitability of different body sized silhouettes for Studies 4 and 5. All three studies attempted to replicate Turner and West's (2012) study in an online format. Study 4 also set out to understand the roles of prior contact and stereotypic language use in interactions with, and consequently attitudes towards, fat individuals. Study 5 examined the potential of 'disgust' to influence the effectiveness of the intervention. Whilst, Study 6 explored the strength of weight stigma by manipulating both the weight and sexual orientation of the imagined target and the influence of the strength of stigma on the effectiveness of the intervention.*

Empirical evidence shows that imagined contact is an effective intervention in reducing children's prejudices. As detailed in Chapter 2, previous research showed that imagined contact interventions have resulted in: improved implicit attitudes, behavioural intentions (Vezzali, Capozza, Giovannini, & Stathi, 2012a), increased outgroup trust (Vezzali, Capozza, Stathi & Giovannini, 2012b) and an increase in planned helping behaviours towards immigrants (Vezzali, Stathi, Crisp, & Capozza, 2015), as well as increased intended friendship with disabled children (Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011). Whilst this type of intervention had not been previously applied to children's weight biases, with such evident success in reducing other prejudices, it is concerning that Study 2 did not show any promise of achieving the desired effects. Thus, it is important that the

possible barriers to this intervention are explored and understood, so that future interventions (be it imagined contact or not) have higher success rates in reducing children's weight stigma.

Due to resource constraints, it was beyond the scope of this thesis to explore these barriers in a child population. Furthermore, exploring underlying mechanisms such as belief in anti-fat stereotypes and feelings of disgust for example, seemed likely to pose ethical problems with this age group. Hence, the following studies were conducted with an adult population.

At least 70 published studies demonstrate that imagined contact can improve intergroup attitudes (Miles & Crisp, 2014). However, at the time of conducting the following studies only one study had used imagined contact in an attempt to reduce weight stigma (Turner and West, 2012). Specifically, after an imagined contact task, participants were told that they would be taking part in a discussion about obesity in today's society, with an 'obese' person. Participants were asked to help the experimenter set the room up for the discussion by unstacking two chairs. The distance placed by the participant between the two chairs was recorded and used as the behavioural measure. Participants in the imagined contact condition placed the two chairs closer together than those in the control condition, thus demonstrating more willingness to socially engage with an 'obese' person, due to the effects of imagined contact.

The study conducted by Turner and West (2012) did not report any other measures (such as stereotypic language, or disgust for example) that could aid our identification of the contributors and barriers to the success of imagined contact in reducing weight stigma. Therefore, the purpose of the following studies was to replicate the behavioural evidence whilst also testing for factors which could

moderate the success of imagined contact on weight stigma, and thus provide some answers as to why the intervention had not succeeded with a child sample.

In keeping with the methodology used in Studies 1 - 3, Study 4 required the use of adult silhouettes to manipulate the targets' weight. This chapter first presents a pilot study, which tests the suitability of these adult silhouettes. Specifically, the pilot study tests and finds that the thinner silhouette is perceived as of 'average' weight, with no stigma attached; whilst the larger silhouette is perceived as 'overweight', with a severe stigma attached.

In Study 4 participants were instructed to imagine either a neutral outdoor scene, an interaction with a slim person or an interaction with a higher weight person (as depicted by the silhouette's body size). Participants' attitudes and behavioural intentions were measured along with their experience of the imagined interaction, and prior contact.

Study 5 served to further explore the negative stereotypic language used by participants when describing interactions with 'obese' people. The primary hypothesis was that any null effects of the intervention would be due to participant's feelings of disgust.

The final study, Study 6, tested the hypothesis that the strength and normalisation of weight stigma is a barrier in implementing effective imagined contact interventions. To examine this theory, Study 6 used a cross-category approach, where participants either imagined contact with a gay person, or a gay *and* 'obese' person. In line with previous findings it was expected that attitudes towards gay people should improve following the imagined contact intervention.

## Pilot

In keeping with the methods used in Studies 1 - 3, two of the studies presented in this chapter used silhouettes as a method of varying the body size of the

targets. The silhouettes for the following studies were obtained from the website for South Florida's Lymphedema Support Network, but can also be found across multiple online sources discussing BMI (see Appendix D for details). The original source presents five silhouettes of varying body sizes, which have been computer generated to accurately depict body sizes from 'normal weight' to 'morbidly obese', according to medical BMI classifications. For the purpose of the pilot and subsequent studies, the two chosen silhouettes were selected from either extreme of the scale ('normal weight' and 'morbidly obese').

Whilst these silhouettes are accurate visual representations of different BMI categories, it cannot be said that participants will necessarily perceive relevant silhouettes as 'average-weight' or 'overweight', nor that they will associate positive and negative attributes to each silhouette, as would be expected with the presence of weight stigma. Thus, a pilot study was conducted to determine the perceived weight of the silhouettes and to confirm any existing stigma attached to such body sizes. The pilot study was also used as an opportunity to ensure that participants would be able to report their height and weight, in order for their BMI scores to be calculated.

## Method

### Participants

Twenty American adults (11 Females) aged between 26 and 70 ($M$ = 42.16, $SD$ = 12.08) were recruited via Amazon's Mechanical Turk.

### Procedure

Demographic information of participants' age, gender, height (in feet and inches), and weight (in pounds) was first obtained. Participants were then presented with the lower weight and higher weight silhouettes in turn; the order in which these were presented was counterbalanced. Following the presentation of each silhouette, participants were asked to rate; the silhouette's weight (3-point scale; "underweight",

"average weight" or "overweight"), how good it is to be that particular size (1 = Not at all, 5 = Very Much), how bad it is to be that particular size (1 = Not at all, 5 = Very Much), and finally the gender of the silhouette (male, female, or not sure).

## Results

### BMI

Only one participant was not able to provide their weight, all other participants were able to provide both their weight and height, allowing for their BMI to be calculated. BMI was calculated using the following formula:

$$\text{BMI} = [\text{Weight in pounds} / (\text{Height in inches } 2)] \times 703$$

According to the National Heart, Lung, and Blood Institute (part of the U.S. Department of Health and Human Services) normal weight falls between the BMIs of 18.5 and 24.9. Individuals are classed as 'overweight' when they have a BMI of 25-29.9 and those who have a BMI of over 30 are considered 'obese'. The BMIs of the current sample for the pilot study ranged between 14.63 and 36.28 ($M$ = 27.21, $SD$ = 5.51). Whilst this does fall into the 'overweight' category, this is not unusual as the mean BMI for American adults is 28.8 (WHO, 2015).

### Silhouettes

**'Average-weight' silhouette.** All participants rated the slimmer silhouette as "average weight" (rather than "underweight" or "overweight"). There was a significant difference between how good and how bad participants perceived this weight to be $t$ (19) = 12.06, $p < .001$, Cohen's $d$ = 2.70. Participants perceived this weight to be more good ($M$ = 3.95, $SD$ = 0.89) than bad ($M$ = 1.20, $SD$ = 0.41). The majority of participants rated the silhouette's gender as female (60%, $n$ = 12), only two participants were not sure of the silhouette's gender.

**'Overweight' silhouette.** All participants rated the larger silhouette as "overweight" (rather than "underweight" or "average-weight"). There was a significant difference between how good and how bad participants perceived this weight to be $t$ (19) = -35.19, $p < .001$, Cohen's $d$ = -7.87. Participants perceived this weight to be more bad ($M$ = 4.70, $SD$ = 0.47) than good ($M$ = 1.00, $SD$ = 0.00). With clear floor and ceiling effects for "how good is it to be this weight?" and "how bad is it to be this weight?" respectively, it is clear that there is a real stigma attached to being of a larger body size. The majority of participants rated this silhouette's gender as female (55%, $n$ = 11), only two participants were not sure of the silhouette's gender.

**'Average-weight' vs 'overweight' silhouettes.** A repeated measures ANOVA was conducted to test for significant differences between the 'average-weight' and 'overweight' silhouettes, on the measures of perceived gender, positivity of the weight and negativity of the weight. There was no significant difference in the perceived gender of either silhouette $F$ (1, 19) = 0.06, $p$ = .804, $\eta_p^2$ = .003. A significant difference was found for the positivity of the weight ("how good is it to be this weight?") $F$ (1, 19) = 221.20, $p < .001$, $\eta_p^2$ = .921, with lower weight seen as more good than higher weight (means as reported above). A significant difference was also found for the negativity of the weight ("how bad is it to be this weight?") $F$ (1, 19) = 665.00, $p < .001$, $\eta_p^2$ = .972, with higher weight seen as worse than lower weight (means as reported above). Therefore, both silhouettes accurately represent their intended weight as defined by the BMI system ('average' vs 'over'). The pilot study indicates an obvious association between 'good' and 'average-weight', and a clear and strong stigma against being 'overweight'.

## Discussion

The purpose of the pilot study was to ascertain whether the silhouettes would act as suitable visual manipulations of the target's weight, for use in subsequent studies. The 'average-weight' silhouette was correctly identified by participants as representing "average-weight". This silhouette did not seem to have a weight-related stigma attached to it, as it was rated more positively than negatively. The silhouette that represents "morbidly obese" on the BMI scales was correctly identified by participants as being "overweight", rather than "underweight" or "average-weight". The larger silhouette was also rated more negatively than positively, due to an apparent stigma. Furthermore, the two silhouettes were significantly different from one another in terms of perceived weight category and stigma, thus they are both appropriate for use in the following studies to represent 'average' and 'overweight' targets.

Both targets however were rated by the majority of participants as being female, rather than male or unidentifiable. Nevertheless, the intention was to use silhouettes that could be interpreted as either gender, and since almost half of all participants rated the silhouette as male, the selected silhouettes still serve their purpose.

The pilot study also confirmed that most of the participants were able to supply information on their height and weight which could be used to determine participants' BMI scores. This is of importance in the following studies in order to account for the possible confound of participants' own weight.

## Study 4

The aim of the present study was to reduce adults' weight bias using imagined contact, and to explore the underlying mechanisms of the imagined contact effects. Of most interest was; participants' prior contact with higher weight

individuals, the positivity of the imagined interaction, and also the language used to describe the interaction and imagined target.

To keep in line with the design of Study 2, participants' weight bias is determined here through both attitudes and behavioural intentions. Further, whilst Turner and West (2012) demonstrated actual behaviour change in their lab-based study; the present study was conducted online therefore making it harder to observe actual behaviour change. The present study measured participants' willingness to engage in a *future* (rather than immediate) discussion with an 'obese' person, using three different forms of contact. Different forms of contact were presented in order to create a sense of distance, as the original behaviour change task measured the physical distance between the chairs set out for the discussion session. Thus, the present study proposed discussions in person, over the phone, and online. Moreover, having three different types of contact allows for the exploration of within and between condition differences. In particular, it is expected that the imagined contact technique would reduce differences in levels of willingness between the three different types of contact. Yet participants in control conditions may express more desire to interact from a distance (e.g. online), than in person.

Whilst imagined contact has been established as an effective intervention to reduce prejudiced attitudes in contexts where direct contact is limited or impossible (Husnu & Crisp, 2010a; Turner, Crisp, & Lambert, 2007a; West, Husnu, & Lipps, 2015), prior experience of contact with the target outgroup can influence the effects of the intervention. Husnu and Crisp demonstrated that the effects of imagined contact were enhanced when participants had prior contact experience. This enhancement of the effects was mediated by the vividness of the imagined interaction. Therefore, prior contact with the target group (Muslims, in Husnu & Crisp's study) allows for the individual to imagine a more realistic and detailed

interaction than when there is less or no prior contact; and in turn this increases the positive outcomes of the intervention. Alternatively, more recent research testing prior contact as a moderator, has found that imagined contact works best when participants have *lower* levels of prior contact. Yet, this was only the case when the imagined outgroup was gay people, and not when the outgroup was Muslims (Hoffarth & Hodson, 2016). The conflicting findings for the role of prior contact highlight the need to further test how prior contact can interact with the imagined interaction, and to identify with which target groups prior contact is an important or necessary condition.

Original research on imagined contact implemented a neutral imagined interaction task, with success (Turner et al., 2007a). However, it has since been recommended that imagined interaction interventions instruct a positive interaction to be imagined (Crisp, Stathi, Turner, & Husnu, 2009). In fact, West, Holmes, & Hewstone (2011) demonstrated that with highly stigmatised groups, a positive (rather than neutral) imagined interaction was absolute necessary for reducing prejudiced attitudes and increasing good intentions. Whilst the studies presented in this thesis do instruct participants to imagine a positive interaction, it is possible that this is not how interactions are likely to be experienced in reality. Thus, the present study will assess the positivity of the imagined interaction and its contribution to the success, or failure, of the intervention.

Along similar lines to the positivity of the imagined interaction, it is plausible that the stereotypes, and therefore stigma, surrounding higher weight individuals interferes with participants' ability to imagine a positive interaction. To examine this possibility, the present study will analyse participants' free recall of the interaction for use of weight-stereotypic language (Bessenoff & Sherman 2000).

## Method

### Participants and Design

Seventy-seven females and 74 men ($M_{age}$ = 35.75, $SD_{age}$ = 10.69) residing in the United States of America were recruited via Amazon's Mechanical Turk and were paid accordingly for their time and efforts. Participants' BMI ranged between 17.18 and 59.99 ($M$ = 26.49, $SD$ = 6.44). Any participants who had participated in the pilot study were not illegible to take part in the current study and were therefore rejected during pre-screen tests if they had previously participated. Furthermore, the study contained 'attention checker' questions amongst scale variables, such as "select 'strongly agree' if you live in the U.S." These attention checker questions had only one correct answer and were impossible to answer incorrectly, unless the participant was not paying due attention. Any participants that failed to correctly answer the attention checker questions were rejected and henceforth their data was discarded.

The present study employed a 3-condition, between-subjects design. Participants were randomly allocated to either; the *neutral control condition* (imagining a neutral scene), the *control imagined contact condition* (imagined contact with a lower weight individual) or the *experimental imagined contact condition* (imagined contact with a higher weight individual). For this design, GPower analyses calculated a minimum sample size of 144, to obtain the same effect size observed by Turner and West (2012, Cohen's $D$ = .64 or $\eta_p^2$ = 0.3), with 90% power.

### Materials

As the purpose of Study 4 was to assess why the intervention in Study 2 did not succeed in changing attitudes and intended behaviours in children; Study 4 will employ a similar methodology to that employed in Study 2. That is, instead of

explicitly asking participants to imagine contact with an 'obese' person (as in Turner & West, 2012), Study 4 will use silhouettes as a means of varying the target's weight (All materials and measures for Study 4 can be found in Appendices D & E).

All participants were asked to provide demographic information including; gender, age, ethnicity, weight (in pounds), and height (in feet and inches).

**Attitudes.** Weight biased attitudes were measured using the Universal Measure of Bias, Fat Subscale (UMB-FAT; Latner, O'Brien, Durso, Brinkman, & Macdonald, 2008). The UMB-FAT is a 20-item scale with four subscales measuring; Negative Judgement, Distance, Attraction, and Equal rights. For the current study the two items from each subscale that held the highest factor-loadings were chosen to form an eight-item scale (Cronbach's $\alpha$ =. 849).

**Intentions.** Intentions towards higher weight individuals were examined through participants' willingness for future contact which was assessed using a novel measure. This measure was intended to be as comparable as possible to the behavioural measure created and utilised by Turner and West (2012). The current measure was created with the knowledge that participants would be involved in an online study, rather than a lab-based study. Participants were told that in preparation for future studies, researchers were interested in gauging how much individuals would like to be involved in a future discussion concerning obesity in today's society, with an 'obese' person. To incorporate a sense of distance, as in the original measure, participants were asked about engaging in conversation in three different scenarios; online, over the telephone, or face-to-face. Participants responded on a 5-point scale to indicate their willingness to take part in each discussion (1 = definitely not, 5 = definitely yes). Factor analyses revealed all three items to load highly on to one factor, with good reliability (Cronbach's $\alpha$ = .793). However, on examining the Cronbach's alpha analysis more closely, it was noted that the internal consistency of

the scale could be improved if the 'online' item was deleted. Doing so would create a 2-item scale for which Cronbach's alpha is arguably not the most suitable analysis for a 2-item scale (Eisinga, Grotenhuis, & Pelzer, 2013). Therefore, a Spearman-Brown coefficient was obtained for the 2-item scale, revealing a high internal consistency coefficient (.866). The main analyses therefore used the 2-item measure as opposed to the 3-item measure, to assess the effects of imagined contact on participants' intentions towards 'obese' individuals.

**Prior contact.** Participants' prior contact with 'obese' individuals was measured by asking, "how much contact have you had with obese people?" (1 = None, 5 = A Great Deal). The experience, or quality, of this prior contact was measured by employing established bipolar scales (Voci & Hewstone, 2003). Specifically, participants were asked how meaningful the contact was (1 = Superficial, 7 = Deep) and how pleasant the contact was (1 = Unpleasant, 7 = Pleasant).

**Positivity of the imagined interaction.** Participants in both of the imagined contact conditions, but not the neutral control condition, rated how friendly and pleasant the imagined contact was (7-point scales; Unfriendly – Friendly, Unpleasant – Pleasant).

**Procedure**

The aims of the study were described to participants as 'to examine how people imagine social and non-social interactions differently'; importantly no mention of weight or prejudice reduction was made in the study title or aims. Participants assigned to the *experimental imagined contact* and *control imagined contact* conditions were presented with the instruction *"I would like you to spend the next 2 minutes imagining meeting the person pictured below for the first time. Imagine that the interaction is relaxed, positive, and comfortable"*. The person

pictured below the instructions was either a silhouette of a slim person (control imagined contact condition) or a silhouette of a larger bodied person (experimental imagined contact condition). Those randomly allocated to the *neutral control condition* were given the instruction *"I would like you to spend the next 2 minutes imagining an outdoor scene. Try to imagine aspects of the scene about you (e.g. is it a beach, a forest, are there trees, hills, what's on the horizon?)"*. All participants completed the following measures; Free recall of imagined task, Universal Measure of Bias – Fat Subscale (UMB-FAT), Willingness for future contact, and Experience of Prior contact. Those in the control imagined contact and the experimental imagined contact conditions completed additional dependent variable measures of; Free description of imagined target's traits and characteristics, Ratings of how friendly and pleasant the imagined contact was, and Impressions of who the imagined target was. All of these measures concerning only participants who imagined a social interaction were completed immediately after the imagined contact, except for the impressions of who the target was, which was completed towards the end of the survey, immediately before the measure of prior contact.

## Results

### Imagined Contact Effects on Weight Bias

To test for the expected effects of imagined contact on attitudes and behavioural intentions a MANCOVA was conducted, with Condition as the independent variable and Attitudes and Intentions as the two dependent variables, with Amount of Prior Contact and participant BMI as covariates. Due to the design of the study, the Positivity of the Imagined Interaction could not be included in the initial analysis as participants in the neutral control condition were not asked to rate the positivity of their imagined scenario. The MANCOVA revealed no main effect of condition $F$ (4, 292) = 0.76, $p$ = .552, $\eta_p^2$ = .010 on participants' attitudes ($p$ =

.617) nor their behavioural intentions towards 'obese' people *(p* = .366). Participants' BMI was not a significant covariate $F$ (2, 145) = 0.97, $p$ = .383, $\eta_p^2$ = .013, however amount of prior contact was $F$ (2, 145) = 14.80, $p$ < .001, $\eta_p^2$ = .169.

Following the finding that there were no significant differences between the neutral control condition and either the control or experimental imagined contact conditions, the MANCOVA was re-run with the inclusion of Positivity of the Imagined Interaction as a covariate. Thus, the following analyses only concern the control and experimental imagined contact conditions and not the neutral control condition. There was no main effect of condition $F$ (2, 97) = 1.66, $p$ = .617, $\eta_p^2$ = .033 on participants' attitudes ($p$ = .173) nor their behavioural intentions ($p$ = .178) towards 'obese' people. Participants' BMI was not a significant covariate $F$ (2, 97) = 2.02, $p$ = .817, $\eta_p^2$ = .004, however amount of prior contact $F$ (2, 97) = 18.14, $p$ < .001, $\eta_p^2$ = 1.00 and positivity of imagined contact $F$ (2, 97) = 11.00, $p$ < .001, $\eta_p^2$ = 0.99 were significant covariates.

It would seem from the above analysis alone that imagined contact interactions did not have an effect on individuals' attitudes or future contact intentions. However, prior contact and the positivity of the imagined contact with larger bodied individuals are important variables to consider.

**Prior Contact and Positivity of the Imagined Contact**

To further explore possible covariates, correlational analyses were carried out with Attitudes, Intentions, Prior Contact (amount of prior contact, and composite scores of meaningfulness and positivity of prior contact), and Positivity of imagined contact. As the MANCOVA revealed no differences between the three conditions, the correlations were conducted with a dummy-coded condition variable, with the experimental imagined contact condition coded as 1, and the control imagined contact and neutral control conditions both coded as 0.

Not surprisingly, condition was not correlated with Attitudes or Intentions (*p*s = .577 and .219, respectively). Interestingly however, condition was *negatively* associated with the positivity of the imagined interaction ($p = .003$). Indicating that those who imagined an interaction with a larger-bodied person rated their interaction as *less* positive than those who imagined interacting with a slimmer person.

Further, attitudes were positively correlated with all other variables including the amount of prior contact ($p < .001$) and the positivity of the imagined interaction ($p < .001$). Intentions to engage in future contact were positively correlated with amount of prior contact also ($p < .001$), but not with positivity of the imagined interaction ($p = .187$). See Table 5.1 for all correlations.

Table 5.1. *Study 4. Correlations for Condition, Attitudes, Intentions, Amount of Prior Contact, Quality of Prior Contact and Positivity of Imagined Contact Interaction.*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Condition | | -.046 | .101 | .018 | -.116 | -.287** |
| 2. Attitudes | | | .248** | .353*** | .574*** | .428*** |
| 3. Intentions | | | | .339*** | .264** | .131 |
| 4. PC (amount) | | | | | .539*** | .123 |
| 5. PC (quality) | | | | | | .432*** |
| 6. Positivity of IC | | | | | | |

*Note.* PC = Prior contact, IC = Imagined interaction.
** $p < .01$, *** $p < .001$.

To further explore the relationship between condition and the negative construal of the imagined interaction, a moderation model was run using Hayes PROCESS (Hayes, 2013). Amount of prior contact was entered as a moderator

variable in the relationship between condition (dummy coded) and positivity of the imagined contact. The overall model was significant $F$ (3, 99) = 5.26, $p$ = .002, $R^2$ = .137. Condition significantly predicted the positivity of the imagined interaction, $b$ = -2.57, $p$ = .008, indicating that receiving the instruction to imagine contact with a larger-bodied person led to a less positive imagined interaction than when instructed to imagine contact with a slim-bodied person. There was also a significant condition x prior contact interaction, $b$ = 0.512, $p$ = .049. This interaction was significant at both the mean score and one SD below the mean score of prior contact ($b$ = -0.73, $p$ = .002, and $b$ = -1.20, $p$ < .001 respectively, see Figure 5.1). Indicating that when imagining an interaction with a larger-bodied person, those with low and average levels of prior contact with an 'obese' person imagined a less positive interaction. The $R^2$ increase due to the interaction was .0345, $F$ (1, 99) = 3.96, $p$ = .049.

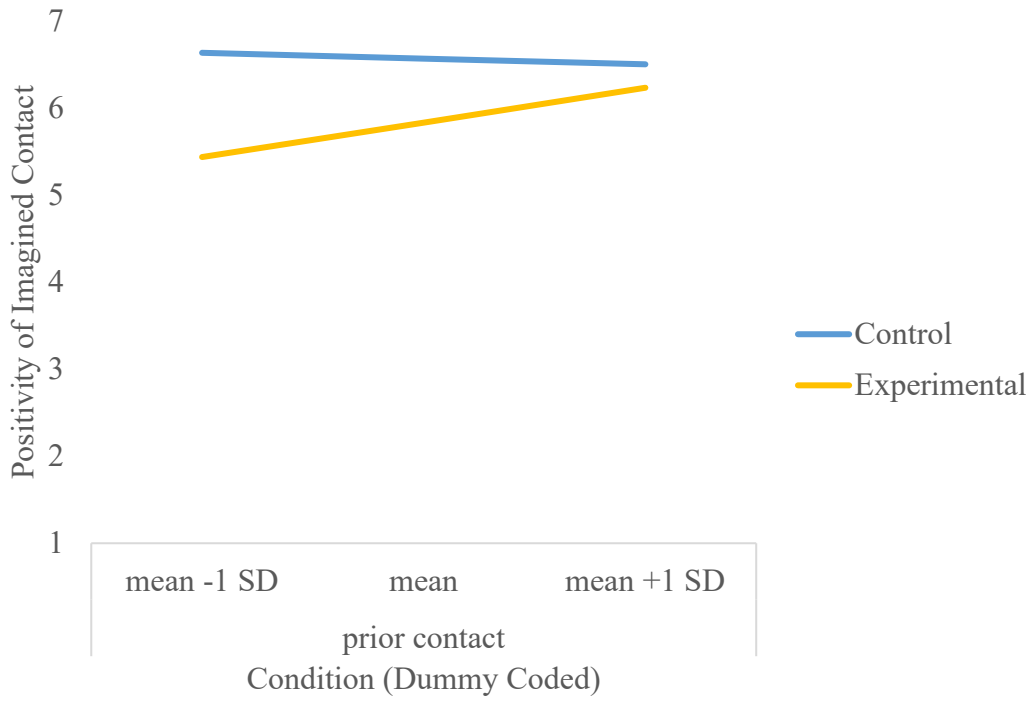


*Figure 5.1.* Study 4. Positivity of the imagined contact interaction by condition (dummy coded) at different levels of participants' prior contact with 'obese' people.

**Negative Stereotypic Language**

Using Bessenoff and Sherman's (2000) categories of weight-related stereotypes, participants' free descriptions of the imagined target's traits and characteristics were categorised into six different types of stereotyping. The traits could be categorised into positive or negative stereotypes of; fat people, thin people, and weight-irrelevant stereotypes (for full list see Appendix F). For each participant, a sum score was made of how many of each type of stereotypic word was used to describe the imagined person. To allow for a second type of analysis on this data, two composite variables, positive and negative stereotypes, were computed using the sum of the three positive stereotype variables and the three negative stereotype variables, respectively.

A MANOVA was first conducted to test for differences between the conditions in the total number of positive and negative stereotypes listed (regardless of the type of stereotype). There was a significant effect of condition $F$ (2, 96) = 6.90, $p$ = .002, $\eta_p^2$ = .126, on both the number of positive traits $F$ (1, 97) = 4.83, $p$ = .030, $\eta_p^2$ = .047, and the number of negative traits listed $F$ (1, 97) = 12.26, $p$ = .001, $\eta_p^2$ = .112. Participants listed more positive stereotypes in the control imagined contact condition, where the imagined target was slim ($M$ = 2.11, $SE$ = 1.19); than they did in the imagined contact condition, where the target was fat ($M$ = 1.56, $SE$ = 1.18). Participants also used more negative stereotypes for the fat target ($M$ = 0.60, $SE$ = 0.11) than for the slim target ($M$ = 0.06, $SE$ = 0.11).

To test for differences in the *types* of traits and characteristics listed to describe targets another MANOVA was conducted with six dependent variables; positive fat-stereotypic, negative fat-stereotypic, positive thin-stereotypic, negative thin-stereotypic, positive irrelevant-stereotypic, and negative irrelevant-stereotypic. The MANOVA revealed a significant effect of condition $F$ (6, 92) = 5.27, $p$ < .001,

$\eta_p^2$ = .256, however follow up analyses revealed no significant effects of condition on positive fat-stereotypic traits $F$ (1, 97) = 0.02, $p$ = .898, $\eta_p^2$ = .000, negative-thin stereotypic traits $F$ (1, 97) = 3.40, $p$ = .068, $\eta_p^2$ = .034, or positive irrelevant-stereotypic traits $F$ (1, 97) = 0.34, $p$ = .563, $\eta_p^2$ = .003.

There was a significant main effect of condition on negative fat-stereotypic traits, $F$ (1, 97) = 8.71, $p$ = .004, $\eta_p^2$ = .082, with more of these stereotypes being listed for the fat target ($M$ = 0.42, $SE$ = .08) than the slim target ($M$ = 0.06, $SE$ = .09). There was a significant main effect of condition on positive thin-stereotypic traits, $F$ (1, 97) = 22.84, $p$ < .001, $\eta_p^2$ = .191, indicating that more of these stereotypic traits were listed for the slim target ($M$ = 0.68, $SE$ = .09) than for the fat target ($M$ = 0.12, $SE$ = .08). There was a marginally significant effect of negative irrelevant-stereotypic traits $F$ (1, 97) = 3.84, $p$ = .053, $\eta_p^2$ = .038, with participants using these stereotypes to describe the fat target ($M$ = 0.08, $SE$ = .03) but not the slim target ($M$ = 0.00, $SE$ = .03)

Further, when categorising the traits and characteristics into the stereotypic traits above, it was noticed that some of the negative descriptions were related to the concept of disgust (e.g. “sweaty”, “dirty”, “smelly”, and “poor hygiene”). On further investigation, all of these ‘disgust-related’ descriptions were made by participants in the experimental imagined target condition (larger-bodied target) and not by any participants in the control imagined target condition (slim target). This emotion of disgust and its association with weight stigma may provide an insight into why the imagined contact intervention produced negative imagined interactions in the current study and is something that is examined further in Study 5.

**Differences between types of Intended Contact**

It was hypothesised that there would be significant differences between the three types of future contact in the *control* conditions, with participants preferring

online over all other types of contact. Whilst for those in the *experimental* condition there would be a smaller, if any, difference between the types of contact. To test this hypothesis, A 3 (condition: control vs 'slim' vs 'fat') x 3 (intentions: online vs phone vs face) mixed ANOVA was conducted with intentions as the within-subjects factor and condition as the between-subjects factor.

Mauchly's test of sphericity was significant, $W = .81$, $X^2$ (2) = 31.25, $p <$ .001) therefore the assumption of sphericity had been violated and the following results were thus obtained using the Huynh-Feldt correction ($\varepsilon = .86$).

As the main analyses showed that imagined contact did not have an effect on outcomes, it is not surprising that there was no significant intentions x condition interaction $F$ (3.44, 254.34) = 1.81, $p = .138$, $\eta_p^2 = .024$. However, there was a significant main effect of intentions, $F$ (1.72, 254.34) = 77.78, $p < .001$, $\eta_p^2 = .344$, see Figure 5.2. Pairwise comparisons of the types of intentions revealed significant differences between all three levels. Participants were more willing to engage in an online conversation with an 'obese' person than both over the phone and face-to-face (both *p*s <.001) and significantly more willing to participate over the phone than face-to-face ($p = .008$), regardless of experimental condition.

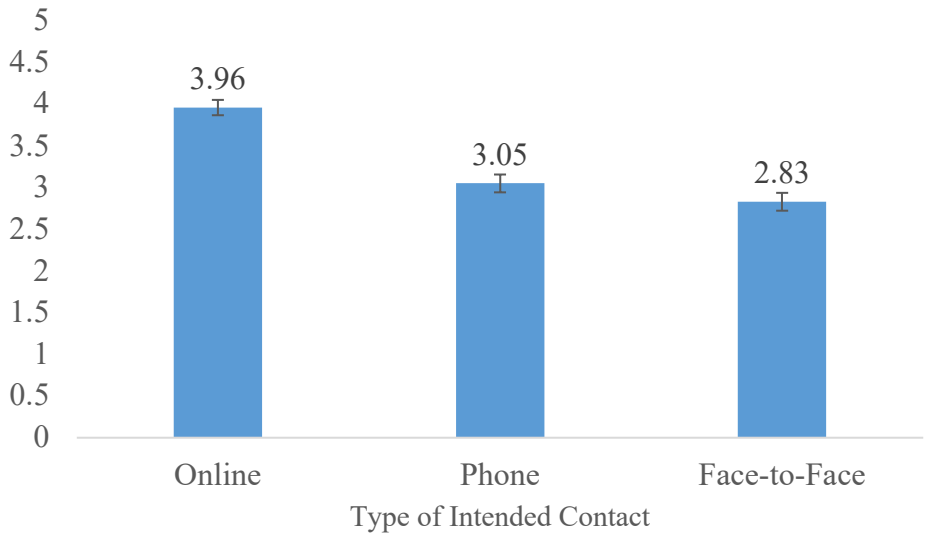


*Figure 5.2.* Study 4. Differences in types of intended future contact with an 'obese' person.

## Discussion

The aim of Study 4 was to implement the imagined contact intervention to an adult sample, and to test underlying mechanisms of weight stigma and imagined contact. In contrast with previous research (Turner & West, 2012), the present study did not successfully reduce weight bias amongst participants via imagined contact. In fact, participants who imagined an interaction with a larger-bodied individual imagined a more negative interaction, a finding that has the potential to explain the null effects of imagined contact on anti-fat attitudes.

The moderation analyses revealed that participants were even more likely to imagine a negative interaction with a fat person if they had little to no prior contact with 'obese' individuals. This is an important finding as other research has established that lower levels of prior contact yield the best results for imagined contact interventions when gay people are the target group (Hoffarth & Hodson, 2016). Yet, the role of prior contact has never before been tested for when 'obese' individuals are the target group. The present study therefore establishes that lower

levels of prior contact with 'obese' individuals is harmful for imagined contact interventions.

Participants' attitudes, but not behavioural intentions, were related to the positivity of the imagined contact. As research shows that a positive tone to the imagined contact instruction (Stathi & Crisp, 2008) and a positive imagined interaction are both required for imagined contact to improve attitudes towards the most highly stigmatised groups (West, Holmes, & Hewstone, 2011); this finding suggests that imagined contact may be sufficient to change attitudes towards 'obese' individuals, but not intentions. As prior contact was related to intentions it can be concluded that it is personal experience that drives the behavioural intentions of individuals when thinking about interacting with an 'obese' person. Thus, a possible avenue for further research in lab-based studies such as that conducted by Turner and West (2012), would be to assess participants' levels of prior contact to test whether it really is imagined contact driving positive behaviour, or perhaps a combination of prior contact and imagined contact effects.

The present study found that regardless of experimental condition, participants preferred forms of contact with more of a distance, over closer forms of contact. Whilst this may be a symptom of the deeply ingrained weight stigma in society, it is important also to acknowledge that this study employed participants via M-Turk. As such, this finding may also reflect the type of sample used as these participants may prefer to engage in computer-based activities rather than more intimate activities such as telephone or face-to-face conversations.

Study 4 highlights the strength and persistence of weight stigma in society, not only through the failed IC intervention, but also through the examination of language used. Categorising participants' free recall into stereotypic language categories revealed that participants used negative language to describe the

interaction and the imagined target when imagining a larger-bodied person. Participants in this condition were more likely to use words that have been used to negatively stereotype fat individuals, and negatively stereotype individuals regardless of their weight; as compared to those in the control imagined contact condition (slim target). Furthermore, when in the experimental IC condition (fat target), disgust-related words were used to describe the interaction, whereas these types of words were not used once by participants in the control IC condition.

Given that such strong, negative language was used and that the IC intervention had failed to improve attitudes or intentions, it is essential that the next study, Study 5, examines the role of disgust in the effectiveness of IC interventions.

## Study 5

Study 5 was a further attempt to replicate the lab-based findings that imagined contact interventions can reduce prejudice towards overweight individuals (Turner & West, 2012). However, considering the null results obtained in Study 4, it is not expected that the following study would be successful in changing attitudes or intentions. Instead however, the present study aims to examine how feelings of disgust may contribute to the failure of the intervention. Specifically, it is expected that any failure or negative outcomes of the IC intervention can be attributed to an increase in disgust amongst individuals who imagine interacting with a fat person.

Furthermore, the present study uses the term ‘fat’ rather than ‘obese’ in the dependent measures. This change in terminology is in response to weight stigma researchers acknowledging that the terms ‘obese’ and ‘overweight’ are in themselves stigmatising (see Terminology chapter for detail). The term ‘obese’ is employed in Studies 4 and 6 however, to allow for a replication of the Turner & West (2012) study in which IC was successful in reducing weight bias.

## Method

### Participants and Design

Participants were once again recruited via Amazon's Mechanical Turk and therefore anyone who had participated in the pilot or previous study was not illegible to take part in the current study and was rejected at the pre-screen stages. As previously, incorrect answers on attention checks also disqualified the participant. One hundred and seventy-nine U.S. residents (98 Male) participated in the current study. Participants' age ranged between 19 years and 71 years ($M$ = 39.06, $SD$ = 12.03) and BMI scores raged between 16.04 and 51.35 ($M$ = 27.31, $SD$ = 6.50). As in Study 4, participants were randomly allocated to one of three conditions, either; *imagined contact* (imagined contact with a higher weight person), *control imagined contact* (imagined contact with a lower weight person), or *neutral control scene* (imagining nature scene).

As Study 4 did not achieve the effect size of $\eta_p^2 = .3$, Study 5 was designed to test for a medium effect size ($\eta_p^2 = .25$) at 80% power (N must be larger than 158 for ANCOVA with 5 covariates).[5]

### Materials

Study 5 measured the same dependent variables as in Study 4, with a slight adjustment to the ratings of the imagined interaction. In Study 4 only those that had imagined an interaction (either with a lower weight or a higher weight person) were asked to rate the pleasantness and friendliness of the imagined scenario. Study 5 however asked *all* participants to rate the pleasantness of what the participant had imagined (thus including those who imagined a nature scene) and only participants

[5] NB similar power for MANOVA requires only N = 108 but then arguably the alpha level is too low (.05) and so using the ANCOVA calculation is more conservative.

in the imagined *interaction* conditions rated the friendliness of the imagined interaction.

Study 5 employed two additional measures: Anti-Fat Attitudes Scale (AFAS, Morrison & O'Connor, 1999), and Disgust Sensitivity (Lieberman, Tybur, & Latner, 2012).

The AFAS was implemented in Study 5 in combination with the UMB-FAT subscale (Cronbach's $\alpha = .766$) as an additional attitudinal measure. The AFAS consists of five items (see Appendix E) and according to previous research all items load on to only one factor (Morrison & O'Connor, 1999), thus making this scale a parsimonious measure of negative attitudes towards fat individuals. Factor analyses on the current data also revealed a one factor structure for this subscale, with high reliability (Cronbach's $\alpha = .836$).

Disgust sensitivity towards larger bodied individuals was measured using a 3-item scale developed by Lieberman and colleagues (2012), importantly the scale wording was adapted for the current study to replace terms such as 'obese' with 'fat'. Participants rated their moral ("How morally disgusting do you find fat people, that is, how wrong is it for someone to be fat?), sexual ("How sexually disgusting do you find fat individuals, that is how disgusting would it be to have sex with someone who is fat?") and pathogenic ("In terms of disease or overall grossness, how disgusting do you find individuals?") disgust towards 'obese' or fat individuals using a 7-point Likert scale (1= Not at all disgusting, 7=Extremely disgusting). A concern with this scale was that the items were overtly negative and may cause distress to the participants, therefore positive filler items were also added to the scale (e.g. "How socially exciting do you find it to be with fat people, that is, how much do you find them to be really friendly and willing to get to know you?") and randomised amongst the three disgust sensitivity items.

### Procedure

The aims and procedure of Study 5 were as described in Study 4, with the following additions. As mentioned above, the UMB and AFAS scales were combined to appear as one measure in the survey. Participants completed these scales after the imagined scenario and imagined scenario descriptions and ratings of pleasantness and friendliness. Following the attitude measures (UMB and AFAS), participants completed the disgust sensitivity measures; followed by the intentions for future contact measure (2-item measure as in Study 4, Spearman-Brown $\alpha$ = .851), and finally the target impressions and measures of prior contact.

## Results

### Imagined Contact Effects on Weight Bias

To examine the effects of imagined contact on anti-fat attitudes and intentions, a MANCOVA was conducted with condition as the independent variable. The UMB, AFAS and Intentions scales were dependent variables in the analysis, whilst BMI, amount of prior contact and the three Disgust variables were entered as covariates. Condition did not have a significant effect on any of the dependent variables $F$ (6, 340) = 0.76, $p$ = .597, $\eta_p^2$ = .013. However, sexual disgust, pathogenic disgust and amount of prior contact were all significant covariates (all $p$s < .001).

### The Role of Disgust

It was hypothesised that any null or adverse effects of imagined contact on attitudes would be due to feelings of disgust. Therefore, the correlations between the covariates, dependent variables and condition (dummy coded as in Study 4) were examined. All three types of disgust were positively correlated with both UMB and AFAS (see Table 5.2 for all correlations). A composite score of all three types of disgust was therefore created (Cronbach's $\alpha$ = .829) for use in the subsequent

analyses. Correlations did not exist between condition and disgust, or condition and UMB or AFAS. However, prior contact did negatively correlate with all three disgust measures and both the UMB and AFAS.

Regression analyses confirmed that disgust is a significant predictor of attitudes, as measured by both the UMB $F$ (1,177) = 99.63, $p < .001$, $R^2 = .360$, and AFAS $F$ (1, 177) = 252.91, $p < .001$, $R^2 = .588$.

As prior contact and disgust were related to one another, and also to attitudes, mediation analyses were conducted to understand that role of disgust as a mediator between prior contact and attitudes towards fat individuals. As determined in Study 4, lower levels of prior contact were related to negative attitudes. The following analyses test the theory that this effect is due to high levels of disgust. Two mediation analyses were carried out, the first with UMB scores as the outcome variable, and the second with the AFAS scores as the outcome variable.

For the first model, disgust was found to be a significant mediator of the relationship between prior contact and attitudes (UMB), $b = 0.32$, $SE = 0.04$, 95% CI [-0.39, -0.25]. Specifically, the significant total effect of prior contact on attitudes (UMB) $b = 0.47$, $SE = 0.08$, $t = 5.99$, $p < .001$, was reduced, but remained significant, in the direct model $b = 0.27$, $SE = 0.07$, $t = 3.92$, $p < .001$.

Similarly, in the second model, disgust was found to be a significant mediator of the relationship between prior contact and attitudes (AFAS), $b = 0.61$, $SE = 0.04$, 95% CI [-0.52, -0.69]. Specifically, the significant total effect of prior contact on attitudes (AFAS) $b = -0.57$, $SE = 0.11$, $t = -5.48$, $p < .001$, was reduced, but remained significant, in the direct model $b = -0.23$, $SE = 0.08$, $t = -2.89$, $p = .004$.

Both mediation models revealed a partial mediation, indicating that both disgust and low levels of prior contact can explain negative attitudes towards fat people.

Table 5.2. *Study 5. Correlations Between Condition, Dependent Variables and Covariates.*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Condition | | -.039 | .037 | .010 | .111 | -.116 | .064 | .066 | -.004 |
| 2. UMB | | | -.602*** | .022 | .198** | .411*** | -.456*** | -.540*** | -.558*** |
| 3. AFAS | | | | -.070 | -.276*** | -.381*** | .475*** | .754*** | .740*** |
| 4. Intentions | | | | | .078 | .214** | .011 | .094 | .021 |
| 5. BMI | | | | | | .248** | -.239** | -.281*** | -.207** |
| 6. Prior Contact | | | | | | | -.246** | -.292*** | -.311*** |
| 7. Moral Disgust | | | | | | | | .545*** | .624*** |
| 8. Sexual Disgust | | | | | | | | | .701*** |
| 9. Pathogenic Disgust | | | | | | | | | |

*Note.* ** $p < .01$, *** $p < .001$.

## Discussion

As was the case in Study 4, Study 5 showed that imagined contact failed to reduce weight bias amongst adults. The key aim of the present study was to examine the role of disgust, as a barrier to the success of the IC intervention. It was hypothesised that an increase in disgust towards fat people would result in negative attitudes, despite the implementation of a positive imagined interaction. The findings revealed that disgust did indeed predict attitudes, with higher levels of disgust resulting in more negative attitudes.

Interestingly however, whilst disgust increased bias, as did prior contact, more prior contact resulted in lower disgust scores. Yet, disgust was shown to partially mediate the relationship between prior contact and bias, indicating that both prior contact and disgust are key drivers of negative attitudes towards fat people. Regarding the negative relationship between prior contact and disgust, it is plausible that whilst disgust may be reduced as a result of prior contact experiences, the strength of the stigma attached to being of a higher weight is such that levels of bias remain high. Henceforth, Study 6 investigates the strength of weight stigma as the barrier to effective imagined contact interventions on weight bias.

## Study 6

The present study was pre-registered on the Open Science Framework; the registration can be found by following this link:

https://osf.io/zudah/?view_only=1f765aa4c7144469a0e0030cec4d5fe5

To test the theory that weight stigma itself is the barrier to reducing biased attitudes, a layered stigma approach can be utilised. That is, weight can be combined with another stigmatising attribute for which research has established that the imagined contact intervention is successful. Gay people are one such stigmatised group and as a result social psychology has paid much attention to ways in which

homophobic attitudes can be reduced. Indeed, imagined intergroup contact has been successful in reducing homophobia (Miller, Markman, Wagner, & Hunt, 2013; Turner et al., 2007a; Turner, West, & Christie, 2013), even in contexts where stigmatisation and derogation of gay people is high (West et al., 2015).

If weight stigma is the barrier to effective IC intervention, then biases should be stronger in instances where the target individual is both gay and of higher weight, than when gay and of lower weight. To test this theory, the present study will firstly, aim to replicate the methods and findings of West and colleagues (2015), in an online study. Secondly, the study will test the theory presented above by including a third condition in which the imagined target is both gay and of larger body size.

Further, if weight stigma disrupts the IC process in reducing homophobic attitudes, it can be expected that implicit weight biases are correlated with explicit homophobic attitudes in the layered stigma condition. To this end, an IAT is also employed in Study 6.

**Hypotheses**

**H1.** Imagined contact with a gay person should increase positivity towards gay people. This will be evidenced by participants who imagine contact with a gay person holding more positive attitudes and behavioural intentions, compared with participants who imagine an outdoor nature scene (control).

**H2.** Imagined contact is not effective in reducing weight stigma. Therefore, individuals who imagine contact with someone who is both gay and 'obese', will hold more negative attitudes and behavioural intentions towards a gay person, compared with those who imagined interacting with a person solely described as gay.

**H3.** In further support of weight stigma disrupting imagined contact effects on attitudes towards homosexuality; it is expected that a correlation will exist

between implicit weight bias scores and explicit attitudes towards gay people only among participants who imagined interacting with a person who is both gay and 'obese'. This correlation should not exist for the other two conditions.

**H4.** Participant's disgust scores will be significantly higher when imagining interacting with an 'obese' (and gay) individual, compared with imagining a gay individual and with imagining an outdoor scene.

**H5.** As evidence of the strength of weight stigma in society; it is expected that there will be no significant mean level differences in explicit or implicit attitudes towards 'obese' individuals between all three conditions.

**H6.** In line with the correlational findings from Studies 4 and 5, it is expected that effects of condition on behavioural intentions will be mediated by disgust, quality of the imagined interaction and attitudes.

## Method

### Participants and Design

Recruitment and screening methods for this study were the same as those employed in Studies 4 and 5; with the additional requirement that participants had to identify as either male or female, and of heterosexual orientation. One hundred and seventy-nine adults (96 Male) took part in the current study. Participants' age ranged between 18 years and 64 years ($M$ = 34.86, $SD$ = 9.63) and BMI scores raged between 17.75 and 65.09 ($M$ = 27.37, $SD$ = 7.25). Participants were randomly assigned to one of three conditions, either; a *neutral control scene*, *single stigma imagined contact* (imagined contact with a gay person), or *double stigma imagined contact* (imagined contact with an 'obese' and gay person).

Power analyses were based on the effect size obtained for the Weight IAT, as other measures in the present study have not previously been used with 'obese' targets. Schwartz, Chambliss, Brownell, Blair and Billington (2003) obtained an

effect size of $r = .52$, which for the current design at 80% power, requires a sample size of 158.

**Materials**

In an attempt to replicate previous findings, methods and measured employed in Study 6 are identical, where applicable, to those employed by West and colleagues (2015). Therefore, unlike in Studies 4 and 5, silhouettes were not used in this study to depict the body size of the imagined target, instead this was described as part of the imagined contact instruction. In the double stigma condition, participants read, *"I would like you to spend the next 2 minutes imagining meeting an obese (male/female) stranger for the first time. Early in the conversation you find out that (he/she) is gay. Imagine that the rest of your interaction is relaxed, positive, and comfortable."* Whilst in the single stigma condition, the word "obese" was omitted, leaving the target's body size undisclosed. The gender of the imagined target was matched to that of the participant.

The current study employed the following measures: Attitudes towards gay people (Cronbach's $\alpha = .932$), Attitudes towards 'obese' individuals (Cronbach's $\alpha = .915$), Behavioural Intentions towards gay people, Behavioural Intentions towards 'obese' individuals, Disgust (Cronbach's $\alpha = .934$), and a Weight IAT. As in the previous studies; quality of the imagined contact and prior contact experience (with gay people only) were also recorded.

Attitudes towards gay individuals were measured using the same techniques as employed by West et al. (2015). In the current study these measures were repeated to also assess attitudes towards 'obese' individuals. Participants were required to rate their feelings towards the target on four, seven-point semantic differential scales (Wright et al., 1997): cold–warm, suspicious–trusting, negative–positive, and admiration–disgust (reversed).

Behavioural intentions were assessed by asking participants to rate their response to the question "Next time you find yourself in situation where you could interact with a (gay/obese, man/woman) how likely is it that you would strike up a conversation?" on a seven-point scale (1 = extremely likely, 7 = extremely unlikely).

The disgust sensitivity scale used in Study 5 was specific to feelings towards 'obese' or fat people, however the current study required a more general measure of disgust that was not target or situation specific. Henceforth, in the current study, disgust was measured using the Urges to Wash Subscale from the Mental Contamination Report (Elliot & Radomsky, 2009). Participants were presented with five items asking; "At this current moment, how much do you feel the urge to; rinse your mouth out/brush your teeth/wash your face/wash your hands/take a shower?". Responses were made on a seven-point scale (1 = Not at all, 7 = Very much).

Finally, participants' implicit biases were measured using the Weight (Bodies) IAT (Schwartz et al., 2003).

**Procedure**

After completing demographic details, participants were randomly assigned to one of the three conditions. Participants in the control condition were presented with the same instructions as described in Studies 4 and 5; the experimental conditions presented the instructions as described above. After the imagination task, all participants were asked to describe what they had imagined. As before, this task acted as a means to assess whether or not the participant had followed the instructions. All participants then rated the pleasantness of the imagined task, and those who imagined interactions also rated the friendliness of the task.

The dependent variables (except for the IAT) were then presented one by one in the following order: disgust, attitudes towards gay people, behavioural intentions towards gay people, attitudes towards 'obese' individuals, behavioural intentions

towards ‘obese’ individuals. Participants in the two experimental conditions were then asked to describe their impressions of the target and complete a descriptive checklist (as in Studies 4 and 5). All participants then completed the measures of prior contact with gay people. Finally, participants were then redirected to a different webpage, where they completed the weight IAT.

**Results**

To test hypotheses 1, 2, 4, and 5, a MANCOVA was conducted on all DVs, with condition as the IV, and BMI and Prior Contact as covariates. The analysis revealed no significant effect of condition $F$ (10, 338) = 0.80, $p$ = .628, $\eta_p^2$ = .023, suggesting that the imagined contact intervention was not effective in either experimental condition. However, amount of prior contact was a significant covariate $F$ (5, 168) = 12.25, $p$ < .001, $\eta_p^2$ = .267. Thus, only hypothesis 5, that levels of bias towards ‘obese’ individuals would not vary between conditions, was met.

Analysis of the IAT data revealed participants in all three conditions to hold negative biases against ‘obese’ people (see Table 5.3). To test hypothesis 3, that implicit attitudes towards ‘obese’ people would be correlated with explicit attitudes towards gay people in the double stigma condition only, the correlations were examined for each condition. A correlation did not exist between the IAT scores and attitudes towards gay people in either the single or the double stigma conditions (*p*s = .330, and .699, respectively). Thus, the theory that weight stigma could be responsible for negative attitudes towards the sexuality of an individual is not fully supported in this study.

The final hypothesis that measures of disgust, positivity of imagined contact, and attitudes could mediate the effect of condition on behavioural intentions could not be tested as no there was no effect of condition. However, examination of the

correlations between condition (dummy coded), mediators and the dependent variables, once again revealed a negative correlation between condition and positivity of the imagined interaction (see Table 5.4). To confirm the differences of the imagined interaction between conditions, a post hoc analysis of variance (with Bonferroni adjustments) was conducted, revealing a significant effect of condition $F(2, 176) = 11.43$, $p < .001$, $\eta_p^2 = .115$, see Figure 5.3. Pairwise comparisons confirmed that there was no difference in the positivity of the imagined interaction between the control ($M = 6.65$, $SE = 0.13$) and single stigma conditions ($M = 6.32$, $SE = 0.14$), $p = .219$. Whereas participants in the double stigma ($M = 5.78$, $SE = 0.13$) condition imagined a significantly more negative interaction compared to those in both the control ($p < .001$) and single stigma conditions ($p = .017$).

Table 5.3. *Study 6, IAT D scores by condition.*

| Condition | *M* | *t* | *df* | *p* |
|---|---|---|---|---|
| Control | 0.24 | 4.93 | 64 | < .001 |
| Single Stigma IC | 0.27 | 5.10 | 54 | < .001 |
| Double Stigma IC | 0.29 | 5.50 | 57 | < .001 |

*Note.* IC = Imagined Contact

Table 5.4. *Study 6. Correlations Between Condition, Dependent Variables for Both 'obese' And Gay Targets, and Covariates.*

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Condition | | -.069 | -.058 | -.101 | -.059 | .042 | .066 | -.093 | -.083 | -.314*** |
| 2. Attitude (Gay) | | | .587*** | .722*** | .422*** | -.098 | -.013 | .471*** | .616*** | .363*** |
| 3. Attitude ('obese') | | | | .487*** | .690*** | -.167* | -.002 | .265*** | .415*** | .314*** |
| 4. Intentions (Gay) | | | | | .653*** | -.079 | -.005 | .433*** | .547*** | .397*** |
| 5. Intentions ('obese') | | | | | | -.067 | -.057 | .291*** | .432*** | .293*** |
| 6. IAT (weight) | | | | | | | -.018 | -.006 | -.032 | -.065 |
| 7. Disgust | | | | | | | | .106 | .033 | -.252** |
| 8. Prior Contact (Amount) | | | | | | | | | .658*** | .180* |
| 9. Prior Contact (Quality) | | | | | | | | | | .255** |
| 10. Positivity of IC | | | | | | | | | | |

*Note.* ** $p < .01$, *** $p < .001$.

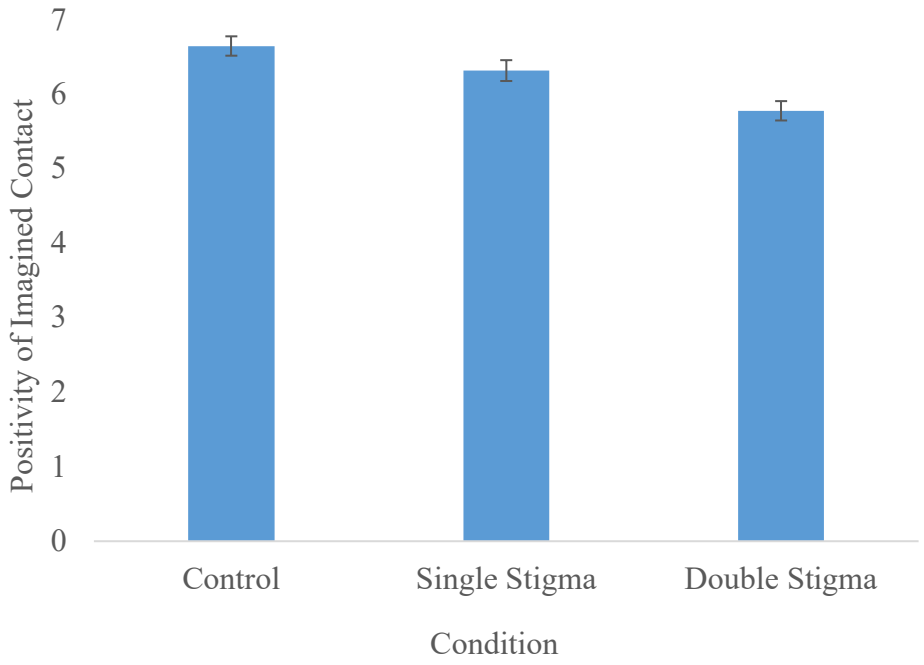


*Figure 5.3.* Study 6. Positivity of the imagined contact interaction by experimental condition.

**Discussion**

The present study had two main aims; firstly, to replicate previous findings that imagined intergroup contact can reduce homophobic attitudes, and secondly to demonstrate that weight stigma prevents imagined contact from being a successful prejudice reduction tool.

Surprisingly, the first aim of this study was not met. The imagined contact intervention did not reduce homophobic attitudes. Specifically, imagining interacting with a gay individual (whose weight was not disclosed) did not reduce bias in comparison to imagining an outdoor scene. This null finding is discussed in more detail in the following discussion section.

Whilst the present study could not demonstrate a difference in attitudes due to weight stigma (as there was no effect of condition), post-hoc analyses did show that weight bias disrupts the imagined contact process. That is, those who imagined interacting with an 'obese' individual imagined a more negative interaction than those who imagined interacting with someone whose weight was not specified. Also,

in line with hypothesis 5, further evidence of the strength of weight stigma was evident in that levels of bias towards 'obese' individuals remained the same, regardless of condition.

## General Discussion

The aims of the studies presented in this chapter were to address some of the questions arising from the null results of Study 2, by applying the imagined contact intervention to an adult population. In particular, the initial aims of Study 4 were to replicate published findings that imagined contact can reduce adults' weight biases (Turner & West, 2012), and also to consider the role of prior contact and anti-fat stereotypes. After considering the findings of Study 4, Studies 5 and 6 continued to explore possible barriers and mediators of imagined contact effects, such as; quality of the imagined interaction, feelings of disgust and the strength of weight stigma itself.

In summary, Study 4 found that the imagined contact intervention was not successful in changing attitudes or intentions towards 'obese' individuals. However, findings suggest that those who are instructed to imagine contact with a larger-bodied individual imagine a less positive interaction than those who imagined interactions with a slim person. Furthermore, it seems that low levels of prior contact are responsible for this effect. Moreover, analysis of participants' experience of imagined contact revealed the use of strong disgust related stereotypes with regards to the fat target. Study 5 also revealed no significant effects of imagined contact on participants' attitudes or intentions. Whilst disgust was found to be a predictor of attitudes, it did not vary by condition, and therefore could not moderate or explain the failures of the intervention. The final study, Study 6, however, found that not only did the intervention fail to improve attitudes and intentions in the cross category (or double stigma) condition, but it also failed in the condition where participants

imagined interacting with a gay person (whose weight was not disclosed). Further findings and implications of each study are detailed below.

Whilst Study 4 failed to replicate published findings, it does make several contributions to the imagined contact literature. Firstly, despite the instruction to imagine a positive interaction, those that imagined interacting with a higher weight individual imagined more negative interactions. This finding highlights the prevalence and stubborn nature of weight stigma. In addition, Study 4 found that this tendency to imagine a negative interaction was heightened with lower levels of prior contact with 'obese' individuals. This finding is in concurrence with Husnu and Crisp's (2010a) claims that more prior contact is advantageous for imagined contact interventions. Study 4 also highlighted the need to consider anti-fat stereotypes and feelings of disgust as barriers to effective weight bias reduction interventions.

The role of disgust as a barrier to effective interventions was tested in Study 5. Disgust was shown to be an important variable to consider in interventions as it predicts attitudes towards higher weight individuals, however the analyses could not confirm its role as a key barrier to imagined contact interventions. Importantly, Study 5 provided further evidence that imagined contact interventions do not reduce weight bias. Moreover, the role of prior contact was once again highlighted with a negative association with feelings of disgust and bias.

A major contribution to the literature was made in Study 6, where for the first time, a layered stigma approach was employed to test the effectiveness of imagined contact interventions. An unexpected finding of this design however was that imagined contact was not effective in reducing homophobic attitudes, contrary to established findings (Turner et al., 2007a; West et al., 2015). Possible reasons for this null effect are discussed below. Whilst this meant that the planned analyses could not support the hypothesis that weight stigma is a barrier to effective IC

interventions; post hoc analyses did provide strong evidence. The strength of weight stigma was evident as demonstrated by the fact that when body size is made salient, the participant imagines a less positive interaction.

All three studies presented in this chapter could not reduce weight stigma via imagined intergroup contact. This seems consistent with one study comparing different forms of intergroup contact interventions that found only direct contact, and not imagined contact, to be effective in reducing weight stigma (Koball & Carels, 2015). However, the studies presented in this chapter were in part an attempt to replicate Turner and West's (2012) study. Thus, it is useful to revisit aspects of the current studies that were not identical to Turner and West's. Firstly, these studies were conducted online, rather than in the lab. However, if it is the case that imagined contact works best in lab studies or in the field, then the question is raised as to why Study 2 failed to reduce children's weight biases when the intervention was carried out in classrooms. Furthermore, whilst many successful imagined contact interventions have been lab-based, arguably the unique selling point of such an intervention, is that it can be implemented anywhere and at any time. Thus, this prompts a bigger question of the validity of imagined contact as the stepping stone to direct contact (Crisp et al., 2010).

Secondly, the study conducted by Turner and West (2012) demonstrated a reduction in weight bias through actual behaviour, whereas Studies 4 – 6 here, measured attitudes and intended behaviour (rather than actual behaviour) as representations of weight bias. Nevertheless, it is well established that attitudes predict behaviour (Ajzen, 1991; Armitage & Conner, 2001), and that improvements in attitudes as a result of imagined contact provide the grounding for future intended behaviour (Crisp, Husnu, Meleady, Stathi, & Turner, 2010). It therefore seemed reasonable to expect to observe a reduction in weight bias through attitudes and

intended behaviour. Another consideration to be made is that the chair placement method used by Turner and West leads the participant to believe that they are about to participate in actual contact. Perhaps the intervention is a success only in the immediate moments as the participant has just imagined speaking to someone extremely similar to the person that they are about to meet. Yet, it is not clear if attitudes towards larger bodied individuals are changed long term, if at all. Thus, it must be questioned whether or not this display of positive behaviour is internalised, via a reduction in prejudiced attitudes and intended future behaviour, or even carried forward with the participant.

**Disgust**

The decision to analyse participants' descriptions of the imagined interaction for use of weight-stereotypic language in Study 4, was important as it also highlighted the use of disgust-related words. Negative language use was only employed by participants who imagined interacting with a fat individual rather than the slim individual. Importantly, this occurred despite instructing participants in both conditions to imagine a positive interaction; a finding also present in other studies (Kobell & Carels, 2015). Furthermore, the studies presented in this chapter revealed that feelings of disgust are associated with the negative construal of the imagined interaction, and importantly are a predictor of anti-fat attitudes. Previous research examining mechanisms of weight bias have revealed disgust to be related to anti-fat attitudes (Vartanian, 2010; Vartanian, Trewartha, & Vanman, 2016), and predictive of negative weight-related stereotypes (Vartanian, Thomas, & Vanman, 2013). This chapter has expanded on such findings present in the literature by demonstrating that feelings of disgust still persist, despite participation in an intervention designed to reduce anti-fat attitudes through evoking positive thoughts and emotions.

**Prior contact**

The role of prior contact in IC interventions has not yet been conclusively established in the published literature. The contradictory evidence suggests that for one type of prejudice (homophobic), lower levels of prior contact facilitate the effects of imagined contact (Hoffarth & Hodson, 2016); whereas for another type of prejudice (anti-Muslim), higher levels of prior contact are required (Husnu & Crisp, 2010). Hence, the need for further work to establish the contexts and prejudices for which prior contact is harmful or advantageous. In contrast to research on homophobic attitudes (Hoffarth & Hodson), this chapter presents the consistent finding that lower levels of prior contact are detrimental to the IC approach in reducing weight biases.

Whilst this is an important new finding for imagined contact researchers, it does seem somewhat problematic that prior contact is necessary. An advantage of imagined contact is that it can be implemented in highly stigmatised or segregated contexts (Husnu & Crisp, 2010; West et al., 2015). Thus, if for particular prejudiced attitudes to be effectively reduced via IC, large amounts of prior contact are a necessity; then it is plausible that this is not a technique that is suitable for all types of prejudices.

**Weight Stigma and Positivity of the Imagined contact**

In addition to the novel finding that low levels of prior contact inhibit attempts to reduce weight bias; Study 4 found prior contact to moderate the valence of the imagined interaction. In particular, those who imagined interacting with a larger-bodied person, imagined a more negative interaction; and this was especially true for those who had low to average levels of prior contact. Whereas it has been established how high levels of prior contact influence the vividness of the imagined

task (Husnu & Crisp, 2010); until this point it was not known how *low* levels of prior contact effect the imagined interaction itself.

Further, Study 6 confirmed the correlational findings of Studies 4 and 5, that the positivity of the imagined interaction differed by condition. Specifically, there was no difference in the positivity of the imagined interaction between the control condition and the single stigma condition (where the imagined target's weight was not specified). However, participants imagining a higher weight individual imagined a less positive interaction, when compared with the control and single stigma conditions. It is important to remember that these negative interactions were imagined despite the fact that participants in all three studies were explicitly told to imagine a "relaxed, *positive*, and comfortable" interaction. Thus, demonstrating the strength and persistence of weight stigma and related stereotypes.

**Limitations**

Arguably, the intended behaviour measure designed and employed in Studies 4 and 5 could not be used in an attempt to replicate the findings by Turner and West (2012). As previously mentioned, the studies presented here were not lab-based studies, and therefore measures used in published literature needed to be adapted for use in online studies. However, the attempt to adapt the chair placement measure for online use is problematic for two reasons. Firstly, it is probable that the participant is aware that the proposed conversation is purely hypothetical, despite attempts to make it seem like a realistic possibility for follow up studies that the participant may be invited to. Secondly, the responses to different forms of communication could be skewed due to the sample of participants employed. That is, individuals who earn money by participating in online surveys may naturally be less inclined to participate in social activities with a stranger ('obese' or not), offline. On the other hand, however, differences in preference for each type of future contact were observed.

Thus, the adapted measure is suitable for and effective in detecting behavioural intentions. Arguably, in this increasingly technological world, the adapted measure also holds greater ecological validity than the chair approach, particularly as online contact can be just as important as offline contact (Yau & Reich, 2018).

The finding that imagined contact did not reduce homophobic attitudes in Study 6 was a surprising one, due to the success of the intervention in previous research. However, comparison of the data between Study 6 and West et al. (2015), suggests that the sample did not hold strong negative attitudes towards gay people. The present research was conducted on adults in America, where homophobic attitudes do exist, but not to the same extent as in countries such as Cyprus and Jamaica, where West and colleagues conducted their research. However, research conducted in the U.K., a country culturally similar to the U.S., did have success in reducing homophobic attitudes via imagined contact (Turner et al., 2007; Turner et al., 2013).

**Future Directions**

A key finding from this set of studies is that individuals who imagine interacting with a fat person will imagine a less positive interaction than if they imagine a slim person. This is an important finding as research has established that for highly stigmatised groups, a positive imagined interaction is necessary for imagined contact to successfully reduce bias towards these groups (West, Holmes, & Hewstone, 2011). The studies presented here clearly instructed participants to imagine a positive interaction; therefore, a vital question for future research is how to ensure a positive interaction is imagined? One avenue to consider is providing the participant with more information about the imagined target. For example, a series of studies demonstrated that presenting the imagined outgroup target as antinormative reduced prejudice through a reduction in feelings of threat from the outgroup

(Yetkili, Abrams, Travaglino, & Giner-Sorolla, 2018). Moreover, recent attempts to reduce weight bias via imagined contact were successful when participants were instructed to imagine interactions with counter-stereotypical 'obese' individuals, in comparison to stereotypical 'obese' individuals (Dunaev, Brochu, & Markey, 2018).

The current studies have identified prior contact and disgust as barriers of imagined contacts' success in reducing weight stigma. Not only should future research consider how to reduce emotions such as disgust, but work must also continue to identify other barriers to effective weight-prejudice reduction. However, the final study presented in this chapter also saw a failure of IC to reduce homophobic attitudes. This suggests that more research is required to understand the conditions in which imagined contact is not only successful but also suitable.

# Chapter 6: General Discussion

*In this final chapter, a summary of the overarching aims of the thesis are presented first. With a summary of the overall key findings second, followed by brief summaries of the findings for each study. Theoretical implications for the fields of weight stigma, imagined intergroup contact, and the developmental subjective group dynamics theories are discussed. Limitations of the studies are discussed along with future directions for theory and research. Finally, conclusions are made about the application of the findings and the contribution to knowledge made by this thesis.*

## Summary of Aims

The initial aims of this thesis were; firstly, to examine the influence of group membership and group dynamics on children's weight biases, and secondly to reduce children's weight stigma using the imagined intergroup contact intervention. With progress, it became clear that several barriers may exist to making imagined contact an effective intervention for the reduction of weight stigma in children. Thus, a third aim of this thesis became to explore the possible barriers of imagined contact in reducing weight stigma in adults. Specifically, factors of; disgust, prior contact, quality of the imagined contact, and weight stigma itself were all examined in attempts to reduce adults' weight stigma, and to understand the mechanisms of imagined contact and weight bias.

## Summary of Key Findings

All of the studies presented in this thesis demonstrate the strength and entrenchment of weight stigma, throughout the lifespan and across different contexts, and the difficulties of reducing weight stigma. The findings also highlight the ingrained nature of weight stigma through children and adults' use of negative stereotypes and descriptions of fat individuals. The first three studies in this thesis (Chapters 3 and 4) were conducted with children aged 6–11 years and demonstrated

the influence of group membership and norms on children's attitudes and intentions towards fat peers. These studies confirmed the existence of anti-fat biases amongst children and also showed that children's attitudes and behavioural intentions were driven by their perceptions of how well the target fits within the ingroup. The findings showed that group dynamics and norms are of great importance to children's judgements and social decision making, when considering fat peers. Furthermore, the findings from the two studies that employed imagined contact to reduce children's weight stigma (Studies 2 and 3, Chapter 4) suggest that imagined contact is not an effective tool to do so. The specific findings of these studies are summarised later in this section. The final three studies of this thesis (Studies 4-6, Chapter 5) explored potential facilitators and barriers to reducing adults' weight stigma with imagined contact. These studies highlighted the roles of prior contact and disgust in the effectiveness of the intervention, along with the strength of weight stigma itself as a barrier to weight-bias reduction. The findings from the final study (Study 6) invite further research into the effectiveness of imagined contact as a prejudice-reduction tool more generally, rather than specifically for weight stigma.

Study 1 (Chapter 3) highlighted 6-11-year-olds' weight bias through; their attitudes, behavioural intentions towards, and perceived fit of thin and fat targets. Overall; children showed more negative attitudes towards fat targets, perceived fat targets as less well fitting to the ingroup, and expressed less desire to interact with fat targets compared to the slim counterparts. This was the case when comparing disloyal slim targets with disloyal fat targets. Yet, when children were asked to judged fat but loyal targets, they did not discriminate between the fat and non-fat counterparts on attitudes or perceived fit to the group; they did however make clear and significant differences in their behavioural intentions towards fat and non-fat loyal targets. These findings suggest that children are socially smart and may be

aware that they are being asked to explicitly judge a target based solely on their body size when rating their attitudes towards the target (e.g. “X is nice”), however the measure of behavioural intentions makes it less easy for children to disguise their biases.

The data also revealed a clear set of anti-fat stereotypes used by children, whereby the words “greedy”, “slow”, and “lazy” were used significantly more to describe fat targets than non-fat targets. The stigmatisation of fat peers was once again highlighted when examining the use of these stereotypes as children ascribed significantly more anti-fat stereotypes to both double deviants (fat and disloyal) and generic deviants (fat and loyal), compared with non-fat targets; with the most anti-fat stereotypes being assigned to double deviants. Study 1 also highlighted the important role that group dynamics play in children’s anti-fat attitudes and social decision making. Specifically, children’s differential attitudes and behavioural intentions towards normative and deviant peers, was driven by the extent to which the children perceived the peer to fit within the ingroup. In other words, before forming judgements and intentions about others, children consider the consequences that liking the target or socialising with the target will have on the group, and the group dynamics in particular.

With the knowledge that children hold strong anti-fat biases, expressed through attitudes and behavioural intentions; the subsequent study, Study 2 (Chapter 4) attempted to reduce such biases in children, whilst examining potential effects of group membership on the effectiveness of the intervention. Specifically, the imagined contact approach was used to target children’s anti-fat biases, and such biases were measured by employing the same methods as Study 1, both for consistency and to allow for examination of any group-related effects. The findings from Studies 2 and 3 both suggest that imagined contact is not the most effective

method of reducing children's weight biases. Both studies found that imagined contact did not reduce anti-fat bias towards targets from either the ingroup or the outgroup, nor were there any significant between groups differences. However, in Study 2, children were asked to rate targets which they had not imagined interactions with, and therefore, the null effects of the imagined contact intervention could have been due to the fact that the children's attitudes and intentions towards the imagined target were not measured.

Therefore, Study 3 examined children's attitudes towards both the imagined target and towards unimagined fat targets. Here, the imagined contact did seem to have an effect, whereby attitudes and intentions towards imagined targets were significantly more positive than towards unimagined targets. Moreover, the data from Study 3 suggest that attitudes towards the unimagined fat target can be improved via imagined contact, so long as the target belongs to the ingroup. That is, attitudes and intentions towards the imagined target were significantly correlated with *ingroup* unimagined targets, but not outgroup unimagined targets. The small sample size for Study 3 did not yield enough power to statistically test the predictive relationship, yet, the findings of Study 2 did not support the theory that imagined contact could reduce prejudice toward an ingroup or outgroup unimagined target. Even if a predictive relationship does exist between imagined and unimagined ingroup targets, it appears unlikely that biases towards an unimagined ingroup target will change as a result of the intervention. However, future research is required to test this assumption.

To understand possible reasons why the imagined contact intervention was not producing the expected results in reducing children's weight stigma; Studies 4-6 examined imagined contact effects on weight stigma in adults. All three studies (4-6) also found that the intervention was not successful in reducing implicit or explicit

attitudes and behavioural intentions towards fat individuals. Moreover, the findings from Studies 4, 5, and 6 suggest that imagined contact is not only ineffective in reducing weight stigma but it is potentially counterproductive for weight stigma reduction efforts. Participants instructed to imagine *positive* contact with a fat person imagined significantly more negative interactions than those who were instructed to imagine contact with a slim person, or to imagine a neutral outdoor scene. Furthermore, lower levels of prior contact with fat people were shown to induce more negative imagined interactions with fat people. And prior contact was also positively related to behavioural intentions, suggesting that participants' intentions towards fat people were being driven by their personal experiences rather than the intervention.

In Study 4, the descriptions that participants provided of their imagined interactions with fat people were found to be heavily disgust-related. Therefore, Study 5 specifically examined disgust as a potential barrier to an effective imagined contact intervention. Whilst disgust was found to significantly predict anti-fat attitudes, there were no differences in levels of disgust between experimental conditions. Thus, it is not the case that imagined contact interventions increase or induce feelings of disgust, which in turn inhibit the positive effects of imagined contact. Instead, it seems that imagined contact is not successful in reducing or overcoming participants' feelings of disgust associated with fatness. The final study of this thesis confirmed the theory that it is the strength of weight stigma that is preventing imagined contact from being an effective prejudice-reduction tool for weight stigma. The findings from Study 6 showed that compared to a control condition and a condition where participants imagined contact with a gay person (body-size not made apparent), participants who imagined an interaction with a fat, gay person once again imagined a more negative interaction.

The findings of this thesis highlight the deep entrenchment of weight stigma in children and adults. The fact that older children (9-11 years old) derogated fat targets regardless of group membership or displays of loyalty (Study 1), at an age where research has shown that group concerns are a priority for children (Abrams et al., 2003a; 2003b) is evidence of the importance that children place on the thin ideal. Studies 4-6 (Chapter 5) further demonstrate the entrenchment of weight stigma, particularly through the findings that behavioural intentions towards larger-bodied people are driven by prior contact, and that when instructed to imagine a positive interaction with fat people, participants imagine a negative one. The findings of Study 6 highlight this further by demonstrating that individuals imagine a negative interaction with a gay person, when that person is labelled as 'obese', compared to when weight is not mentioned, despite the explicit instruction to imagine a positive interaction. The findings of this thesis show that the stigmatisation of fat people is developed early and is deeply ingrained to such an extent, that the imagined contact intervention was ineffective in changing attitudes, behavioural intentions, negativity, and disgust towards fat people.

**Theoretical Implications**

This thesis makes substantial contributions to several different bodies of literature, namely; the developmental subjective group dynamics (DSGD) model, the imagined intergroup contact theory, and the literature on weight stigma and prejudice-reduction strategies.

The study of the existence and development of children's weight stigma (Study 1) provided some support for the DSGD model. In particular, Study 1 demonstrated that targets who display multiple deviances, in the form of disloyalty and fatness are at significantly more risk of being negatively judged and derogated from the group, than targets who only display one type of deviance (either disloyalty

or fatness), which supports the findings of Abrams et al. (2016). The study also extends the evidence base for the DSGD model in at least three distinct ways.

Firstly, it is the only study to examine the two deviances of fatness and disloyalty using the DSGD model with younger children – only one other published study has examined weight stigma and loyalty transgressions, and this was conducted with a teenage population (Abrams et al., 2016). Secondly, Study 1 extends the model with the inclusion of behavioural intentions as well as attitudes. The existing evidence for the DSGD model provides information on children's attitudes and group biases only, and this is the first time that behavioural intentions have been examined simultaneously. The findings from Study 1 support the assumptions that the processes behind children's attitudes towards deviant targets also applies to their social inclusion and exclusion intentions. Specifically, this study found that perceived fit of the target mediates the black sheep effect and is therefore a key driver of children's attitudes and behavioural intentions towards targets.

The final implication that the findings from Study 1 have on the DSGD and SGD literature is a substantial one. Until now, all of the evidence for the DSGD model shows that before mid-childhood, children are not capable of making judgements based on both inter- and intra-group information. Thus, the BSE has never before been evident in children as young as 6 – 8 years old. After this age however, children regularly rely on both types of information, allowing them to make differential judgements towards targets from different social groups and who display different behaviours (or deviances). The findings from Study 1 demonstrate that young children can make both inter- and intra-group judgements simultaneously. That is, 6-8-year-olds showed more negativity to ingroup deviants than they did to outgroup deviants, thus displaying their understanding of the differential consequences of deviance for the ingroup and the outgroup. Surprisingly, the older

children (aged 9-11) did not make intergroup differentiations, instead, they derogated deviants regardless of their group membership.

As these findings are an anomaly amongst the other published studies on the development of the black sheep effect (e.g. Abrams, Cameron, & Rutland, 2003a; Abrams, Cameron, Rutland, & Marques, 2003b), it is probable that it is children's weight stigma that is responsible for the unexpected findings. Perhaps older children view deviance from the ideal body type as such a strong transgression that they are not concerned with the group membership of the target. If this was the case however, a significant interaction of the BSE with the type of deviance should have been observed. Specifically, it is expected that older children would derogate the ingroup target more so than the outgroup target (BSE), in the case of oppositional (disloyal, thin) targets, but not generic or double deviants (due to weight stigma). Further, whilst this may be plausible, the theory does not provide answers for the evident BSE in younger children. Hence, there is a clear need for further work on the DSGD model to account for the findings of Study 1.

For the weight stigma literature however, Study 1 makes two important contributions. One is that children aged 6-11 hold strong anti-fat biases and are willing to act on those biases, and the other is that such biases are influenced by considerations of the consequences of associating with fat peers on the group's dynamics. These findings converge with past research on the early and extended effects of body size stereotyping. Specifically, the findings that children as young as 3 years old display signs of emotional investment in the thin ideal and anti-fat attitudes (Harriger, Calogero, Witherington, & Smith, 2010), and merely being in proximity to a higher weight person elicits weight stigmatising evaluations and treatment from others (Hebl & Mannix, 2003). The findings from Study 1 lend

further support to the deep entrenchment and knowledge of body size stereotyping in young children.

The remainder of the studies in this thesis (Studies 2-6) make important contributions to the weight stigma and imagined contact literatures. First and foremost, it is clear that imagined intergroup contact is not an appropriate method of reducing weight stigma in children or adults. Imagined contact is known to be a highly effective intervention that is applicable almost anywhere (Lee & Jussim, 2010), in any context and at any time; including in education settings (e.g. Crisp, Stathi, Turner, & Husnu, 2009; Crisp & Turner, 2012) and high-conflict situations (West, Husnu, & Lipps, 2015). The studies presented here however, clearly demonstrate instances where imagined contact is not suitable or effective, and also provide insights into why this is the case. In Study 2, imagined contact could not reduce weight stigma, as measured by attitudes and intentions towards a fat target that participants did not imagine contact with. Study 2 therefore showed that imagining contact with a fat target did not affect judgements about of higher weight people as a group.

Study 3 did show some support for the imagined contact intervention, as attitudes and intentions were more positive towards the imagined fat target than towards the unimagined fat target. However, a truly effective prejudice reduction intervention is one that is capable of extending beyond the subtyping of a specific target, and instead make improvements towards an entire group of people. As detailed in an earlier section, Study 3 did provide some evidence of imagined contact having an effect on an unimagined target from the ingroup, but not the outgroup. Whilst these findings appear to be in contrast to the null findings of Study 2, they do support the push for a new direction for imagined contact theory, where the group membership of the imagined target may play an important role. Vezzali and

colleagues (2015) provide empirical evidence for the integration of imagined contact and the common ingroup identity model; an approach that is discussed in more detail in the future directions section below.

There is evidence for the role of prior contact whereby imagined contact interventions work best when there are low levels of prior contact (Hoffarth & Hodson, 2016). However, there is some evidence that the opposite is also true (see Husnu & Crisp, 2010a). Studies 4, 5, and 6 (Chapter 5) examined the influence of prior contact on the imagined contact intervention with adults; Study 4 examined prior contact and the positivity of the imagined interaction, Study 5 included disgust as an additional measure, and Study 6 examined homophobia in additional to weight stigma. The findings from Studies 4, 5, and 6 contribute to the literature by providing further evidence of instances where lower levels of prior contact are in fact harmful to the effects of imagined contact.

The studies also have substantial implications for the reliability and generalisability of the imagined contact instructions. Previous work has established the necessity of instructing participants to imagine a *positive* interaction rather than a *neutral* interaction (Stathi & Crisp, 2008). However, in Studies 4-6, instructing a positive imagined interaction with a larger-bodied person was not sufficient to elicit a positive imagined interaction and effects. In all three studies, all participants who imagined a neutral scenario or an interaction with a non-fat person described positive imagined situations, yet, when imagining interacting with a fat person, participants imagined negative interactions. The fact that this was a consistent finding across the three studies is important for the imagined contact approach, and warrants further investigation into the barriers of imagining a positive interaction with larger bodied individuals, and the opportunity to test for ways to overcome the inherent negativity of such interactions. This finding is also key for the weight stigma literature as it

once again highlights the entrenchment and stubborn nature of weight stigma. Indeed, in their meta-analysis, Miles and Crisp (2014) acknowledge that negative interactions are imagined only "when imagining interactions with the most feared or hated outgroups" (p. 20).

Several pieces of research demonstrate that imagined contact can still be effective even amongst participants with strongly held prejudices. For example, West, Hotchin and Wood (2017) demonstrated in two experiments that imagined contact was more effective in improving attitudes, behavioural intentions and actual behaviour, for participants with higher initial prejudices. Similarly, Birtel and Crisp (2012) examined the influence of participants' pre-contact prejudice on the imagined interaction itself. They found that for individuals with high intergroup anxiety, the imagined interaction was more cognitively taxing than those lower in intergroup anxiety; however, imagined contact was still successful in reducing biases in these participants. Thus, previous research provides evidence that strong prejudices can be changed through imagined intergroup contact, even when the task of imagining positive contact is difficult for the participant. Whilst the findings from Studies 4 and 6 demonstrate that imagining a positive interaction with a larger-bodied person is difficult for participants, the findings from Studies 2-6 demonstrate that imagined contact does not reduce participants' weight bias. Taking these findings together then, it is plausible to conclude that the negativity of the imagined interaction may be contributing to the failure of imagined contact in reducing weight bias. Support for this assumption can be found in recent research examining the effectiveness of intergroup contact quality for prejudice prone individuals. Specifically, Kteily, Hodson, Dhont, and Ho (2017) found that the quality of contact (measured by the positivity and superficiality of contact), and not the mere happening of contact, predicted more tolerant attitudes. This high-quality contact – attitudes relationship

was found to be just as effective for individuals with lower and higher prejudice proneness. Therefore, a prejudice as strong as weight stigma has the potential to be reduced through intergroup contact, if interventions are successful in improving the quality, or positivity, of the interaction.

Whilst Turner and West (2012) demonstrated a reduction in anti-fat behaviour using an imagined contact paradigm, Studies 4-6 did not demonstrate similar findings, however these studies were conducted online as opposed to in a laboratory setting. To my knowledge, no evidence exists to suggest that the effectiveness of an imagined contact intervention depends on whether it is conducted in the lab or online. Yet, the evidence presented in this thesis raises the possibility that imagined contact should not be employed as an online intervention tool to reduce weight stigma. Also of interest, is the finding that imagined contact did not reduce homophobic attitudes in Study 6. Since imagined contact has previously been shown to reduce homophobic attitudes in both experimental and field settings (e.g. Turner, et al., 2013; West, Husnu, & Lipps, 2015), this finding raises issues about the replicability and robustness of imagined intergroup contact theory across domains of prejudice, and calls for an examination of unpublished research where there may be further evidence of failed replications.

Notably, Study 6 also contributed to the current literature by implementing a 'layered stigma' approach for the first time. Comparable to the single and double deviance design employed in Study 1 (Chapter 3); Study 6 tested for differences in imagined contact effects between a target with one stigmatised attribute (homosexuality) and a target with two stigmatised attributes (homosexuality and fatness). The study found no significant differences in attitudes and behavioural intentions towards both 'obese' people and gay people, between conditions. However, participants in the double stigma condition were found to imagine a more

negative interaction than participants in the control or single stigma conditions. Whilst in this thesis this approach was used to test the hypothesis that the strength of weight stigma is the barrier to effective prejudice reduction; this approach can be used in future research to investigate other hypotheses. For example, future studies could use this approach to examine the prejudice-reduction effects of imagined contact toward targets who belong to two outgroups for which imagined contact has been proven to be a successful intervention (for example, ageism and racism).

**Limitations and Future Directions**

An obvious critique of the studies carried out for this thesis is the suitability of imagined contact as a tool to reduce weight stigma; as imagined contact was designed, and is most effective for, situations where the opportunity for contact is low or non-existent. Perhaps then, imagined contact is not the appropriate intervention to reduce weight stigma as contact and interaction with larger-bodied individuals is neither rare nor impractical. Countering this argument though is the evidence that imagined contact has been successful in creating more positive behaviours towards 'obese' or larger-bodied people (Turner & West, 2012). Thus, the extensive testing of imagined contact as a tool to reduce weight stigma as presented in this thesis, is justified. Imagined contact was designed as a stepping stone to real contact, as part of a *continuum of contact* (Crisp & Turner, 2009). Whilst imagined contact is used to enable future direct contact in instances where contact between groups is low (e.g. between different ethnicities in low-diversity settings); the aim of using imagined contact for weight stigma, is clearly not to enable direct contact; but instead to reconfigure one's expectations of direct contact with fat people and provide individuals with a positive internal dialogue to approach future situations with fat people.

There are a number of adjustments that could be made to the methods employed in these studies to test imagined contact effects on weight stigma, which may result in further insight into the null and unexpected findings. Firstly, to improve the vividness of the imagined interaction with children, which in turn should enhance the imagined contact effects (Husnu & Crisp, 2010a), real images of slim and fat children should be used. As mentioned in the introductory chapter of this thesis, the original designs for the developmental studies included real images, however due to the underrepresentation of positive images of fat children in the media, this was not possible. Thus, a future research piece should manipulate existing images of child models, to create images of various body sizes and test the manipulated images for validity and reliability in terms of perceived body size and associated stigmas. Secondly, the procedure employed for the intervention with children in Studies 2 and 3, was created from a combination of the procedures used in previous research (Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011; Stathi, Cameron, Hartley, & Bradford, 2014; Vezzali, Capozza, Stathi, & Giovannini, 2012b). Whilst this procedure is unlikely to be responsible for the null findings, it would certainly be helpful if future studies employing the imagined contact intervention with children were to use a standardised method. This is a call therefore, for future research to test and confirm which of the various methods are most effective for use with children. If researchers are to continue using, and empirically testing, imagined contact interventions to improve children's attitudes and behaviours; it is imperative that a uniform approach is used, both for scientific rigour and to allow for alternative methods of prejudice reduction to be directly compared.

The mixed findings for the role of the target's group membership on children's judgements and decision making, following imagined contact in Studies 2

and 3 can be addressed in future research in two ways. One possibility posited in the discussion section for these studies (Chapter 4) was that the information about the target's group membership is interfering with any imagined contact effects, as the group to which the imagined target belonged was not made clear. Therefore, to test that this extra information is inhibiting or interfering with any effects, future research should employ a third condition, where children rate attitudes and intentions towards a target whose group membership is not specified. This would not only allow for the examination of the effect of providing a group membership or not, but it would also allow for the examination of differential responses to targets who have no specific group membership vs. belong to the ingroup vs. belong to the outgroup. In addition to manipulating the group membership of the target that children are asked to rate following the intervention, the group membership of the imagined target could also be manipulated, to provide insight into whether or not the intervention is more successful in reducing weight stigma when the imagined interaction is with an ingroup member. In fact, in two studies combining the imagined contact and common ingroup identity models; Vezzali et al. (2015) showed that asking participants to imagine an interaction with targets who appeared to have a common group membership with the participant, resulted in more positive helping intentions towards the outgroup.

Another way in which the group context may influence the effectiveness of the imagined contact intervention, is the typicality or normality of the group member with which participants imagine the interaction. Research has demonstrated that by designing the imagined contact intervention on the basis of the subjective group dynamics (SGD) model, the effects of imagined interactions can be enhanced. Research on SGD has shown that anti-normative or atypical ingroup members are derogated more so than anti-normative members of the outgroup, demonstrating the

black sheep effect (Marques, Paez, & Abrams, 1998). Sometimes, the atypical outgroup member is even preferred over the atypical ingroup member, as was the case in Study 1 (Chapter 3), whereby children were more positive towards the outgroup deviant than the ingroup deviant. Based on these types of findings, Yetkili, Abrams, Travaglino, & Giner-Sorolla (2018) employed a SGD approach to imagined contact. The study found that asking participants to imagine contact with an anti-normative, or atypical, outgroup member resulted in more positive attitudes and lower perceived threat, in comparison to an anti-normative ingroup member and a normative outgroup member respectively. Considering the findings of Study 1 then, where the DSGD model was employed to examine children's weight stigma, the subsequent studies may have yielded different results if the design of the imagined contact interventions were combined with that of the DSGD approach used in Study 1. That is, if children were instructed to imagine contact with a fat target from the outgroup who was depicted as anti-normative (disloyal to their group for example), the intervention may have had more positive outcomes, compared to imagining a fat, but otherwise normative member of the ingroup or outgroup.

Disgust was found to be a strong predictor of anti-fat attitudes in Study 5, and an emotion that imagined contact failed to reduce. Henceforth, future research should work to investigate how fat-related feelings of disgust can be reduced to allow for effective weight stigma reduction. One such promising method of doing so is the use of an elaborated imagined contact technique. Researchers found that compared to a control and normal imagined contact condition; an elaborated imagined contact condition was successful in weakening the negative relationship between disgust and outgroup trust. In the elaborated condition, participants were instructed to imagine an interaction with a homeless person, in detail, which included imagining making physical contact with the target through a number of

'trust exercises'. The imagined interaction also involved a deep breathing relaxation technique. Whilst this technique was successful in increasing outgroup trust, it must be noted that both the elaborated and ordinary imagined contact conditions were successful in reducing the relationship between disgust and prejudice (Hodson, Dube, & Choma, 2018). Therefore, whilst an elaborate imagined interaction script may be fruitful in reducing disgust and prejudice towards homeless people, it is not clear if it will be effective with weight stigma, as the ordinary imagined contact did not reduce prejudice or disgust in Studies 4-6.

Whilst a number of modifications could be made to the study designs, the results of Studies 2-5 highlighted that imagined contact may not be the most effective tool to reduce weight stigma in children and adults. However, the fact that others have been successful in reducing weight biases through imagined contact, and this thesis failed to replicate these findings warrants further attention to such studies. Studies 4-6 attempted to replicate the study conducted by Turner and West (2012). Of course, an obvious limitation to the design of Studies 4, 5, and 6 is that they were conducted online rather than in a lab-based setting, meaning that the behavioural measure employed by Turner and West could not be employed in these three studies. Therefore, a true comparison between these studies is not possible. Nevertheless, similar effects should still be observed in related measures, such as attitudes, and in the online behavioural measure designed specifically with the 'chair-distance' measure in mind. Another difference between online and lab-based experiments is the participant sample employed. Many of the lab-based imagined contact studies have sampled from university student populations for participants, whereas online studies, such as Studies 4-6 in this thesis, recruit a wider range of participants. The majority (approximately 60%) of online survey participants are over the age of 25 years and according to 2009 figures, 41% of participants' education levels were

lower than a bachelor's degree (Ross, Zaldivar, Irani, & Tomlinson, 2009). It is possible that factors such as age and education level influence the way in which the intervention is understood and carried out by participants.

Thus, it is important that these discrepancies are addressed in future research, by combining the methods employed in Studies 4-6 with those of Turner and West. Specifically, a future experiment could be conducted in the lab, under the same procedure used by Turner and West, with a more diverse sample and with the addition of explicit measures of attitudes, prior contact, disgust, and positivity of the imagined interaction. The longevity and internalisation of the behavioural effects observed in Turner and West's study should also be considered. For example, future experiments could employ a second behavioural measure at a later time point, such as willingness to hold a door open, or delay the closing of elevator doors for a fat person in comparison to a thin person.

Finally, as discussed earlier; the fact that previous studies reducing both weight stigma, and homophobia (separately) could not be replicated, has substantial implications for imagined intergroup contact theory, and therefore needs to be addressed in future research. It is possible that due to publication biases, a number of unpublished studies exist that present findings contrary to the published studies where imagined contact is effective. These unpublished studies may, like the studies conducted for this thesis, contain valuable information about other barriers and facilitators of imagined contact. In their meta-analysis of imagined contact effects, Miles and Crisp (2014) also conducted a statistical analysis of the likelihood that unpublished studies have a different story to tell. The findings showed that the unpublished data included in the meta-analysis did produce smaller effect sizes than the published data, and it is possible that "the true effect of imagined contact could be smaller than we believe it to be" (p. 17) as a result of publication bias. Whilst

50% of the studies included in the meta-analysis were unpublished studies, an updated search and analysis is now required to address this possibility.

**Conclusion**

This thesis has presented studies that examine weight stigma and approaches to reduce weight stigma, in ways never employed before. In particular, it is the first time that the DSGD model has been employed to examine weight biases in children between the ages of 6 and 11, and also the first time that behavioural intentions have been included empirically, in the DSGD model. Further, it is the first time that imagined contact has been used in attempts to reduce children's weight biases. Similarly, it is the first time that the influence of other factors, such as prior contact and disgust, on imagined contact effects has been examined in the attempted reduction of weight stigma. Consequently, this thesis makes several new contributions to knowledge.

Until now, it was understood that the instruction to imagine a *positive* encounter was sufficient to build a positive mental imagery. However, this thesis has consistently demonstrated this instruction is not sufficient for imagining positive contact with a fat person. Individuals are for some reason still motivated to imagine negative interactions. It is clear therefore that the well-established methods of reducing other prejudices cannot apply to weight stigma. Additionally, whilst the influence of prior contact on prejudice is known; *how* prior contact affects the outcomes of imagined contact had not been fully examined. Husnu and Crisp (2010a) successfully demonstrated how high levels of prior contact increase vividness of the imagined interaction (and in turn result in positive effects towards the target group), but until this point it was not known how *lower* levels affect the imagined interaction itself. The studies here provide some answers by consistently demonstrating that low levels of prior contact with fat people, increase the negativity

of the imagined interaction, which in turn reduce the intervention's success in reducing weight stigma.

The findings from this thesis challenge the generalisability of the imagined contact approach. It seems as though imagined contact is not in fact a "deceptively simple and remarkably effective" intervention (Crisp & Turner, 2009, p. 231); at least not for the purposes of reducing weight stigma. One of the attractions of imagined contact is its suitability for use in school settings where implementing complex interventions, or simply direct contact, is not always practical. A temptation for schools implementing this intervention following initial success is to use the intervention to target all type of prejudices and bullying. However, this thesis is evidence that imagined contact would not be an appropriate tool for use in schools, particularly when one considers the possibility that it can cause more harm by encouraging negative imagined interactions.

Arguably, the most important contribution to knowledge made here, is that the strength of weight stigma is problematic in prejudice-reduction attempts. The fact that participants imagined more negative interactions when the target was gay *and 'obese',* compared to when the target was only gay, shows that weight stigma may in fact prevent the reduction of other prejudices also. This thesis has presented studies conducted with a wide range of developmental age groups and has taken into consideration numerous influential processes, including group memberships, group dynamics, prior contact, and disgust. Yet, the strength and entrenchment of weight stigma was such that multiple attempts remained unsuccessful in eliciting even slight improvements in attitudes and behavioural intentions towards fat people.

The evidence presented in Chapter 1 shows the pervasiveness and entrenchment of weight stigma across society. Larger bodied children and adults are at risk of bullying (e.g. Bradshaw, Waasdrop, O'Brennan, 2013), social isolation

(e.g. Nabors et al., 2011), vilification in the media (e.g. Ata & Thompson, 2010), unemployment (Rooth, 2009), and medical neglect (e.g. DiGiacinto, Gildon, Stamile, & Aubrey, 2015). Fat people are consistently told to lose weight and are encouraged to do so by doctors and healthcare professionals who often advocate methods of weight loss where the risks outweigh the benefits (Astbury et al., 2018). The entrenchment of weight stigma is such that fat jokes and negative remarks have become socially acceptable to the point that they pervade everyday social discourse and media, including children's TV and movies (e.g. So et al., 2016; Eisenberg, Carlson-McGuire, Gollust, & Neumark-Sztainer, 2016). These structural and societal level discriminations against fat people legitimise prejudice against this group, which increases the struggle of developing effective weight stigma reduction strategies. The findings of this thesis show that imagining a positive interaction with a fat person is not sufficient to overcome the normalised and legitimised stigmatisation of fat individuals. Weight stigma appears to be a prejudice like no other - thus far, attempts to reduce negative attitudes, behaviours, and disgust towards fat people have been; ineffective, non-replicable and harmful (see Daníelsdóttir, O'Brien, & Ciaos, 2010). There is a need therefore, for a substantial overhaul in the efforts to reduce weight stigma, whereby novel approaches are developed specifically to target weight stigma and address the legitimacy of structural and societal level discrimination.

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# Appendices

# Appendix A: Ethical Approval for Studies 1-6

## Study 1 Ethics Approval

From: <psychsupport@kent.ac.uk>
Subject: Ethics Online - Children's and Adolescents' Attitudes and Behavioural Intentions towards Deviant Peers
Date: 18 June 2015 at 15:58:56 BST
To: <kkp2@kent.ac.uk>

APPROVAL BY PSYCHOLOGY RESEARCH ETHICS COMMITTEE

The following research project has been approved by
The Psychology Research Ethics Committee

This project requires a valid CRB check in addition
to this approval. It is your responsibility to provide
it to the School office before you begin collecting data.

Date: 2015/06/18
Code: 20154218

Applicant details:
Name: Kiran Purewal
Status: PhD Student
Email address: kkp2@kent.ac.uk

Title of the research:
Children's and Adolescents' Attitudes and Behavioural Intentions towards Deviant Peers

When carrying out this research you are reminded to
* follow the School Guidelines for Conducting Research with Human Participants
* comply with the Data Protection Act 1998
* refer any amendments to the protocol to the Panel

Please keep this form in a safe place. You may be asked to present it at a later stage of your study for monitoring purposes. Final year project students and MSc students will need to submit a copy of this form with their project.

You can log in at

http://www.kent.ac.uk/psychology/technical/ethics/index.php to copy or print pregenerated handouts for this study.Dominic Abrams

Christos Pliatsikas

Studies 2 and 3 Ethics Approval

From: Kent Psychology Ethics <psychethics@kent.ac.uk>

Subject: Application (#3911) fully approved

Date: 31 May 2016 at 11:12:22 BST

To: Kiran Purewal <kkp2@kent.ac.uk>

Cc: Dominic Abrams <D.Abrams@kent.ac.uk>

Dear Kiran Purewal,

Congratulations! Your application: **"Effects of Imagined Contact on Young Children's Weight Prejudices"** has been fully approved by the review committee panel with an Ethics ID of **201614646879063911**. The application will expire and may require renewing at this date: **31-05-18**

You can view your application at any time via the link below:

https://psych-ethics.kent.ac.uk/application/view/3911

Best wishes Psychology Ethics team

Study 4 Ethics Approval


*Note.* The email confirmation for this ethics approval could not be located, instead a screenshot from the online ethics application portal is presented.

Studies 5 and 6 Ethics Approval

From: Kent Psychology Ethics <psychethics@kent.ac.uk>

Subject: Application (#4452) fully approved

Date: 10 May 2017 at 11:19:45 BST

To: Kiran Purewal <kkp2@kent.ac.uk>

Cc: Dominic Abrams <D.Abrams@kent.ac.uk>

Dear Kirandeep Purewal,

Congratulations! Your application: **"Effects of imagined contact on attitudes towards homosexuals and obese people"** has been fully approved by the review committee panel with an Ethics ID of **201714944115854452**. The application will expire and may require renewing at this date: **10-05-19**

Comments in relation to your application from the panel can be found below:

**Supervisory approval feedback**

I've gone over the design carefully with Kiran and approve the application

You can view your application at any time via the link below:

https://psych-ethics.kent.ac.uk/application/view/4452

Best wishes Psychology Ethics team

Appendix B: Study 1 Materials

**Ingroup Bias Measure**

Participants answered each of the following items using the 5-point smiley-face likert scale to assist understanding of the scale.


Here are some questions about your school and another primary school near you called “Rosemary Green”. Please think about Rosemary Green as well as your own school. Read the sentences below and tick the face you agree with.

1. How do you feel about **your** school?

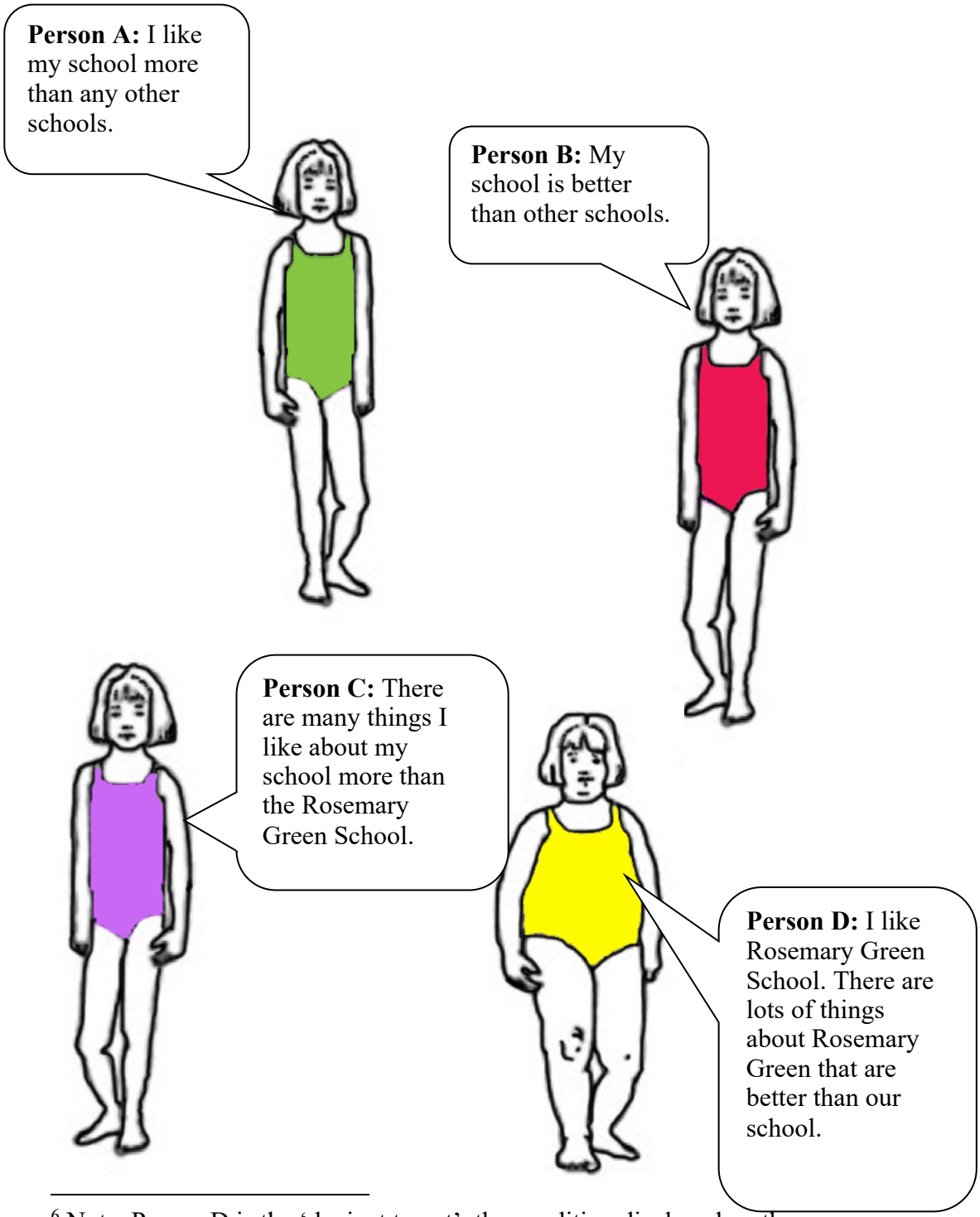
2. How do you feel about **Rosemary Green** school?

3. How much do you like belonging to **your** school?

4. How much would you like to belong to **Rosemary Green** school?

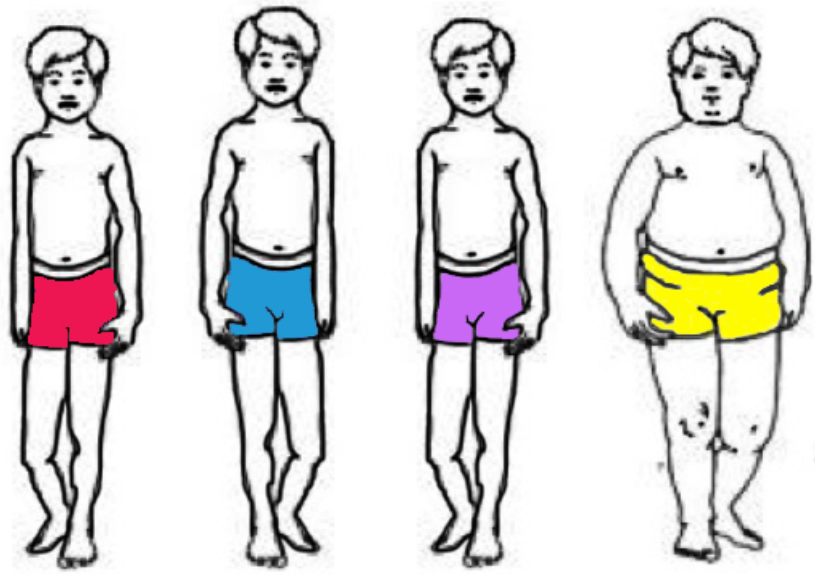
**Manipulation of Group and Deviance Type Conditions**

Here are pictures of four people. Imagine they go to [**Your/Rosemary Green**] school[6].




[6] Note. Person D is the 'deviant target', the condition displayed on the page above is the 'double deviance' condition. In the oppositional condition, the target made the same remarks as above but appeared to be of the same body size as the other figures. In the generic condition, the target had the larger body size but made the loyal comment; "I'm glad I go to our school rather than the Rosemary Green School"

All materials were gender matched to the participant. The drawings below were presented to male participants instead of the female drawings displayed in the rest of this Appendix.



**Attitudes, Competence, and Perceived Fit Measures**

Participants responded to the following items using the 5-point smiley-face likert scale.

Below are some sentences that could describe what you think about Person C/D. Please tick the face that shows how much you agree with the sentence.

1. I like Person C/D
2. Person C/D is fun to be around
3. Person C/D is nice
4. Person C/D is clever
5. Person C/D is good at school work
6. Person C/D would fit into my school well

**Behavioural Intentions Measure**

Here is a list of things that you might or might not do with **Person C/D**. Tick the box that shows how much you would like to do each of these things with **Person C/D**. You must answer all questions.

| | Not at all | A little bit | Quite a bit | A lot | Very much |
|---|---|---|---|---|---|
| Ask Person C/D to come to my house to watch TV. | | | | | |
| Sit next to Person C/D in class | | | | | |
| Share my games or books with Person C/D | | | | | |
| Be in the same reading group with Person C/D | | | | | |
| Study spelling words with Person C/D at school | | | | | |
| Invite Person C/D to my birthday party | | | | | |
| Ask Person C/D to go swimming with me | | | | | |
| Eat lunch next to Person C/D at school | | | | | |
| Walk together with Person C/D in the hall at school | | | | | |
| Do art with Person C/D in class | | | | | |
| Pick Person C/D to be on my PE team | | | | | |
| Write a story for school with Person C/D | | | | | |
| Do homework with Person C/D at home after school | | | | | |
| Go to the cinema with Person C/D | | | | | |
| Play with Person C/D outside during break | | | | | |
| Pick Person C/D as my partner in a game with other children | | | | | |
| Be good friends with Person C/D | | | | | |
| Ride bikes with Person C/D | | | | | |

**Adjective Checklist (Stereotypes) Measure**

Below is a list of words you might use to describe **Person C/D**. Tick the ones you would use describe **Person C/D** and cross the ones you wouldn't. Please think about every word.

**If there are any words you do not understand please put up your hand and someone will come and explain to you what it means.**

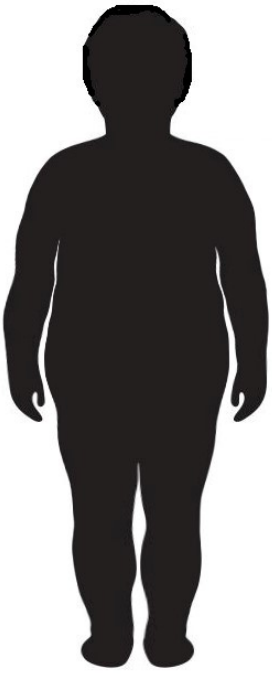
**Here is the list:**

| | | | | | |
|---|---|---|---|---|---|
| Smart | | Dumb | | Greedy | |
| Weak | | Slow | | Bright | |
| Dirty | | Friendly | | Honest | |
| Helpful | | Healthy | | Selfish | |
| Sad | | Kind | | Stupid | |
| Lazy | | Alert | | Nice | |
| Happy | | Careless | | Ugly | |
| Lonely | | Cheerful | | Neat | |
| Sloppy | | Foolish | | Careful | |
| Ashamed | | Clever | | Unhappy | |
| Handsome | | Glad | | | |

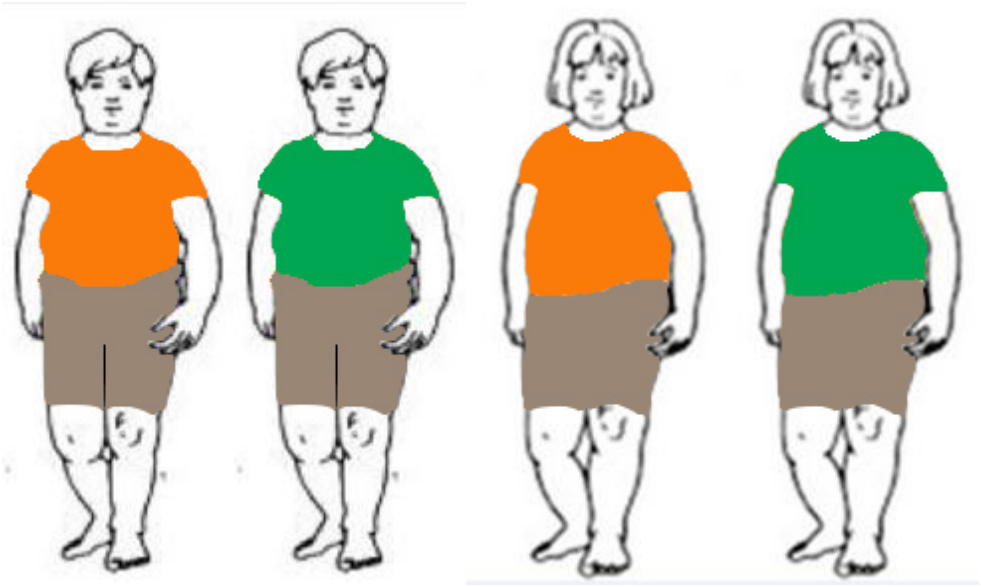
Appendix C: Study 2 Materials

**Imagined Contact Scenes**

**Imagined Contact Silhouette**



**Target for Measures**



**Link to Child Weight IAT**

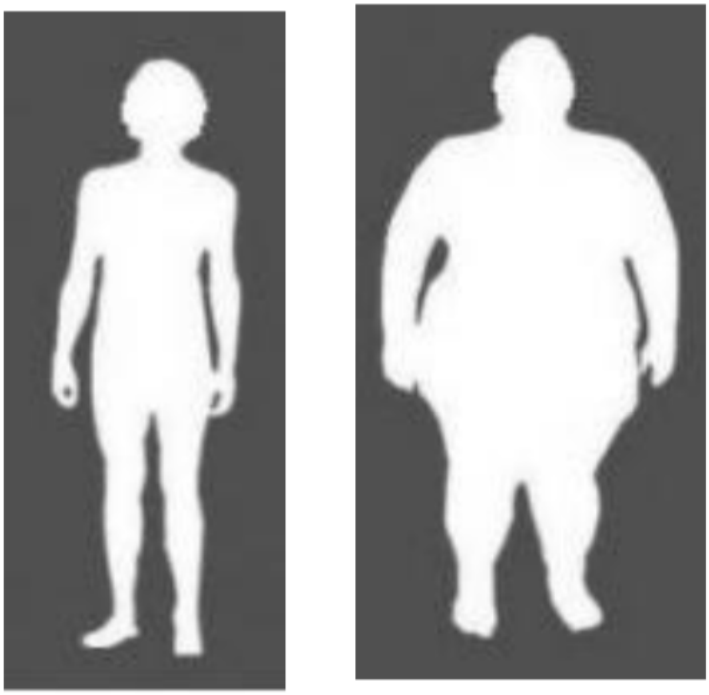
http://research.millisecond.com/ja356/ChildIAT.web?subject_id=${e://Field/subject_id}

Appendix D: Silhouettes used for Studies 4-6

**Original Image Retrieved Online**


Source: http://www.lymphedemasupport.org/glossary.html

**‘Average-weight’ Silhouette vs ‘Overweight Silhouette’**



Appendix E: Study 4 and 5 Materials

**Study 4**

**Universal Measure of Bias – Fat Subscale**

1. Obese people tend toward bad behavior
2. Sometimes I think that obese people are dishonest
3. I would be comfortable having an obese person in my group of friends
4. I would like having an obese person at my place of worship or community centre
5. I find obese people attractive
6. I find obese people to be sexy
7. Special effort should be taken to make sure that obese people have the same educational opportunities as other people.
8. Special effort should be taken to make sure that obese people have the same housing opportunities as other people.

**Study 5**

**Anti-Fat Attitudes Scale**

1. Fat people are less sexually attractive than thin people
2. I would never date a fat person
3. On average, fat people are lazier than thin people
4. Fat people only have themselves to blame for their weight
5. It is disgusting when a fat person wears a bathing suit on a beach

# Appendix F: Weight-Related Steroetypes

Table A.1

*Coding scheme for weight-related and unrelated traits developed by Besenoff and Sherman (2000).*

| | Positive Traits | Negative Traits |
|---|---|---|
| Fat-Stereotypic Traits | Caring | Insecure |
| | Friendly | Introverted |
| | Humorous | Lazy |
| | Kind | Passive |
| | Maternal | Unhealthy |
| | Sympathetic | Unpopular |
| Thin-Stereotypic Traits | Athletic | Aggressive |
| | Attractive | Competitive |
| | Confident | Conceited |
| | Disciplined | Demanding |
| | Energetic | Selfish |
| | Happy | Vain |
| Weight-Irrelevant Traits | Boring | Artistic |
| | Forgetful | Clean |
| | Greedy | Economical |
| | Jealous | Hardworking |
| | Rude | Musical |
| | Violent | Orderly |