

# **Anti-fat attitudes among children**

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## Publications

This thesis contains findings that have been presented in the following submissions for publication.

Penny, H., & Haddock, G. (in press). Anti-fat prejudice among children: The “mere proximity” effect in 5-10 year olds. *Journal of Experimental Social Psychology*.

Penny, H., & Haddock, G. (in press). Children’s stereotypes of overweight children. *British Journal of Developmental Psychology*.

## Abstract

Research has shown that adults consistently derogate overweight adults. However, little research has explored children's perceptions of overweight children. The aim of the present thesis was to explore the prevalence and nature of children's attitudes towards overweight children and to test an intervention designed to reduce such anti-fat prejudice. Children between 3 and 11 years of age took part in a range of investigations measuring: (1) children's desire to be friends with overweight children compared with average-weight black and white children, (2) children's stereotypes regarding overweight children's athletic, academic, artistic, and social abilities, (3) the mere-proximity effect, which is whether average-weight children are derogated when evaluated in the proximity of overweight children, and (4) the effectiveness of an intervention designed to reduce anti-fat prejudice. The key results showed that: (1) overweight children were liked significantly less than average-weight black and white children, (2) children eight years of age and younger held negative stereotypes about overweight children regarding their athletic, academic, artistic, and social abilities, (3) average-weight female targets were derogated when evaluated in the proximity of overweight female characters, and (4) the intervention altered children's answers on explicit (but not implicit) measures of anti-fat prejudice, and this tended to persist and sometimes became stronger over time. The implications of these findings are discussed with regards to obesity stigma in the context of existing research and future directions for research are discussed.

## CHAPTER ONE

### 1. Anti-fat attitudes

#### 1.1. Introduction

In a report prepared for the Department of Health, Zaninotto, Wardle, Stamatakis, Mindell, and Head (2006) found that in 2003 30% of boys and 25% of girls between two and ten years of age were overweight. Further, the Royal College of Physicians (2006) warned that "... if the rapid acceleration in childhood obesity in the last decade is taken into account, the predicted prevalence in children for 2020 will be in excess of 50%". Given the prevalence of obesity amongst children in the U.K., it is important that research be conducted in order to fully understand the implications of this worrying trend. Whilst a plethora of investigations has explored the medical consequences of obesity and much research has considered prevention and treatment (for systematic reviews see, Campbell, Waters, O'Meara, & Summerbell, 2001; Reilly, Methven, McDowell, Hacking, Alexander, Stewart, & Kelnar, 2003), comparatively little research has investigated the stigma associated with being overweight or obese. The primary aim of this thesis is to determine how children perceive overweight children. Do children display a preference for average-weight children compared to overweight children? Do children possess negative stereotypes about overweight children? What are the implications of anti-fat attitudes among children? How easy is it to change negative attitudes toward overweight children? These types of questions were addressed in this thesis.

Within this chapter, I review previous research into anti-fat attitudes. I begin by considering research assessing adults' perceptions of overweight people before moving on to explore the current (limited) research investigating children's perceptions of overweight people. Finally, I highlight the existing research aimed at changing people's anti-fat attitudes.

## 1.2 Terminology

The terms bias, stigma, and prejudice are used interchangeably in this thesis. Within the study of obesity, Brownell (2005) defines bias as "a personal and sometimes unreasoned judgement" about a category or individual (p. 9). Stigma is conceptualised as a "mark of shame or discredit" against a category or an individual, whilst prejudice is defined as a preconceived judgement or opinion formed without just grounds or before sufficient knowledge (Brownell, 2005, p.9). This definition of prejudice is consistent with accepted social psychological perspectives, which conceptualise prejudice to refer to a negative overall attitude or opinion (i.e., like or dislike) about a social group (see Dovidio, Glick, & Rudman, 2005; Haddock & Zanna, 1999). Additionally, I use the term stereotype to refer to the attributes or traits associated with a group.

There appears to be no single universally accepted term to refer to weight-related problems. Terms such as fat, obese, overweight, and excess weight have all been used in the literature. There have been some recent moves to reclaim the term fat from its socially negative

connotations, notably by the National Association for the Advancement of Fat Acceptance (NAAFA). This pressure group argues that whilst the Greek origin of the word fat has neutral connotations, the Latin root of obese stems from references to a being that has eaten itself plump (Robinson & Bacon, 1996). Throughout this thesis I use the term overweight in a medical sense that describes people with a Body Mass Index (BMI) above the recommended healthy range; this term includes obese and fat individuals. However, when describing other research I will use the term chosen by the authors of that research in order to accurately describe their work. Finally, the term anti-fat attitude has been used by Crandall (1994, 1995) to describe a negative attitude toward overweight individuals. I will make use of this term throughout this thesis.

### 1.3 Anti-fat prejudice in adults

There has been considerable research exploring anti-fat stigma in adults (for a review of this work see Puhl & Brownell, 2001). This stigma is expressed in many ways. For example, obese adults are perceived as less attractive, popular, happy, intelligent, and as having less success in jobs and relationships (Hebl & Heatherton, 1998). Obese people are also perceived as being less tidy, more emotional, and even having “different personalities” (Neumark-Sztainer, Story, & Harris, 1999). Furthermore, obese individuals are discriminated against by healthcare professionals, receiving shorter examinations and having a greater likelihood of being ascribed negative attributes and more illness (Hassel, Amici, Thurston, & Gorsuch, 2001; Hebl, Xu, & Mason, 2003).

In early research into anti-fat prejudice in adulthood, Maddox, Back, and Liederman (1968) asked adults to rank a series of six line-drawings of people, one individual of average weight, four with different disabilities (e.g., an individual in a wheelchair) and one overweight individual. Overall, participants ranked the overweight drawing as least likeable. Since Maddox et al.'s (1968) research, there have been numerous studies looking at anti-fat bias using this paradigm. Most recently, Latner, Stunkard, and Wilson (2005) found that university students also liked line drawings of obese characters the least, suggesting that anti-fat prejudice remains prevalent.

In a study by Harris, Harris, and Bochner (1982) college students were asked to rate the likeability of a target person who was either male or female, overweight or average-weight, and wearing glasses or not wearing glasses. Harris et al. (1982) found that participants rated overweight targets more negatively than any of the other target groups. Further, in a study conducted by Tiggemann and Rothblum (1988), male and female college students from Vermont and South Australia were asked to rate the degree to which eight qualities (e.g., warmth, happiness, self-confidence, self-indulgence, and laziness) were characteristic of overweight and average-weight individuals. The results of the study indicated that overweight people were perceived as warmer and friendlier, but less confident, attractive, and self-disciplined, and more self-indulgent. Moreover, when Vener, Krupka, and Gerard (1982) asked students to rank order a series of potential marital partners, participants



reported that they would prefer to marry a shoplifter, embezzler, or cocaine user rather than an overweight person.

In other research, Greenleaf, Starks, Gomes, Chambliss, and Martin (2004) asked college students to associate male and female silhouettes with a range of weight-related words and characteristics. Participants also undertook a word association task and defined five weight terms. Participants grouped weight terms into two camps, one for “slender” terms and one for “heavy” terms. Participants of both genders selected smaller female figures than male figures for the terms overweight, fat and normal weight. Participants also associated weight-related words with personal characteristics, including overweight-lazy. Taken together, these studies suggest that overweight adults are evaluated negatively when directly compared to other social categories.

These anti-fat biases have also been found on implicit measures of bias, in which participants are unaware that their evaluations are being assessed. During an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) participants associate a stigmatised group and a non-stigmatised group with good and bad words. The times it takes for the participant to make these associations are timed and if a participant finds it easier to (i.e., is faster when) associate the stigmatised (non-stigmatised) group with bad (good) words, it is assumed that they have a bias against the stigmatised group.

In a study exploring implicit anti-fat prejudice, Chambliss, Finley, and Blair (2004) conducted research in which university students completed a weight-based IAT, two self-report instruments, and a demographic questionnaire. The implicit measure demonstrated strong anti-fat attitudes, and endorsed lazy stereotypes of obese people. Factors associated with a greater negative bias included being female, Caucasian, and being brought up in a less populated region. Holding the belief that obese individuals are personally responsible for their condition was associated with a stronger lazy stereotype. Having obese friends, a family history of obesity, and a belief that individuals were not responsible for being obese were all associated with more favourable attitudes towards obese people.

There is further evidence to suggest that individuals generally prefer thin people to overweight people. Schwartz, Vartanian, Nosek, and Brownell (2006) conducted an online experiment to assess anti-fat stereotypes, in which participants completed an IAT aimed at ascertaining how quickly participants could associate overweight/average-weight with good/bad words. Participants were from across the weight range, and bias persisted across weight groups. The strength of the anti-fat bias decreased as participants' own weight increased, but even the most obese group of participants was biased against obese people, both on explicit and implicit measures. Substantial proportions of participants of all groups were willing to endure "adverse life events" to avoid being heavier (e.g., 46% of the sample would rather lose a year of life, 30%

would rather be divorced than become obese). In each option thin people were more willing to face adversity (sacrifice) than heavier participants.

Wang, Brownell, and Wadden (2004) conducted two studies of obese participants (both male and female) using the IAT. Participants in both studies demonstrated significant anti-fat bias. In particular, they explicitly endorsed the suggestion that fat people are lazier than thin individuals. This shows that obese individuals do not have positive ingroup attitudes. This finding of implicit ingroup derogation demonstrates how pervasive anti-fat attitudes are compared with other forms of bias. In research testing ingroup attitudes, Rudman, Feinberg, and Fairchild (2002) asked participants to complete a number of IATs in order to compare ingroup associations among a number of minority groups. They found that whilst some minority group members (e.g., Asian, Jewish) did not demonstrate the equivalent ingroup preference as majority group members, they were still positive about their ingroup. However, overweight participants showed an ingroup devaluation. The authors explain this finding in terms of System Justification Theory (Jost and Banaji, 1994), which suggests that prevalent and accepted stigmas become normalised to such an extent that even members of the stigmatised group will accept and display these biases. Taken together, this research suggests that anti-fat attitudes are pervasive in the adult population. These anti-fat attitudes are held by average-weight and overweight individuals and are demonstrated on both explicit and implicit measures of attitude.

### *1.3.1 Anti-fat attitudes in the media*

Some research has looked at how the media influences anti-fat biases. In one study, Blaine and McElroy (2002) coded 18 hours of cable television infomercials for weight loss products. They found that women appeared twice as many times as men, suggesting weight loss products were targeted more at women than men. Thin women appeared three times more often than obese women, promoting the thin ideal. The output emphasised unrestricted more often than restricted eating (i.e., eating what you want rather than controlling what you eat), weight reduction without exercise more often than with exercise, and showed obese individuals as “unhappy and unattractive”.

In another study, Geier, Schwartz, and Brownell (2003) exposed healthy-weight participants to an advertisement including either “before and after” photos of individuals who had successfully lost a substantial amount of weight, or just “before” or “after” photos. All participants showed strong implicit anti-fat attitudes. Two moderating variables for this effect were demonstrated; participants reporting a higher general life satisfaction expressed less anti-fat bias, and participants who had a close personal relationship with an obese individual were less biased. Those exposed to the “before and after” photos were more likely to indicate that obesity was controllable, compared to participants in either of the other conditions. The authors argued that the results demonstrate that “before and after” diet ads enhance weight stigma and perpetuate negative stereotypes.

Taken together, this research (and other comparable studies) suggests that the media has a significant role in perpetuating anti-fat attitudes by promoting the thin ideal and oversimplifying of complex problems, increasing the idea that controlling weight is easy (e.g., by the use of their product) and thus exacerbating people's biases.

### *1.3.2 Anti-fat attitudes and healthcare*

Research has considered how obesity stigma affects the treatment obese people receive in healthcare situations. This research typically shows that overweight people are discriminated against by healthcare providers. For example, Hebl and Xu (2001) developed a number of vignettes featuring otherwise healthy patients who had experienced two migraines a week for two years. The BMI and gender of the patient were manipulated and one vignette was sent to primary care physicians who were asked to indicate how they would treat the patient. The results indicated that physicians were more than seven times as likely to refer an obese patient to a psychologist (23%) compared to an average-weight patient (3%). Further, physicians were less likely to want to treat overweight patients, and believed that overweight patients were less self-disciplined, more annoying and less likely to benefit from treatment. Moreover, the physicians indicated they would spend 30% less time with obese patients compared with average-weight patients. In other research, Foster, Wadden, Makris, Davidson, Sanderson, Allison, and Kessler (2003) surveyed a large sample of physicians on their opinions about overweight people. Results indicated that over 50% of physicians perceived obese people as awkward, ugly, and noncompliant.

In a further study, patients reported the quality and amount of care they received from their physician (Hebl, Xu, & Mason, 2003). The results revealed that overweight men reported that less time was spent with obese individuals than average weight men, whilst no such differences were reported by women. The authors suggest that physicians may interact differently with them, but also that female patients may engage in denial strategies or “compensatory behaviours” that affect the quality of their care.

Research using samples of nurses has revealed similar findings to that obtained with samples of physicians. In one study, Bagley, Conklin, Isherwood, Pechiulis, and Watson (1989) found that 25% of nurses interviewed strongly agreed with the statement “Caring for an obese patient repulses me”. Further, Maroney and Golub (1992) found that more than one third of nurses agreed with sentences such as “Nurses feel uncomfortable when caring for obese people”, “Caring for an obese adult patient is stressful”, and “If given the choice most nurses would prefer not to care for an obese patient”. Moreover, nurses thought that obese people are over-indulgent and that obese adults experience unresolved anger.

In research conducted by Agell and Rothblum (1991), psychologists were asked to comment on fictitious case studies which were either about an overweight or an average-weight client. Results indicated that psychologists were more likely to rate obese clients as embarrassed and

unattractive. At the same time they were also more likely to rate overweight clients as soft and kind, compared with average-weight characters.

Even healthcare professionals who work with overweight people have been shown to demonstrate both explicit and implicit anti-fat attitudes (Teachman & Brownell, 2001). Healthcare professionals were given an IAT which revealed that participants found it easier to associate fat people with bad and lazy than with positive words like good. Further, respondents demonstrated explicit beliefs that overweight people are less motivated than average-weight people. Along the same line, Schwartz, Chambliss, Brownell, Blair, and Billington (2003) conducted research at an international obesity conference. Using the IAT, delegates found it easier to associate fat people with words like stupid, bad and worthless than positive words such as good, and clever.

Wee et al. (2002) surveyed almost 3000 patients and found that overweight and obese patients reported lower satisfaction with their visits to primary healthcare practices than did normal weight patients. However, after adjusting the scores for the burden of illness, the difference was not statistically significant for overweight and obese patients. Patients' satisfaction with their care did not significantly vary with weight.

In summary, healthcare professionals demonstrate both explicit and implicit anti-fat biases, even those who work with overweight people on a regular basis. However, despite obese people reporting less satisfaction

with their interaction with healthcare providers, this is likely due to the nature of illnesses that overweight people present with rather than the healthcare providers.

### *1.3.3 Anti-fat attitudes in the work place*

Overweight people are also often discriminated against in the work place. Brink (1988) asked students to rate job applicants. Applicants were either male or female, young or old, black or white, married or unmarried, had two children or eight, and were overweight or average-weight. Results showed that only weight had a negative influence over participants' judgements. Participants were less likely to hire or promote an overweight target than all other targets.

Further evidence that a candidate's weight influences their job prospects can be seen in a study by Pingitore, Dugoni, Tindale, and Spring (1994). Students were asked to watch videotaped, mock job interviews where the candidate was an actor who was either average-weight or made to look overweight using prostheses. The overweight candidate was significantly less likely to be offered the job than the average-weight candidate.

Rothblum, Miller, and Garbutt (1988) also conducted an investigation to explore how an applicant's weight can effect how they are perceived. In their investigation students were provided with résumés and asked to rate each applicant (out of 100) on a number of qualities (e.g., likeability as a co-worker, lazy, good personal hygiene). When résumés were accompanied by written descriptions of the candidates portraying them as



overweight, participants rated them more negatively than average-weight candidates.

In other research using a sample of lawyers, male overweight lawyers were paid less than average-weight lawyers (there was no difference among female lawyers). Researchers argued this may be because of social perceptions as to deviations from an “ideal” physique (Saporta & Halpern, 2002). Further, in a study by Ding and Stillman (2005) recruitment consultants in New Zealand were asked to rank fictitious CVs on their appropriateness for a particular post. The same four women were shown on rotation as normal weight and overweight in photographs on the CVs. Two normal weight men were also included as distracters. There was a general bias against the overweight female jobseekers. The expertise of the participants did not significantly influence the effect of weight bias upon the assessments.

#### *1.3.4 Anti-fat attitudes and social relationships*

Research has also explored social relationships among overweight adults. The findings in this field are somewhat conflicting. Harris et al. (1982) found that overweight people are perceived as less popular than average-weight individuals. In another study conducted by Harris (1990), college students were asked to complete a Love Attitudes Scale for overweight and average-weight individuals. Overweight people were rated as less attractive, less likely to be dating, less erotic, more manic, and as having lower self-esteem. Moreover, participants rated that overweight people deserved fatter, uglier love partners. This research

suggests that people perceive that overweight people are less successful in relationships.

However, in a study by Miller, Rothblum, Brand, and Felicio (1995) obese and non-obese female participants completed surveys of social anxiety, self-esteem, social competence, social network size, and their perceived network of social support from family members and friends. Friends and colleagues also rated the participants on the same surveys. There was no significant difference between the results for obese and non-obese participants. The researchers argue that anti-fat attitudes do not affect obese women's ability to have secure relationships. However, participants only had to supply the names of two friends or co-workers to complete the questionnaire and it is unlikely that friends and colleagues who were asked to complete these questionnaires would do so and then respond in a derogatory manner. Furthermore, participants had to put themselves forward for the investigation after reading a newspaper advertisement. People with few or no friends who are unhappy are unlikely to volunteer for this sort of study, perhaps making it less likely that differences amongst any subcategories would be found.

Further evidence that interpersonal relationships are affected amongst adults is available. Crandall (1995) found that overweight daughters were significantly less likely to receive financial support through university than overweight sons and average-weight children. This effect was present despite controlling for all other possibilities, most notably parental income and daughter achievement.

### *1.3.5 Anti-fat attitudes and gender*

Research findings on how gender interacts with anti-fat attitudes are somewhat conflicted. In the Harris et al. (1982) study described earlier in this chapter, no gender effects were found. Conversely, Tiggemann and Rothblum (1988) found that not only were female participants more likely to demonstrate negative stereotypes about overweight individuals, but furthermore, that overweight female targets received more negative stereotypes than overweight male targets. Furthermore, in the Pingitore et al. (1994) study, an overweight female target was less likely than an overweight male target to be offered a job, although the effect was present for both male and female targets.

This research suggests that weight stigma is more problematic for women than for men. One rationale for this suggestion is that women are more likely to consider themselves overweight. In a study by Grover, Keel, and Mitchell (2003) male and female participants completed an IAT and elements of a questionnaire designed to investigate eating disorders. Both male and female participants accurately judged their own weights, and demonstrated explicit and implicit anti-fat attitudes. Men identified themselves as "light" regardless of their actual weight, whilst female participants did not. Women's judgments were associated with their actual weight and self-esteem. As such, women were more likely than men to consider themselves overweight.

Further evidence that society places more importance on female thinness can be found in other strands of research. Rand and Wright (2001) conducted a study where participants from various age-groups were shown line drawings of individuals of different ages, of both genders, ranging from very thin to very overweight. Participants then rated ideal male and female body sizes for each age-group and gender. Most participants chose similar body sizes for both male and female targets regardless of the gender of the participant. Young adults were most likely to prefer thinner female targets. However, all groups demonstrated a bias in favour of thinner female targets. This may contribute to body image concerns in the wider population.

However, Hebl and Turchin (2005) conducted an investigation to ascertain male perceptions of weight-stigma. They showed male undergraduate students a series of photographs of individuals of different weights and skin colour. Photographs were standardised to ensure that all of the individuals within the photographs were both smiling and moderately attractive. Participants were then asked to rate how happy, intelligent, personally successful and socially successful the characters depicted in the photographs were. Results showed that male participants were likely to stigmatise overweight individuals and be stigmatised if they themselves were overweight, demonstrating that weight related bias is not only experienced by women. Taken together, this research suggests that anti-fat attitudes are held by men and women; it is possible that women are more sensitive to being the victim of anti-fat bias as they are more likely than men to perceive themselves as overweight.

### *1.3.6 Summary*

Overall, the above research shows that adults demonstrate bias against overweight individuals. This bias occurs on both explicit and implicit measures, and when men and women are making evaluations about both men and women. Further, anti-fat attitudes are present in a variety of contexts including the media, the work place, healthcare environments and the family.

### **1.4 Anti-fat attitudes among children**

“For fat students, the school experience is one of ongoing prejudice, unnoticed discrimination, and almost constant harassment... from nursery school through college, fat students experience ostracism, discouragement, and sometimes violence.” (National Education Association, 1994, cited in Latner & Schwartz, 2005, p.54)

Whilst previous research suggests that an obese child will be the victim of stigmatisation (Neumark-Sztainer, Story, & Faibisch, 1998) and less likely to be chosen as a playmate (Harper, Wacker, & Cobb, 1986), surprisingly, only a small amount of research has explored the content of anti-fat stereotypes and the prevalence of anti-fat attitudes among children. Most of this work has revealed that children possess anti-fat attitudes, and that these attitudes have become more negative in the past 50 years (Davison & Birch, 2004; Kraig & Keel, 2001).

Richardson, Goodman, Hastorf, and Dornbusch (1961) were the first to examine children's attitudes to overweight children, and their study formed the premise for the Maddox et al. (1968) paper discussed previously in this chapter. In their study, Richardson et al. (1961) asked participants to rank how likeable they found a series of line drawings of children. The overweight children were consistently ranked the least likeable. In a similar study, Sigelman, Miller, and Whitworth (1986) instructed children to rank order images of children who were overweight, black, a wheelchair user, facially disfigured, glasses-wearing, or of the opposite sex. Again, the obese children were consistently ranked lower than the others. The authors argue that whilst other types of stigma are socially unacceptable, anti-fat prejudice is not particularly frowned upon and therefore, children are more likely to learn and demonstrate explicit anti-fat attitudes.

More recently, Latner and Stunkard (2003) replicated the Richardson et al. (1961) experiment. Their findings not only revealed a similar pattern of anti-fat prejudice, but also that the extent of this bias had become more extreme. Participants in the Latner and Stunkard (2003) study were 42% more likely to rank overweight children as the least likeable compared to Richardson et al. (1961). This suggests that despite (or because of) the increase in the number of overweight children, children's anti-fat prejudice has become more prevalent.

### 1.4.1 Stereotypes

A limited amount of research has assessed children's stereotypes of overweight children. Staffieri (1967, 1972) asked children aged between six and eleven years to assign negative (e.g., stupid, mean, ugly, cheats, naughty) and positive (e.g., smart, honest, neat) to silhouettes of overweight, average weight and thin children. Staffieri (1967, 1972) found that participants were significantly more likely to assign the negative adjectives to overweight silhouettes compared to the other characters. Participants also reported that they would not like to look like the overweight character. Despite the fairly large range of participant ages, no age effects were investigated. Moreover, whilst anti-fat attitudes were reported by both male and female participants, male and female participants were investigated separately (males in 1967, and females in 1972) and participants only evaluated characters that were the same gender as themselves. Therefore, how gender might influence the findings was not considered.

In a study by Brylinsky and Moore (1994), children between kindergarten and fourth grade age rated drawings of thin, average and overweight children using 12 bipolar adjectives. The analysis demonstrated that overweight drawings were viewed less favourably than thin and average-weight children. Moreover, girls had a more positive view of "thin" traits than did boys. This research also found that the negative stereotype of overweight children was apparent between first and second grades, whilst the positive thin stereotype was present across all ages.

Anti-fat attitudes and stereotypes in children have been reported in other research, with children displaying attitudes similar to those found in adults. For example, Cramer and Steinwert (1998) found stigmatisation in children as young as three to five years of age. Participants in this study were read vignettes containing two children, one behaving in a neutral manner and the other behaving in a negative manner (e.g., kicking over a sandcastle). Participants were then asked to indicate which character in the story was average-weight and which one was overweight. Cramer and Steinwert (1998) found that participants were more likely to perceive overweight children as being both mean and an undesirable playmate. The presence of this stigmatisation at such an early age is important, because even at this young age peer rejection has long lasting consequences (McDougall, Hymel, Vaillancourt, & Mercer, 2001).

Bell and Morgan (2000) showed children between nine and eleven years video footage of a young, average-weight boy and girl who were either dressed in fat suits or not. Using an adjective checklist, the investigators asked participants to assign positive and negative adjectives to the children in the video footage. The results showed that participants ascribed more negative adjectives to overweight children rather than the average-weight children. Bell and Morgan (2000) reported that anti-fat stereotypes were slightly stronger when boys were making evaluations and when younger participants were making evaluations. However, it is unsurprising that few age effects were found given the limited age range of the participants.



In another study, Musher-Eizenman, Holub, Barnhart, Goldstein and Edwards-Leeper (2004) found that children between the ages of four and six years attributed more negative characteristics (e.g., mean, stupid, no friends, sloppy, ugly and loud) to overweight children compared to average-weight children. The results also showed that participants were less likely to choose overweight children to be their friends compared to average-weight children. However, in this investigation a forced-choice paradigm was employed, such that participants had to choose between average-weight and overweight children when assigning negative and positive attributes and choosing friends. This study did not consider how age and gender might influence their findings.

#### *1.4.2 Anti-fat attitudes within families*

A number of studies have considered the presence of anti-fat attitudes within families. For instance, Davison and Birch (2003) asked nine year old girls and their parents were asked to associate positive and negative characteristics with images of overweight and thin characters. Davison and Birch (2003) found that not only were both parents and their daughters more likely to associate positive characteristics with thin images and negative characteristics with overweight characters, but fathers with higher education levels reported higher anti-fat prejudice.

O'Bryan, Fishbein, and Ritchey (2004) used a sample of ninth and eleventh grade students and their parents to assess their prejudices against a range of different target groups. The aim of the investigation was to see how parents' prejudices affect their children's prejudices.

Parents' and children's attitudes to members of a number of outgroups were assessed. Results showed that mothers' attitudes toward HIV/AIDS, obesity and race influenced that of their children. Fathers' male-female stereotypes and bias against homosexuals was related to children's attitudes toward the same target groups. Furthermore, parents with intolerant views were more likely to have children that demonstrate intolerance. Whilst mothers and fathers were approximately equal in their influence upon general intolerance, mothers with strong anti-fat attitudes were more likely to have children with anti-fat attitudes.

In other research Musher-Eizenman, Holub, Edwards-Leeper, Persson, and Goldstein (2003) asked preschool children and their mothers to rate body shapes as "current, ideal, aversive and acceptable." Mothers also answered a questionnaire on the ways in which they feed their children. The results demonstrated that children had a less restrictive conception of acceptable body shapes than their mothers. Mothers who viewed a narrower range of body shapes as acceptable for their child reported that their habits in feeding their children were also more restrictive than the rest of the sample. These findings suggest that mothers may be more likely to perceive people as being overweight than children.

More recently, in a study by Davison and Birch (2004), nine year old girls and their parents completed questionnaires which measured their anti-fat attitudes and stereotypes. Overall, participants demonstrated anti-fat attitudes. Further, parents were more stereotypical in their views when they reported a high investment in their own looks, and well-educated

fathers of affluent families were more likely to endorse anti-fat attitudes. Whilst there were no associations between the stereotypes held by parents and those held by their daughters, results also indicated that in families where there were more discussions about body shape and weight loss, daughters were more likely to endorse anti-fat attitudes.

### *1.4.3 Summary*

A relatively small amount of research has studied anti-fat attitudes in children. Most of this research has concentrated on either ranking overweight children in relation to other children or ascribing general characteristics to overweight children. Whilst shortcomings in the literature will be discussed in more detail in later chapters, it should be noted that given the vast and increasing number of overweight children in the developed world more research needs to be conducted.

### *1.5 Attitude change*

A limited amount of research has addressed the question of how to reduce the prevalence of anti-fat attitudes. Crandall (1994) and Crandall, D'Anello, Sakalli, Lazarus, Nejtardt, and Feather (2001) argue that adults' prejudice toward overweight people is particularly difficult to change because many members of society perceive that obesity is controllable and as such it is appropriate to blame overweight people for their weight. In a study by Blaine, DiBlasi, and Connor (2002) participants were given fictional health and fitness information about a female target. The weight and recent weight loss of the target were varied, and participants rated the likeability and traits of obese individuals, as well as their perceptions

of the controllability of weight. The results indicated that in conditions where targets had lost weight participants perceived that weight was more controllable. Moreover, overweight targets were disliked more and considered less attractive than normal weight targets, especially when overweight targets were portrayed as having recently lost weight. This implies that people do blame overweight people for their size which results in anti-fat attitudes, and that to reduce anti-fat attitudes among adults, it is important to alter attributions regarding the causes of obesity.

Various methods have been used to attempt to change adults' negative attitude toward overweight people. For instance, Teachman, Gapinski, Brownell, Rawlings, and Jeyaram (2003) found that participants displayed implicit but not explicit anti-fat attitudes. Further, participants demonstrated higher implicit bias when they were told that obesity was caused by individuals' over-eating and not exercising regularly.

Participants told that obesity was the result of genetic factors did not demonstrate decreased implicit bias. In a further study, Teachman et al. (2003) exposed participants to stories of anti-fat bias to evoke empathy for obese individuals. Whilst this did not result in lower bias compared to control groups, it did result in lower implicit bias among obese participants. Evoking empathy towards overweight children does not reduce average weight children's anti-fat biases.

A further study conducted by Kutcher and Bragger (2004) was aimed at reducing anti-fat bias in a recruitment setting. Participants who rated the effectiveness of a video-taped candidate demonstrated a bias against

overweight candidates. However, when interviewers used a structured interview system participants demonstrated less bias than when an unstructured interview was used. Further research showed that highly structured interviews resulted in less bias than mildly structured ones. Overall, results indicated that structured interview processes may moderate against anti-fat attitudes amongst interview panels.

Research has used other methods to reduce anti-fat attitudes. Hague and White (2005) varied the way in which a web-based educational message promoting size acceptance was delivered to a group of adults. Overall, all participants' attitudes towards obesity became more positive over time. Interestingly, attitude change was most pronounced when the presenter of the educational material was overweight. This suggests that extended positive contact, even indirect contact, with overweight individuals may reduce anti-fat attitudes.

Puhl, Schwartz, and Brownell (2005) investigated the effects of group consensus upon stereotypes about obese people. Participants reported their attitudes towards obese individuals before and after the intervention. After learning that others had positive attitudes towards obese people, participants reported more positive stereotypes toward obese people. This effect was greater when the favourable attitudes came from ingroup sources as opposed to outgroup sources. This method was more effective than other methods of reducing stigma, such as providing information as to the uncontrollable causes of obesity or the genetic causes of the condition.

In a recent study, Gapinski, Schwartz, and Brownell (2006) asked participants to view either an empathy-evoking film of obese persons or a non-weight related video, followed by a video showing obese individuals positively or negatively. Subsequently, participants' attitudes were assessed using both explicit and implicit measures. The study found strong implicit and explicit anti-fat attitudes, and this bias persisted despite the interventions. This suggests that evoking empathy with overweight people is not a successful way of reducing anti-fat attitudes.

Very little research has been conducted in attempts to change children's negative attitudes toward overweight people. In a study of nine to twelve year olds, Anesbury and Tiggemann (2000) attempted to change children's attitudes toward overweight children by changing children's beliefs about the controllability of obesity. They did this by reading aloud information about how children have no control over what size they are as genes passed from parent to child determine a child's ability to metabolise fat. Whilst this intervention was able to get children to think that obesity was beyond a child's control, this did not alter the participants' negative stereotypes toward overweight children. These results imply that children's anti-fat attitudes may not simply be caused by them blaming overweight people for their size, and suggest that in order to change children's anti-fat attitudes, it is important that factors other than controllability be considered.

### *1.5.1 Summary*

Whilst some research has looked at reducing anti-fat attitudes in adults most of these interventions have been unsuccessful. The most promising research in adults suggests that increasing education and contact with overweight individuals can reduce anti-fat prejudice. There has yet to be a successful intervention targeted at reducing anti-fat attitudes among children. It appears that manipulating perceived controllability of weight does not result in a reduction of prejudice and as such any future interventions should explore other methods. In Chapter Five of this thesis I test another type of intervention based upon extended contact theory in order to reduce anti-fat attitudes among children.

### *1.6 Conclusions*

Taken together, existing research suggests that children do discriminate against overweight children. However, there are substantial gaps in the literature. Whilst research has looked at how overweight children are perceived compared with average-weight and disabled children, research has not directly considered at how explicit and implicit prejudice toward overweight children compares with other forms of prejudice (e.g., racial prejudice). It is possible that anti-fat attitudes are far more socially acceptable than racial (e.g., anti-black) attitudes. The second chapter of this thesis addresses this issue. Given the amount of resources that are aimed at reducing racial prejudice in schools, if overweight children are less liked than children from minority ethnic groups, it could be argued that more effort and resources need to be allocated into reducing obesity stigma.

A further weakness of existing research is that stereotypes about overweight children have not been fully explored. Much research claims that children perceive overweight children as being less able than average-weight children, but does not look any further than this single attribute. In Chapter Three of this thesis, stereotypes about overweight children are investigated in more detail, by considering how children discriminate across ability domains (e.g., athletic, academic, artistic, and social ability).

There are some interesting phenomena that have been investigated in the adult literature that have not been explored with children. In Chapter Four I look at the mere proximity effect and see whether it is present in children. The mere proximity effect refers to a negative attitude being expressed toward someone simply in proximity to a stigmatised individual (see Hebl & Mannix, 2003). This is an important finding because children who receive negative feedback whilst in the proximity of overweight children may avoid being near overweight children.

Whilst some research has focussed on reducing anti-fat attitudes, within children this issue remains relatively unexplored. With many researchers arguing that the perception of controllability of weight gain leads to prejudice, it is no surprise that research on attitude change has attempted to manipulate this element in order to reduce prejudice. In Chapter Five, I attempt to manipulate extended contact theory in order to provide



additional information about and positive instances of overweight children  
in an attempt to reduce anti-fat attitudes in children.

## CHAPTER TWO

### 2. Prevalence of prejudice toward overweight children among children

#### 2.1 Overview

In this first experimental chapter I explore whether children are more or less reluctant to befriend overweight children compared to ethnic minority group children. The aim of this chapter is to demonstrate that anti-fat attitudes are prevalent among children.

#### 2.2 Introduction

The British Government spends over £25 million annually on the Commission for Racial Equality (CRE; HM Treasury, 2004). Part of this funding is targeted directly at improving the educational environment for children, ensuring that “educational establishments... take proactive steps to tackle racial discrimination, and promote... good race relations.” (CRE, 2004). Among other things, schools are expected to prepare a written statement describing their race equality policies. These steps have been taken because racial discrimination occurs within schools, producing negative social and educational effects on children who are the victims of such discrimination (Aboud, 1988). However, at the time of writing this thesis, there were no provisions set aside for reducing anti-fat prejudice within schools.<sup>1</sup>

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<sup>1</sup> Resources are being directed at getting children to eat more healthily, but not at understanding the level of and effects of anti-fat prejudice.

If research finds that overweight children are as likely to be the victims of discrimination as members of ethnic minority groups, then it seems reasonable that resources be allocated to reducing anti-fat attitudes. The aim of this chapter is to directly compare anti-fat attitudes with anti-black attitudes amongst children, to compare their relative prevalence and strength.

The literature on cross-racial prejudice amongst children is vast and appears to show that majority group children show a bias against ethnic minority groups (for a review see Nesdale, 2001). For example, Aboud, Mendelson, and Purdy (2003) examined children's playmate selection in a school environment and found that children tended to have more same-race friends than cross-race friends, even when they controlled for differences in opportunity to be friends with an ingroup or outgroup member. Further, Graham and Cohen (1997) asked white and black children from the same school to rate how much they would like to be friends with white and black targets and to circle the names of their friends on the class register. The results demonstrated that children were more likely to have same-race friends despite having equal access to white and black classmates. Taken together, this area of research suggests that even when white children have equal opportunity to befriend a white or black child, they are more likely to choose to be friends with children of the same race.

As described in Chapter One, there are several studies suggesting that children have a bias against overweight children. However, few studies

have compared children's attitudes toward overweight children and children from an ethnic minority group. One study that attempted to compare children's prejudices was conducted by Sigelman et al. (1986). In this study, children between four and nine years of age were shown a set of drawings depicting a child who was either average-weight, overweight, black, a wheelchair user, wearing glasses, facially disfigured, or of the opposite sex. All of the target children's other characteristics were kept constant. Characters were presented in pairs and every possible combination of the characters was presented to participants, who selected which character they liked best out of each pair (forced-choice) and then described each character (free-choice evaluations). The results indicated that the average-weight white child was liked most, the black child ranked in the middle, and the overweight white child was typically liked the least. This implies that anti-fat attitudes may be stronger than anti-black attitudes. The gender and age effects reported by Sigelman et al. (1986) were somewhat mixed. Girls were more negative about overweight characters than boys when forced to choose between characters, however participants' free-choice evaluations did not differ based on gender. Conversely older participants were more negative than younger participants when making free-choice evaluations, however this could be attributed to the fact that the older participants have a larger vocabulary with which to make negative evaluations. Furthermore, given that the oldest participants were only eight years of age more research with older children needs to be done in order to understand the development of children of anti-fat attitudes in childhood.

Whilst this study does begin to address the relative strength of anti-fat bias, there are some conceptual problems with Sigelman et al.'s (1986) research. First, whilst children were given the opportunity to describe characters freely, they were not able to say whether they would or would not like to be friends with *each* character individually. It is possible that a child who prefers one character over another would choose to be friends with both individuals. In fact, Aboud and Amato (2001) argue that it is common for children to report that they would like to be friends with members of the derogated group, despite having previously made negative comments about that group.

Secondly, before participants made their evaluations, the experimenter said to the children "This kid looks like somebody I know. Maybe you know someone like this". This instruction may have caused the children to think of a particular exemplar, rather than a generic member of that target group, implying that it may not be appropriate to generalise to the category or group. Whilst Sigelman et al.'s (1986) research suggests that children are likely to discriminate against overweight children, there are some major problems that need to be remedied before any conclusions can be made.

Regarding how to measure attitudes, Aboud and Amato (2001) argued that "voluntary contact with peers and the development of stable relationships is the most important index of intergroup behaviour among children" (p. 72). As such, it seems appropriate to utilise this type of index to compare anti-fat and anti-black attitudes. A similar paradigm to the one

used by Sigelman et al. (1986) was employed in the study reported in this chapter. A benefit of this paradigm is that it enabled me to investigate children's willingness to befriend novel targets, whilst the task is simple enough for young children to complete, and it also ensured that a direct comparison between groups was being achieved.

At the same time, the experimental paradigm employed by Sigelman et al. (1986) has been altered slightly for the purpose of the current investigation. In the original version, participants were shown two characters and asked which one they would like to have as friends. It is assumed that the acceptance of one of the characters is the same as the rejection of the other (and vice versa). However, Aboud (1988) points out that this kind of forced-choice paradigm may not demonstrate a dislike of the unselected character. Instead it might demonstrate a desire to associate positive features with characters who resemble themselves, and as more children are average-weight (than overweight), this would account for the "preference" for average-weight. Therefore, in order to accommodate for this concern, I asked participants whether they would like to be friends with both of the individual characters. This allows participants to freely accept or reject both characters. Furthermore, in order to maximise the possibility that children did not activate a particular group exemplar, participants were not asked if the target characters looked like someone they knew. Finally, participants rated a number of characters, who were all made to look different by altering hair styles, and clothing, in order to ensure that results were representative of a child's attitudes toward the category rather than a particular individual.

Given that children's anti-black attitudes have been well established in the literature, a decision was made to compare the level of anti-black prejudice to the level of anti-fat prejudice. Consistent with previous research, it was hypothesised that white children would prefer to befriend same-race characters rather than cross-race characters. Secondly, it was hypothesised that children would be less likely to choose to befriend overweight characters rather than average-weight characters. A final goal of the study was to explore whether the above effects are of a similar magnitude. If anti-fat attitudes are as prevalent (or more prevalent) than anti-black attitudes then this provides justification for further research into this field, and the need for intervention – possibly on a policy level – to reduce this stigma and improve the quality of the school environment for overweight children.

## 2.3 Method

### 2.3.1 *Participants*

52 school children from a junior school in South Wales participated in the study. Participants were divided into two age-groups, the 24 participants in the young group were aged between three and eight years ( $M = 5.63$  years,  $SD = 1.41$ ), and the 28 participants in the old group were aged between nine and eleven years ( $M = 10.10$  years,  $SD = .74$ ). In each group, half of the participants were male and half were female.

Participation was based upon positive responses from parents who had received a letter from the school.

A collection of images was created for this study. Each image was a coloured cartoon drawing of a child. Each individual image was placed on a separate card that was 10 cm by 15 cm. Each character was either male or female. For each character there was a white average-weight version, a black average-weight version, and a white overweight version. These were identical in every other way except for their weight and skin colour (see Figure 2.1).

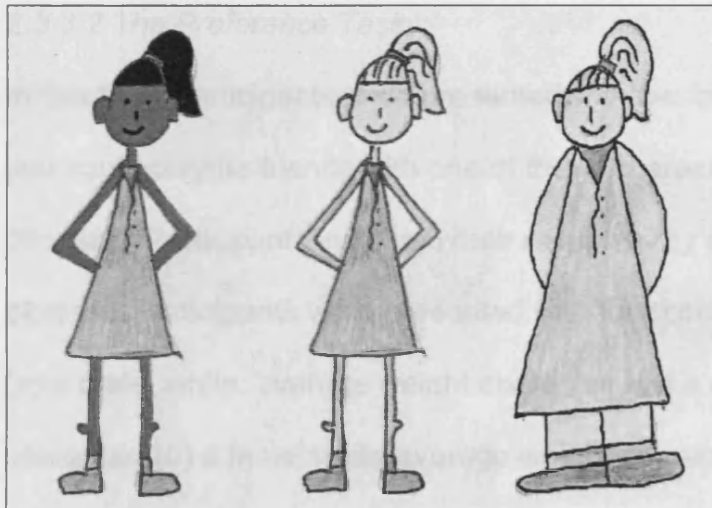


Figure 2.1. Three versions of the same character.

### 2.3.3 Procedure

Participants were interviewed individually during the school day. There were two tasks in this study and each participant completed both tasks. Tasks and trials were presented in a random order, and all participants evaluated all character categories.



### 2.3.3.1 *The Friends Task*

In this task, participants were asked whether they would like to be friends with the character placed in front of them. They could respond by saying yes or no. Each child saw twelve characters, one at a time. Two were male, white, and overweight; two were male, white, and average weight; two were male, black, and average weight; two were female, white, and overweight; two were female, white, and average weight; and two were female, black, and average weight.

### 2.3.3.2 *The Preference Task*

In this task, participants were presented with two characters and asked "If you could only be friends with one of these characters, who would you choose?" Participants indicated their response by pointing to one of the pictures. Participants were presented with four combinations of pictures: (a) a male, white, average weight character and a male, white overweight character; (b) a male, white average weight character and a male, black average weight character; (c) a female, white, average weight character and a female, white overweight character; (d) a female, white average weight character and a female, black average weight character.

## 2.4 Results

### 2.4.1 *The Friends Task*

Yes responses were given a score of one and no responses were given a score of zero, an average of responses for the same character type was calculated (see Aboud, 2003). While these indices were used in subsequent analyses, I report the percentage of times participants

indicated they would like to befriend the character. This was done for ease of presentation.

The data were analysed using a 3 (target appearance: WA, BA, WO) x 2 (target gender: male or female) x 2 (age-group) x 2 (participant gender) mixed-model ANOVA. There were two significant main effects. First, participants wanted to be friends with white, average weight characters (76%) and black, average weight characters (74%) more than they wanted to be friend with white, overweight characters (62%),  $F(2, 47) = 10.43, p < .001$ . Secondly, younger participants wanted to be friends with targets ( $M = 60\%$ ) less often than older participants ( $M = 80\%$ ),  $F(1, 48) = 10.00, p < .005$ .

There was a significant two-way interaction between target gender and participant gender,  $F(1, 48) = 18.42, p < .001$ . Male participants wanted to be friends with male targets (78%) more often than they wanted to be friends with female targets (57%),  $t(25) = 3.55, p < .005$ , whereas no differences were found amongst female participants,  $t < 1$ .

There were also two significant or marginally significant three-way interactions. First, there was a significant interaction among target gender, participant gender, and age-group  $F(1, 48) = 5.69, p < .05$ . As can be seen in Table 2.1, amongst the younger age-group, female participants showed a marginal preference for female targets (69%) over male targets (57%),  $t(11) = 1.43, p = .09$  (1-tailed), and male participants showed a significant preference for male targets (74%) over female

targets (42%),  $t(11) = 2.97, p < .05$ . However, amongst the older participants, the female participants showed no preference,  $t < 1$ , whilst the male participants continued to prefer male targets (82%) over female targets (70%),  $t(13) = 2.22, p < .05$ .

Table 2.1

The interaction among target gender, participant gender, and age-group

Young	Male Target	Female Target	Old	Male Target	Female Target
Male			Male		
Participant	74%	> 42%	Participant	82%	> 70%
Female			Female		
Participant	57%	< 69%	Participant	83%	= 85%

Arrows denote the direction of a significant difference.

There was also a marginally significant interaction among character appearance, participant gender, and participant age  $F(2, 47) = 2.90, p = .06$ . As can be seen in Table 2.2, among the younger participants, average-weight female targets (67%) were significantly preferred to overweight female targets (42%),  $t(23) = 2.40, p < .05$ , whereas average-weight male targets (69%) were marginally preferred to overweight male targets (54%),  $t(23) = 1.37, p = .09$  (1-tailed). However, amongst older participants, whilst average-weight female targets (89%) continued to be preferred to overweight female targets (66%),  $t(27) = 3.30, p < .005$ , no preference was found across thin and overweight male targets ( $t < 1$ ).

Table 2.2

The interaction among character appearance, participant gender and participant age

Young	Average-weight	Overweight	Old	Average-weight	Overweight
Female			Female		
Target	67%	> 42%	Target	89%	> 66%
Male			Male		
Target	69%	> 54%	Target	80%	= 80%

Arrows denote the direction of a significant difference

#### 2.4.2 The Preference Task

Average-weight white characters were given a score of zero and black and overweight characters were given a score of one. These scores were analysed using a 2 (black/white preference and overweight/average-weight preference) x 2 (character gender: male, female) x 2 (participant age-group: young, old) x 2 (participant gender: male, female) mixed model ANOVA. Once again, for the sake of parsimony I will describe the data with the use of percentages, indicating the percent of time that the stigmatised group (black and overweight) was chosen over the majority group (white, average-weight).

A number of main effects were found. First, there was a marginally significant main effect of participant gender,  $F(1, 48) = 3.37, p = .07$ . Male participants were less likely to prefer a minority group (43%) compared with female participants (50%). Secondly, there was a significant main effect of age-group,  $F(1, 48) = 6.27, p < .05$ . Younger

participants were less likely to prefer minority group targets (39%) than older participants (51%). Thirdly, there was a significant main effect of target gender,  $F(1, 48) = 4.46, p < .05$ . When female targets were being evaluated minority groups were preferred less (41%) than when male targets were being evaluated (50%). Most importantly, there was a significant main effect of appearance preference,  $F(1, 48) = 14.18, p < .001$ . Overweight targets (35%) were chosen less often than black targets (55%). In order to determine whether this effect was due to a preference toward white/average-weight, overweight, or black characters the scores were compared to chance (50%). This revealed that whilst there was no significant preference for black or average-weight white characters ( $t < 1$ ), there was a significant preference for average-weight rather than overweight characters (35%),  $t(52) = 4.10, p < .001$ .

## 2.5 Discussion

As expected, responses on both measures demonstrated an anti-fat bias. When given the choice between being friends with an overweight character or an average-weight character, participants chose the average-weight character. Further, even when participants were not forced to choose between characters, they were less likely to say that they would like to be friends with overweight characters compared to average-weight characters. These findings converge with Sigelman et al.'s (1986) findings that overweight targets are liked least, even when compared with one form of racial bias.

The findings of this study also demonstrate that participants did not exhibit an anti-black bias. Participants were as likely to say that they would like to be friends with an average-weight black character as an average-weight white character. Further, when asked to choose between two average-weight characters, participants selected white and black characters as often as each other. This finding does not converge with the Sigelman et al. (1986) findings, where black targets were liked less than white targets. This could be due to differences among North American and British attitudes toward ethnic minorities, or possibly a result of improved attitudes over time, especially in light of rigorous governmental programmes aimed at reducing negative attitudes toward ethnic minorities, among school children in the UK.

Taken together, these findings extend previous research by demonstrating that children show an anti-fat bias but not an anti-black bias. Future research may also like to add the category black and overweight to the above paradigm. Research suggests that anti-fat prejudice is not as prevalent for overweight, black individuals (Hebl & Heatherton, 1998) which is possibly caused by cultural differences in ideal body shape.

The findings of the present study may be due to the educational environment having to promote racial equality. In the introduction to this thesis I described research demonstrating that anti-fat attitudes are endorsed by parents, the media, and society. It is possible that these attitudes are then passed on to children. Aboud et al. (2003) argued that

children are aware that racism is socially undesirable and as such may be less likely to report racial bias. However, given that anti-fat attitudes do not appear to be as socially undesirable, children may not have concerns about demonstrating anti-fat attitudes. As such, this may account for why children in this investigation demonstrated anti-fat but not anti-black attitudes.

While this study found anti-fat prejudice to be expressed more willingly than anti-black prejudice, it should be noted, however, that Aboud et al. (2003) argued that demonstrating a willingness to befriend a person of a different race does not necessarily demonstrate reduced prejudice toward that race. Rather, the evaluator may be considering the potential friend as an exception or an individual and may have a negative attitude toward the group. However, in the present investigation children were merely evaluating drawings. Children who actually befriend a child from a group that they demonstrate prejudice against may make an exception for the new friend because he/she may have desirable traits, such as a good personality or nice toys. However, given that in this investigation the participants had no additional information with which to create an exception, this explanation seems unlikely.

The present findings show that children demonstrate a bias against overweight children and are less likely to befriend overweight white children compared to average-weight white or black children. Given that so much emphasis is placed by the government on improving race-relations in school, the current findings suggest that resources should be

allocated to reducing obesity stigma and making school a more pleasant environment for overweight children. Further research is necessary to understand this anti-fat bias and to test the effectiveness of school-based interventions aimed at tackling this problem. Such interventions could be similar to those used to reduce racial prejudice amongst children. In Chapter Five I shall adapt one such intervention for this purpose.

This study suggests that anti-fat attitudes are prevalent among children. In Chapter Three, I consider the stereotypes that children hold about overweight children examining the content of children's stereotypes about overweight children across four different ability domains: athletic, academic, artistic, and social.



## CHAPTER THREE

### 3. Children's stereotypes of overweight children

#### 3.1 Overview

In the previous experimental chapter of this thesis, I established that children demonstrate anti-fat attitudes toward overweight children. The aim of the present chapter is to explore the stereotypes children hold about overweight children.

#### 3.2 Introduction

As described in the introduction to this thesis, stereotypes refer to attributes or traits individuals associate with a social group. Stereotypes play a pervasive role in everyday life. Given the ubiquitous nature of stereotypes, it is unsurprising that a large volume of research has addressed issues such as the content of stereotypes about social groups, the relation between stereotypes and prejudicial attitudes, and how stereotypes influence information processing (see Fiske, 2004). Within this research, attention has been devoted to assessing the content and favourability of stereotypes held about overweight adults (see e.g., Crandall, 1995; Hebl & Heatherton, 1998).

In comparison, very little research has explored the content of the stereotypes children hold about overweight children. In early studies by Staffieri (1967, 1972), participants were asked to allocate negative (ugly, mean, stupid) and positive (nice, smart, good) adjectives to silhouettes of

overweight average-weight and thin individuals. Children consistently ascribed the negative adjectives to the overweight silhouettes.

Brylinsky and Moore (1994) conducted research in which children rated pictorial figures of overweight, average-weight, and thin characters on a range of bipolar dimensions. These dimensions were quiet/loud, brave/afraid, happy/sad, strong/weak, cute/ugly, healthy/sick, not teased/teased, nice/mean, smart/stupid, works hard/lazy, neat/sloppy, and many friends/few friends. Brylinsky and Moore found that children were more likely to ascribe negative attributes to overweight characters than average-weight or thin characters. However, given that some of the aforementioned variables are associated with being overweight (e.g., health problems, fewer friends, being teased, being a bully), their investigation does not provide a thorough understanding of children's stereotypes of overweight children.

In another study, Cramer and Steinwert (1998) read children a series of short stories, each of which contained two characters. In each story, one character performed a behaviour that was perceived to be mean (e.g., kicking over a sand castle made by the other character). After each story, the participant was presented with two target figures, one of whom was overweight and one of whom was average-weight. The participant was asked to identify which character was nice and which character was the bully. Cramer and Steinwert found that children were more likely to attribute bullying behaviours to the overweight (compared to average-weight) child.

Whilst interesting, there are a number of conceptual and methodological weaknesses of this research. First, Cramer and Steinwert (1998) concentrated on a single anti-social behaviour and did not consider *either* other negative attributes *or* positive abilities. This is clearly not sufficient to draw any viable conclusions about children's perceptions of overweight children. For example, in research assessing children's self-competencies, Harter (1982) measured children's self-perceptions by assessing their cognitive competencies, social competencies, and physical competencies.

Secondly, the single construct that Cramer and Steinwert (1998) used in their research is itself confounded by the fact that children who are overweight are indeed more likely to be bullies (Shelton & Liljequist, 2002). In a review of the literature on stereotype accuracy, Ryan (2002) argues that some stereotypes may reflect reality. As such, simply measuring this single construct may not be reflective of an overall negative attitude.

Thirdly, there are issues regarding Cramer and Steinwert's use of a forced-choice paradigm where the participants only have two characters to choose between, one who is average-weight and one who is overweight. It could be argued that this binary-choice paradigm increases the probability that participants will choose the overweight figure as the anti-social character, as it is conceivable that participants associate the "typical" (i.e., average-weight) child with the "typical" (i.e.,

good) behaviour, forcing the overweight child to be associated with the bad behaviour (see Davison & Birch, 2004, for a similar argument).

Fourthly, it is possible that children are more likely to identify with the nice character in the story, and therefore select the picture that looks most like themselves to represent the good character. Given that most children are average-weight this will result in the overweight child consistently being evaluated in a negative way.

A further factor that needs to be considered when assessing the favourability of stereotypes about overweight children is how children's perceptions may alter with age. A number of theories have been formed to understand the development of children's prejudice. Most notable is Aboud's (1988, 2003) cognitive-developmental theory, which suggests that children's prejudice alters with their cognitive development.

According to this model, young children construct categories and evaluate these categories. Initially, these evaluations are dominated by children's fear of the unfamiliar and attachment to the familiar, leading to crude and encompassing evaluations. By approximately 5-7 years of age, cognitive-developmental theory posits that children's prejudice should reach a peak as they prefer their ingroup to outgroups. From about 8 years of age, children increasingly perceive differentiations within different social groups and similarities between groups, and increasingly appreciate other people's perspectives, and so prejudice reduces between 8 and 12 years of age.

Existing research has not sufficiently considered how anti-fat perceptions might vary with age. This is because studies have focused on a narrow age range. For example, Cramer and Steinwert (1998) limited their study to children aged 3-5. The present study sought to assess stereotypes of overweight children held by children between the ages of 5 and 10 years, in an attempt to obtain a broader assessment of age-related changes in the favourability of anti-fat stereotypes. To assess these perceptions, this study incorporated a story paradigm that has been used in previous work (e.g., Cramer & Steinwert, 1998; Powlishta, Serbin, Doyle, & White, 1994). This paradigm is most suitable to ensure that children as young as five are able to understand the task in which they are participating. However, unlike Cramer and Steinwert (1998), children in the present study were presented with multiple pictures of average-weight and overweight children from which to select as the good and bad characters in the story. This was done in order to avoid the complications associated with the binary-choice paradigm. In addition to using a different selection paradigm, the current study presented participants with stories about children's abilities in four separate areas: athletic, academic, artistic, and social. This was done in order to extend previous research by gaining a wider understanding of the characteristics children attribute to overweight children (see Harter, 1982). Moreover, by including athletic ability, which is known to be a weight-related trait (Marshall, Biddle, Gorely, Cameron, & Murdey, 2004), I am able to investigate stereotype accuracy among children. The research questions in this study were: Do children demonstrate an anti-fat bias? If so, is this bias higher in 5-8-year-olds than in 9-10-year-olds, as cognitive-developmental

theory predicts? Finally, are such biases consistent across ability domains?

### 3.3 Method

#### 3.3.1 *Participants*

Seventy-three children (47 females and 26 males) from two junior schools in South Wales took part in the study. Letters were sent to the parents/guardians of all children aged 5-10 from both schools.

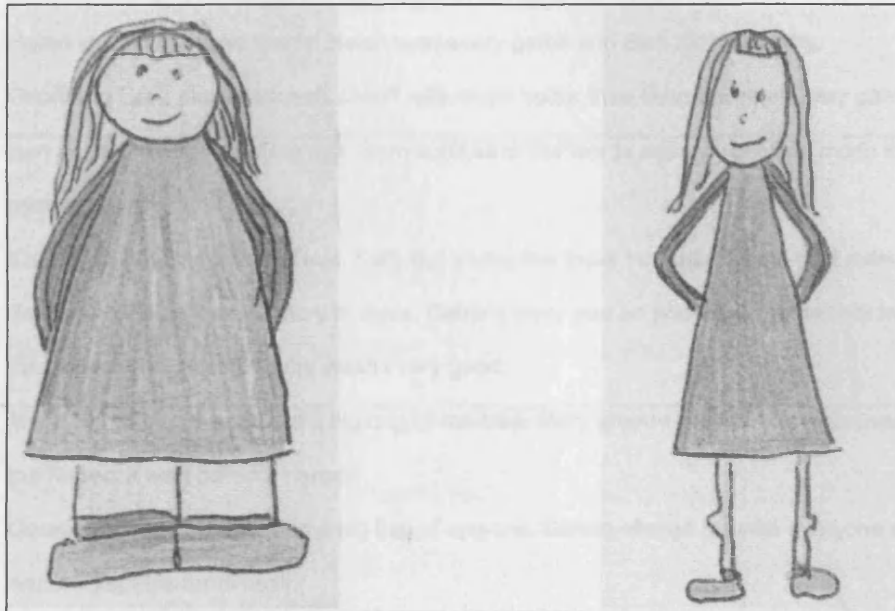
Participation was limited to those children whose parents returned the consent form to the school. Participants were divided into three age-groups: 27 participants (18 female and 9 male) were aged 5-6 ( $M = 6.4$  years), 26 participants (16 female and 10 male) were aged 7-8 ( $M = 8.5$  years), and 20 participants (13 female and 7 male) were aged 9-10 ( $M = 10.4$  years).

#### 3.3.2 *Materials*

24 pairs of cards were created. Each card was 21cm high and 15cm wide and had a simple line drawing of a child on it. 12 pairs displayed pictures of female characters and 12 pairs displayed male characters. The characters in each pair were identical except that one was average-weight and one was overweight (see Figure 3.1).

Figure 3.1

Two versions of the same character



A series of 12 short stories were developed. Each short story had two characters that were either both male or both female, one of whom was high in a particular quality, the other being low in this quality. Half of the stories contained female characters whereas the others contained male characters. Each story was based on one of four themes: athletic, academic, artistic, and social competence. There were three stories for each theme. The athletic stories dealt with abilities regarding running, tennis, and squash. The academic stories dealt with abilities regarding spelling, maths, and writing. The artistic stories dealt with abilities relating to playing the piano, drawing, and playing the lead role in a school play. The social stories dealt with abilities regarding sharing toys, sharing crayons, and inviting others to a party. For a full list see Table 3.1.

Table 3.1

List of statements

---

John and David had a race. David was much faster than John and won the race.

Helen and Sian played tennis. Helen won every game and Sian didn't win any.

Geoff and Greg played squash. Geoff was much better than Greg and won every game.

---

Ben and Sam had a spelling test. Sam spelt all of the words correctly but Ben made lots of mistakes.

Kate and Sally had a maths test. Sally got a very low mark but Kate got the best mark in the class.

Sarah and Catrin wrote a story in class. Catrin's story was so good that the teacher read it out to the entire class. Sarah's story wasn't very good.

---

Mary and Rebecca both had a big bag of marbles. Mary shared her marbles with everyone else but Rebecca kept hers for herself.

Gareth and Andrew both had a big bag of crayons. Gareth shared his with everyone else but Andrew kept his for himself.

Bethan and Hannah had parties for their birthdays. Bethan invited everyone to her party but Hannah left some people out.

---

Jack and Huw both play the piano. Jack isn't very good but Huw plays the piano really well.

Eleanor and Catherine drew pictures in class. Eleanor's was so good that the teacher put it on the wall but Catherine's was really bad.

Harry and Lewis were both in the school play. Lewis has the main part but Harry was just in the chorus.

---

### 3.3.3 Procedure

Participants were interviewed individually during the school day.

Participants were presented with eight pairs of cards, in a randomized order, on a table. The experimenter then read aloud a story to the participant and first asked them to point to the person that looked most like one of the characters in the story. Subsequently, they were asked to point to the picture that looked most like the other character in the story.



The experimenter recorded each response. Every participant was presented with every vignette. This procedure was followed for each of the stories, varying the cards and the story order for each participant.

### 3.4 Results

#### 3.4.1 Data reduction

To analyze the data, a score of zero was given each time a participant selected an overweight picture to represent the character in the story, whereas a score of one was given each time a participant selected an average-weight picture to represent the character in the story. As there were three stories for each ability, a score of zero to three was awarded for each participant for both the “good” and “bad” behaviours in each ability domain (see Aboud, 2003).

For each ability domain, a 3 (age-group: 5-6; 7-8; 9-10 years) x 2 (participant gender: male versus female) x 2 (behaviour type: good versus bad) mixed-model ANOVA was conducted. Age-group and participant gender were between-participant variables, whereas behaviour type was a within-person variable.

#### 3.4.2 Athletic Ability

The ANOVA on responses to the stories about athletic ability revealed a significant main effect of behaviour type,  $F(1, 67) = 105.53, p < .001$ . Overall, scores for the character with high athletic ability ( $M = 2.33$ ) were significantly greater than scores for the character with low athletic ability ( $M = 0.92$ ). The direction of this effect indicates that children expressed

less favourable perceptions of overweight (relative to average-weight) children. To determine whether this effect reflects a strong association between overweight and bad, a weak association between overweight and good, or both, the mean values were compared to chance (a score of 1.5). These analyses revealed that high athletic ability was less associated with overweight than average-weight children ( $t(72) = 9.05, p < .001$ ), whereas low athletic ability was more associated with overweight than average-weight children ( $t(72) = 5.30, p < .001$ ).

This main effect was qualified by a number of significant interactions.

First, there was a significant interaction between behaviour type and age-group,  $F(2, 67) = 13.31, p < .001$  (see Table 3.2). Among 5-6 year olds, there was a marginally significant difference between scores on the indices of good ( $M = 1.96$ ) and bad ( $M = 1.40$ ) athletic ability,  $t(26) = 1.92, p < .07$ . Compared to chance, 5-6 year olds were less likely to associate overweight children with high athletic ability ( $t(26) = 2.68, p < .05$ ). Among 7-8 year olds, there was a significant difference between scores on the indices of good ( $M = 2.62$ ) and bad ( $M = .79$ ) athletic ability,  $t(25) = 7.32, p < .01$ . Compared to chance, 7-8 year olds were less likely to associate overweight children with high athletic ability ( $t(25) = 9.96, p < .001$ ) and more likely to associate overweight children with low athletic ability ( $t(25) = 4.10, p < .001$ ). Among 9-10 year olds, there was a significant difference between scores on the indices of good ( $M = 2.45$ ) and bad ( $M = .45$ ) athletic ability,  $t(19) = 8.72, p < .001$ . Compared to chance, 9-10 year olds were less likely to associate overweight children with high athletic ability ( $t(19) = 6.19, p < .001$ ) and more likely to

associate overweight children with low athletic ability ( $t(19) = 7.76, p < .001$ ).

Table 3.2

Scores for good and bad athletic ability as a function of age-group and participant gender.

	Male			Female		
	5-6	7-8	9-10	5-6	7-8	9-10
Good	1.89 (.93)	3.00 (.00)	2.86 (.38)	2.00 (.91)	2.38 (.62)	2.23 (.73)
Bad	1.67 (.87)	.10 (.32)	.43 (.53)	1.28 (1.02)	1.19 (.91)	.46 (.66)

Note: Standard deviations are in parentheses.

There was also a significant interaction between behaviour type and gender,  $F(1, 67) = 4.34, p < .05$ . As revealed in Table 3.2, while boys and girls both showed negative evaluations of overweight children, the effect was more pronounced for boys than girls. Finally, there was a significant three-way interaction among behaviour type, gender, and age-group,  $F(2, 67) = 5.06, p < .01$ . As can be seen in Table 3.2, the magnitude of the gender difference differed across the age-groups, with the largest difference evident among 7-8 year olds.

### 3.4.3 Academic Ability

The ANOVA on responses to the stories about academic ability revealed a main effect of behaviour type,  $F(1, 67) = 5.62, p < .05$ . Overall, scores

for the character with high academic ability ( $M = 2.01$ ) were significantly greater than scores for the character with low academic ability ( $M = 1.42$ ).

The direction of this effect indicates that children expressed less favourable perceptions of overweight (relative to average-weight) children. Compared to chance, positive academic abilities were less likely to be associated with overweight characters ( $t(72) = 4.36, p < .001$ ).

This main effect was qualified by the interaction between behaviour type and age-group,  $F(2, 67) = 5.21, p < .01$  (see Table 3.3). Among 5-6 year olds, there was a significant difference between scores on the indices of good ( $M = 2.25$ ) and bad ( $M = 1.37$ ) academic ability,  $t(26) = 2.84, p < .01$ . Compared to chance, 5-6 year olds were less likely to associate overweight children with high academic abilities ( $t(26) = 5.16, p < .001$ ). Among 7-8 year olds, there was a significant difference between scores on the indices of good ( $M = 2.35$ ) and bad ( $M = 1.23$ ) academic ability,  $t(25) = 3.78, p < .01$ . Compared to chance, 7-8 year olds were less likely to associate overweight children with high academic abilities ( $t(25) = 4.84, p < .001$ ). Among 9-10 year olds, weight was not differentially associated with high versus low academic ability.

Table 3.3

Scores for good and bad academic ability as a function of age-group

	5-6 years	7-8 years	9-10 years
Good	2.25 (.76)	2.35 (.89)	1.25 (1.07)
Bad	1.37 (1.11)	1.23 (1.07)	1.75 (.97)

#### 3.4.4 Artistic Ability

The ANOVA on responses to the stories about artistic ability revealed a main effect of behaviour type,  $F(1, 67) = 4.06, p < .05$ . Overall, scores for the character with high artistic ability ( $M = 1.86$ ) were significantly greater than scores for the character with low artistic ability ( $M = 1.40$ ). The direction of this effect indicates that children expressed less favourable perceptions of overweight (relative to average-weight) children.

Compared to chance, positive artistic abilities were less likely to be associated with overweight characters ( $t(72) = 3.18, p < .01$ ).

This main effect was qualified by the interaction between behaviour type and age-group,  $F(2, 67) = 6.14, p < .01$  (see Table 3.4). Among 5-6 year olds, there was a significant difference between scores on the indices of good ( $M = 1.93$ ) and bad ( $M = 1.33$ ) artistic ability,  $t(26) = 2.41, p < .05$ .

Compared to chance, 5-6 year olds were less likely to associate overweight children with high artistic ability ( $t(26) = 2.41, p < .05$ ).

Among 7-8 year olds, there was a significant difference between scores on the indices of good ( $M = 2.19$ ) and bad ( $M = 1.11$ ) artistic ability,  $t(25) = 3.78, p < .01$ . Compared to chance, 7-8 year olds were less likely to associate overweight children with high artistic ability ( $t(25) = 4.16, p < .001$ ) and more likely to associate overweight children with low artistic ability ( $t(25) = 2.27, p < .05$ ). Among 9-10 year olds, weight was not differentially associated with high versus low artistic ability.

Table 3.4

Scores for good and bad artistic ability as a function of age-group

	5-6 years	7-8 years	9-10 years
Good	1.93 (.92)	2.19 (.84)	1.35 (1.04)
Bad	1.33 (1.00)	1.12 (.86)	1.85 (.93)

### 3.4.5 Social Ability

The ANOVA on responses to the stories about social ability revealed a significant interaction between behaviour type and age-group,  $F(2, 67) = 19.32$ ,  $p < .001$ , (see Table 3.5). Among 5-6 year olds, there was a significant difference between scores on the indices of good ( $M = 2.07$ ) and bad ( $M = 1.22$ ) social ability,  $t(26) = 3.51$ ,  $p < .01$ . Compared to chance, 5-6 year olds were less likely to associate overweight children with high social ability ( $t(26) = 3.60$ ,  $p < .001$ ). Among 7-8 year olds, there was also a significant difference between scores on the indices of good ( $M = 1.88$ ) and bad ( $M = 1.31$ ) social ability,  $t(25) = 2.38$ ,  $p < .05$ . Compared to chance, 7-8 year olds were less likely to associate overweight children with high social ability ( $t(25) = 1.88$ ,  $p = .05$ ). Among 9-10 year olds, there was a significant difference between scores on the indices of good ( $M = .85$ ) and bad ( $M = 2.30$ ) social ability,  $t(19) = 3.96$ ,  $p < .01$ . The direction of this effect suggests that 9-10 year olds were positively biased toward overweight children. Compared to chance, 9-10 year olds were more likely to associate overweight children with high social ability ( $t(19) = 2.94$ ,  $p < .01$ ) and less likely to associate overweight children with low social ability ( $t(19) = 4.88$ ,  $p < .001$ ).

Table 3.5

Scores for good and bad social ability as a function of age-group

	5-6 years	7-8 years	9-10 years
Good	2.07 (.82)	1.88 (.95)	0.85 (.98)
Bad	1.22 (.94)	1.31 (.88)	2.30 (.73)

### 3.4.6 Summary of findings

*Athletic ability.* Overall, overweight characters were less likely to be associated with high athletic ability than average-weight characters. These negative perceptions were moderated by both participant age and participant gender, such that older participants were more likely to attribute low athletic ability to overweight characters.

*Academic ability.* Overall, overweight characters were less associated with possessing high academic ability. This effect was found among 5-8 year olds but not 9-10 year olds.

*Artistic ability.* Overall, overweight figures were less likely to be chosen to represent characters with good artistic ability. Children aged 5-8 were less likely to assume that an overweight child was good at activities like drawing, piano playing, and playing the lead role in a school play. Among 9-10 year olds there was no association between weight and artistic ability.

*Social ability.* Children aged 5-8 were significantly less likely to associate high social ability with overweight children. However, 9-10 year

olds were significantly more likely to associate high social abilities with overweight children and low social abilities with average-weight children.

### 3.5 Discussion

The aim of the present study was to assess the content, favourability, and generality of anti-fat stereotypes among children. Building upon previous research that has demonstrated anti-fat stereotypes (e.g., Cramer & Steinwert, 1998; Crandall, 1995), the results of the current study indicate that children hold negative stereotypes of overweight children. The results of the present study extend previous research and are important in a number of ways. First, the methodology used was designed to elicit children's underlying preferences without adopting a binary-choice paradigm. In this study, as participants were given a variety of characters from which to select, it seems less likely that children displayed biases because of a binary-choice paradigm. Secondly, this research also shows how biases vary across four separate ability domains. This finding is of interest because previous research has evaluated children's perceptions of overweight children on a narrow range of attributes (Kraig & Keel, 2001). The current research utilised multiple measures of four ability domains that Harter (1982) associated with children's global self-esteem. This provides a clearer picture of children's stereotypes about overweight children. Thirdly, these results demonstrate that children's anti-fat biases vary with age and that these changes are more complex than a simple increase or decrease in prejudice, providing a more comprehensive understanding of the nature of children's anti-fat stereotypes. Previous research has mostly investigated small age-groups



and has not demonstrated how stereotypes toward overweight children changes with age.

The age effects found in the current research are consistent with cognitive-developmental theory. As noted earlier in the chapter, Aboud (1988, 2003) suggested that children's prejudice alters with their cognitive development, such that enhanced reasoning skills and the ability to appreciate others' perspectives are associated with a reduction in outgroup derogation. In the present study, children between five and eight years of age ascribed fewer positive characteristics to overweight (compared to average-weight) children across all domains. Children in this age range were more likely to assume that overweight children are less athletic, academic, artistic, and social.

By age nine, children in the present study generally demonstrated fewer anti-fat biases. This result could emerge because older children possess more developed reasoning skills, which might lead them to become more aware of how they are being perceived by others and, understanding that discrimination is wrong, are less likely to be overtly prejudiced.

Alternatively, it is possible that older children have a better understanding of the capabilities of overweight and average-weight children and as such are unlikely to consider average-weight characters better at weight irrelevant skills such as spelling and drawing. Given that the 9-10 year old children were as likely to attribute good academic and artistic ability to overweight children as average-weight children, but more likely to attribute good athletic ability to average-weight children, we can begin to

distinguish between the two explanations. In reality, average-weight children tend to be more active than overweight children (Marshall et al., 2004). This suggests that older children are being influenced by their experience. This is consistent with Ryan (2002) who argued that some stereotypes reflect a kernel of truth. This finding is of particular interest as it, to my knowledge, is the first time that stereotype accuracy has been shown in a sample of children.

Interestingly, the 9-10 year olds were more likely to attribute greater social ability to overweight children than average-weight children; this might be a result of overcompensation in order to appear more positive and less prejudiced. However, it may also be the case that children's responses on this ability domain are simply reflecting reality. It could well be the case that overweight children make more of an effort to share and be inclusive of everyone in an effort to avoid being bullied or ostracized.

In summary, this research demonstrates that children under the age of nine hold negative stereotypes about overweight children. These stereotypes extend across a number of domains. Taken together with the findings described in the previous chapter, there is compelling evidence that children demonstrate prejudice against overweight children. In the next chapter I will explore whether the prejudice experienced by overweight children can have an effect on individuals in the proximity of overweight children.

## CHAPTER FOUR

### 4. The “mere proximity” effect

#### 4.1 Overview

The previous empirical chapters have concentrated on the prevalence of obesity stigma among children and outlining the nature of stereotypes held by children about overweight children. Taken together, they suggest that perceptions of obese children are negative. The current chapter changes focus and explores a possible implication of obesity stigma. Specifically, the aim of this chapter is to determine whether obesity stigma has an effect of individuals who are merely in the proximity of overweight children. That is, does the mere presence of an overweight child lead to a negative evaluation of an average-weight target?

#### 4.2 Introduction

Research has shown that when an initially non-stigmatised person has a relationship with a stigmatised individual, they too become the victim of stigmatisation. In one demonstration of this mere proximity effect, Neuberg, Smith, Hoffman, and Russell (1994) presented pictures of two males together, some participants were told that one of the males were heterosexual and some were told that the same male was gay. Participants were then asked to evaluate the other male in the photograph. Results showed that the target was consistently derogated when observed with a gay friend. That is, being in the proximity of a stigmatised individual resulted in the derogation of the previously non-stigmatised individual.

This effect has also been found with obesity stigma. Gallagher, Tait, McCologan, Dovey, and Halford (2003) asked university students to evaluate a male in wearing a tuxedo in a photograph. The male was either presented with an average-weight or overweight prom date. The results indicated that students rated an average-weight male with an overweight female prom date more negatively than the same male with an average-weight female date.

Using a similar paradigm, Hebl and Mannix (2003) asked participants to rate job applicants who were photographed next to either an average-weight female or an overweight female. Not only did they find that average-weight applicants were stigmatised when presented with an overweight background character, they also found that an average-weight male job applicant who sat next to an overweight female stranger was stigmatised as much as an applicant who was perceived as sitting next to his overweight girlfriend. This suggests that no direct relationship is necessary for stigmatisation to occur.

#### 4.3 Gender, children, and the mere proximity effect

Previous research has yet to investigate the influence of age and gender on the mere proximity effect. Both Gallagher et al. (2003) and Hebl and Mannix (2003) had adult participants rate a male target accompanied by a female partner/background character. However, as described in the introduction to this thesis, research suggests that gender has an influence on how individuals are themselves perceived and how they perceive others (Furnham & Radley, 1989). Cossrow, Jeffery, and McGuire (2001)

found that women reported experiencing weight stigmatisation more often than men, suggesting that anti-fat attitudes are more likely to be directed at overweight females than males. As such, it is likely that the results of the Gallagher et al. (2003) and Hebl and Mannix (2003) studies would have been different had both the target and background character (i.e., the character in the proximity to the target) been of the same gender, or had the targets been female. Specifically, it is possible that the presence of an overweight female partner/stranger exaggerated the effect, because the increased importance of thinness for females leads overweight females to be stigmatised more than overweight males (e.g., Ananth, 1982; Crandall, 1995). Consistent with this proposal, in a study of 12-19 year olds, Toro, Castro, Garcia, Perez, and Cuesta (1989) found that females are exposed to a “culture of slenderness,” which causes a greater emphasis to be placed on female thinness. In other research, Phillips and Hill (1998) found that overweight girls were significantly less likely than average-weight girls to be nominated as pretty by their peers, whereas Adams et al. (2000) found that 4<sup>th</sup> and 7<sup>th</sup> grade males reported being less concerned about weight and perceived less concern from family and peers regarding weight. This research suggests that people are more likely to notice and be concerned about girls’ weight rather than boys.

Further, given that that the mere proximity anti-fat prejudice effect has not been investigated in children, establishing this effect could have serious ramifications, as a potentially non-prejudiced child may be discouraged from playing with an obese child because of a potential association with

stigmatisation. As described in the introduction to this thesis, the school environment can be challenging for overweight children and this can only be exacerbated if average-weight children refuse to engage with overweight children for fear of being derogated themselves. This will cause already isolated children to become even more disconnected from their peers. Therefore, determining whether the mere proximity effect for obesity occurs in children is necessary to help foster a child's social development.

Two studies using children aged three to eleven were conducted to test whether an anti-fat mere proximity effect be found among children. As an extension of previous research, the studies in this chapter also assessed whether evaluations of an overweight target are affected by the size of the background characters. Previous research has only considered whether non-stigmatised target became stigmatised in the proximity of a stigmatised background character. However, there is no research that considers how the presence of a non-stigmatised individual affects evaluations of the stigmatised character.

Given the high emphasis placed on female thinness and greater stigmatisation of overweight females, it was predicted that anti-fat prejudice would be particularly salient for female targets. Further, it was hypothesized that average-weight female targets would be liked less when presented with overweight background female characters compared to average-weight background characters, and that overweight female targets would be liked less when presented with average-weight

background characters. This mere proximity effect was not expected to be as salient when male targets were presented with overweight versus average-weight background characters.

## 4.4 Study Three

### *4.4.1 Method*

#### *4.4.1.1 Participants*

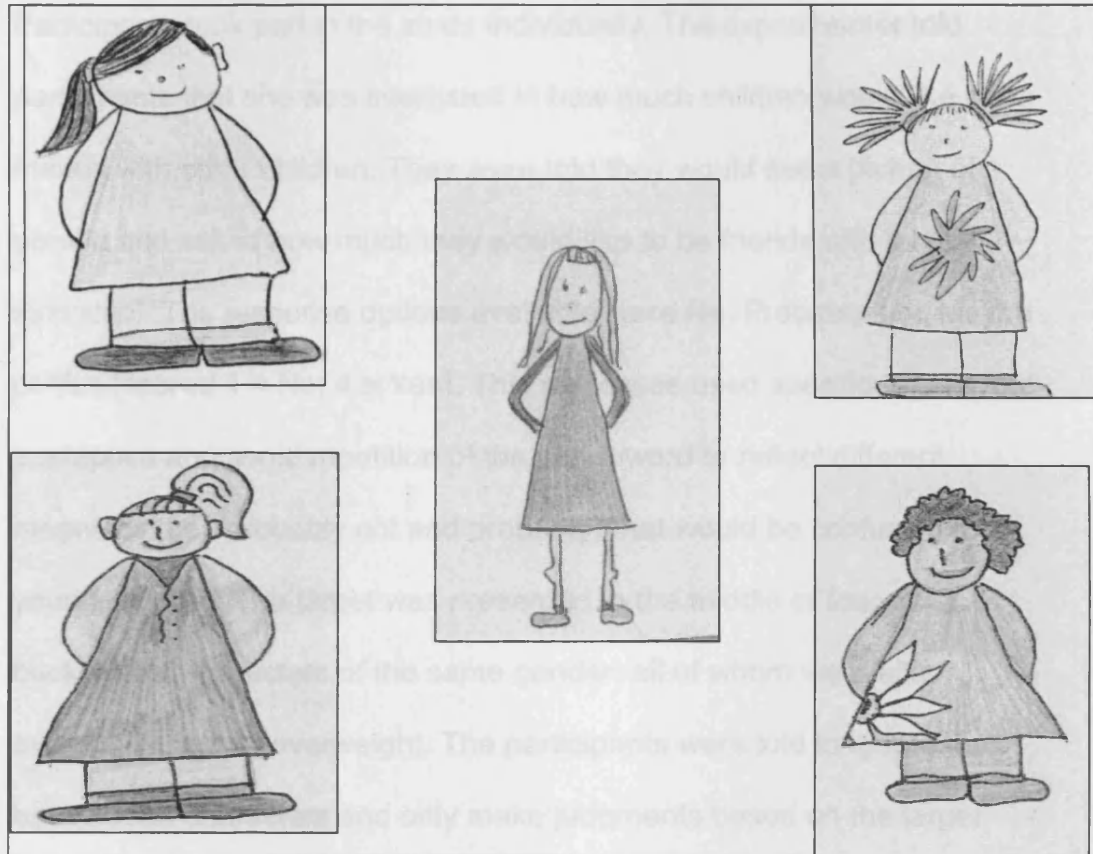
Eighty-nine children from three junior schools in South Wales took part in this study. Participants were 47 females and 42 males, aged between 5 and 10 years. Letters were sent to the parents/guardians of all children aged 5-10. Participation was limited to those children whose parents returned the consent form to the school.

#### *4.4.1.2 Materials*

As in the previous, study 24 pairs of images were used in this study. Each image was a colored cartoon drawing of a child. Each individual image was placed on a separate card that was 10 cm by 15 cm, and each character was either male or female. For each character there was an average-weight version and an overweight version, both were identical in every other way except for their weight. A target character was presented with four background characters (see figure 4.1).

Figure 4.1

Female target character with four background characters.



#### 4.4.1.3 Design

The between-participant variables in the study were participant gender and age-group (5-6; 7-8; 9-10); the within-participant factors were gender of the target and background character (both male or female), target size, and the size of the background characters. The different combinations of gender, target size, and background size were presented in a random order across participants to avoid possible order effects.



#### 4.4.1.4 Procedure

Participants took part in the study individually. The experimenter told participants that she was interested in how much children would like to be friends with other children. They were told they would see a picture of a person and asked how much they would like to be friends with this individual. The response options available were No, Probably Not, Maybe or Yes (scored 1 = No; 4 = Yes). This scale was used specifically to avoid a midpoint and avoid repetition of the same word to reflect different meanings (i.e., probably not and probably) that would be confusing for young children. The target was presented in the middle of four other background characters of the same gender, all of whom were either average-weight or overweight. The participants were told to ignore the background characters and only make judgments based on the target character in the middle.

#### 4.4.2 Results

The data were analyzed using a 2 (participant gender) x 3 (age-group) x 2 (target gender) x 2 (target size) x 2 (background size) ANOVA, with the last three variables being manipulated within-participant. There were three significant main effects. First, average-weight targets ( $M = 2.69$ ) were liked more than overweight targets ( $M = 2.42$ ),  $F(1, 83) = 9.88$ ,  $p < .005$ . Secondly, female participants ( $M = 2.76$ ) gave higher ratings than male participants ( $M = 2.26$ ),  $F(1, 83) = 20.88$ ,  $p < .001$ . Finally, there was a main effect of age,  $F(2, 83) = 7.39$ ,  $p < .002$ . Ratings became

more positive from the younger to older age-groups ( $M_{5-6} = 2.28$ ;  $M_{7-8} = 2.55$ ;  $M_{9-10} = 2.77$ ).

There were also a number of significant two-way interactions. First, there were interactions between target size and age-group,  $F(2, 83) = 4.67$ ,  $p < .05$ , and target gender and participant gender,  $F(1, 83) = 59.15$ ,  $p < .0001$ . These interactions indicated that: (a) average-weight targets were preferred to overweight targets among the 5-6 and 7-8 year olds and (b) participants preferred targets of their own gender. Two other two-way interactions of particular interest were also significant. First, there was an interaction between target size and background character size,  $F(1, 83) = 3.63$ ,  $p = .06$ . This interaction revealed that overweight targets were preferred when presented with overweight background characters ( $M = 2.51$ ) than with average-weight background characters ( $M = 2.20$ ),  $t(88) = 3.10$ ,  $p < .01$ , while there was no significant difference for average-weight targets ( $M = 2.72$  on average-weight background;  $M = 2.65$  on overweight background). Secondly, there was a significant interaction between target size and target gender,  $F(1, 83) = 6.18$ ,  $p < .05$ .

Overweight female targets ( $M = 2.23$ ) were rated less favorably than average-weight female targets ( $M = 2.75$ ),  $t(88) = 4.58$ ,  $p < .001$ . There was no difference between ratings for overweight male targets ( $M = 2.49$ ) and average-weight male targets ( $M = 2.64$ ).

These two-way interactions were qualified by the expected interaction among target size, background size, and target gender,  $F(1, 83) = 12.58$ ,  $p < .01$ . Given the a priori hypotheses, this interaction is dissected as a

function of target gender. For female targets, the pattern of findings is consistent with predictions and the mere proximity effect. Specifically, as can be seen in Table 4.1, average-weight female targets were liked more when presented with average-weight background characters ( $M = 2.94$ ) than with overweight background characters ( $M = 2.55$ ),  $t(88) = 17.95$ ,  $p < .001$ . Conversely, the overweight female target was liked more with overweight background characters ( $M = 2.49$ ) than with average-weight background characters ( $M = 1.97$ ),  $t(88) = 3.92$ ,  $p < .001$ . No significant effects were found when the target was male.

Table 4.1

Ratings of female target as a function of target size and background size

	Target Size	
	Average-weight	Overweight
Background Size		
Average-weight	2.94	1.97
Overweight	2.55	2.49

#### 4.4.3 Discussion

It was predicted that children would display anti-fat prejudice, that the mere proximity effect would occur among children, and that this would occur particularly when female targets were being evaluated. Overall, results were congruent with these hypotheses. There was a main effect of target size, with participants evaluating overweight targets more

negatively than average-weight targets. Furthermore, when female targets were being evaluated average-weight targets were derogated when presented with overweight background characters. Interestingly, overweight characters were derogated when presented with average-weight background characters. These results extend previous research by establishing that the mere proximity effect occurs among children, and is more prominent when female targets are being evaluated. Moreover, the results demonstrate that being evaluated in the proximity of an average-weight character can lead to derogation of overweight characters. In light of these findings the aim of study two is to determine whether the gender of the background character influences participant evaluations. If the mere proximity effect is more prevalent when female targets are being evaluated, it may be more prevalent if female background characters are used.

## 4.5 Study Four

### 4.5.1 Method

#### 4.5.1.1 Participants

52 school children<sup>2</sup> were divided into two age-groups, there were 24 participants aged three to eight in the young group ( $M = 5.6$  years), and there were 28 participants aged nine to eleven in the older group ( $M = 10.1$  years). Half of the participants were male and half were female in

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<sup>2</sup> Due to the lower numbers of participation in this study the age-range of age-groups were altered. Instead of three age-groups, two were used in this investigation. Cognitive developmental theory proposes a shift in perceptions of children after age nine, as such it seemed appropriate to group participants according to their developmental perceptions of outgroups.

each group. Participation was based upon positive responses from parents who had received a letter from the school.

#### *4.5.1.2 Materials*

The materials were the same as those used in the previous study.

#### *4.5.1.3 Design*

The design is similar to the previous study, with the additional variable background character gender being manipulated. Participants additionally rated average-weight and overweight female targets on average-weight and overweight male backgrounds, and rated average-weight and overweight male targets on average-weight and overweight female backgrounds.

#### *4.5.2 Results*

The data were analyzed using a 2 (participant gender) x 2 (age-group) x 2 (target gender) x 2 (target size) x 2 (background size) x 2 (background size) ANOVA, with the last four variables being manipulated within-participant.

There were two significant main effects. First, there was a significant main effect of target size, with overweight targets ( $M = 2.91$ ) being liked less than average-weight targets ( $M = 3.24$ ),  $F(1, 48) = 17.84$ ,  $p < .001$ . Secondly, there was a significant main effect of age-group, young participants more negative in their evaluations ( $M = 2.90$ ) than older participants ( $M = 3.23$ ),  $F(1, 48) = 22.09$ ,  $p < .05$ .

There were also several significant two-way interactions. First, there was a significant interaction between target gender and participant gender,  $F(1, 48) = 65.95, p < .001$ . Female participants liked female targets ( $M = 3.51$ ) more than male targets ( $M = 2.69$ ),  $t(25) = 6.52, p < .001$ , whereas male participants liked male targets ( $M = 3.41$ ) more than female targets ( $M = 2.69$ ),  $t(25) = 4.67, p < .001$ . Secondly, there was a significant interaction between background gender and participant gender,  $F(1, 48) = 12.21, p < .05$ . Male participants significantly preferred targets presented on a female background ( $M = 3.18$ ) than targets presented on a male background ( $M = 2.91$ ),  $t(25) = 3.38, p < .005$ . No effect was found when female participants were making similar evaluations,  $t < 1$ . Thirdly, there was a significant interaction between target size and target gender,  $F(1, 48) = 7.33, p < .01$ . Overweight female targets ( $M = 2.87$ ) were liked significantly less than average-weight female targets ( $M = 3.33$ ),  $t(51) = 5.09, p < .001$ , whereas overweight male targets ( $M = 2.97$ ) were not liked less than average-weight male targets ( $M = 3.14$ ),  $t < 1$ . The final significant two-way interaction was between target gender and background gender,  $F(1, 48) = 7.12, p < .05$ . Male targets were liked more on a female background ( $M = 3.13$ ) than on a male background ( $M = 2.94$ ),  $t(51) = 2.64, p < .05$ . No effects were found for female targets.

There were also two significant three-way interactions. First, there was an interaction among background size, background gender and participant gender,  $F(1, 48) = 5.60, p < .05$ . When male participants were making evaluations, targets presented on an average-weight male background

( $M = 2.78$ ) were liked significantly less than targets presented on an overweight male background ( $M = 3.05$ ;  $t(25) = 2.50$ ,  $p < .05$ ) and targets presented on an average-weight, female background ( $M = 3.19$ ;  $t(25) = 4.36$ ,  $p < .001$ ). No such effects were found when female participants made evaluations.

Secondly, there was a significant interaction among target gender, participant gender and participant age-group,  $F(1, 48) = 4.14$ ,  $p < .05$ . Older female participants made marginally more positive evaluations about male targets ( $M = 2.93$ ) than younger female participants ( $M = 2.41$ ),  $t(24) = 1.76$ ,  $p = .09$ . No other similar effects were found.

Additionally there was a significant four-way interaction among target gender, target size, background size, and participant gender,  $F(1, 48) = 10.84$ ,  $p < .002$ . When female participants were evaluating female targets, overweight targets were liked significantly more on an overweight background ( $M = 3.44$ ) than on an average-weight background ( $M = 3.11$ ),  $t(25) = 2.63$ ,  $p < .05$ . However, average-weight targets were liked marginally more when presented on an average-weight background ( $M = 3.88$ ) than when presented on an overweight background ( $M = 3.61$ ),  $t(25) = 1.54$ ,  $p = .07$ . No such effects were found when female participants were evaluating male targets or when male participants were evaluating female targets. Additionally, male participants evaluating male targets liked overweight characters significantly more when presented on an overweight background ( $M = 3.56$ ) as opposed to an average-weight

background ( $M = 2.96$ ),  $t(25) = 2.24$ ,  $p < .05$ . This was not the case when average-weight targets were being evaluated,  $t < 1$ .

Finally, there was a marginal interaction between target size, background size, target gender and background gender,  $F(1, 48) = 3.03$ ,  $p = .08$ .

When participants evaluated female targets on female backgrounds, overweight targets were liked significantly more on overweight backgrounds ( $M = 2.96$ ) than average-weight backgrounds ( $M = 2.67$ ),  $t(51) = 2.03$ ,  $p < .05$ . However, average-weight characters were liked marginally more on average-weight backgrounds ( $M = 3.41$ ) than overweight backgrounds ( $M = 3.23$ ),  $t(51) = 1.33$ ,  $p = .09$ . Moreover, when male targets were evaluated on male backgrounds, participants were marginally more positive about overweight targets presented on overweight backgrounds ( $M = 3.01$ ) than average-weight backgrounds ( $M = 2.75$ ),  $t(51) = 1.37$ ,  $p = .09$ . No effects were found for thin targets. Furthermore, no significant effects were found when participants evaluated female targets on male backgrounds or male targets on female backgrounds.

#### *4.5.3 Discussion*

The primary aim of this study was to determine how manipulating the gender of the background characters would affect the presentation of the mere proximity effect. Overall, results were congruent with those of study one. There was a main effect of target size, demonstrating that overweight targets were evaluated more negatively than average-weight target characters. Again, overweight female targets were liked less than



average-weight female targets, whilst the equivalent was not the case for male targets. Furthermore, when both the target and background characters were female the effects found in the first study in this chapter were replicated. Average-weight targets were derogated on an overweight background and overweight targets were derogated on an average-weight background.

Unlike in the first study of this chapter, an effect was also found when male targets were being evaluated. Overweight male targets were liked more on an overweight background than on an average-weight background. However, no effects were found when female targets were evaluated on a male background and male targets were evaluated on a female background. This is different to the findings of Gallagher et al. (2003) who found that males were derogated when presented with overweight prom dates. This is possibly due to the different contexts in which the stimuli were presented and the perceived romantic association between the characters.

#### 4.6 General Discussion

The studies presented in the previous chapters suggest that anti-fat prejudice is demonstrated by young children. The aim of the current set of studies was to investigate one possible manifestation of this prejudice, the mere proximity effect. It was predicted that overweight targets would be less desirable as friends than average-weight targets and that this anti-fat prejudice would be most prominent for evaluations of female targets. Also, due to the greater stigmatisation of overweight females, it

was hypothesized that average-weight female targets would be liked less when they were presented with overweight background characters, while overweight female targets would be liked less when presented with average-weight background characters. These mere proximity effects were not expected when male targets were presented.

Overall, the results were congruent with predictions. First, consistent with previous obesity research (Crandall et al., 2001), both studies found anti-fat prejudice, with children preferring average-weight to overweight targets. Secondly, both studies demonstrated that overweight female targets were liked less than average-weight female targets, with no effect of target size for male targets. This is likely due to a higher emphasis being placed on female thinness as described in the introduction to this thesis. Thirdly, in both studies target size and background size interacted to influence liking judgments of a female target, with an average-weight female target evaluated more negatively on an overweight background and an overweight female target evaluated more negatively on an average-weight background. Finally, when the gender of the background characters was manipulated the mere proximity effect only occurred when female targets were presented on a female background. However, when male targets were being evaluated on male backgrounds, overweight characters were preferred on overweight backgrounds.

There were other findings of interest. First, participants consistently preferred to make friends with children of their own gender. Secondly, older children made more positive evaluations than younger children.

Both of these findings are consistent with previous research on children's biases. Aboud (1988) argued that preference for one's own gender and rejection of the opposite gender is more consistently demonstrated than other biases. Further, this is consistent with cognitive-development theory discussed in Chapter Three of this thesis. Children above the age of eight demonstrate a reduction in explicit biases.

When considering this chapter's findings in the context of previous research on the mere proximity effect (Gallagher et al., 2003; Hebl & Mannix, 2003), these studies make several key contributions to the literature. First, they establish that the mere proximity effect occurs in children as young as five years old. This is an interesting and alarming finding, that this manifestation of prejudice can be apparent in such young children. In particular, these results suggest that children are less likely to make friends with obese children *and* those around them. Given that research suggests that integration is a good method of reducing stigma, the segregation that is revealed by the current findings is very problematic (Schulze, Richter-Werling, Matschinger, & Angermeyer, 2003).

Secondly, these studies extend previous findings by indicating when the mere proximity effect is especially likely to occur. Specifically, the effect in these studies was apparent when evaluations were made about female targets, on female backgrounds. This finding is congruent with research on gender differences in weight perception, which has found that women are more aware of both their own weight and the weight of those around

them (Grover, Keel, & Mitchell, 2003; Harris & Smith, 1982; Pine, 2001). This study has implications for both the Gallagher et al. (2003) and Hebl and Mannix (2003) studies, in which male targets were rated with female background characters. The present findings suggest that the effect in their investigations might be in part attributable to the use of a female background character. In those past studies, male targets may not have been derogated had they been presented with an overweight male background character.

Thirdly, these studies also extend previous findings by investigating the influence of target size on the mere proximity effect. Gallagher et al. (2003) and Hebl and Mannix (2003) demonstrated that non-stigmatised individuals are derogated when in the proximity of, or in a relationship with, a stigmatised individual. The present study demonstrated that overweight targets are evaluated less favorably in the presence of average-weight background characters. Whilst one might expect that a group of liked individuals would reduce the amount of prejudice experienced by the stigmatised target, that does not appear to occur for a particularly strong stigma such as obesity. This could account for the low evaluations of the overweight target when in the presence of average-weight background characters. It is also possible that the overweight target is more salient on average-weight background characters, thus increasing participants' anti-fat prejudices. This could also explain why an overweight female target on an overweight background was evaluated more favorably. Their weight was likely to have been a less salient factor, and may have even been ignored when participants were making

evaluations. This finding is important because it suggests that the group is not just the sum of its parts, but rather only liked as much as the least liked person in view. Future research could examine this in greater detail by measuring perceptions of the entire group as well as the target character.

The findings of both Hebl and Mannix (2003) and the present investigations demonstrate that a relationship between the stigmatised and non-stigmatised individual is not necessary for derogation to occur. In the present investigation, participants were told to ignore the background characters and only make judgments based on the target character. Future research might assess the impact of manipulating the nature of the relationship between the target and background characters. Such a manipulation could help determine the processes underlying the observed effects. Future research should also determine participants' awareness of the mere proximity effect. I suspect that participants are unaware of this influence. Furthermore, future research should determine how this effect is related to implicit and explicit anti-fat attitudes. The mere proximity paradigm could serve as an alternative measure of implicit evaluations.

In summary, the results of these studies demonstrate how pervasive anti-fat attitudes in childhood can be. Anti-fat stigma is so strong that it can influence how average-weight children in the proximity of overweight children are perceived. Taken together the research from the previous experimental chapters has demonstrated that anti-fat attitudes are

prevalent among children. This provides justification for the next and final experimental chapter, which evaluates an intervention aimed at reducing anti-fat attitudes among children.

## CHAPTER FIVE

### 5 Attitude change

#### 5.1 Overview

The research in the previous three chapters demonstrated that children are less likely to choose an overweight child as their friend compared with an average-weight white child or a black child, that children hold negative stereotypes about overweight children across a range of ability domains, and that children who are viewed in the proximity of overweight children are derogated even if they themselves are not overweight. Taken together, this research demonstrates that children hold anti-fat attitudes and that these attitudes are pervasive and present in children a very early age. The research presented in this chapter had two primary aims. The first aim was to attempt to reduce anti-fat prejudice using an intervention that has been used to reduce bias in children. The second aim of this chapter was to introduce an implicit measure of children's anti-fat attitudes.

#### 5.2 Introduction

##### *5.2.1 Attitude change among children*

In the introduction of this thesis I reviewed the literature on changing anti-fat attitudes. On the whole, these interventions have been unsuccessful in reducing the prevalence of anti-fat attitudes. In this chapter, I attempted to adapt a successful intervention aimed at improving attitudes toward

another stigmatised group (refugees) in order to reduce children's anti-fat attitudes.

The intervention used in the present research was similar to that employed by Cameron, Rutland, Brown, and Douch (2006), and is based upon the extended contact hypothesis (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). This hypothesis proposes that an individual's bias toward a stigmatised outgroup may be reduced if that individual learns of examples of members of their ingroup being friends with members of that outgroup. This normalises the idea of being friends with the outgroup member without any of the potential anxiety that direct contact can elicit.

In the study by Cameron et al. (2006), English children aged between five and eleven years heard a story about a refugee who was best friends with an English child. Participants were then asked to assign positive and negative adjectives (such as nice and mean) to refugees. Additionally, participants' intended behaviour toward a refugee child was measured by asking the child to imagine how they might act upon meeting a child they knew from school, who was either a refugee or English. The results revealed that participants who heard the story ascribed more positive adjectives to refugees than participants who did not hear the story. Conversely, there was less change in intended behaviour than in attitudes, implying that achieving behaviour change is more difficult than achieving attitude change.



When looking at the stories used by Cameron et al. (2006), it is apparent that in addition to asserting the friendship between the refugee and an English child, the refugee was additionally portrayed in a very positive manner, he was described as a great singer and dancer, as being very cool, popular and hard-working. Whilst the researchers do not comment on this positive portrayal, it is quite likely that this positive description was a major reason for the attitude change found in their investigation. In addition to normalising the idea of being friends with an outgroup member, the participants were also given a positive exemplar of a refugee child that may have altered the stereotypes they held about the outgroup. Not only did participants have extended contact, the exemplar was being described positively, as such it is difficult to determine the mechanism underlying the attitude change.

Further, Cameron et al. (2006) did not include a measure of participants' implicit attitudes toward the outgroup. It would be interesting to see whether the intervention is strong enough to alter participants' implicit attitudes as well as their explicit attitudes because previous research (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997) has demonstrated a dissociation between implicit and explicit measures of attitudes on racial prejudice (see also Fazio & Olson, 2003). As such, it is possible that whilst the intervention was able to change a negative attitude toward the outgroup on a direct measure, it may not have been sufficient to elicit an effect on an implicit measure of attitudes.

### 5.2.2 *Implicit anti-fat attitudes*

As can be seen in the introduction to this thesis, research has found that adults display anti-fat attitudes when attitudes are measured implicitly as well as explicitly. An implicit prejudice is described by Devine and Monteith (1993) as a bad habit or an over-learned response that is beyond a person's control. The most common method of measuring prejudice implicitly is through the use of Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). In an anti-fat IAT, participants are asked to associate good and bad words with overweight and average-weight pictures. The speed with which participants associate the categories with positive and negative attributes is compared and if a participant is able to associate overweight (average-weight) with bad (good) more quickly than overweight (average-weight) with good (bad), the participant holds an implicit anti-fat bias.

Whilst research has been conducted on implicit anti-fat attitudes amongst adults, research has yet use an IAT to measure children's anti-fat prejudice. Given the prevalence of explicit anti-fat prejudice amongst children (as shown in the previous three experimental chapters), it is worth addressing whether children will also exhibit the same bias when attitudes are measured implicitly.

Given its format, one concern with the original version of the IAT is that it is not appropriate for use with children. As a result, Baron and Banaji (2006) developed an IAT that was appropriate for children to use. This was accomplished by making several alterations to the basic IAT. First,

the child IAT allowed children more time to respond (in an adult IAT, long reaction times would be considered an error). Secondly, the positive and negative attributes were simple words that are frequently used in a child's vocabulary (e.g., nice, mean, yucky), and were spoken aloud to the child through headphones or speakers (rather than written words on a computer screen). Thirdly, brightly coloured buttons were used to record responses rather than keys on a keyboard. Finally, participants were given age appropriate instructions that were read aloud to them.

Baron and Banaji (2006) successfully used this child-friendly IAT in a sample of six and ten year olds. In their investigation, children completed explicit (forced-choice) measures and an implicit (IAT) measure of children's insect-flower attitudes and race attitudes. The results showed that six and ten year olds showed an implicit preference for flowers over insects. Six year olds also demonstrated strong explicit and implicit pro-white/anti-black associations, while ten year olds showed a dissociation between their explicit and implicit attitudes. Specifically, while the older were more positive on the explicit measure, they remained negative on the implicit measure. In the experiment described in this chapter I modified Baron and Banaji's child IAT in order to measure children's attitudes towards overweight and average-weight children.

### *5.2.3 The present study*

The primary aim of the present study was to test whether a story portraying overweight children in a positive way would alter explicit and implicit anti-fat attitudes. The hypothesis was that participants who heard

a positive story about overweight children would demonstrate more positive explicit attitudes toward overweight children compared with the participants who did not hear such a story. Additionally, an implicit measure was included to determine the effectiveness of the intervention. Finally, in order to see if any effects persisted over time, measures were taken again one week later.

### 5.3 Method

#### 5.3.1 *Participants*

Letters were sent to the parents/guardians of children in a school in South Wales. Participation in the investigation was limited to those children whose parents returned the consent form to the school.

At time one, 80 children from a junior school in South Wales took part in this study. Participants were 47 females and 33 males, aged between five and eleven years. Participants were divided into two age-groups, 34 participants were in the group for five to eight year olds ( $M = 6.8$  years), and 46 participants were in the group for nine to eleven year olds ( $M = 9.9$  years).

At time two, 54 participants were interviewed. Of the 26 participants who were not available at time two, 18 were in the infant section of the school, where a stomach bug was caught by most of the children, making it impossible to conduct research. The other participants were either absent from school due to illness or on holiday. No child withdrew their

participation from the study formally after having completed the first session.

### *5.3.2 Materials*

The cartoon drawings from previous studies were used in this study. For each task within this study, participants viewed different characters and individual characters were not used in more than one task.

#### *5.3.2.1 Statements*

Participants were read aloud a series of statements and shown eight female pairs and eight male pairs of characters. The children were asked to point to the cartoon character that is best described by each statement. The statements are shown in Table 5.1.

#### *5.3.2.2 The Friends Task*

Participants were shown a series of drawings, two average-weight males, two overweight males, two average-weight females and two overweight females. Participants were then asked how much they liked each character. Participants could respond by pointing at one of five smiley faces, ranging from one, which was frowning a lot, meaning “not at all” to five which was smiling a lot, meaning “very much”.

Table 5.1

List of statement

Ability Type	Statement
Athletic ability	Who is a very fast runner? Who is a very slow runner? Who is very good at tennis? Who is very bad at tennis? Who is brilliant at football? Who is really bad at football? Who can run for a really long time? Who can't run for long?
Academic ability	Who is good at spelling? Who is bad at spelling? Who is great at maths? Who is bad at maths? Who is really good at writing stories? Who's really bad at writing stories? Who is really good at reading? Who is not very good at reading?
Social ability	Who shares their toys? Who never shares their toys? Who shared their crayons? Who wouldn't share their crayons? Who invited everyone to their party? Who wouldn't invite everyone to their party? Who is nice to everyone? Who isn't very nice to everyone?
Artistic ability	Who isn't very good at playing the piano? Who is really good at playing on the piano? Who is really good at drawing pictures? Who is really bad at drawing? Who is really good at acting? Who is really bad at acting? Who is really good at singing? Who is really bad at singing?

5.3.2.3 Child IAT

The format of the IAT used in this study was the same as that used by Baron and Banaji (2006). Cartoon drawings of average-weight and overweight children were used instead of pictures of flowers and insects. Given that only four pictures for each category are used in this version of the IAT, separate programmes were created to measure responses to

male and female targets. Each child completed both types of IAT. Words were presented through headphones. The positive words used were nice, great, happy, and good. The negative words used were bad, sad, yucky, and naughty.

#### *5.3.2.4 Behaviouroid measure*

Sixteen drawings were presented to participants. Half of the characters were average-weight and half were overweight. Participants were then given the following instruction: "These children are all in the same class. They are all going to the zoo today but only 4 of them can stroke the baby giraffe. You can choose which four can stroke the baby giraffe. Who would you like to choose?" Participants responded by pointing to four characters.

#### *5.3.2.5 Conditions*

##### *5.3.2.5.1 Experimental*

Participants in this condition were read aloud a story about two characters that were overweight. The story was accompanied by one drawing of the overweight children. The story described a day in the life of the children who were portrayed as very helpful, kind, clever and talented. The characters were described helping a series of other characters, being conscientious and well-behaved in school and looking after and sharing with another child (see Appendix A).

#### *5.3.2.5.2 Control*

Participants in this condition heard the same story, however the main characters in the control story were fish. This was considered an appropriate control due the age of the participants and the popularity of cartoons such as “Finding Nemo” amongst this demographic.

#### *5.3.3 Procedure*

Each participant was interviewed individually during the school day. In the first session, participants were read either the control story or the experimental story. After the story was finished, participants completed the dependent measures, this took approximately 30 minutes. In the second session (approximately one week after the initial interview), all dependent measures were completed, this took approximately 20 minutes.

### **5.4 Results**

Given the large number of participants who were unable to be tested at time two, I will first analyse all of the data from time one (in order to include those participants) and then in separate analyses address the time two data. For ease of presentation, data will be presented according to each task.

#### *5.4.1 Time One*

The stories were compared to assess the degree to which they were liked. The data were analysed using a univariate ANOVA with liking scores entered as a dependent measure and participant condition,



gender and age-group entered as fixed-factors. Results demonstrated that female participants ( $M = 4.21$ ) liked the story marginally more than male participants ( $M = 3.91$ ),  $F(1, 72) = 3.74$ ,  $p = .06$ . Furthermore, younger participants liked the story ( $M = 4.47$ ) significantly more than older participants ( $M = 3.80$ ),  $F(1, 72) = 20.34$ ,  $p < .001$ . However participants in both conditions liked the stories equally,  $F(1, 72) = .07$ , ns.

#### 5.4.1.1 *The Friends Task*

The data were analysed using a 2 (target gender: male, female) x 2 (target size: overweight, average-weight) x 2 (condition: control, experimental) x 2 (participant gender: male, female) x 2 (age-group: young, old) mixed-model ANOVA, with the last three variables manipulated between participants. The ANOVA revealed a significant main effect of target size, with overweight targets ( $M = 3.32$ ) being liked less than average-weight targets ( $M = 3.48$ ),  $F(1, 72) = 7.40$ ,  $p < .001$ .

There was a significant two-way interaction between target gender and participant gender,  $F(1, 72) = 49.32$ ,  $p < .001$ . Male targets were liked more by male participants ( $M = 3.57$ ) than female participants ( $M = 3.00$ ),  $t(72) = 3.36$ ,  $p < .005$ , whilst female targets were liked more by female participants ( $M = 3.87$ ) more than male participants ( $M = 3.12$ ),  $t(78) = 4.76$ ,  $p < .001$ .

Further, there was a significant three-way interaction among target size, condition and participant age-group,  $F(1, 72) = 4.20$ ,  $p < .05$ . This interaction was broken down according to age. The younger participants

in the control condition liked overweight characters ( $M = 3.13$ ) significantly less than average-weight characters ( $M = 3.77$ ),  $t(15) = 3.24$ ,  $p < .01$ . However, participants in the experimental condition of the same age-group demonstrated no bias,  $t < 1$ , implying that the manipulation had the desired effect. There were no effects found in the older age-group.

This interaction was qualified by the interaction among target size, condition, age-group, and participant gender,  $F(1, 72) = 10.66$ ,  $p < .005$ . As can be seen in Table 5.2, when young female participants were making evaluations, those in the control group liked overweight targets ( $M = 3.23$ ) significantly less than average-weight targets ( $M = 3.73$ ),  $t(9) = 2.86$ ,  $p < .05$ , whilst no bias was shown in the experimental condition,  $t < 1$ . When older female targets were making evaluations, those in the control condition showed no biases,  $t < 1$ ; whilst those in the experimental condition preferred overweight targets ( $M = 3.67$ ) to average-weight targets ( $M = 3.34$ ),  $t(15) = 2.97$ ,  $p < .05$ . Both of these effects imply that the manipulation led to less anti-fat bias. There were no significant effects found when male participants in either age-group made evaluations.

Table 5.2

Scores when female targets were making evaluations

	5-8 years		9-11 years	
	Average-weight target	Overweight target	Average-weight target	Overweight target
Control	3.73	3.23	3.50	3.34
		> =		= <

Experimental	3.55	3.25	Experimental	3.34	3.67
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\*Arrow denotes a significant effect

#### 5.4.1.2 Stereotypes

A score of zero was given each time an overweight character was selected and a score of one was given each time an average-weight character was chosen. Scores across domains were then averaged (e.g., if a participant chose an average-weight child as having good athletic ability four times a score of one was given). These scores were then entered into a 2 (ability level: good, bad) x 2 (condition: control, experimental) x 2 (participant gender: male, female) x 2 (age-group: young, old) mixed-model ANOVA. For the purpose of clarity the results will be described according to each ability domain.

##### 5.4.1.2.1 Athletic Ability

There was a significant main effect of athletic ability, with participants significantly more likely to ascribe good athletic ability to an average-weight character ( $M = .84$ ) than an overweight character ( $M = .20$ ),  $F(1, 71) = 243.26$ ,  $p < .001$ . There was also a significant two-way interaction between athletic ability and age-group,  $F(1, 71) = 4.30$ ,  $p < .05$ . This interaction was due to older children ( $M = .89$ ) being significantly more likely to ascribe high athletic ability to average-weight children than younger participants ( $M = .76$ ),  $t(77) = 2.81$ ,  $p < .01$ . There was no difference among ascription for low athletic ability,  $t < 1$ .

##### 5.4.1.2.2 Academic Ability



There were no significant effects for academic ability.

#### 5.4.1.2.3 Artistic Ability

There was a significant main effect of artistic ability. Overall, participants were significantly more likely to ascribe good artistic ability to an average-weight character ( $M = .56$ ) than an overweight character ( $M = .51$ ),  $F(1, 71) = 4.50$ ,  $p < .05$ . A second significant main effect of participant gender was also found, with female participants ( $M = .57$ ) giving higher ratings than male participants ( $M = .49$ ),  $F(1, 71) = 4.15$ ,  $p < .05$ .

There was also a significant two-way interaction between artistic ability and age-group,  $F(1, 71) = 11.05$ ,  $p < .005$ . This interaction was due to younger participants being significantly more likely to ascribe low artistic ability to overweight characters ( $M = .40$ ) and good artistic ability to average-weight characters ( $M = .59$ ),  $t(33) = 4.52$ ,  $p < .001$ . This effect was not present in the older age-group ( $t < 1$ ).

Finally, there was a significant three-way interaction among ability, condition and age-group,  $F(1, 71) = 4.75$ ,  $p < .05$ . The intervention had no effect on the younger participants, who were less likely to ascribe positive characteristics to overweight targets and more likely to ascribe negative characteristics to overweight targets in both the control ( $t(15) = 8.13$ ,  $p < .001$ ) and experimental ( $t(17) = 11.93$ ,  $p < .001$ ) conditions. However, the intervention was successful among the older participants. Older participants in the control condition showed a similar effect as the

younger children ( $t(20) = 13.73, p < .001$ ), whilst participants in the experimental condition were more likely to ascribe positive characteristics (and less likely to ascribe negative characteristics) to overweight characters,  $t(23) = 12.78, p < .001$ . This interaction can be seen in Table 5.3.

Table 5.3

Interaction among ability, condition, and age-group

	5-8 years		9-11years	
	Good	Bad	Good	Bad
Control	.59	.41	.61	.51
Experimental	.60	.39	.49	.67

\*Arrows denote the direction of a significant effect.

#### 5.4.1.2.4 Social Ability

There was significant two-way interaction between social ability and age-group,  $F(1, 71) = 5.19, p < .05$ . This interaction was due to younger participants ( $M = .57$ ) being significantly less likely to ascribe high social ability to overweight characters than older children ( $M = .41$ ),  $t(77) = 2.20, p < .05$ . There no effect for low social ability,  $t < 1$ .

There was also a significant three-way interaction among ability, condition and age-group,  $F(1, 71) = 3.88, p = .05$ , with the pattern the same as that found for artistic ability. The intervention had no effect on the younger participants, who were less likely to ascribe positive characteristics to overweight targets and more likely to ascribe negative characteristics to

overweight targets in both the control ( $t(15) = 7.10, p < .001$ ) and experimental ( $t(17) = 7.47, p < .001$ ) conditions. However, the intervention was successful among participants. Older participants in the control condition showed a similar effect as the younger children ( $t(20) = 7.94, p < .001$ ), whilst participants in the experimental condition were more likely to ascribe positive characteristics (and less likely to ascribe negative characteristics) to overweight characters,  $t(23) = 4.75, p < .001$ . This interaction can be seen in Table 5.4.

Table 5.4

Interaction among ability, condition, and age-group

	5-8 years		9-11years	
	Good	Bad	Good	Bad
Control	.58	.44	.54	.46
Experimental	.56	.44	.29	.63

\*Arrow denotes the direction of a significant effect.

#### 5.4.1.3 Behaviouroid Measure

An average of the four responses was calculated and entered into a univariate ANOVA, with age-group, condition, and participant gender entered as fixed-factors. One significant effect was found, a main effect of age-group,  $F(1, 71) = 8.32, p < .01$ . Younger participants only chose to give the positive experience (stroking a baby giraffe) to overweight characters 36% of the time as opposed to older participants who chose overweight characters 56% of the time.

#### *5.4.1.4 Child IAT*

Mean reaction times for each participant were calculated and entered into a 2 (implicit association: overweight/good + average-weight/bad, overweight/bad + average-weight/good) x 2 (condition: control, experimental) x 2 (age-group: young, old) x 2 (participant gender: male, female) mixed-model ANOVA. Children demonstrated implicit pro-average-weight/anti-fat associations, indicated by faster responses to the average-weight + good/overweight + bad trials than the average-weight + bad/overweight + good trials (mean difference = 114 ms),  $F(1, 72) = 9.86$ ,  $p < .005$ . No other effects were significant.

#### *5.4.2 Summary*

At time one there were several interesting findings. First, females who heard the intervention story were more likely to choose an overweight target as a friend compared with their peers in the control condition. Secondly, older participants who heard the intervention story were less likely to report negative stereotypes about overweight children's artistic and social abilities. At time one, condition did not influence children's responses to the behavioural measure. Moreover, the IAT measure demonstrated an implicit pro-average-weight/anti-fat association, which was not reduced by the intervention.

### 5.4.3 Time two

As noted earlier, a number of children from the younger age-group were unable to complete the second session of the study. As such, any age effects need to be considered with caution due to the low number of younger participants.

#### 5.4.3.1 Friends task

For the sake of parsimony a new variable was created, whereby the score given for an overweight character was deducted from the score given for the corresponding average-weight character. This gave a new score of preference for a body type. A positive score denotes a strong anti-fat attitude, a score of zero denotes no preference and a negative score denotes a preference for overweight characters.

The data were analysed using a 2 (target gender: male, female) x 2 (time: time one, one week later) x 2 (condition: control, experimental) x 2 (participant gender: male, female) x 2 (age-group: young, old) mixed-model ANOVA, with the last three variables manipulated between participants. There was a marginal main effect of time, participants demonstrating stronger anti-fat attitudes at time one ( $M = .14$ ) compared with time two ( $M = -.05$ ),  $F(1, 46) = 3.83$ ,  $p = .06$ . There was also a marginal main effect of age-group, with younger participants demonstrating stronger anti-fat attitudes ( $M = .35$ ) compared with older participants ( $M = -.09$ ),  $F(1, 46) = 3.29$ ,  $p = .08$ . Furthermore, there was a marginal main effect of participant gender, with male participants



demonstrating stronger anti-fat attitudes ( $M = .28$ ) than female participants ( $M = -.13$ ),  $F(1, 46) = 3.26$ ,  $p = .08$ .

Further, there were three significant two-way interactions. First, there was a significant interaction between target gender and participant gender  $F(1, 46) = 6.79$ ,  $p < .05$ . Female participants had a significant preference for female targets ( $M = 3.70$ ) over male targets ( $M = 2.81$ ),  $t(30) = 5.29$ ,  $p < .001$ , whereas male participants did not differ significantly in their evaluations of male and female targets,  $t < 1$ . Secondly, there was a significant interaction between target gender and condition,  $F(1, 46) = 4.58$ ,  $p < .05$ . Participants in the experimental condition demonstrated a marginal pro-fat attitude when evaluating male targets ( $M = -.19$ ) compared with female targets ( $M = .07$ ),  $t(26) = 1.79$ ,  $p = .09$ . This effect was not present in the control condition,  $t < 1$ . Thirdly, there was a significant interaction between target gender and participant age-group,  $F(1, 46) = 5.25$ ,  $p < .01$ . Younger participants demonstrated stronger anti-fat attitudes toward male targets ( $M = .42$ ) than older participants ( $M = -.18$ ),  $t(52) = 1.80$ ,  $p = .08$ . This was not the case when participants were evaluating female targets,  $t < 1$ .

There was also a marginal two-way interaction between participant gender and condition,  $F(1, 46) = 3.37$ ,  $p = .07$ . This interaction was due to female participants in the experimental condition displaying more pro-fat attitudes ( $M = -.46$ ) compared with female participants in the control condition ( $M = .23$ ),  $t(29) = 2.99$ ,  $p < .01$ . This effect was not present when male participants were making evaluations,  $t < 1$ .

Furthermore, there was a significant three-way interaction among target gender, participant gender, and participant age-group,  $F(1, 46) = 15.59$ ,  $p < .001$ . Amongst the young age-group, male participants demonstrated significantly greater anti-fat attitudes toward male targets ( $M = 1.21$ ) than female targets ( $M = -.05$ ),  $t(14) = 2.58$ ,  $p < .05$ . However amongst the older age-group, male participants demonstrated significantly stronger anti-fat attitudes toward female targets ( $M = .33$ ) than did the female participants ( $M = -.24$ ),  $t(36) = 2.14$ ,  $p < .05$ .

There was also a marginal three-way interaction among target gender, condition and age-group  $F(1, 46) = 3.52$ ,  $p = .07$ . This interaction occurred because amongst the younger age-group, participants in the experimental condition demonstrated significantly less anti-fat attitudes toward male characters ( $M = -.09$ ) compared with participants in the control condition ( $M = .32$ ),  $t(14) = 2.05$ ,  $p = .06$ . This effect did not occur when younger participants were evaluating female targets or when older participants were making evaluations.

Finally, there was a significant four-way interaction among time, target gender, condition, and age-group,  $F(1, 46) = 6.27$ ,  $p < .05$ . Amongst the younger age-group, participants in the experimental condition at time one demonstrated significantly less anti-fat attitudes when evaluating male targets ( $M = -.25$ ) than participants in the control condition ( $M = 1.38$ ),  $t(14) = 2.52$ ,  $p < .05$ . This effect was not present at time two, when female

targets were being evaluated, or when older participants were making evaluations.

#### 5.4.3.2 Stereotypes

For the sake of parsimony a new variable was created by deducting the score for bad in an ability domain from the score for good in an ability domain. Thus, a positive score represents overweight characters being worse than average-weight character, a score of zero demonstrates no difference and a negative score demonstrates a belief that overweight characters have more ability than average-weight characters. These scores were then entered into a 2 (time: time one, time two) x 2 (condition: control, experimental) x 2 (participant gender: male, female) x 2 (age-group: young, old) mixed-model ANOVA. For the purpose of clarity the results will be described according to each ability domain.

##### 5.4.3.2.1 Athletic Ability

There was a significant three-way interaction among time, condition, and age,  $F(1, 46) = 6.25, p < .05$ . Younger participants in the control group displayed a stronger association of overweight with bad at time one ( $M = .78$ ) compared with participants in the experimental condition ( $M = .56$ ),  $t(14) = 1.53, p = .07$ . No effects were found at time two or amongst older participants.

##### 5.4.3.2.2 Academic Ability

There was a marginal main effect of condition  $F(1, 46) = 3.03, p = .09$ . Participants in the experimental condition were more likely to ascribe

good academic ability to overweight characters ( $M = -.19$ ) than participants in the control condition ( $M = .08$ ).

#### 5.4.3.2.3 Artistic Ability

There was a significant main effect of age-group, with older participants ( $M = -.10$ ) demonstrating less anti-fat bias than younger participants ( $M = .17$ ),  $F(1, 46) = 8.54$ ,  $p < .01$ . There was also a significant two-way interaction between condition and age-group,  $F(1, 46) = 3.97$ ,  $p = .05$ . Older participants in the experimental condition demonstrated significantly more positive stereotypes toward overweight characters ( $M = -.24$ ) compared with older participants in the control condition ( $M = .05$ ),  $t(36) = 2.47$ ,  $p < .05$ . This effect was not present in the younger age-group ( $t < 1$ ).

#### 5.4.3.2.4 Social Ability

There were four significant or marginal main effects. First, participants in the experimental condition were significantly more positive about overweight children ( $M = -.36$ ) than participants in the control condition ( $M = 0$ ),  $F(1, 46) = 5.64$ ,  $p < .02$ . Secondly, older participants were more positive about overweight children ( $M = -.26$ ) than younger children ( $M = 0$ ),  $F(1, 46) = 6.58$ ,  $p < .05$ . Thirdly, participants were marginally more positive about overweight characters at time two ( $M = -.25$ ) than at time one ( $M = -.11$ ),  $F(1, 46) = 2.99$ ,  $p = .09$ . Fourthly, female participants were marginally more positive about overweight characters ( $M = -.23$ ) than male participants ( $M = -.12$ ),  $F(1, 46) = 3.39$ ,  $p = .07$ .

There were also two significant two-way interactions. First, there was a significant interaction between time and condition,  $F(1, 46) = 10.38, p < .005$ . At time one there was no difference among the control group and the experimental group,  $t < 1$ . However, at time two participants in the experimental condition were significantly more positive about overweight characters ( $M = -.51$ ) than participants in the control condition ( $M = 0$ ),  $t(52) = 4.00, p < .001$ .

Secondly, there was a significant interaction between participant gender and age-group,  $F(1, 46) = 4.72, p < .05$ . Young male participants demonstrated more anti-fat bias ( $M = .32$ ) than the young female participants ( $M = -.19$ ),  $t(14) = 3.06, p < .01$ , and the older male participants ( $M = -.27$ ),  $t(21) = 2.81, p < .05$ .

Finally, there was a significant three-way interaction among time, condition and age-group,  $F(1, 46) = 10.38, p = .01$ . Amongst the younger participants there was no difference in scores between the control and experimental condition at time one,  $t < 1$ . However, at time two participants in the experimental condition demonstrated less anti-fat stereotypes than participants in the control condition,  $t(14) = 3.19, p < .01$ . Older participants in the experimental condition demonstrated less anti-fat stereotypes compared with participants in the control condition both at time one ( $t(43) = 2.48, p < .05$ ) and time one ( $t(36) = 2.94, p < .01$ ). This interaction can be seen in Table 5.5.

Table 5.5

Interaction between time, condition, and age-group

	5-8 years		9-11 years	
	Experimental	Control	Experimental	Control
Time 1	.14	.11	-.33	.07
Time 2	-.38	.31	-.57	-.14

\*Arrows denote a significant effect

#### 5.4.3.3 Behavioural Measure

A 2 (time: time one, time two) x 2 (condition: control, experimental) x 2 (age-group: young, old) x 2 (participant gender: male, female) mixed-model ANOVA was used to analyse the data, with the latter three variables manipulated between participants.

Two significant main effects were found. First, there was a main effect of time, with participants choosing the overweight child more often at time two (58%) than time one (48%),  $F(1, 46) = 4.92, p < .05$ . Secondly, there was a significant main effect of age-group. Younger participants only chose to give the positive experience to overweight characters 38% of the time as opposed to older participants who chose overweight characters 59% of the time,  $F(1, 46) = 11.75, p < .005$ .

There was also a marginal two-way interaction between participant gender and condition,  $F(1, 46) = 3.00, p = .09$ . Female participants in the experimental condition were more likely to choose overweight characters

(60%) than female participants in the control condition (46%),  $t(29) = 1.97$ ,  $p = .06$ . This was not the case when male participants were making the choice,  $t < 1$ .

There were also two significant three-way interactions. First, there was a significant interaction among time, gender and age-group,  $F(1, 46) = 4.22$ ,  $p < .05$ . Younger boys were more likely to choose an overweight character at time two (46%) compared with time one (17%),  $t(5) = 1.94$ ,  $p = .05$  (1-tailed). Older girls followed a similar pattern, at time two they were more likely to choose an overweight child (65%) than at time one (52%),  $t(20) = 1.92$ ,  $p = .07$ . This did not occur when young female or old male participants were making the choice.

Secondly, there was a significant interaction between time, condition and age-group,  $F(1, 46) = 3.88$ ,  $p = .05$ . Amongst the young age-group, the participants in the experimental condition became more likely to choose an overweight child at time two (50%) compared with time one (28%),  $t(7) = 1.70$ ,  $p = .07$  (1-tailed). This was not the case for young participants in the control group. Amongst the older age-group, at time one participants in the experimental condition were more likely to choose an overweight child (62%) than participants in the control group (47%),  $t(36) = 1.68$ ,  $p = .05$  (1-tailed). At time two this effect was found, though this was because participants in the control group were more likely to choose an overweight child (66%) at time two than at time one (47%),  $t(18) = 2.50$ ,  $p < .05$ .

#### 5.4.3.4 Child IAT

The data were entered into a 2 (implicit association: overweight + good, overweight + bad) x 2 (condition) x 2 (time: time one, time two) x 2 (age-group) x 2 (participant gender) mixed-model ANOVA. Children demonstrated implicit pro-average-weight/anti-fat associations, indicated by a faster responding to the average-weight + good/overweight + bad trials than the average-weight + bad/overweight + good trials (mean difference = 31 ms),  $F(1, 46) = 3.58$ ,  $p = .07$ . There was also a significant main effect of time. Participants overall responses were faster at time two than time one (mean difference = 120ms),  $F(1, 46) = 15.38$ ,  $p < .001$ . Furthermore, there was a marginal main effect of age-group. Older participants were faster when responding than younger children (mean difference = 151 ms),  $F(1, 46) = 3.41$ ,  $p = .07$ . No other effects were significant.

#### 5.4.4 Summary

Several key results were found at time two. On the friends task, all participants were more positive about overweight characters at time two compared with time one. However, whilst the intervention improved attitudes toward overweight male targets at time one, this effect was not present at time two.

The results from the stereotype measures were also interesting. At time one, young participants in the experimental condition were less likely (than participants in the control condition) to attribute poor athletic ability to overweight characters. This effect was not present at time two. Other



effects did persist across time. Most notably, participants in the experimental condition were more positive about overweight characters' academic ability across time. Furthermore, older participants in the experimental condition were more positive about overweight characters' artistic ability, and this effect also persisted. The same effect was also found for social ability; moreover, whilst younger participants in the experimental condition did not show an improvement at time one, at time two they were more positive in their evaluations of overweight characters' social ability.

Similarly, the results of the behavioural measure demonstrates that younger participants in the experimental condition were more likely to give the positive experience to the overweight child at time two compared with time one. Older participants in the experimental condition were more likely (than participants in the control condition) to choose the overweight character. At time two, participants in the experimental condition continued to choose the overweight character at the same level, however participants in the control condition increased the amount they chose overweight characters to same rate as participants in the experimental condition.

The IAT results continued to demonstrate anti-fat attitudes amongst children across conditions. Participants were all faster at responding at time two than time one, though this is likely due to increased familiarity with the task.

## 5.5 Discussion

The primary aim of this study was to adapt an intervention developed to reduce children's prejudice toward refugees (Cameron et al., 2006) to be used in an attempt to reduce prejudice toward overweight children. The effectiveness of the intervention was evaluated by looking at a number of measures, some of which have been used previously in this thesis. This study also introduced an implicit measure of anti-fat attitudes among children. Overall, a number of interesting results were found. At time one, female participants in the experimental condition (compared to the control condition) demonstrated less anti-fat prejudice in the friends task. That is, they were more positive when evaluating overweight children as potential friends after hearing the experimental story.

When looking at the stereotype measures at time one, there was no effect of condition on participants' perceptions about who would be good or bad at sports. This is hardly surprising as the story makes no reference to overweight children's athletic ability. However, when looking at the results from the data on artistic ability, whilst the intervention did not affect the younger participants at time one, older participants who were in the experimental condition were more positive about overweight characters. The same effect was found when social ability was being considered. Taken together, this suggests that the intervention was somewhat successful at reducing the negative stereotypes that older children hold about overweight children. The difference in age-groups supports the cognitive-developmental theory of prejudice in children (Aboud, 1988, 2003) described in Chapter Three of this thesis. Whilst

younger children demonstrate a global dislike for outgroups, older children tend to use external information to form opinions. The story provided them with additional, positive information with which to evaluate overweight characters, in a more favourable way.

At time one, the intervention did not affect children's choice on the behavioural measure. Younger children were more likely to choose to give the positive experience to the average-weight characters rather than the overweight characters. This is consistent with Cameron et al. (2006), who explain their intervention's weak influence over their behavioural measure. They state that the relationship between attitudes and behaviour is not automatic, and that behaviour change does not necessarily follow from attitude change.

The results of the IAT demonstrate that overall children show an anti-fat/pro-average-weight bias. This bias was of a similar magnitude to the anti-black/pro-white bias presented in the Baron and Banaji (2006) paper, and persisted across conditions. That is, the intervention did not succeed in reducing implicit anti-fat bias. This finding is of significance to the Cameron et al. (2006) paper as it raises the possibility that their intervention also only worked on an explicit level, that is, when participants are more able to control their bias.

Despite the drop in participation (due to illness) at time two there were a number of interesting effects. Overall, the pattern of results converge with the findings obtained at time one. However, results from some measures

demonstrate that some effects dissipated over time. At time one, young female participants in the experimental condition demonstrated reduced bias against overweight male targets, though this effect disappeared at time two. Similarly, the results of the stereotype data show that when considering athletic ability, at time one, young participants in the experimental condition demonstrated less bias than those in the control condition. But this effect again disappeared by time two.

However, negative stereotypes about overweight characters pertaining to academic ability were reduced in participants in the experimental condition and this effect persisted at time two. This pattern of results was also the same when participants were considering artistic ability.

Moreover, this reduction in bias grew stronger by time two when participants were evaluating social ability. Taken together these results suggest that not only did the intervention make children think more positively about overweight children's abilities across the domains, but that this effect persisted and even increased over time.

When considering the results of analyses of the behavioural measure, again we have evidence that the intervention was successful. Whilst there was no difference among young participants' choices at time one, at time two the young participants in the experimental condition were more likely to give the positive experience to the overweight characters compared to participants in the control condition. Older participants, in the experimental condition were more likely than participants in the control condition to choose overweight characters at time one, whilst participants

in the experimental condition continued to choose overweight children at time two, participants in the control condition also increased their incidence of choosing overweight characters.

At time two, participants were all faster at completing the IAT. However, condition did not influence IAT results. This suggests that implicit anti-fat associations are pervasive and were not changed by this kind of story.

Taken together, these findings support the findings of Cameron et al. (2006), suggesting that simple narratives can be used to reduce explicit prejudice toward outgroups. The findings also extend previous research by measuring the effectiveness of this type of intervention across a number of domains. These findings suggest that the intervention can be used to reduce explicit anti-fat attitudes amongst children, reduce negative stereotypes about overweight children, and possibly even change participants' behaviour. Furthermore, these changes not only persist across one week but some even increase, suggesting the possibility of a sleeper effect. Kumkale and Albarracin (2004) describe the sleeper effect in persuasion as when information is provided with a discounting cue (i.e. information that might affect the credibility of the info), people are less persuaded initially but then become more persuaded over time.

One explanation for the sleeper effect is that whilst the information is retained, the reason for discounting the information is forgotten over time. It is possible that participants were less persuaded by the information

about overweight children initially because it was presented as a fictional story rather than factual information. However, as time went on participants remembered the information but forgot that the fictional story was the source of the information. This could account for the increase in attitude change at time two.

The findings from this investigation extend previous research by applying the IAT to measure anti-fat bias and demonstrating that children as young as five demonstrate an anti-fat/pro-average-weight bias and that this bias continues despite an intervention. This finding was not unexpected given that Dovidio et al. (1997) previously argued that there is a dissociation between explicit and implicit measures of attitudes. Responses to explicit measures of attitudes are more easily controllable compared to implicit measures, as such children who feel like they should change their attitudes will find it easier to respond differently on explicit measures. Moreover, Devine and Monteith (1993) argue that implicit prejudice is a more automatic type of response, suggesting that to change this form of prejudice would require un-learning which is a more lengthy process than merely hearing a story.

In summary, the intervention was used with good effect on explicit measures. Participants who heard the story depicting overweight children in a positive way demonstrated improved attitudes toward overweight children. Whilst some effects did not persist over time, some effects not only persisted they became stronger over time, suggesting this is a promising method of reducing explicit anti-fat attitudes.

## CHAPTER SIX

### 6. General Discussion and Conclusions

#### 6.1 Overview

In this concluding chapter I begin by describing the key findings of this thesis and critically evaluate how these findings address the primary aims of this thesis. I then integrate this research in the context of the existing literature on anti-fat attitudes among children and finally suggest future areas of research.

#### 6.2 Summary of key findings

The primary aim of the thesis was to determine how children perceive overweight children. In the introduction I asked a number of questions that were addressed during the course of the research. Those questions were: Do children display a preference for average-weight children compared to overweight children? Do children possess negative stereotypes about overweight children? What are the implications of anti-fat prejudice among children? How easy is it to change negative biases toward overweight children on an implicit and explicit level?

In Chapter Two, I described a study in which children rated how much they wanted to be friends with overweight white children, average-weight white children, and average-weight black children. The results of the study indicated that participants wanted to be friends with overweight children less than average-weight children (regardless of the race of the average-weight child) and that when forced to choose one character to befriend, participants preferred average-weight white and black children

equally and the overweight child least often. Moreover, the anti-fat bias was more pronounced when participants were younger than nine years of age and when the target characters were female. Taken together, these findings suggest that children dislike overweight children compared to average-weight children. Furthermore, overweight children were disliked more than average-weight members of a racial group who are the victims of prejudice and discrimination.

Chapter Three of this thesis investigated children's stereotypes of overweight children. The results of the study demonstrated that young children were less likely to attribute good athletic, academic, artistic, and social ability to overweight children compared with average-weight children. That is, children thought that overweight characters were worse at activities such as maths, spelling, drawing, playing musical instruments, singing, and being sociable. These stereotypes were very pervasive amongst younger children but were different for children who were nine years of age and older. Amongst that age-group, participants were less likely to attribute good athletic ability to overweight children compared with average-weight children, and showed no difference in their attributions of artistic and academic ability. However, they were more likely to attribute good social ability to overweight children compared with average-weight children. These findings address the second question posed in the introduction to this thesis. Young children do possess negative stereotypes about overweight children across a range of ability domains.



The mere proximity effect was investigated in Chapter Four of this thesis. Consistent with the findings of the first two experimental chapters, overweight targets were liked less than average-weight targets. Additionally, when female targets were presented in the proximity of female background characters interesting effects emerged. Average-weight female targets were liked less when they were viewed with overweight female background characters rather than average-weight female background characters. This effect was not present when female targets were presented with male background characters or when male targets were being evaluated. Furthermore, overweight female targets were liked less when presented on an average-weight background rather than an overweight background (when the target and background characters were the same gender). This is a novel finding, which has not previously been tested amongst children or adults. These findings address the third question posed in the introduction to this thesis. A negative attitude toward overweight children can lead to derogation of someone else in the proximity of overweight children.

The final experimental chapter of this thesis described an intervention designed to help reduce anti-fat attitudes. Children between the ages of five and eleven heard a story that portrayed overweight children in a positive manner. Children's attitudes were assessed on two occasions, using a variety of explicit measures including how much they would like to be friends with overweight children and stereotype measures. Additionally, an implicit measure of participants' anti-fat attitudes was used as well as a behaviouroid measure. Results demonstrated that

immediately following the intervention, female participants were more likely to report that they would like to be friends with overweight children. Moreover, older children who had heard the intervention were more likely to attribute good artistic and social ability to overweight children.

One week following the intervention any positive effect on participants' desire to be friends with overweight children had dissipated. However, at time two older participants' more positive stereotypes about overweight children's artistic and social ability persisted. Additionally, negative stereotypes about overweight characters' academic ability had decreased and younger participants were also less negative about overweight children's social ability at time two. Moreover, results from the behavioural measure demonstrated that participants were more likely to choose to give an overweight child a positive experience after hearing the intervention. This final effect was stronger for younger children at time two compared with time one.

Results from the implicit measure of anti-fat attitudes showed that implicit prejudice scores did not alter as a function of condition. Participants in the experimental and control conditions both showed a significant pro-average-weight/anti-fat bias. These findings address the final question posed in the introduction. This study suggests that it is possible to employ a simple intervention to reduce anti-fat attitudes on an explicit level. However, further research needs to be conducted in order to develop an intervention that can reduce children implicit anti-fat/pro average-weight biases.

### *6.2.1 Gender Effects*

The research in this thesis demonstrates that anti-fat attitudes are especially targeted at overweight females. Results from the research described in this thesis indicate that overweight female targets are especially disliked and unlikely to be chosen as friends. Moreover, the mere proximity effect was only found when female characters were presented with female background characters. This suggests that females are particularly likely to be the victim of anti-fat attitudes. This converges with previous research into anti-fat attitudes amongst adults (e.g., Tiggemann & Rothblum, 1988) who not only found that females were more likely to demonstrate anti-fat attitudes but that overweight females were more likely to be discriminated against than overweight males.

### *6.2.2 Age Effects*

Throughout the studies described in this thesis, a similar pattern of age-effects was found. The research demonstrates that anti-fat attitudes are especially prevalent for participants who are eight years of age and younger. Children in that age-group are less likely to want to be friends with overweight children and display negative stereotypes across an array of domains. However, whilst children who are nine years and older may demonstrate fewer anti-fat attitudes on explicit measures, they demonstrate anti-fat attitudes when using implicit measures. The mere proximity measure and the IAT are less transparent measures of anti-fat attitudes. That is, it is less easy for participants to guess the purpose of the task and control their responses.

The outcome of these measures demonstrates that whilst older children are less likely to explicitly report anti-fat attitudes, they still demonstrate them when implicit measures are used. These findings converge with the cognitive development account of prejudice. As noted earlier in this thesis, Aboud (1988, 2003) argued that children's prejudice alters in line with their cognitive development. As children's reasoning skills and the ability to appreciate others' perspectives increases, their prejudice toward outgroups decreases. Research by Aboud concludes that the pivotal age for this change is around nine years of age. This pattern converges with the findings in this thesis. This was not the case for IAT responses, though this can be explained by Devine and Monteith's (1993) suggestion that implicit attitudes are an over-learned response and as such do not necessarily alter at the same rate as explicit measures. So whilst children are beginning to report less prejudice on explicit measures, they will find it difficult not to display this on implicit measures.

### 6.3 Implications for the literature

The research in Chapter Two converges with findings which have demonstrated that overweight children are stigmatised more than other groups. Furthermore, it extends previous research by directly comparing two commonly observed stigmatised groups and demonstrating that, amongst school children in South Wales, anti-fat bias is more prevalent than anti-black bias. This has several implications: it validates the demand for research and resources in anti-fat attitudes. If children are more explicitly prejudiced toward children who are overweight than

children who are at present protected by strong governmental racial equality policies, this implies that action should also be taken on a policy level to understand and reduce the stigma experienced by overweight children.

The findings presented in Chapter Three converge with Cramer and Steinwert (1998) by demonstrating that children hold negative stereotypes about overweight children. Moreover, it extends the literature on children's stereotypes of overweight children in several key ways. Most importantly, it demonstrates that children hold negative stereotypes about overweight children across four specific and distinct ability domains that are considered critical to children's self-esteem (Harter, 1982). Moreover, the design employed a multiple-choice (rather than a binary-choice) paradigm and so children's stereotypes were more reflective of actual attitudes. The findings also demonstrated age effects whereby older children displayed fewer negative stereotypes than younger children. Taken with the findings reported in Chapter Two, this suggests that whilst older children do not want to be friends with overweight children, they do not hold negative stereotypes about overweight children. Not only do younger children not want to be friends with overweight children, they hold negative stereotypes about overweight children.

The findings presented in Chapter Four made several key contributions to the literature. First, they demonstrated that the mere proximity effect is found in young children. Previous research has only investigated this effect in adults (Hebl & Mannix, 2003). Given the small environment in

which children of primary school age socialise, the presence of this effect could have serious consequences. Average-weight children may be discouraged from associating with overweight children to avoid negative ramifications from their peers. Secondly, this research extends our understanding of when the mere proximity effect is most likely to occur. It appears that when female targets are being evaluated with female background characters the mere proximity effect is most prevalent. This converges with literature that argues that females are most likely to experience weight-related stigma (Tiggemann & Rothblum, 1988).

Thirdly, a new finding was observed using the mere proximity paradigm. Specifically, overweight targets were derogated when presented with average-weight background characters of the same gender. This finding could be explained in terms of salience. The overweight target may appear more overweight in the proximity of average-weight characters of the same gender and as such be stigmatised more. This effect does not occur when the target character is of the opposite gender to the background characters. This is possibly due to the presence of additional information when children are making evaluations, which could reduce the salience of the overweight characters. Moreover, male and females grow at different rates (Ogden et al., 2002) and as such children may be accustomed to seeing boys and girls of different sizes in the same peer group and be less likely to compare the sizes of a boy and a girl than two characters of the same gender. This could also account for the divergence in this thesis from the findings of Hebl and Mannix (2003), who found the mere proximity effect when males were evaluated with

female background characters. By adulthood, individuals are able to conceptualize the comparative size of an average man and woman, whereas this is less easy amongst children who follow different growth trends. Alternatively, given that this is a fairly subtle effect, it is possible that in childhood it requires a particularly stigmatised target and background group in order to manifest itself.

Results from Chapter Five extend previous research in a variety of ways. First, the Child IAT was used with success in children as young as five in order to measure anti-fat/pro average-weight bias. Baron and Banaji (2006) used the IAT with children who were six years of age to measure anti-black/pro-white bias. The study described in the present thesis not only used the Child IAT with success, it also demonstrates that the Child IAT can be adapted for use measuring other types of biases. Secondly, an intervention used by Cameron et al. (2006) was adapted for use in reducing anti-fat attitudes. A similar pattern of results emerged in this thesis, children were more likely to choose overweight children as friends and have fewer negative stereotypes about overweight children after hearing the intervention. However, I also used an implicit measure of participants' anti-fat attitudes and found that whilst the intervention altered children's responses on explicit measures of anti-fat attitudes, implicit biases persisted. This extends the work of Cameron et al. (2006) as it demonstrates that this types of intervention can be used to reduce other types of prejudice (other than toward refugees) however, this works on an explicit and not an implicit level.

## 6.4 Future Directions

While the present research addressed a number of important questions, it also poses a number of novel questions that can be addressed in future research. With regard to anti-fat stereotypes, future research could look at children's stereotypes across other domains such as personality traits. I expect that, consistent with the findings outlined in this thesis and the cognitive-developmental account of prejudice among children (Aboud 1988; Nesdale, 2001), children who are eight years of age and younger will display a very general and broad range of negative stereotypes about overweight children which will extend across other domains, whereas children who are nine years of age and older will hold more targeted stereotypes which may reflect knowledge of how groups function.

With regard to the mere proximity effect, future research could additionally question the children in order to ascertain why they believe they are making these evaluations and also ask participants to evaluate the background characters. This might help explain the causes of the mere proximity effect. Although it is possible that participants are unaware of the way in which they are responding and would find it difficult to answer such questions.

Other future research could look at manifestations of the mere proximity effect in particular, and anti-fat prejudice in general, amongst adolescents. This could help bridge the gaps between children and adults. In the introduction to this thesis I described a large amount of research reporting strong anti-fat attitudes among adults, however in the



findings of this thesis, anti-fat attitudes appeared to be decreasing by late childhood. This implies that there is a shift in attitudes that occurs during adolescence. As such, conducting research with adolescents may help to explain the differences in the presentation of anti-fat attitudes between children and adults.

Future research may also look at the intervention in closer detail. The intervention used in my study was designed with the extended-contact hypothesis in mind (Wright et al., 1997). This hypothesis proposes that bias toward a stigmatised group may be reduced by describing examples of ingroup members being friends with members of the stigmatised outgroup. This normalizes the idea of being friends with the outgroup member without any of the anxiety that direct contact can elicit. However, in both the Cameron et al. (2006) study and the one described in this thesis, in addition to contact between the stigmatised and non-stigmatised individuals, the stigmatised individuals were portrayed very positively. Moreover, in my study, the contact was fairly limited (short interactions with others) compared with the Cameron et al. (2006) study (being best friends). Future research could examine how much contact is necessary in the story, in order to elicit attitude change. Additionally, research could investigate the effect of using more than one story portraying overweight children positively, given that the study described in this thesis found strong results after reading one short story on one occasion, it seems likely that continued exposure to this type of story could yield even stronger results. Future research could also adapt the intervention to reduce other types of stigma.

Research should also explore how adults perceive overweight children. Do parents, healthcare professionals, and teachers hold anti-fat attitudes about children? An array of investigations exploring adults' attitudes toward overweight adults was described in the introduction to this thesis (see Puhl & Brownell, 2001, for a review). The methodologies used in those studies could be adapted in order to assess their attitudes toward overweight children. These findings would provide a more complete account of the discrimination that overweight children face.

It would also be interesting to determine whether infants display a preference for overweight or average-weight faces. Research conducted with newborn babies less than 151 hours old has found that babies look longer at attractive faces compared with unattractive faces (Slater, Von der Schulenburg, Brown, Badenoch, Butterworth, Persons, & Samuels, 1998). It is possible that a dislike of overweight individuals occurs almost immediately after birth.

Finally, the effect of anti-fat attitudes on overweight children's self-esteem and life opportunities should also be investigated. How do anti-fat attitudes in society impact upon overweight children? Given that at present almost a third of British children are overweight or obese (Zaninotto et al., 2006), it seems prudent that we understand the full impact of the epidemic, not just in medical terms but in social and psychological terms also.

## 6.5 Conclusion

In conclusion, the aim of this thesis was to shed light on the prevalence and nature of anti-fat attitudes among children. Through a number of studies I have shown that anti-fat attitudes are very prevalent amongst children. Additionally, I have demonstrated that young children hold negative stereotypes pertaining to overweight children's athletic, academic, artistic, and social abilities. Further, average-weight girls who are evaluated in the mere proximity of overweight girls are also derogated. Moreover, I employed a simple intervention with great effect. This research has contributed to the very limited field of research in this area, however more research needs to be done in order to understand and ultimately reduce anti-fat attitudes among children.

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## APPENDIX A

### Stories for Study Five Experimental Condition

Chloe and Jack are brother and sister. They are overweight compared to other children their age. Chloe and Jack are very nice children and have very busy days. This is the story of one of those days.

Chloe and Jack got up to go to school. Before going to school they made their beds and got dressed and ran down stairs to ask mum if she needed any help. Mum asked them if they could take some books to Mrs. Jones, the little old lady who lived across the road.

“Of course mum” they both said with big smiles. They took the books to Mrs. Jones. She was very pleased to see them. “Can you please take this money to Mr. Smith in the newsagents; I owe him for yesterday’s paper.”

“Of course Mrs. Jones” said the children. They took the money to Mr. Smith who was so pleased that the children had rushed to bring him the money that he gave them a bag of marbles. They said “Thank you” and then went straight to school.

At school they had a maths test, Chloe and Jack were really good at everything in school and both of them got full marks. The teacher was so pleased with them that she put gold stars on their maths books.

During lunch break Chloe and Jack noticed that a boy was picking on one of the other children. They ran over to stop him. "Leave her alone!" shouted Chloe and Jack. The bully was so shocked that he ran away. "Thank you so much" said the girl. "That's ok, we'll look after you" said Chloe and Jack. The girl still looked a bit upset, and then Chloe and Jack said "I know what will cheer you up" and with that gave the girl the bag of marbles that Mr. Smith had given them. The girl was very happy.

That afternoon Chloe and Jack drew pictures in class. The pictures were so good that the teacher put them on the wall so that everybody could see them.

After school Chloe and Jack went to practice for the school play. Chloe was a great singer and had the main part in the play. Jack was brilliant at playing musical instruments and was in charge of the band.

That night they went home and helped their mum tidy the whole house. By bed time Chloe and Jack were very tired and went straight to bed. "Goodnight Chloe" "Goodnight Jack" they said, as they wondered what would happen tomorrow.

## Control Condition

Chloe and Jack the goldfish are brother and sister. Chloe and Jack are very nice goldfish and have very busy days. This is the story of one of those days.

Chloe and Jack got up to go to school. Before going to school they made their beds and got dressed and swam down stairs to ask mum if she needed any help. Mum asked them if they could take some books to Mrs. Jones, the little old fish who lived across the road.

“Of course mum” they both said with big smiles. They took the books to Mrs. Jones. She was very pleased to see them. “Can you please take this money to Mr. Smith in the newsagents; I owe him for yesterday’s paper.”

“Of course Mrs. Jones” said the fish. They took the money to Mr. Smith who was so pleased that they had rushed to bring him the money that he gave them a bag of marbles. They said “Thank you” and then went straight to school.

At school they had a maths test, Chloe and Jack were really good at everything in school and both of them got full marks. The teacher was so pleased with them that she put gold stars on their maths books.

During lunch break Chloe and Jack noticed that a fish was picking on one of the other fish. They swam over to stop him. “Leave her alone!” shouted

Chloe and Jack. The bully was so shocked that he swam away. "Thank you so much" said the fish. "That's ok, we'll look after you" said Chloe and Jack. The fish still looked a bit upset, and then Chloe and Jack said "I know what will cheer you up" and with that gave the fish the bag of marbles that Mr. Smith had given them. The fish was very happy.

That afternoon Chloe and Jack drew pictures in class. The pictures were so good that the teacher put them on the wall so that everybody could see them.

After school Chloe and Jack went to practice for the school play. Chloe was a great singer and had the main part in the play. Jack was brilliant at playing musical instruments and was in charge of the band.

That night they went home and helped their mum tidy the whole house. By bed time Chloe and Jack were very tired and went straight to bed. "Goodnight Chloe" "Goodnight Jack" they said, as they wondered what would happen tomorrow.

