An attempt to reduce negative stereotyping of obesity in children by changing controllability beliefs

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Abstract

The purpose of the present study was to investigate whether changing children’s beliefs about the controllability of obesity would reduce their negative attitudes toward fat people. The participants were 74 children from Grades 4–6, 42 in the experimental group and 32 in the control group. The experimental group were presented with a brief intervention which focussed on the uncontrollability of weight. The study found that the intervention was successful in reducing the amount of controllability that children assigned to obesity, but was not successful in reducing negative stereotyping of the obese among the experimental group compared to the control group. These results indicate that while children’s beliefs about the controllability of obesity can be changed, reducing their negative stereotyping is more difficult.

Introduction

Obesity is stereotyped in a highly negative manner in Western countries. Many studies have shown that adults characterize obese people by negative attributes such as lazy, unattractive, unhappy, unpopular and sloppy (Harris et al., 1982; Tiggemann and Rothblum, 1988; Ryckman et al., 1989; Cogan et al., 1996). Children also endorse a similar dislike of obesity. The classical study of Richardson et al. (Richardson et al., 1961) showed that children ranked an obese child last on likeability, behind children with various physical handicaps, such as facial disfigurement and using a wheelchair. Other research has indicated that children as young as the age of 3 describe a fat child as lazier, and less attractive, happy, smart and popular (Brylinsky and Moore, 1994; Hill and Silver, 1995; Tiggemann and Wilson-Barrett, 1998). These studies also reveal that the gender, age and weight of the child have little effect on the high degree of negative stereotyping.

This negative stereotyping of obesity in children has important implications because of the potential negative ramifications on the peer acceptance and psychological health of overweight children. For example, Strauss et al. (Strauss et al., 1985) have shown that obese children are liked less as playmates than average-weight children, and that they perceive themselves as more depressed and as having lower self-concept (involving all of behaviour, academic performance, anxiety, popularity, happiness and physical appearance) than do non-obese children. Similarly, Pierce and Wardle (Pierce and Wardle, 1997) have found overweight children to be more vulnerable to low self-esteem. Despite these negative ramifications, as yet no published research has tried to reduce the high degree of stereotyping of obesity by children. Only a few studies have attempted to reduce adults’ negative attitudes, some successfully (Weise et al., 1992; Robinson et al., 1993; Crandall, 1994) and some unsuccessfully (Harris et al., 1991). This is possibly because many people are not aware of the existence of weight stereotyping and discrimination (in adults or in children) since, as Crandall...
(Crandall, 1994) points out, in contrast to race or gender, there is no strong social pressure against the expression of anti-fat attitudes.

In addition to the strong dislike of obesity, people hold inaccurate beliefs about the causes of obesity. Although there is debate about their relative importance, there is increasing evidence that genetic [for a review, see Price (Price, 1987)] and metabolic factors (Keesey, 1980; Rothblum, 1990), in addition to sociocultural factors, are important determinants of obesity in adults. Research indicates that the same is true for childhood obesity [e.g. (Williams and Kimm, 1993)]. In contrast, popular belief suggests that eating too much and exercising too little are the major causes of obesity. The view that fat is controllable distinguishes stereotyping of obesity from stereotyping of other physical attributes. Whereas race, gender and height are not controlled by the individual, obesity is perceived to be under the individual’s direct control. According to attributional accounts of stigma, when a negative outcome such as obesity is attributed to a controllable cause, negative judgements and affective reactions are made about the stigmatized condition (Weiner et al., 1988). Some studies with adults have confirmed that negative attitudes to fat people are significantly correlated with the perceived control fat people have over their weight (Allison et al., 1991; Crandall, 1994; Crandall and Martinez, 1996). Sigelman and Begley (Sigelman and Begley, 1987) also found children evaluated an obese child target more positively when perceived responsibility for the problem was low. Tiggemann and Anesbury (unpublished data) found controllability and negative stereotyping to be positively correlated in children aged 8–12 years.

Given the relationship between controllability and negative attitudes, one way to reduce negative stereotyping of obesity might be to change people’s beliefs that obese individuals can control their weight. In the one published study targeting the controllability of obesity, rather than general knowledge about obesity (Crandall, 1994), adult participants heard and read either a persuasive message arguing that fatness is caused by uncontrollable physiological/metabolic and genetic factors (experimental condition) or a message about the role of psychological stress on illness (control condition). Compared to the control group, the experimental group answered significantly more factual questions about weight correctly, and, more importantly, tended to dislike fat people less and were not as likely to attribute obesity to a lack of self-control or willpower. Therefore, by changing beliefs about the controllability of obesity, Crandall (Crandall, 1994) was able to reduce adults’ negative attitudes toward fat people.

The purpose of the present study was to attempt to reduce negative stereotyping of obesity in children by introducing an intervention similar to Crandall (Crandall, 1994) that stresses the importance of genetic and metabolic factors as the principal causes of obesity. Like Crandall (Crandall, 1994), the intervention was designed to isolate controllability beliefs as a mediator of negative attitudes to obesity and to attempt to reduce stereotyping in children by directly manipulating those beliefs. A methodological improvement was that change within individuals was also assessed, with the children’s perceptions of controllability and their negative stereotyping being measured both before and after the intervention. Based on the results found in adults, it was predicted that, relative to the control group, both controllability beliefs and negative stereotyping would decrease following the intervention for the experimental group.

### Method

#### Participants

The participants were 74 children (39 boys and 35 girls) in Grades 4–6 (age range 9–11 years, $M = 10.05$, $SD = 0.89$) in a State primary school located in South Australia. This represents a subset of the children studied by Tiggemann and Anesbury (in preparation).

#### Procedure

A questionnaire containing measures of negative stereotyping and the controllability of obesity was
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administered to the participants in three class groups, in which the instructions and questions were read aloud and explained (Time 1). One week later (Time 2), children were assigned to one of two conditions: the intervention group (19 girls and 23 boys) or the control group (16 girls and 16 boys). Children in the intervention condition were provided with a brief intervention about the uncontrollability of body size, which lasted about 10 min. After the presentation, these children completed a second questionnaire, also measuring negative stereotyping and controllability. During this time, control children were involved in normal activities in another room with the class teacher. Then they too completed the second questionnaire. The instructions to each section were read aloud, after which the children completed the questions on their own.

On completion of the questionnaire, each group was debriefed. The debriefing involved a brief talk about the unrealistic stereotypes of obesity and the uniqueness of a person’s size. For the control group, the debriefing also contained a brief version of the intervention.

Questionnaire

There were two versions of the questionnaire, one for girls and one for boys. The first section was designed to elicit the presence of stereotyping of weight, firstly for the respondent’s own sex and then the opposite sex. Respondents were presented with Tiggemann and Wilson-Barrett’s (Tiggemann and Wilson-Barrett, 1998) silhouette drawings of an obese and normal-weight child side-by-side, and asked to indicate which girl (boy) they thought was friendlier, happier, lazier, more attractive, more confident, works harder, smarter, healthier, like the best, want to play with and be friends with. Respondents were also provided with the option of choosing ‘same’ so that demand characteristics could not totally determine stereotyping. To prevent any systematic bias resulting from the position of the figures, the figures were swapped so that the normal-weight drawing was presented as the left figure in half the questionnaires and as the right figure in the other half. To make the questionnaire more realistic, each of the child figures was given a name, which was different from any of the names of the participating children in Grades 4–6. Each of the names was associated with the normal-weight figure for half of the questionnaires and the obese figure for the other half. In addition, for Time 2, the names and clothing on the figures were modified to encourage generalization.

The 11 items of the stereotyping measure were scored so that a score of 1 was given to each response that indicated negative stereotyping of the obese figure and a score of 0 to each response that indicated no negative stereotyping. These scores were summed to form a scale ranging from 0 to 11. Calculated using the Kuder–Richardson’s formula, the resulting internal reliabilities were high, with 0.85 for the female and 0.86 for the male target at Time 1, and 0.90 for the female and 0.86 for the male target at Time 2.

The next section of the questionnaire was concerned with perceptions of controllability or whether children believed weight to be under personal control. Respondents were required to answer nine questions by indicating whether or not they believed the statement to be true (‘yes’), false (‘no’) or they did not know (‘don’t know’). The questions covered both the initial cause of the condition (e.g. ‘are many fat children born that way?’) and the possible solutions (e.g. ‘can fat children become thin if they really tried?’). Ideas for the questions came from Crandall’s (Crandall, 1994) Antifat Attitudes Questionnaire Willpower subscale, Tiggemann and Rothblum’s (Tiggemann and Rothblum, 1988) Perceived Aetiology of Obesity Scale, and Sigelman’s (Sigelman, 1991) control-ability manipulations and measures. A score of 1 was given for each answer that indicated controllability, 0.5 for each ‘don’t know’ answer and 0 for each answer that represented no controllability. The resulting scale ranged from 0 to 9, with a higher score representing a higher degree of controllability assigned to obesity. Calculated using Cronbach’s $\alpha$, the reliability for the nine-item weight measure at Time 1 was 0.64.

At Time 2, these questions were presented first (before the stereotyping measure) so that they
could be used as a manipulation check to ensure the children understood the material presented in the intervention. For the second testing, the reliability of the nine-item scale improved substantially to 0.87.

**Intervention**

The aim of the intervention was to change children’s beliefs about the controllability of obesity and thus to highlight that, for the most part, a child cannot control their weight. The intervention was designed especially for children, using evidence for the causes of obesity to address uncontrollability. Metabolism and the storage of fat were chosen as the focus because children were more likely to understand these concepts than they would concepts like natural set-point theory or the procedures involved in adoption and twin studies. To make the intervention interesting and understandable to children, the presentation was given verbally, the language was kept simple, new terms were explained in detail, accompanying pictures were used to illustrate the differences in children’s body size and the message about the uncontrollability of body size was repeated many times. Because the intervention was designed as a way to test the effects of controllability on stereotyping, negative stereotyping of obesity itself was not specifically addressed in the presentation.

As an introduction, pictures highlighting differences in the hair, eye and skin colour of adults were presented to explain that people can differ in many types of ways. Then, pictures of children with different body shapes and sizes were shown to illustrate in general the various types of bodies children have. These pictures consisted of boys and girls differing in their height and weight, with each picture being given a name. Differences in children’s height were pointed out initially using pictures of tall, average height and short children. The genetic mechanisms underlying height were then discussed, with an explanation that genes carry important information about a child’s characteristics that are passed on from the child’s parents. Because that information cannot be changed, it was emphasized that a child cannot control their height.

Next, pictures of children with lean, average and large body builds were shown to highlight again that children differ in their body size. Following this, it was explained that genes also play an important role in controlling weight. In particular, it was explained that genes are important in determining a child’s ability to break down the fat they eat, so that some children’s bodies break down fat fast, whereas others do not. Consequently, children with low metabolism store more fat in their bodies than do those with high metabolism, allowing two children to eat the same amount and type of food but still weigh different amounts. In this context, it was mentioned that diet and exercise do not solely control weight. In conclusion, it was emphasized that, for the most part, a child is not able to control their weight.

**Results**

**Reducing weight controllability**

The purpose of the present study was to change children’s beliefs about the controllability of obesity and thereby reduce negative stereotyping. To investigate whether the presentation on the uncontrollability of weight reduced weight controllability beliefs, a repeated measures MANOVA was performed with weight controllability as the dependent variable. The repeated measure was time of testing, comprised of the scores from Time 1 and Time 2, and the independent variable was experimental condition. The means, SDs and difference scores for the assessment of weight controllability for Times 1 and 2 are displayed in Table I. The difference score is the difference between the two means, where a negative score indicates that there has been a reduction from Time 1 to Time 2, and a positive score indicates an increase.

<table>
<thead>
<tr>
<th></th>
<th>Time 1</th>
<th>Time 2</th>
<th>Difference score</th>
</tr>
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<tbody>
<tr>
<td>Intervention</td>
<td>5.27 (1.63)</td>
<td>2.46 (2.10)</td>
<td>-2.81</td>
</tr>
<tr>
<td>Control</td>
<td>5.00 (2.16)</td>
<td>4.53 (2.49)</td>
<td>-0.47</td>
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</table>
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The means from Time 1 reveal that the children thought that obesity was controllable to a high degree. From Time 1 to Time 2, the difference column shows that weight controllability beliefs reduced for both groups, but more so in the intervention group than the control group. The repeated measures MANOVA confirmed that the difference between Times 1 and 2 was significant, $F(1,70) = 63.45, P < 0.001$, and that the means were significantly lower for the intervention group than the control group, $F(1,70) = 3.96, P = 0.05$. More important, the interaction between time and experimental condition was significant, $F(1,70) = 32.16, P < 0.001$. This indicates that the reduction in weight controllability was significantly greater for the intervention group than the control group.

### Reducing negative stereotyping of obesity

To examine whether negative stereotyping reduced more for those in the intervention group compared to those in the control group, one repeated measures MANOVA was used. The repeated measures consisted of time of testing (scores from Times 1 and 2) and gender of the target (female and male child), and the independent variable was experimental condition. The means, SDs and difference scores for the female and male child targets are presented in Table II. The means for Time 1 indicate that stereotyping was highly negative. For change over time, the difference column shows that negative stereotyping reduced for both groups, although this reduction was greater for those in the intervention group. The repeated measures MANOVA revealed that the difference between the means for Times 1 and 2 was significant, $F(1,71) = 22.21, P < 0.001$. However, contrary to expectation, the interaction between time of testing and experimental condition did not reach statistical significance, $F(1,71) = 0.70, P > 0.05$. In other words, negative stereotyping did not reduce significantly more from the first to the second assessment for the intervention group than for the control group. It needs to be noted, however, that the study was a little underpowered statistically. Although it is difficult to calculate statistical power for interactions and repeated measures (Howell, 1992), an approximation can be obtained for testing between group difference scores. For sample sizes of 32 and 42, as is the case here, the power of detecting a moderate size effect is 0.56, which is reasonable but somewhat below the desirable 0.80 (Howell, 1992).

Although the reduction in scores from Times 1 to 2 was slightly greater for the female than the male child for both the intervention and control groups, the within-subjects effect of gender of the target, $F(1,71) = 0.00, P > 0.05$, and its interaction with experimental condition, $F(1,71) = 2.43, P > 0.05$, were not significant. The interaction between time of testing and gender of the target was also not significant, $F(1,71) = 0.96, P > 0.05$, nor was this interaction significant with experimental condition, $F(1,71) = 0.26, P > 0.05$. Furthermore, the between-subjects main effect of experimental condition was not significant, $F(1,71) = 0.02, P > 0.05$.

### Relationship between controllability and stereotyping

The relationship between weight controllability and negative stereotyping of obesity was explored at both times. At Time 1, there was a significant positive correlation between weight controllability and negative stereotyping of obesity for both the female ($r = 0.27, P < 0.05$) and male targets ($r = 0.26, P < 0.05$), showing that negative stereotyping of the obese child increased as weight controllability increased. For Time 2, the correlations were positive but did not reach statistical significance ($rs = 0.16..20, Ps > 0.05$). This is consistent with movement over time in the

<table>
<thead>
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<th>Time 1</th>
<th>Time 2</th>
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</tr>
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<tbody>
<tr>
<td><strong>Female target</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>7.44 (2.84)</td>
<td>5.75 (3.50)</td>
<td>−1.69</td>
</tr>
<tr>
<td>Control</td>
<td>6.94 (3.50)</td>
<td>5.56 (3.93)</td>
<td>−1.38</td>
</tr>
<tr>
<td><strong>Male target</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>7.12 (2.93)</td>
<td>5.58 (3.25)</td>
<td>−1.54</td>
</tr>
<tr>
<td>Control</td>
<td>6.94 (3.69)</td>
<td>6.05 (3.62)</td>
<td>−0.89</td>
</tr>
</tbody>
</table>

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Discussion

The purpose of the present study was to attempt to reduce negative stereotyping by teaching children about the uncontrollability of obesity. As expected, the reduction in controllability from the first to the second questionnaire was significantly greater for the intervention group. However, contrary to expectation, negative stereotyping did not reduce from the first to the second questionnaire significantly more for the intervention group than the control group. Rather, both the intervention and control groups reduced their stereotyping of the obese male and female child. In addition, the controllability assigned to obesity was related to the extent of negative stereotyping in the first questionnaire. As children assigned more controllability to obesity, the more negatively they stereotyped the obese male and female child. These results provide support for attribution theory (Weiner, 1995; Weiner et al., 1988), which predicts that assigning controllability to obesity is related to more negative attitudes toward obese people. However, the relationship was not significant in the second questionnaire, showing the correlation was suppressed by the movement in controllability beliefs but not stereotyping.

The results regarding weight controllability show that the intervention was successful in reducing children’s beliefs about the controllability of obesity, revealing that the children attended to the message and understood what was being said. This is consistent with Crandall’s (Crandall, 1994) finding that adults assign less control to fat after having been presented with information about the genetic and physiological causes of obesity. The present study also extends Crandall’s (Crandall, 1994) work by measuring beliefs within individuals over time and by showing that an intervention about the uncontrollability of obesity is capable of reducing controllability beliefs in children. However, as in all studies using intervention techniques, there are demand characteristics from measuring beliefs immediately after an intervention. In this case, the children may have repeated the information they just heard in the talk, rather than changing their actual beliefs about the controllability of obesity. It is also possible that the children understood the items better the second time around, consistent with the improved internal reliability of the controllability measure and accordingly assigned less control to obesity.

Notwithstanding the above limitations, the impact of the intervention shows that there is potential to reduce children’s controllability beliefs even further. Although the intervention was relatively short (10 min) and addressed only one aspect of the uncontrollability of obesity (metabolism), children’s beliefs still changed in the right direction. Possibly, a longer and more powerful intervention that addresses different aspects of the uncontrollability of obesity would reduce controllability further.

In addition, whereas the intervention in the present study was given only once, repeated sessions might be even more beneficial in reducing controllability beliefs.

Although controllability beliefs reduced more in the intervention than in the control group, this was not the case for the extent of negative stereotyping of either the obese male or female child targets. Rather, the results show that both groups reduced their stereotyping from the first to the second questionnaire, suggesting that the intervention was not responsible for the reduction. These results are not in accordance with those of Crandall (Crandall, 1994) who found that teaching adults about the genetic and physiological causes of obesity reduced their negative attitudes towards fat people. However, Crandall’s (Crandall, 1994) intervention was able to incorporate more complex information about more sources of uncontrollability of obesity because it was targeted at adults. The intervention employed in the present study may not have been sufficiently powerful or long in duration to elicit a greater reduction in negative stereotyping. Possibly an intervention that incorporates more uncontrollability information and is repeated over time would be more effective in reducing negative stereotyping of obesity in children.
The finding that the control group also reduced their negative stereotyping by the second questionnaire suggests that stereotyping may not be stable over time. It is possible that children’s attitudes fluctuate (even if only a little) from week to week. Another possible reason for the reduction in stereotyping by both experimental and control groups, is that the first questionnaire may have acted like an intervention by prompting the children to think about their attitudes and their interactions with overweight children, maybe even to discuss them with their friends, in the time interval before the second questionnaire. In particular, it is likely that children (and their teachers) may never before have considered the issue of controllability of obesity or whether being fat is a child’s fault. Consequently, the first questionnaire may have prompted a re-appraisal, resulting in subsequent less negativity towards obese children.

Although addressing the uncontrollability of obesity did not reduce negative stereotyping more for the intervention group than the control group, it is important to remember that the study design was a little underpowered and that this was the first attempt at reducing children’s negative stereotyping. Considering that children’s stereotyping is so strong and pervasive, and that other factors, such as parental attitudes, children’s experience of obesity and school culture may influence stereotyping, it can be expected that successfully reducing stereotyping is a difficult task. However, the present study has taken an important first step by directly addressing the issue of the uncontrollability of obesity as a means of reducing stereotyping in 9- to 11-year-old children. Although not significant as predicted, the study has at least shown that introducing an intervention concerning the uncontrollability of obesity does not make these children’s attitudes towards obesity any more negative. Future research might usefully investigate the impact of longer and more powerful interventions targeted at different age groups. In this way the generalizability of the finding could be extended, ultimately leading to a more theoretical account of the development over time of the relationship between controllability and stereotyping.

Overall, the present study has important applied implications. First, the results show that parents and teachers can successfully use messages about the uncontrollability of obesity to change children’s beliefs that obesity is controllable. These messages could be incorporated into health and nutrition courses in schools to improve children’s understanding of the factors involved in determining weight. Information of this kind would be especially useful for those children who strongly believe that obesity is controlled by the individual and negatively stereotype children based on that belief. Second, it is imperative for parents and teachers to address the problem of negative stereotyping of obesity in children, a problem that often goes unrecognized. Schools should be encouraged to incorporate programs which attack negative stereotyping, as the present study has attempted. This would certainly benefit the overweight and obese children whose self-concept and psychological well-being are otherwise at risk.

References


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