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ORIGINAL RESEARCH

Pediatric OBESITY WILEY

Young children's choices and thoughts about pro-social behaviour towards others with overweight

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Summary

Objectives: This study aimed to investigate weight bias within young children's pro-social choices between characters who differed in body size.

Methods: Seventy-six children aged 4–6 years read stories asking them to choose who they would first help, share with, comfort, and steal from, between a healthy weight and child with overweight. They also selected the one character they would most like to play with. Children's reasoning for these choices was recorded and analysed.

Results: The character with overweight was helped first in only a third of the choices made. Children chose the characters with overweight more often as the target for anti-social action. In friendship selections, children overwhelmingly rejected the characters with overweight. However, weight bias was not prominent in the reasons children gave for the choices. Most children were not negative about body shape, weight or appearance. Similarly, in friendship choices, these were mostly expressed positively to the character chosen. Only a small minority of children were explicitly negative about the character with overweight.

Conclusions: A better understanding of weight bias acquisition and variation between children will benefit those working in health care and educational settings. Future research should link with developmental theory, such as on social categorization and theory of mind.

KEYWORDS
children, friendship, helping, obesity, pro-social behaviour, weight bias

1 | INTRODUCTION

Weight bias describes the negative attitudes to, beliefs about and behaviour towards people who have obesity. There is increasing and international attention on obesity stigma, to the damage caused by weight bias and to its unacceptability in a diverse society.[1,2] Weight bias has contributed to the failure to effectively manage obesity. This failure is argued as unethical and a violation of patient's human rights.[3] When internalized, it carries a psychological risk to people with obesity who then may need psychotherapeutic intervention in addition to weight management.[4]

Externalized weight bias in children—arguably reflecting prevailing social attitudes—was first described more than half a century ago in work that examined children's perception of disability. Presented with various line drawings of children differing in physical appearance, preteens liked the child with overweight the least[5] and more often matched this body shape to negative personality and behavioural descriptions than to one that was thinner.[6]

The many studies that have followed have helped in our understanding of the nature, strength and age at which weight bias becomes evident, and reaffirmed that children are more likely to match negative attributes and story outcomes to figures that are overweight than to those that are healthy weight or thin. This is apparent in choices between simple line-drawn figures (e.g.[5,6]), fabric silhouettes,[7] more realistic figural representations,[8] adult actors dressed as overweight or average weight[9] and non-human cartoons.[10] This phenomenon has been documented in children from pre-school age upwards[10,11] and from different social backgrounds.[12]

What is also evident, however, is that methodology affects outcome. The studies cited above require children to rank depictions of body shapes in order of preference, make a forced choice between these depictions or match these depictions with story outcomes (most often negative outcomes). Weight bias is indicated by simple choices. Alternative approaches allowing a greater differentiation of choice reveal that overweight body shapes are not rejected outright by children. Instead, they may be simply less preferred, albeit often by around two-thirds of participant samples.[13] In other circumstances, they are rated lower than healthy weight body shapes on various personality characteristics but still rated above the scale mid-points.[14]

Within this work, there has been a consistent interest in social relationships, specifically peer acceptance and friendship intentions. This acknowledges the increased likelihood of social exclusion and victimization experienced by young people with obesity.[15] Studies have asked children to choose which of the body shapes or drawn characters they would choose as their friends.[16] Others have included judgements about having friends to play with or being invited to a party within the list of characteristics assessed.[7,14] In these, the child with overweight is largely rejected in favour of one of healthy weight, being chosen by just 7% in the study by Musher-Eizenman et al.[16] and 4% in a study of ours.[14]

Perhaps surprisingly, only one study has looked in detail at weight bias in pro-social behavioural intentions. That is, in situations where children are helping others or are responsive to others' needs. Children aged 4–8 were presented with 7 short stories or scenarios in which two characters needed help.[17] One character was of average weight and the other was overweight. Once children made their choice of whom to help, they were asked whether they would maybe or definitely help that character and to give a reason. Overall, children were less likely to help the overweight than the average weight figure, with the mean ratings across the scenarios falling between 'maybe help average weight' and no difference. This indicated a statistically significant but weak effect. Interestingly, appearance and body weight-related reasons were given by only 13% of children for their choice to help the average weight character. This was very similar to the reasons for helping the overweight character. Consequently, neither body shape nor weight was distinctive in young children's reasoning for choices that appeared to reveal weight bias.

There is more to pro-social behaviour than simply helping others. Three main needs and types of responding are distinguished: helping (recognizing and responding to another's need to complete a task or action), sharing (recognizing and responding to another's lack of desired material goods) and comforting (recognizing and responding to another's negative affective state;[18]). It is distinctive because it is a response that requires a child to recognize the need of another and, as such, is a landmark of children's cognitive development.

Accordingly, the present study examined emerging weight bias by looking at young children's pro-social choices between characters who differed in body size and in their character friendship choices. It was hypothesized that weight bias would be seen across all of the pro-social dimensions (helping, sharing and comforting) in both children's preferences for an average weight character, and in their reasoning for these choices. Likewise, that children's friendship choices would be for an average weight character over one with overweight. Potential differences in the responses of girls and boys were examined, given that pro-social awareness may appear earlier in girls,[19] as were the responses of children who were themselves overweight.

2 | METHOD

2.1 | Participants

Seventy-six children from four primary schools in the north of England took part in the study, with complete data obtained for 72 (25 girls and 47 boys). The schools were state run and in areas where families were mainly of low to middle socioeconomic status. Children were in Reception class ($N = 37$) or Year 1 ($N = 35$) of the national educational system in England, had written parental consent for their participation, and were all aged between 4 and 6 years old. Ethical approval for the study was granted by the University of Leeds, School of Medicine Research Ethics Committee (MREC16-119).

2.2 | Materials

2.2.1 | Story books

A 19-page picture book was created specifically for this study. It featured professionally illustrated child characters that were used in previous studies.[14,20–22] Two characters were of average weight ('Holly' and 'Thomas') and two were overweight ('Alfina' and 'Alfie'). The story was set in a school and involved the characters making pictures in the classroom. It included four scenarios in which one character helped, shared with, comforted and finally stole from one of the other characters. Children were matched to the sex of the two characters that they had to choose between.

The first story scenario was a variant of one used by Patel & Holub[17] to assess children's willingness to help. Girls were shown 'Thomas', 'Holly' and 'Alfina' who were using crayons to draw their pictures (Figure 1, top panel). 'Holly' and 'Alfina' dropped their crayons. The next page in the story showed all three characters and asked, 'Who do you think Thomas will help pick up the crayons first? Holly or Alfina?' And then, 'Why do you think Thomas helped that girl?'

A second story scenario asked about sharing artwork materials. The question was asked, 'Who do you think Thomas will share the

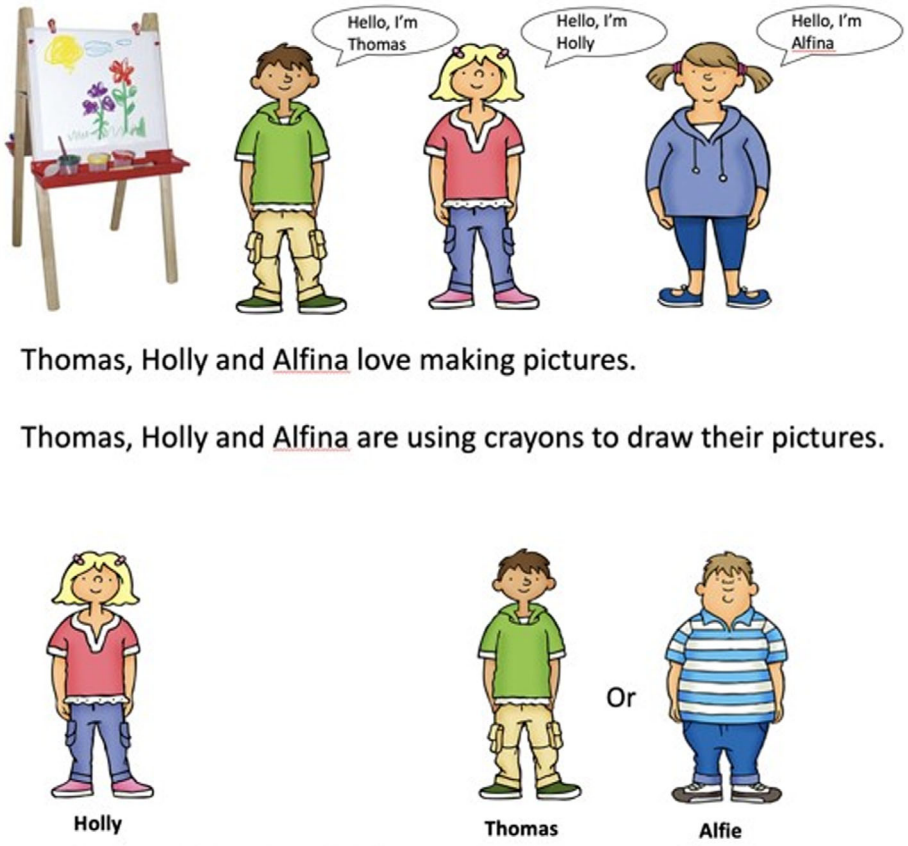

FIGURE 1 Example pages from the children's storybook. Top panel from the girl's story and bottom panel from the boy's story.

glitter with first? Holly or Alfina?', and then, 'Why do you think Thomas shared with that girl?' Comforting was examined in the third scenario. When paint spilled on the artwork done by the story characters, they were upset. Children were asked, 'Who do you think Thomas will hug first? Holly or Alfina?' In the final scenario, scarce artwork resources meant that 'Thomas' decided to steal stickers from one of the girls. Children were asked, 'Who do you think Thomas will steal stickers from? Holly or Alfina?' Again, they were asked why they chose that girl. The story ended with the teacher saying how lovely the pictures were and putting all the children's artwork on the classroom wall.

The boys' version had 'Holly' as the character who helped, shared with (Figure 1, bottom panel), comforted or stole from either 'Thomas' or 'Alfie'. The three pro-social situations were presented in counterbalanced order within the sample of participants. The stealing situation was always presented last within the story.

2.2.2 | Body size rating

The body figure scale by Collins[23] was used to estimate the body size of each participant. This pictorial scale features seven preadolescent figures of increasing body size. It has uncertain psychometrics for use by young children to indicate their own body size.[24] The body size of each participant was therefore estimated by the researcher and matched to one of the figures following the procedure of Charsley et al.[21]

2.3 | Procedure

The researcher introduced themselves as a visitor to the school who was to read a story with some of the children. They sat with the child in a quiet area of the classroom or school building and the child's verbal assent was obtained. All sessions were audio-recorded. Children were encouraged to lead in the reading of the story as this was a format they were familiar with at school. The researcher supported children in reading when they were unable to do so. Having finished the story and the four associated tasks, the children were presented with a friendship selection task. The characters from the story were presented side by side on an A4 sheet and children were asked, 'Who would you most like to play with?' and 'Why did you choose that boy/girl?' Once children had made their friendship selection they were given a sticker for participating, told the activity had finished and returned to the main classroom.

2.4 | Data analysis

The audio recordings were transcribed verbatim. Children's character choices in the four-story scenarios and their friendship selection were noted. Differences in the choices of average weight character over the character with overweight were determined by a test of proportions (*z*-score) with the null hypothesis set at 50% (i.e. equally likely to be chosen). A test of difference between proportions (χ^2) was used to examine potential sex differences.

Children's reasons for their choices were assessed according to their emotional valence, that is, whether they were positive, negative or neutral in tone, in relation to the character chosen. This followed the procedure outlined by Kilmurray et al (2019). Positively coded responses were those that described the choice as fair, being responsive or helping (e.g. someone in distress) or liking the character in some way (including the way they looked). Negatively coded responses were saying something negative about one of the characters, including their appearance, body shape or weight, or justified theft (in the stealing situation). Neutral responses described the choice as due to the character being nearest to the one chosen, being similar in clothes or appearance, or any response that could not be clearly coded as positive or negative. Two authors independently coded the children's responses to the pro-social scenarios. Coding reliability was $\kappa = 0.81$, indicating a strong level of agreement. The frequencies of positive, negative and neutral responses were tabulated and the proportions of these responses were compared between the story characters who were different in body shape (χ^2).

3 | RESULTS

3.1 | Character choices

Combining choices in all the pro-social scenarios revealed that a significantly smaller proportion of children chose the character with overweight ('Alfie' or 'Alfina') as the first recipient of help, sharing or comfort (Table 1). They chose the average weight character ('Holly' or 'Thomas') on 65% of all occasions ($z = 4.38$, $p < 0.001$). Girls and boys were similar in their choice of average weight character over the one with overweight ($z = 3.73$, $p < 0.001$ and $z = 2.04$, $p = 0.04$, respectively).

Looking at the pro-social scenarios individually, children chose 'Holly' or 'Thomas' over 'Afina' or 'Alfie' as the child to be helped first ($z = 4.38$, $p < 0.001$) and to be comforted first ($z = 3.20$, $p = 0.001$). In the comforting scenario, whilst 88% of girls made this choice ($z = 3.67$, $p < 0.001$) only 60% of boys chose the average weight character to be comforted first ($z = 1.31$, $p = 0.19$). This difference in choice between girls and boys was statistically significant ($\chi^2(1) = 5.79$, $p = 0.016$). In contrast, there was no difference between average weight and character with overweight choices in the sharing scenario ($z = 0.17$, $p = 0.87$).

In total, 18 (25%) children were constant in their character selection across all the pro-social scenarios, meaning that they chose the same character as the first recipient in each of the helping, sharing and comforting situations. Of these, only three children chose the character with obesity ('Alfina' or 'Alfie') first over the average weight character on all occasions (17%, $z = 2.83$, $p = 0.005$). Likewise, significantly fewer children chose 'Alfina' and 'Alfie' in two out of the three pro-social situations (31%, $z = 2.74$, $p = 0.006$).

In the stealing situation, children showed a clear preference for stickers to be stolen from the character with overweight ('Alfina' or 'Alfie') rather than 'Holly' or 'Thomas' ($z = 3.54$, $p < 0.001$). Some 84% of girls made this choice ($z = 3.40$, $p < 0.001$) and 64% of boys, the latter just failing to reach significance ($z = 1.90$, $p = 0.06$). The difference in the proportion of girls and boys was also not significant ($\chi^2(1) = 3.12$, $p = 0.08$).

3.2 | Rationale given for choices

Children provided a reason for their choices on 65% of occasions. Five children answered 'Don't know' to all five questions having selected a character. All of these were in reception class (i.e. younger) and three were boys. The proportion of 'Don't knows' did not differ between the children choosing an average weight character or a character with overweight (29.4% vs. 37.8%, $\chi^2(1) = 2.71$, $p = 0.10$). Nor did the average number of 'Don't knows' differ between girls (1.3 per child) or boys (1.4 per child).

TABLE 1 Girl's and boy's choices of story characters in each of the pro-social and stealing situations, *N* (%).

	Average weight character			Character with overweight		
	Girls	Boys	Total	Girls	Boys	Total
Helping	21 (88%)	33 (70%)	54 (76%)	3** (12%)	14* (30%)	17** (24%)
Sharing	10 (42%)	25 (53%)	35 (49%)	14 (58%)	22 (47%)	36 (51%)
Comforting	21 (88%)	28 (60%)	49 (69%)	3** (12%)	19 (40%)	22** (31%)
Total pro-social	52[a] (72%)	86 (61%)	138 (65%)	20** (28%)	55** (39%)	75** (35%)
Stealing	4 (16%)	17 (36%)	21 (29%)	21** (84%)	30 (64%)	51** (71%)

Note: Difference between girl's and boy's choices in each scenario and between the total number of choices *$p < 0.05$ **$p < 0.01$.

[a]One girl declined to give a choice in any of the pro-social scenarios.

TABLE 2 The valence of children's reasoning for their choice of story characters in each of the pro-social and stealing situations, *N* (%).

	Average weight character			Character with overweight			
	+ve	-ve	Neutral	+ve	-ve	Neutral	Do not know
Helping							
Girls	4	0	9	1	0	1	10
Boys	11	0	10	5	0	4	17
Sharing							
Girls	2	0	5	4	0	4	10
Boys	6	0	11	6	0	7	17
Comforting							
Girls	7	0	7	1	0	2	8
Boys	11	0	10	6	0	1	19
Total pro-social	41 (44%)	0 (0%)	52 (56%)	23 (55%)	0 (0%)	19 (45%)	81
Stealing							
Girls	1	1	2	0	9	5	7
Boys	2	2	8	0	14	7	14
Total	3 (19%)	3 (19%)	10 (62%)	0** (0%)	23** (66%)	12 (34%)	21

Note: Difference between characters $^{**}p < 0.01$.

In the pro-social scenarios overall, 47% of the reasons cited for character choice were coded as positive and 53% as neutral (Table 2). Whilst significantly fewer children had chosen the character with overweight as the first to receive help, their reasons for making these choices did not differ by valance (positive valence, 44% vs. 55%, $\chi^2(1) = 1.39$, $p = 0.24$). There were no negatively valenced reasons for the choice of either character. However, five children justified their choice of the average weight character by referring negatively to the character with overweight. For example, [Thomas] 'Because Alfie's the fattest one and Thomas is not the fattest one'; [Thomas] 'Because Alfie has a fat tummy and then she has small arms so she can't hug all the way round and Thomas has not a big belly so she can hug Thomas' and [Thomas] 'Because Alfie has been doing something naughty and Thomas is all on his own'. Note that all these responses were coded positive as they were positive about the character chosen (in comparison with being negative about the character rejected). Four of these five children gave 2 or more comparative reasons for the 3 pro-social situations, and four were boys. There were no clear gender differences in children's reason valence.

In contrast to the pro-social scenarios, negatively valenced reasons were the majority category in the stealing scenario (51%). The preference for stickers to be stolen from the character with overweight was justified by children more frequently giving negatively valenced reasons ($\chi^2(1) = 9.52$, $p = 0.002$) and significantly fewer coded as positive ($\chi^2(1) = 6.93$, $p = 0.009$). Most of the negative reasons were simple statements about the fat character, for example, [Alfina] 'Because Alfina took all the stickers'; [Alfie] 'Maybe because Alfie might have hit Holly' and [Alfina] 'Because I think Alfina is a mess'.

Considering the responses to all four scenarios, only 12 of the children referred to the character's appearance or clothing in any of their choice reasons, for example, [Holly] 'Because Holly has long hair'; [Alfie] 'Because Alfie has a stripy t-shirt' and [Thomas] 'Because I like his shoes'. Only five of these, all boys, commented specifically on the body shape or weight of the characters, often contrasting the average weight and fat characters: [Alfie] 'Because that guy is fatter' and [Alfie] 'Because Alfie might roll on the table and trip over, that's why. Thomas doesn't have a fat tummy'. Overall, only 6% of the reasons given for children's character choices were related to body shape or weight.

3.3 | Friendship choice

Asked 'Who would you most like to play with?' children could choose from any of the characters. Six of the children's choices were discarded as they said their choice was because this was their own name, the name of their best friend at school, or of a pet (five 'Alfies' and one 'Thomas'). Three children declined to make a choice. Of the 63 children who made a choice, 51 chose 'Holly' or 'Thomas', significantly more than the number who chose 'Alfina' or 'Alfie' (4 and 8 respectively, $z = 4.91$, $p < 0.001$; Figure 2). Children's choices were strongly matched to their own sex. Of the 25 girls, 23 chose 'Holly' ($z = 4.2$, $p < 0.001$). No girl chose 'Alfina'. Of the 38 boys, 30 chose 'Thomas' or 'Alfie' ($z = 3.57$, $p < 0.001$).

Forty-five children gave reasons for their choice. Of these, 28 were positively valenced (a reference to liking the character in some way, including appearance) and 12 were neutral (commenting on some aspect of appearance, being the same sex or age). Only 5 responses were coded as negative (3 girls and 2 boys). In each case, the child justified their choice of an average weight character as the one they wanted as a friend by referring to either 'Alfie' or 'Alfina' as being fat or having a big belly (e.g. [Thomas] 'Because Thomas isn't fat

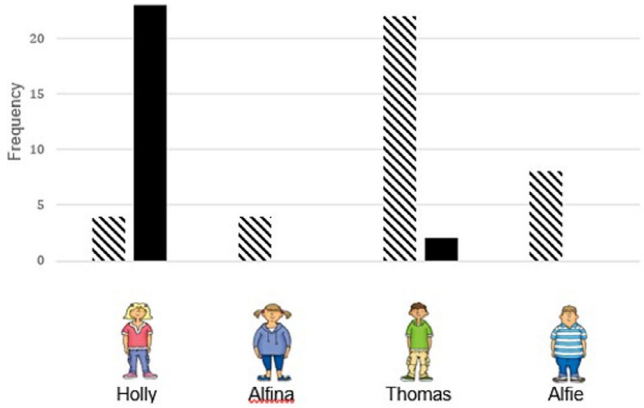

FIGURE 2 Children's choice of the character they wanted to play with (girls solid bars and boys hatched bars).

and Alfie is fat and she's fat too'). Only two of these children had been negative in their earlier reasoning towards the character with overweight.

3.4 | Additional observations

Nearly all children were assessed by the researcher as being within the mid-range of the Collins body shape scale (Figures 3–5). Only one was rated as Figure 6 and their responses were not markedly different from those of the other children.

4 | DISCUSSION

This study is the first to examine emerging weight bias across a range of young children's pro-social behavioural intentions, finding evidence of weight bias in some but not all situations. Weight bias was evident in 4 aspects of children's responses. First, in their overall choices for pro-social action. The character with overweight was helped first in only a third of the choices made. Second, by choosing the character with overweight as the target for anti-social action (being stolen from). Third, in their friendship choices. Children overwhelmingly rejected the characters with overweight in favour of one with a healthy weight. And fourth, in the explicit responses of a small minority of children.

In contrast, weight bias was not evident in other outcomes. In particular, weight bias did not feature in the reasons children gave for the choices made in the pro-social scenarios. None were negative and the proportion of positively framed reasons was similar when either the average or overweight characters were chosen. Overall, most children were not negative about body shape, weight or appearance in any of the reasons for the choices they made. In terms of friendship choices, these were mostly expressed positively with respect to the character chosen. Only 11% of those giving reasons were explicitly negative about the character with overweight.

Our findings have some similarities to those of Patel & Holub.[17] They found that young children were less likely to help the overweight child across a range of pro-social scenarios. Additionally, weight bias was not evident within the reasons children gave and there was little reference to weight or body shape in what they said. Patel and Holub suggested this could mean that children had difficulty with the task. An alternative interpretation would be that most children were aware that one body shape was more desirable than the other but were unable to articulate the reasons for this. In previous work with children this age we observed that features of appearance such as clothing, hairstyle and sex are more salient than body shape in the friendship choices of young children.[21] Furthermore, several other studies have found that when young children are asked to give reasons for their choices, body shape or fatness is rarely referred to directly.[11,13,25] This was also true in our study of peer interactions, in which after reading a story featuring a character with overweight, only one of 45 pairs of older and young primary-age children spoke about him 'being fat'.[22] The general picture, therefore, is of younger children preferring normally represented body shapes over those that are different, that is, overweight or with a disability,[26] but not providing verbal justifications in the ways observed in older children and adults.

Weight bias was much more evident in the friendship choices they were asked to make between characters. Very few children chose a character with overweight. As noted earlier, this is consistent with findings from several studies that document the child with overweight being rejected in favour of one of healthy weight.[14,16,17] This rejection mirrors some, but not all, of the research on the friendship networks and peer acceptance of older primary school children.[27–29] Similarly, it can be seen in parent's predictions of less social interaction by their children with an overweight peer relative to one of average weight.[30] It is important to note the sex bias in character choice for friendship. Children selected the same sex character, even more than they rejected one with overweight. Again, something that was observed in our previous work.[21]

The visibility of differences between characters in terms of their body shape and appearance is likely to be important. It links with what is known of the complex processes underpinning social categorization in children.[31] Body shape is an obvious feature by which children create groups and classify, and it speaks to the very heart of weight bias. In addition, learning to make sense of other people's feelings and behaviours is a key part of children's social-cognitive development in the first 5 years of life.[32] Most children acquire a theory of mind (about other's emotional and intentional states) between the ages of 4 and 5,[33] but what leads up to this significant cognitive achievement is in evidence much younger. By 8 months, children prefer those who act positively (help) towards pro-social others,[34] and prefer those who act negatively towards anti-social others. By the age of 2, children cooperate in a simple task[35] and also show sympathy for an adult victim of a harmful event.[36] Helping is the first pro-social behaviour to emerge.[18] A focus on pro-social behaviour is critical to gaining a more balanced account of weight bias.

This study has strengths in additional to the more comprehensive account of pro-social intentions. The characters in the storybooks were professionally drawn. The narrative was presented in a within-participant design, with all 5 choices being made by each child. This allowed us to look for 'fixed' patterns of choices (of which there was little evidence). Children were asked who to assist, share with or comfort first. Unlike in other studies, this indicated that both characters could benefit from their action. The research also gave children a voice in terms of listening to what they said about their choices. As with our previous work, listening to what children say is novel and distinctive[20–22]; it recognizes that young children experience events and situations differently from older children and adults, and respects their reasoning.[37] It also throws light on individual differences—we focused on the emotional valence of what they told us and not just on the content, and looked at these children as individuals and not simply as a group. Importantly, weight bias was explicit in a very small minority of children, something consistent with previous observations.[21,22]

In terms of limitations, there was only one child in the study with a lived experience of overweight or obesity. Children with obesity are generally missing contributors to this literature. We know very little about the chronology of their own self-identification of weight bias. The research was conducted in a school environment and this, together with the audio recording and the presence of an unfamiliar adult researcher, may have inhibited some in expressing negativity. There were unequal numbers of girls and boys in our study sample. All children were from the north of England and with limited diversity in ethnicity or deprivation. This limits the generalizability of the study findings.

Future research could address these limitations. It might consider the social context of attitudes to weight and weight bias in significant adults in children's lives within close family and school. Providing a range of characters from different cultural backgrounds might allow us to see how important this is to children in shaping their choices within a context of weight bias. Considering pro-social intentions alongside the more studied negative attitudes and behaviours would provide a more balanced account of weight bias. Looking again at these children, and at their life experiences, in 2–4 years' time may provide an understanding of the chronology of weight bias. Likewise, there is value in this research forming stronger links with psychological developmental theory, such as that on social categorization[31] and theory of mind.[38]

In conclusion, weight bias does not differentiate adults and young children. It is present, in some form, across all ages. In children, it underpins the documented social exclusion and victimization experienced by young people with obesity.[15] It may affect children's engagement with weight surveillance or obesity management interventions,[39] and has an adverse psychological impact.[40] Accordingly, clinical practice and advocacy recommendations to address weight bias are being directed to providers of healthcare working in paediatric care.[41] A better understanding of the process of weight bias acquisition and variability between children in expression of bias will be of benefit to all those working with young children in health care and educational settings.

AUTHOR CONTRIBUTIONS

GD, GL and AJH designed the study. GD conducted the data collection. All authors were involved in data analysis, drafted the manuscript and approved the final version.

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CONFLICT OF INTEREST STATEMENT

None for the submitted work. Outside of the submitted work: IDC reports receiving grants for clinical trials (NovoNordisk, Eli Lilly and Boehringer Ingelheim). AJH reports receiving personal fees from Slimming World (UK).

DATA AVAILABILITY STATEMENT

Data are available on request.

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