

Understanding childhood weight bias: Laying the foundation for promoting positive body image

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Abstract: This study interviewed 131 kindergarten children in China regarding their perspectives on body size-related bias and associated behavioral tendencies using a case study design. Results showed that body satisfaction was prevalent among this group of young children. Similar to studies conducted in Western cultures targeting young children, body weight bias was evident among this group of Chinese kindergarteners with a strong preference for thinner body types, regardless of their genders. Qualitative findings indicated that weight bias could influence children's behaviors, with a tendency to select friends who either share similar body sizes or have slimmer body types. Meanwhile, children with higher body weight may be perceived as a "protector" prototype, a distinctive discovery and contribution to current literature. Findings also suggested a significant peer influence on body size perception, with family members also playing a role. However, the absence of media influence in the current study highlights the need to reconsider the tripartite model's applicability in non-Western cultural contexts and distinct age groups, offering a unique contribution to the body image literature with young children.

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Introduction

Weight Bias and Body Satisfaction

Weight bias refers to negative attitudes, beliefs, stereotypes, and discrimination toward individuals based on their body size or weight (Puhl & Latner, 2007). It has been observed across various groups and age ranges, including both adults (Carels et al., 2009) and children (Damiano et al., 2015; Pont et al., 2017; Spiel et al., 2012). Weight bias leads people to associate negative attributes with individuals with higher body weight and positive attributes with individuals with lower body weight, stemming from the misconception that body weight can be easily controlled through dieting and physical exercise (Schousboe et al., 2004).

In reality, body weight is not easily malleable and is influenced by multiple factors, including genetics, environment, and societal influences (Blüher, 2019). Therefore, simply eating less and exercising more may not significantly alter body weight. However, such messages have been repeatedly conveyed to young children through various campaigns aimed at combating childhood obesity, such as Let's Move (ObamaWhiteHouse, 2017) in the U.S., Better Health (Department of Health & Social Care, 2022) in the United Kingdom, and World Obesity Day by the World Health Organization (2024). These messages have been internalized, as children tend to believe that body weight is entirely under one's self-control or entirely dependent on willpower (Tiggemann & Anesbury, 2000; Xu & He, 2022; Xu & Nerren, 2017).

Weight bias is deeply rooted in these misconceptions (Blüher, 2019) and has become prevalent not only among adolescents (Himmelstein & Puhl, 2019; Puhl & Luedicke, 2012) but also among young children (Harriger et al., 2019; Spiel et al., 2012). A comparison of the findings of Richardson et al. (1961) and Latner

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and Stunkard (2003) suggests that weight bias among children has increased by 40.8%. Evidence of weight bias has been observed in children as young as three years old (Brylinsky & Moore, 1994; Cramer & Steiwert, 1998; Harriger & Trammell, 2022; Worobey & Worobey, 2014). Specifically, preschool-aged children in these studies were found more likely to describe an overweight peer as mean, unhappy, having few friends, and being someone they were less likely to play with.

Weight bias is prevalent in school settings, where children and adolescents with heavier bodies frequently experience weight-related stigmatization and victimization (Puhl & King, 2013; van Geel et al., 2014). Weight bias can be internalized, known as internalized weight bias (IWB), meaning children and adolescents can apply negative weight bias to themselves (Pearl & Puhl, 2018). IWB refers to self-directed negative beliefs about oneself based on perceived weight status (Durso & Latner, 2008). As a result, this raises significant concerns among parents (Puhl et al., 2013), because these children who are experiencing weight-related victimization are more likely to have depression, low self-esteem, and poor academic performance (Puhl & Lessard, 2020). Although comparatively fewer studies have been conducted with very young children, there is evidence demonstrating that children who are victimized or rejected based on weight can internalize weight bias, and in turn develop negative attitudes toward themselves and their own bodies (Smolak, 2004; Spiel et al., 2012).

Gender differences in weight bias have been investigated in previous work, adolescent girls experience higher rates of weight-related victimization compared to adolescent boys (Puhl et al., 2017). However, studies targeting young children are limited, and findings are mixed (Puhl & Latner, 2007). Some evidence suggests that girls hold more negative biases related to weight than boys (Burmeister et al., 2016; Harriger et al., 2019; Latner & Stunkard, 2003; Spiel et al., 2012), others found the opposite with 4-year-old boys more likely to demonstrate weight bias than 4-year-old girls (Damiano et al., 2015), while some researchers found no gender differences in terms of weight bias (Harrison et al., 2016; Kornilaki, 2014).

Despite the weight bias related issues discussed above, there are some young children who are quite satisfied with their own body weight and size. This is particularly evident in kindergarten children in China (Xu & He, 2022). This result contrasts with findings in Western cultures that body dissatisfaction was evident in children between the ages of 5 and 8 years old (Lowes & Tiggemann, 2003; Schur et al., 2000; Tiggemann & Wilson-Barrett, 1998). A potential reason behind this discrepancy could be the cultural context, or the beliefs, values, and skills of specific cultural groups (Markus & Hamedani, 2020).

Across different cultural contexts, there is empirical evidence supporting cultural differences on body image ideals, body dissatisfaction, and weight bias. For example, Tiggemann (2012) identified body ideal exceptions in some Asian cultures where plumpness was valued and recognized as a traditional indicator of good health or beauty. In rural Fiji, maintaining a robust body size was important and being thin would be blamed and seen as something to be taken care of by the family (Baker, 2005). This devaluation of thinness may have been more common among non-Western, non-industrialized regions of the world (Anderson-Fye, 2011). However, body image ideals seem to have shifted with industrialization, not only in Asia (Kawamura, 2011) but also in Fiji (Baker, 2005), as a result, higher rates of eating disorders have been observed in parts of Fiji, Hong Kong, and Taiwan. The globalization of the economy opens the door for more exposure to western body images and ideals through media programming (Anderson-Fye, 2011). Even so, it is a promising notion that powerful cultural values could resist western ideals and serve as a buffer against weight bias and body dissatisfaction (Anderson-Fye, 2004). More studies are needed to investigate body image among children at this young age across different cultures, especially targeting younger children. Unfortunately, weight bias has rarely been examined in young children in Chinese culture. Particularly minimal work has explored gender differences on weight bias among Chinese children. To minimize this gap in the literature, this current study explored Chinese kindergarten children's weight bias to gain a more thorough understanding which may provide a foundation for intervention and/or prevention.

Conceptual Understanding of Body Image Development

Body image is how a person perceives, thinks about, and feels regarding their physical appearance

(Heatherton, 2011). Body image-related concerns, attitudes, and behaviors often begin in childhood. Smolak (2011) emphasizes that early experiences significantly shape body image development. Flannery-Schroeder and Chrisler (1996) further note that children absorb the message that “fat is bad and thin is good” from families, teachers, peers, and the media—often internalizing this belief long before they reach adolescence (pp. 243–244). Given the documented health issues related to body image among young children, researchers must understand the factors influencing their body image development and weight bias is crucial. Such understanding can help prevent negative psychological outcomes and promote positive body image perceptions of themselves and others.

From a social-cognitive perspective, the Tripartite Influence Model (Thompson et al., 1999) posits that parents, peers, and media are the primary sociocultural resources shaping body image. Thompson et al. (1999) and van den Berg et al. (2002) suggest that these three influences significantly affect body image development and are strong predictors of weight-related behaviors. Although initially applied to research on body dissatisfaction and eating disorders (e.g., Smolak & Levin, 2001; Shomaker & Furman, 2009), this model offers valuable insights into understanding body image and weight bias development in young children.

Within the sociocultural context, evidence has demonstrated that both parents can impact a child’s body image development and attitudes (e.g., Ricciardelli & McCabe, 2001; Rodgers et al., 2009). Also supported by Vygotsky’s Sociocultural Theory (Vygotsky & Cole, 1978), cultural beliefs on body image ideals and weight bias can be transmitted from one generation to the next, from one person to the other. Parents may pass culturally-based weight-related stereotyped beliefs to their kids. For example, parents might make negatively stereotyped comments about obese individuals in front of their children, thus transmitting weight bias through verbal communications (Puhl & Latner, 2007). Rodgers and Chabrol’s (2009) recent review of 56 publications suggested that parents’ verbal communications seem to be most influential on adolescents’ body concerns; both mothers and fathers are important contributors to children’s development of weight bias. Though less is understood regarding preadolescent children, few studies found correlations between parents’ and their children’s body size attitudes (Holub et al., 2011; Rich et al., 2008; Perez et al., 2018; Spiel et al., 2012). Because children are more likely to learn weight biased attitudes and behaviors from their parents (Hutchinson & Calland, 2019), it is a topic that needs further exploration.

Peer influence cannot be overlooked within the social-cultural context, as peers play a significant role in shaping body image development (Smolak & Levine, 2001) and are recognized as the most common source of weight bias (Himmelstein & Puhl, 2019). Research has shown that conversations among peers about appearance, body shape, weight, and methods of losing weight or building muscle can contribute to body image concerns (e.g., Gondoli et al., 2011; Helfert & Warschburger, 2011; Holt & Ricciardelli, 2002). Weight-related teasing from peers is also associated with increased body dissatisfaction (Phares et al., 2004), and lower self-esteem with their appearance (Lunde et al., 2006).

Due to shared peer norms regarding thinness, the thin ideal has been observed among girls as young as 6 to 7 years old. Moreover, peers’ body dissatisfaction is often internalized as personal dissatisfaction (Dohnt & Tiggemann, 2005), further highlighting the impact of peer influence on body image. Ruble (1983) explained that social comparison becomes particularly apparent between kindergarten and second grade, when self-evaluation is shaped not only by environmental messages but also by social norms (Ruble et al., 1994). At this stage, children begin to recognize societal standards of thinness and compare their bodies to these ideals, often resulting in body dissatisfaction. These factors help explain young children’s early awareness of their own body size, the development of negative attitudes toward overweight peers, and the positive association between thinness and social popularity (Clark & Tiggemann, 2006; Jones & Crawford, 2005).

Many studies have documented media as important sociocultural factors influencing body image perceptions (Levine & Harrison, 2004; Smolak & Levine, 2001), with most studies highlighting its negative impact on children’s body image development. For example, television viewing was found associated with

boys' endorsement of stereotypes about overweight females (Harrison, 2000), while exposure to magazines was correlated with increased awareness of the thin ideal among children aged 9 to 12 (Sands & Wardle, 2003). Similarly, media exposure through magazines and TV programs has been tied to internalization of the thin ideal, body dissatisfaction, and stronger preferences for thinner body types in young girls (Harrison & Hefner, 2006). Even very young children appear susceptible to these influences; girls aged 5 to 8 reported lower satisfaction with their body and its appearance, and a stronger desire for thinness after viewing Barbie doll images (Dittmar et al., 2006). More recently, a study in South Korea found that girls aged 5 to 6 who were exposed to Korean pop music TV programs exhibited greater concern about weight and a heightened desire to be thinner (Kim & Han, 2021). These findings raise great concerns about the harmful effects of media exposure.

Given the multidimensional nature of body image and the influence of parents, peers, and media, it is challenging to develop a comprehensive understanding of body image, particularly in young children. Children's perspectives on body image are not shaped by any single influence in isolation; rather, parental, peer, and media influences interact within a cultural context, which provides the backdrop to form children's attitudes toward their own and others' body size. Body satisfaction, evaluation of one's own body, is just one component of body image. Therefore, the current study aimed to explore attitudes toward one's own and others' body size among kindergarten children in a Chinese cultural context. Specifically, we examined factors that might contribute to the development of body satisfaction and weight bias, and ways these biases might influence behavior. By challenging the applicability of the Tripartite Influence Model (Thompson et al., 1999) within a Chinese cultural context, we offer insights into the culturally specific factors shaping body image development in early childhood.

Method

Little is known about whether weight bias exists in Chinese kindergarten children, and whether it is that similar to weight bias that is held by young children in Western culture. It is unclear whether Chinese girls and boys have different weight biases, what factors may influence their weight bias development, or how bias influences their behavior. To address these gaps, the current study explored children's voices regarding body size-related bias and its relationship to behavioral tendencies.

Study Design

The study employed a qualitative case study for data collection and analysis (Yin, 1994). This design was particularly suitable for the current research as it concentrated on a specific group of participants (kindergarten children), investigated a specific topic (body image perceptions and weight bias), and operated within a unique context (Chinese culture). Qualitative data in this study can provide deeper insights that enhance and extend the current understanding of the topic.

Participants

This study used a convenience sample with 131 children from a local kindergarten. This kindergarten is located in a city with a population of over one million in the middle eastern region of China; the socioeconomic status of the school district is considered middle class. Among these children, 59 were girls and 72 were boys; The youngest participant was 4 years and 8 months old, while the oldest was 7 years and 1 month old. The researchers first obtained ethical approval from the Institutional Review Board, then secured signed consent forms from the school director and parents before contacting the participants.

Data Collection

Data were mainly collected through semi-structured interviews. During the interview, there were three activities associated with the personal and ideal body size, the selections of playmates and best friend, and attribute assignments to facilitate data collection. These interview tasks have been used previously with preschool children (Harriger et al., 2010). Adapted from Collins (1991) and Cramer and Steinwert (1998), three different body figures in different body sizes (thinner, average, and larger) representing different weights were used to facilitate the interviews. These body figures looked the same, with the same

height and the same facial expression, except body sizes were different: One was thin, one was normal, and one was chubby. Two identical sets of boy figures were used for interviewing boys, including two thin-sized figures, two normal-sized figures, and two chubby-sized figures, a total of six. Two sets of girl figures were used for interviewing girls. There was no specific order to follow when using these figures.

Example questions related to personal and ideal body size were: *Are you happy with your body size? If I had a magic wand, which body size would you like to have?* Example question for playmates and best friend selections included: *Among these figures, which ones would you like to play with? Which one would be your best friend?* For attribute assignment, twelve adjectives for positively and negatively valenced attributes were presented on a cardstock and read to each child in a random order: happy, smart, nice, fun, has friends, does not get teased, sad, not smart, mean, not fun, has no friends, and gets teased (Harriger et al., 2010; Spiel et al., 2015; Worobey & Worobey, 2014). The researcher asked individual children: *Please point to the boy/girl that you think is/has_____.*

The participating children were individually interviewed in a quiet room assigned by the school principal. Before each interview, researchers shared information about the study, what they would be doing during the study, and asked about their willingness to participate in the study. Children were informed that they could stop and leave the interview whenever they wanted to. During the interview, the researcher asked questions one after another with minimal follow-up questions to clarify the children’s responses. Researchers documented interview questions and children’s verbal responses on paper and video recorded them for further transcription and verification purposes. Each interview lasted approximately 5-7 minutes.

Data Analysis

The interview data were first transcribed and organized into an electronic document. Individual participants were assigned numbers. Data were analyzed following the three-step procedure by Miles and Huberman (1994). Researchers read the data line by line, color coded similar responses to create initial codes, and then organized similar data together based on frequencies to establish patterns. Matrices were then created for displaying the data with contrasts and comparisons to finalize themes (Miles & Huberman, 1994). See example codes, categories, and themes in Table 1. Interrater reliability (IR) was assessed to ensure agreement in data analyses (Miles & Huberman, 1994) and was calculated by randomly selecting 25% of the data and assigned to researchers to individually code them. The IR was calculated, yielding 92% agreement. Revisiting video files allowed for triangulation across multiple data sources using independent coding.

Table 1
Example Codes, Categories, and Themes

Codes	Categories	Final Themes
- "he/she looks just like me." - "His body size is just like mine, therefore, I like him." - "His body size is the same as mine, we both have normal body size." - "Their body sizes are exactly same with mine, very pretty." - "She has the same weight as me, the same body shape."	-They look like me -Share the satisfying feeling about their own body size	Body Satisfaction
- "I like them because they are thin." - "I like the thin one; I don't like the big size." - "These are very slim and look very handsome." - "He is a little more handsome comparing to the others." - "He is the most handsome." - "She is thin, and we can play together very well." - "He is big, and nobody can fight him."	-Prefer the thin figures simply because they were thin. -Thin and/or normal figures were pretty and handsome. -The chubby figures would likely hurt them, because they were big.	Not the Chubby One
- "They are my friends." - "They look like my friends." - "QianYutong always comes to play with me." - "Feng Xinyu plays with me every day". - "My best friend is exactly the same with this one."	-Associate the figure(s) with their friends. -Personalize the figure by naming their friend. -Mention the activity they	Peer Influence

- "He played basketball with me before."	did with their friend.	
- "Mom says I am just right. My dad says I need to be a bit slimer."	-Family members' comments on their body size.	
- "My grandma says I need to grow a little bigger, but I think I am just right."	-The observations of their parents' behaviors/exercises associated with their body size.	Family Context
- "My mom is slim; she does exercise every day. At night, she does leg exercises and warm up exercises. But my dad is bigger than my mom, he does not exercise at all, he looks at his phone instead."		

Results

Body Satisfaction

Body satisfaction was found to be high in this group of children. When they were asked whether they were happy about their body size, among 131 children interviewed, approximately 96% of children ($n = 126$) were highly satisfied while only 5 were not. This percentage was high compared to the findings in Western culture (Rand & Resnick, 2000). Seventy-four children insisted on maintaining their body size, even though they were told that they could change their body size. Fifty-one children said they would like to become thin, but six of them would like to become chubby (See Table 2).

Table 2

Ideal Body Size Selection Frequencies by Body Size and Gender

	n	Thin	Normal	Chubby
Girls	59	29	28	2
Boys	72	22	46	4
Total Participants	131	51	74	6

Body satisfaction was also evident during the conversations asking about playmates and best friend selections. Children ($n = 73$, 55.7%) frequently chose figures with the same body size as their own. Some children explained that "he/she looks just like me", including 20 boys and 9 girls. They consistently compared their body sizes to the figures selected, and they responded with full confidence, suggesting high body satisfaction among these children, regardless of their gender.

Most interestingly, more boys than girls were likely to share this satisfying feeling about their own body size. For example, Child88 picked normal-sized figure and said:

His body size is just like mine, therefore, I like him.

Child76 compared his body size to the best friend's and commented that

His body size is the same as mine, we both have normal body size.

Child62 only picked the normal-sized figures as her playmates and indicated that

Their body sizes are exactly the same with mine, very pretty.

The same responses were provided by Child61, who also chose the normal-sized figure as her best friend and said:

She has the same weight as me, the same body shape.

Not the Chubby One

Despite self-body satisfaction being high among this group of children, they were more likely to select normal and thin figures rather than chubby figures to play with. This phenomenon suggested weight bias towards others and internalized social norms on thinness. As a best friend, 64 children selected the normal figures, 55 children selected the thin figures, and 11 children selected the chubby figures (see Table 3). Children who selected both thin and normal figures as best friends were excluded from the data analysis.

Table 3
Best Friend Selection Frequencies by Body Size and Gender

	n	Thin	Normal	Chubby
Girls	58	31	24	3
Boys	72	24	40	8
Total Participants	130	55	64	11

Children's comments indicated they chose the average or the thin figures because either they look good or simply because they look like themselves. In other words, children in this group like to play with those who are good-looking or those who are similar to them in terms of body size. They also indicated that the chubby figures would likely hurt them, because they were big.

About one third of boys ($n = 21$) and half of girls ($n = 29$) clearly indicated that they liked thinner figures. When asked to explain their choices, they promptly stated that they preferred the thin figures simply because they were thin; they appeared more aware of the size. This response was common among boys and girls, with no significant differences found in the friend selection choices. In other words, this preference for thin figures was consistent across boys and girls. However, more girls than boys offered such explanations, despite 13 more boys participating in the study, indicating a stronger preference for the thin figures among participating girls.

In addition, boys in this group seemed to be more likely to be appearance-oriented, with more boys than girls offering the explanation that thin and/or normal figures were pretty and handsome. For example, Child49 said

These are very slim and look very handsome

while pointing at the thin- and normal-sized figures. Child104 also described the normal-sized figure as

He is a little more handsome comparing to the others; he is the most handsome.

It was very interesting to notice that more girls indicated a stronger preference for the thin-sized figures while more boys indicated their preference to a good-looking appearance. Based on current literature, there is hardly any study showing similar findings; it may be meaningful to examine children's perceptions of body size versus appearance.

Peer Influence

Peers were often mentioned during children's conversations when they were asked about the reason why these figures were chosen for their playmates and/or their best friends. Children ($n = 20$, 15.3%) frequently mentioned that "they look like my friends" without any hesitation or delays. For instance, Child32, 41, 58, 63, 96, 110, 113, 123, and 126 all shared the same response, "They are my friends," after they chose their playmates. Child96 additionally explained that "They look like my friends".

In addition, children often mentioned their friends' names when they were asked to choose the best friend among the four playmates presented. For example, Child125 said

QianYutong always comes to play with me.

Similarly, Child113, who recognized the best friend figure and commented

Feng Xinyu, he plays with me every day.

Child114 justified

My best friend is exactly the same with this one.

Based on these responses, children's selection of playmates and/or their best friends showed great peer influence; children tend to play with the ones who were similar to their friends' body sizes.

Family Context

Family members may be another influential factor in body size perception development among this group of children, as family members were often mentioned during interviews. Although the influence may not be as strong as peers, our qualitative data showed that family members including parents, grandparents, and siblings were mentioned by participating children, indicating their influences on body size perceptions and weight bias. For example, Child62 said,

Mom says I am just right. My dad says I need to be a bit slimer.

Child130 said

My grandma says I need to grow a little bigger, but I think I am just right.

Some children shared observations of their parents' exercise behaviors. Commented by Child125,

My mom is slim; she does exercise every day. At night, she does leg exercises and warm-up exercises. But my dad is bigger than my mom, he does not exercise at all, he looks at his phone instead.

Discussion

Body Satisfaction

Qualitative findings revealed that body satisfaction was prevalent within this group, reflecting personal body satisfaction and high self-esteem regarding their own body size. This finding is consistent with previous findings in Xu and He (2022) that kindergarten children overall felt good about their body size. This finding could be related to a general difficulty in early to middle childhood in distinguishing between "real self" and the "ideal self" (Harter, 1999). On the other hand, this finding contradicts other research findings in Western culture that body dissatisfaction was evident in children who were between 5 and 8 years old (Lowes & Tiggemann, 2003; Schur et al., 2000; Tiggemann & Wilson-Barrett, 1998). A potential reason behind this discrepancy could be the cultural context. In some traditional Chinese cultural contexts, larger body sizes have been viewed favorably (Tiggemann, 2012). Parents and grandparents prefer their children to be plump instead of slim. Because the plump body size indicates a healthy body; it also indicates that children are being well cared for. These cultural norms and expectations are communicated in Chinese family and community conversations, prevalent in media, but not in Western cultural context. Therefore, it is important to take cultural context into account when studying body size and well-being of young children (Wang, 2021).

However, studies focusing on children aged 8–15 years have shown different results. For example, Fu et al. (2014) found that 67.3% of Chinese children were dissatisfied with their body shape. Similarly, Zhang et al. (2020) reported that Chinese adolescent girls tend to be more dissatisfied with their bodies compared to boys. Wang et al. (2022) further argued that body dissatisfaction can emerge as early as age eight and is associated with measurable aspects of body shape and proportion. Collectively, these findings suggest that as children move through puberty, they become increasingly sensitive to their body image. It seems like increased exposure to environmental messages and social norms from peers (Ruble et al., 1994) may raise body image awareness, potentially leading to lower self-evaluations. Exposure to Western body ideals may also play a role (Anderson-Fye, 2011). Moreover, these results suggested that children's perceptions of their bodies are not static and may be influenced not only by age but also by broader cultural factors over time. Future studies with longitudinal design are needed and will be able to provide a more accurate picture of body image development in children across different cultures.

Weight Bias

Although this group of children had high personal body satisfaction, they seem to carry weight bias towards others, especially their peers. Our findings indicated the presence of body weight bias among this group of children, showing a strong preference for normal and thin body sizes, regardless of gender. In other words, both boys and girls in the group displayed bias against children with chubbier body types. This finding is consistent with previous research on children in Western cultures and addresses the first

research question, confirming that kindergarten children in a Chinese cultural context also exhibit weight bias.

Furthermore, the results indicated that weight bias is likely to influence the children's behavior, with a tendency to select playmates and best friends who either shared similar body sizes or had slimmer body types. This pattern was obvious, especially among girls, reflecting greater societal emphasis on thinness for girls (Wadden et al., 1991). Although not statistically significant, there were some gender differences in terms of best-friend selection. Specifically, it was found that boys were likely to choose their best friend with a larger body size. This could be due to a preference of a muscular body for males (Lennon & Johnson, 2021).

One interesting finding emerged from the conversation when children explained reasons why they chose a chubby body size as their ideal body size or as his/her best friend. A small number of children indicated choosing a friend in a chubby body size because he/she looks stronger, can help others, and can protect others against bullying. This strong protector prototype has not been observed in other weight bias studies with young children in the current literature. Its emergence may reflect a unique social-cognitive script through which children can associate larger body size with social status and belonging. Whether this script exists in Chinese peer culture could have implications for a cultural relational theory of body image (e.g., Jordan & Hartling, 2002) and merits further exploration. In more individualistic cultures, perhaps the protective benefits of body size are less relevant to peer culture.

Peers and Family Members

Qualitative findings suggest that both family members and peers may influence children's development of body size perception and weight bias, aligning with the conceptual framework proposed by Thompson et al. (1999). Although existing literature indicates that adolescent children may adopt weight-related attitudes from their parents (Rodgers & Chabrol, 2009), this influence was less apparent in our study. Peers are mentioned more frequently in children's responses, indicating a stronger peer influence at a young age. Given the fact that most body image studies focused on adolescents (i.e., Jones, 2001; Jones & Crawford, 2005; Lunde et al., 2006) with few studies on young children (Phares et al., 2004), this finding adds an important piece of information to our current literature that peer influences on body size perceptions may start earlier in childhood.

Our findings support direct and indirect family influences on children's body size perceptions and body acceptance. Participating children reported receiving comments from their parents and grandparents about their body size and healthy eating practices. Additionally, they observed and learned about the active and sedentary lifestyle of their family members related to their bodies. Consistent with previous research (Puhl & Latner, 2007; Rodgers & Chabrol, 2009; Xu & He, 2022), findings from conversations with participating children confirm that family members play an important role in shaping children's body size perceptions. This further supports Tiggemann's (2019) emphasis on the importance of family support in fostering body acceptance. Indeed, Andrew et al. (2016) found that girls who received body acceptance comments from family members expressed greater body appreciation.

The Absence of Media

Surprisingly, while media (i.e., TV programs, books or magazines) are considered a critical part of the conceptual framework (Thompson et al., 1999) explaining body image development, media were not mentioned in the conversations with this group of children. One possible explanation is that, at this early developmental stage, the influence of media may be less salient compared to the influence of peers and family. As a result, media exposure might not yet constitute a significant contributor to body dissatisfaction or the development of weight bias in young children. Another explanation may be that this cohort of young children has had limited exposure to media promoting thin-ideal and anti-fat messages in comparison to their counterparts in Western cultures. These findings raise concerns regarding the applicability of the sociocultural model to children in China, particularly given that media may not serve as a dominant influence relative to family and peers within this cultural context and age group. In other words, media

influence in the Tripartite Influence Model (Thompson et al., 1999) may have boundary conditions and only apply in certain cultures or age-related contexts. This highlights the need for further investigation into the primary factors shaping body image development and weight bias among young children across diverse cultural settings.

Implications

It is important to cultivate a positive body image at an early age to help children feel confident, become more resistant against weight bias, and develop body satisfaction. Indeed, many researchers have called for interventions to promote positive body image among young children (i.e., Clark & Tiggemann, 2006; Perez et al., 2018; Tiggemann & Slater, 2014). Unfortunately, there have been minimal prevention programs designed for young children to prevent body bias (Paxton & Damiano, 2017). Supported by positive body image perspectives that emphasize respect and appreciation for one's body irrespective of thin-ideal societal norms (Tylka, 2018) as well as the current findings, we recommend three targeted strategies to promote positive body image and prevent the development of weight bias among young children.

The first strategy is to promote body appreciation. Based on findings of the current study, children at this young age seem to be satisfied with their own body, therefore, continuously delivering messages to young children, such as "your body is beautiful", "your body is awesome", "your body can do everything" may help maintain their body satisfaction. Through protective filtering (Tylka, 2018), these positive messages could be delivered verbally by immediate contacts such as parents, educators, and peers. Messages like these could also be communicated through reading children's literature. Previous research has demonstrated that children's picture books could be a powerful tool to introduce strategies to promote positive body image (Faragó et al., 2023; Xu et al., 2024). This strategy could also be easily implemented through discussions of children's picture books that include examples of positive body image.

The second strategy, body acceptance and love, while very closely tied to the first strategy based on appreciation for one's own body, extends its scope to others' bodies, inviting children to be inclusive and welcoming diverse body shapes and sizes. Our study highlighted the importance of perceptions about peers in terms of body image development; therefore, actions may be taken in schools to promote body acceptance among peers. Having events like diversity celebrations at schools may help increase children's awareness of different body sizes and shapes. Bodies of individuals with disabilities may also be included so as to enhance children's understanding of body acceptance. Having support groups at schools could give students opportunities to share concerns and experiences associated with body image. Integrating body positivity in the health education curriculum could also guide children to develop healthy eating and positive body image.

Last but not least, we recommend a strategic emphasis on health over appearance. Current approaches to obesity prevention and intervention may inadvertently convey the message that larger body sizes are undesirable, potentially contributing to body dissatisfaction and weight-based bias among children. To counteract the internalization of such stigmatizing beliefs, public health efforts should prioritize the promotion of health over appearance. Given that positive body image can be cultivated from an early age through increased public awareness and policies that prioritize both mental and physical well-being (Puhl, 2022), educational initiatives should be universally delivered to emphasize that overall health is far more important than body shape or size. Such initiatives have the potential to promote not only physical health, but also psychological well-being related to body image among young children.

The strategies mentioned above are likely to be most effective when implemented in collaboration with family members and peers rather than media given the findings of the present study, along with existing evidence in literature on the significant roles of family and peers in children's development, particularly in relation to weight bias, body image, and health (Tiggemann, 2019). Parents may use positive language when describing or commenting on their own bodies or those of others, particularly in the presence of their children. Parents may also model healthy behaviors by demonstrating

self-acceptance, making nutritious food choices during family meals, providing healthy snacks, and engaging regularly in physical activity. Peers may help reinforce positive language and healthy behaviors through social interactions.

Meanwhile, early childhood curriculum policies, such as the *Guidelines for Kindergarten Education* (《幼儿园教育指导纲要》, MOE, 2001), could include the development of a healthy body image within their content framework to encourage educators to integrate the three strategies into curriculum implementation. To foster a supportive environment that promotes positive attitudes toward body image in school settings, we believe teachers can play a crucial role by incorporating discussions about body shapes and sizes into the curriculum, nurturing peer support, and helping children build resilience against weight-related discrimination.

Limitations

There are several limitations in this study that should be acknowledged. First, participants were all from a Chinese cultural context, therefore, findings may not be applied to other cultural contexts. Second, participants in this study were children between 4 to 7 years old, an age range spanning multiple developmental stages. While children beyond this age range may have different perspectives that need further investigation, future work with larger subsamples representing both early childhood and middle childhood could also reveal important shifts in perspectives. More cross-culture studies on this topic targeting the same age group of children may be needed. Third, although this study included 131 children, the sample size was not big enough to generate the findings to the large population and should be treated with caution. In addition, using a convenience sample of a single kindergarten in eastern-central China could have created sampling bias. Lack of diversity in this region in terms of socioeconomic status and ethnicity may limit generalizability of the findings to the broader Chinese population. Given that the findings are based on young children's verbal responses, which may be another limitation, social desirability effects should also be acknowledged.

It is important to note that the strategies suggested for implementation are based on our findings and the current literature, it was not our intention to measure the effectiveness of the proposed strategies; future research might be helpful to explore the effectiveness of these strategies when implementing them in the intervention studies. Future research could also adopt a mixed-methods approach, incorporating both qualitative and quantitative data to triangulate findings. Additionally, the family and peers' influence merged during children's conversations was interpreted as supporting evidence for body image development rather treated as causal relations. A follow-up interview with these children may help gain an in-depth understanding of family and peers' influences. Additional information obtained from family members and peers using existing valid instruments may provide a more comprehensive understanding.

Conclusion

Understanding weight bias among young children lays a strong foundation for prevention and interventions efforts related to body weight and size. It may also help develop guidelines and strategies to promote the positive body image. Our study found high personal body satisfaction among this group of children; at the same time, it revealed that body image bias exists in young children not only in Western cultures but also in Chinese culture, regardless of gender. Recommended implications for preventing body image bias were provided. In addition, our findings indicate a significant peer influence on body size perceptions, alongside the contributions of family members. The absence of media influence in the current study suggested a unique cultural and age-specific context, which raised important considerations regarding the applicability of the Tripartite Influence Model (Thompson et al., 1999) in non-Western cultural contexts or distinct age groups.

Declarations

Authors' Declarations

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