

THE EFFECTS OF BODY WEIGHT DISCREPANCY AND POSITIVE MOTHER-  
CHILD RELATIONSHIPS ON ADOLESCENT PEER RELATIONS

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## ABSTRACT

The current study utilized the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD) data set to examine if positive mother-child relationships buffer the negative association between preadolescent body weight discrepancy and negative peer relationships. The NICHD SECCYD is a longitudinal investigation of 1,364 children, followed from birth to age 15, and their families and schools (N=1,364). For the current study, we focus on data collected from children, their mothers, and their teachers in 6th grade (n = 1,061; M age= 11.95, SD= 0.34). The sample demographics consist of 51.7 % male, 80.4% White, 12.9% African American, 1.6% Asian, 0.4% American Indian, and 4.7% other. Over half (54.2 %) of mothers reported having pursued some college. The current study measured the children's relationship with their mother using the Child-Parent Relationship Scale (Pianta, 1992), children's body weight discrepancy was measured with the Child's Eating Habits and Body Self Image questionnaire (Harter, 1998), and child-peer relationships were assessed with the Peer Network Characteristics questionnaire (Olivieri & Reiss, 1987). Correlations were run to examine potential covariates related to the study variables. These analyses revealed significant relations between child sex, maternal education, socioeconomic status (free/reduced lunch), and pubertal status. To test the hypothesized relations, a step-wise linear regression analysis was run in which the control variables were entered into the first step, body weight discrepancy and positive mother-child relationship were entered into the second step, and finally an interaction term between body weight discrepancy and mother-child relationship was entered into the third step as predictors of peer relationship quality. The moderation hypothesis was not

supported. These data support the notion that there was an association between body weight discrepancy, peer relations, and positive mother-child relations. The specific relations between these variables and implications of the current study were discussed.

## I. INTRODUCTION

Body weight discrepancy (BWD) is a salient phenomenon several children experience during their developing years. Body weight discrepancy is characterized by the difference between a child's ideal weight and their reported weight. In other words, children with this discrepancy want to weigh more or less than their current, reported, weight. In pre-adolescence, 56% of boys and 44.3% of girls report being dissatisfied with their weight (Ter-Bogt et al., 2006). According to previous literature, body weight discrepancy is associated with a host of negative outcomes for pre-adolescent children, including trouble with peer relationships (Michael et al., 2013; Ter-Bogt et al., 2006).

The inability to form close relationships with peers is linked to emotional problems, such as internalizing and externalizing problem behaviors (Klima & Repetti, 2008). Forming social and peer relationships is necessary for human functioning, they provide necessary things for healthy social development such as companionship, a sense of belonging, and validation for their sense of self-worth (Klima & Repetti, 2008). A child who is unable to make connections with peers may become maladjusted and form difficulties with social interactions THROUGHOUT LIFE (Klima & Repetti, 2008). Therefore, understanding the relevance of BWD as a risk factor for pre-adolescents' negative peer relationship quality is critical and more work is needed.

The current study extends the somewhat limited research in this area to examine the relation between BWD and peer relationship quality. Furthermore, utilizing risk and resilience theory, the current study aimed to identify a potential buffer to the negative association between BWD and peer relationship quality. Importantly, forming positive

family relationships, which includes closeness with parents, serves as a protective factor against child body dissatisfaction (Littleton & Ollendick, 2003). Thus, a second goal of the current study was to examine if positive mother-child relationships buffer the negative association between preadolescent body weight discrepancy and negative peer relationships.

## **II. BODY WEIGHT DISCREPANCY**

Body weight discrepancy and a fear of gaining weight have been expressed in children as early as five years old (Gowers & Shore, 2001). There is consistent evidence supporting the claim that thinness is perceived as ideal, leading to an increase in BWD for children. For example, a study conducted with children aged 8-10 showed that young girls and boys report that there is an importance for both women and men to be thin, and this is a contributing factor as to why so many children report being dissatisfied with their bodies (Ricciardelli & McCabe, 2001; Shapiro, Newcomb, & Loeb, 1997). Children's BWD increases during pre-adolescence and into adolescence where it peaks (Littleton & Ollendick, 2003; Ter-Bogt et al., 2006). Girls typically consider themselves too heavy, and the percentage of those who consider themselves to be overweight increases from 34.2% in pre-adolescence to 55.5% into adolescence (Ter-Bogt et al., 2006). Boys typically consider themselves too thin, and the percentage of those who consider themselves underweight increases from 15.4% in pre-adolescence to 24.8% into adolescence (Ter-Bogt et al., 2006). Given the dramatic increase in dissatisfaction with body image and weight discrepancy from pre-adolescence to adolescence, it is a critical

area of study that requires further investigation due to its lasting prevalence in children and its frequent association with negative outcomes.

The literature describes various negative outcomes that are associated with BWD, including internalizing and externalizing problem behaviors. Ter-Bogt and colleagues (2006) found children aged 11-16 who reported higher BWD were also higher in internalizing and externalizing problem behaviors. Those who felt they were underweight reported more internalizing problem behaviors and scored higher on each subscale of problem behavior which included anxiety, depression, and various social problems (Ter-Bogt et al., 2006). Children who considered themselves overweight demonstrated stronger significant results for externalizing and internalizing problem behaviors such as anxiety, depression, withdrawal, attention, aggression, and social problems (Ter-Bogt et al., 2006). Children at age 10 who reported being less satisfied with their physical appearance also reported a decline in their self-esteem at age 14 (Barker & Bornstein, 2010).

Children who display dissatisfaction with their weight and appearance are at risk for problems regarding their mental health and can struggle physically with eating disorders and unhealthy dieting. A defining feature of eating disorders such as anorexia and bulimia is self-esteem, where self-esteem is partly determined by how an individual feels about their weight and physical appearance, implying that body dissatisfaction plays a role in determining one's self-esteem level (Barker & Bornstein, 2010). Low self-esteem and body image dissatisfaction may cause an individual to experience a host of negative emotions. The negative affect children experience when dissatisfied with their

bodies are linked to the engagement of unhealthy eating behaviors such as skipping meals, bingeing, and eating junk foods (Littleton & Ollendick, 2003). Data collection concludes that 14.5% of children, aged 11-12, who report having concerns with their weight also report strict dieting and irregular eating behaviors, these percentages increase as children age (Gowers & Shore, 2001). Consistent with previous findings, adolescent children aged 10-14, who reported being less satisfied with their appearance, reported lower levels of self-esteem and engaged in more frequent dieting behaviors (Barker & Bornstein, 2010). Unhealthy dieting is commonly associated with young girls who wish to be thinner and young boys who wish to obtain more muscle (Ricciardelli & McCabe, 2001). The literature clearly expresses that dissatisfaction with a child's weight and appearance is a robust risk factor for eating pathologies, disorders, and unhealthy dieting (Barker & Bornstein, 2010; Littleton & Ollendick, 2003). Based on the literature it can be concluded that children with body image dissatisfaction are at risk for many negative outcomes regarding both their mental and physical health.

Accompanying the previously discussed negative effects of body weight discrepancy are negative peer relationships. For example, one study found that fifth-grade children report lower levels of their physical self-worth, trouble with their peers, and a fear of negative evaluation from peers when higher body weight discrepancy was present (Michael et al., 2013). Specifically, there was a significant negative association between body image discrepancy and peer relationship quality for boys but significant results for girls were not found (Michael et al., 2013). However, for girls, the fear of negative evaluation from peers was positively associated with body image discrepancy (Michael et al., 2013). When children feel negatively about their body image, they also report more



negative relationships with their peers, the opposite appears to be supported as well. Children who feel accepted into their peer groups and have more positive relationships with their peers tend to feel more secure and positive about their body image (Michael et al., 2013). Though the findings from this study clearly supports that body image satisfaction plays a role in the quality of peer relationships, more work is needed to explore these relations.

### **III. MOTHER-CHILD RELATIONSHIPS**

Thus far there has been a heavy discussion regarding the negative effects the listed variables have on children's well-being, these negative aspects are considered risks. Risks are experiences of adversity in the child's environment that can restrict children's access to positive outcomes later in their lives, however, according to the risk and resilience theory, there are protective factors that can be implemented (Schoon & Bynner, 2003). The resilience aspect of this theory is the protective factors and behaviors that help an individual overcome, or reduce, risks (Greene, 2013). These are positive adaptations a child develops such as self-efficacy, coping, and various life skills that lead to successful adjustment (Greene, 2013; Schoon & Bynner, 2003). One example of a protective factor for children is positive maternal relationships. Forming a positive relationship between mother and child can have many benefits for children's lives. Research shows that positive relationships between children and parents where environments are warm, affectionate, and nurturing produce well-adjusted and secure children (Michael et al., 2013; Littleton & Ollendick, 2003). A study of fifth-grade-aged children provided a significant positive association between mother nurturance and a sense of self-worth for

young girls, however, significant results were not found for the young boys (Michael et al., 2013). Studies also reveal that having positive mother-child relationships is associated with less internalizing behaviors such as depression (Carter et al., 2014). Forming positive relationships with parents are associated with healthy, happy children.

In relation to body image discrepancy, longitudinal studies following adolescence reveal that forming close family relationships may serve as a protective factor from forming eating disorders and body image dissatisfaction (Littleton & Ollendick, 2003). Providing social support, teaching coping skills, spending time with parents, and feeling connected with parents are all ways in which parental relationships serve as a protective factor against body image dissatisfaction and its accompanying effects (Littleton & Ollendick, 2003). A study of children aged 10-16 revealed significant results that the level of maternal attachment predicted negative body image and negative body image predicted internalizing problem behaviors (Carter et al., 2014). This study also revealed that when higher levels of maternal attachment were present the child reported lower levels of body image dissatisfaction, and when lower levels of maternal attachment were present, higher levels of body image dissatisfaction were present along with higher levels of internalizing behaviors (Carter et al., 2014).

#### **IV. PRESENT STUDY**

Previous literature conveys the importance of preadolescent peer relationships. Given research suggesting a negative association between BWD and peer relationship quality in fifth graders, the current study aims to confirm this association and determine what might serve as a protective factor for preadolescent children before they form these

solidified views. The current study will apply the risk and resilience theory and explore whether positive mother-child relationships serve as a protective factor for the negative relation between peer relationship quality and BWD amongst sixth-grade-aged children. Two hypotheses were examined: 1) Preadolescent reported body weight discrepancy will be negatively related to teacher-reported quality of peer relationships, and 2) the quality of mother-child relationship reported by mothers will moderate the relation between body weight discrepancy and peer relationship quality.

## **V. METHODS**

### ***Participants***

The current study utilized the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD) data set. The NICHD SECCYD is a longitudinal investigation of 1,364 children, followed from birth to 15, including their families and schools (N=1,364). Participants were recruited from 10 sites across the United States, details of the recruitment procedure can be found in NICHD Early Child Research Network (2005). For the current study, we focus on data collected from children, their mothers, and their teachers in 6th grade (n = 1,061; M age= 11.95, SD= 0.34). The sample demographics consist of 51.7 % male, 80.4% White, 12.9% African American, 1.6% Asian, 0.4% American Indian, and 4.7% other. Over half (54.2 %) of mothers reported having completed some college, 31.2% reported less than or up to grade 12, and 14.6% reported completing some postgraduate education. The children attended middle schools that ranged in their percentage of free and reduced lunch, an indicator of socioeconomic status, with an average of 24.15% of

the school receiving free or reduced lunch. Furthermore, the parents (or alternate primary caregivers) assessed their children's pubertal development using Tanner staging on a scale ranging from 1 (have not begun) to 4 (development completed). The pubertal development scale yields a composite score whereby higher composite scores indicated more advanced pubertal development (Cronbach's alpha was above .60 across all grades).

## VI. MEASURES

### *Relationship with mother*

To measure the relationship between mother and child the study utilized the Child-Parent Relationship Scale (CPRS). This is a 15-item form adapted from the Student-Teacher Relationship Scale, this measure involves the mother's feelings and beliefs about the relationship with her child, and about the child's behavior toward their mother. The CPRS asks the mother to rate items on a 5-point Likert-type scale, ranging from 1 = "Definitely does not apply" to 5 = "Definitely applies." Example items of this measure for Closeness include items such as "I share an affectionate, warm relationship with this child" and "If upset, this child will seek comfort from me." Example items for Conflict include "This child and I always seem to be struggling with each other," and "This child easily becomes angry at me." Conflict with the child is scored with the possible range of 7 to 35, the higher the score the more conflict within the mother-child relationship ( $\alpha = 0.85$ ). Closeness with the child is scored with a possible range of 8 to 40, the higher the score the more closeness within the mother-child relationship ( $\alpha = 0.76$ ). The Total Positive Relationship with the child is scored with a possible range of 15 to 75,

the higher the score indicates a more positive mother-child relationship ( $\alpha = 0.84$ ). (Pianta, 1992).

### ***Child Body Weight Discrepancy***

To measure the child's body weight discrepancy the study utilized the Child's Eating Habits and Body Self Image questionnaire. The measure consists of 27 items regarding children's satisfaction with their physical appearance, weight control behaviors, and dietary choices (Harter, 1998). The child is asked to decide which kind of kid he or she is most like, those described on the left or those on the right in each statement, either choosing "Really true for me" or "Sort of true for me" (Harter, 1998). Examples of this measure include "Some kids wish their body was different BUT Other kids like their body the way it is," and "Some kids are happy with their height and weight BUT Other kids wish their height and weight were different" (Harter, 1998). The Index of healthy eating habits is computed with a possible range in scores from 0 to 12, with higher scores indicating healthier eating habits ( $\alpha = 0.56$ ) (Harter, 1998). The index of unhealthy eating habits is computed with a possible score ranging from 0 to 12, with higher scores indicating more unhealthy eating habits ( $\alpha = 0.59$ ) (Harter, 1998). The index of reported ideal height difference (inches) is computed as Reported height (how tall are you) minus Ideal height (how tall would you like to be right now) (Harter, 1998). The index of reported weight difference (pounds) is computed as Reported weight = (how much do you weigh) minus Ideal weight (how much would you like to weigh) ( $\alpha = 0.91$ ) (Harter, 1998).

### ***Child Peer Relationships***

To measure the child's relationship with their peers, the current study utilized the Peer Network Characteristics. This is a 10-item questionnaire completed by the teacher to describe the type of group the child hangs out with (Olivieri & Reiss, 1987). Teachers described the child's positive peer group with items such as "these kids are kind to other kids" using a scale ranging from 1 (definitely no) to 5 (definitely) ( $\alpha = 0.90$ ) (Olivieri & Reiss, 1987).

Analyses were conducted using SPSS Version 27 to examine descriptive statistics, kurtosis, and the relations between covariates and study variables for the full sample ( $N = 1,061$ ). Correlations were run to examine potential covariates between child sex, maternal education, socioeconomic status (free/reduced lunch), and pubertal status. To test the hypothesized relations, a step-wise linear regression analysis was run in which the control variables were entered into the first step, body weight discrepancy and positive mother-child relationship were entered into the second step, and finally, an interaction term between body weight discrepancy and mother-child relationship was entered into the third step as predictors of peer relationship quality.

## **VII. RESULTS**

The current study utilized SPSS Version 27 to conduct preliminary analyses and test the study hypotheses. Descriptive statistics for the study variables (i.e., body weight discrepancy, positive mother-child relationships, and positive peer relationships) revealed that all variables were normally distributed except for body weight discrepancy which was highly kurtotic. In examining the histogram for this variable, it was evident that the majority of respondents reported low body weight discrepancy resulting in a large

number of scores clustered around the mean. To address the non-normality in body weight discrepancy a z-score was created and used in all analyses.

Correlations were conducted to examine relations between potential covariates (i.e., maternal education, free and reduced lunch, and pubertal development) and the study variables, as well as, relations among the study variables. Maternal education was negatively related to body weight discrepancy ( $r = -.11, p = .000$ ) and positively related to positive mother-child relationships ( $r = .12, p = .000$ ) and positive peer relationship quality ( $r = .25, p = .000$ ). Free/reduced lunch was positively related to body weight discrepancy ( $r = .13, p = .001$ ) and negatively related to mother-child relationship quality ( $r = -.08, p = .024$ ) and peer relationship quality ( $r = -.21, p = .000$ ). Pubertal development was positively related body weight discrepancy ( $r = .22, p = .000$ ) but was not significantly related to mother-child relationship quality or peer relationship quality. An independent samples t-test was conducted to examine if the study variables differed by child gender. Results of the t-test revealed a significant difference between females and males on body weight discrepancy ( $t(985) = -3.30, p = .001$ ) and positive peer group ( $t(830) = -8.02, p = .000$ ). For both variables, females had higher scores than their male peers.

Correlations among the study variables revealed a significant negative relation between preadolescent-reported body weight discrepancy and positive mother-child relationships ( $r = -.10, p = .001$ ) and teacher-reported positive peer relationship quality ( $r = -.10, p = .007$ ). There was a significant positive correlation between positive mother-child relationships and positive peer relationships ( $r = .15, p = .000$ ).

To examine the study hypotheses and the effects of the study variables on adolescents' positive peer relationships, a stepwise regression analysis was conducted. In the first step, the identified covariates (i.e., gender, maternal education, free/reduced lunch, pubertal development) were entered. In the second step, the main effects (i.e., body weight discrepancy and positive mother-child relationships) were entered and in the third step, the interaction between body weight discrepancy and mother-child relationship was entered. The results of these analyses revealed a significant positive main effect of the mother-child relationship on positive peer relationships ( $b = .10$ ,  $p = .006$ ). There was no evidence to support the hypothesis that body weight discrepancy predicted positive peer relationships. There was also no support for the moderation hypothesis.

## VIII. DISCUSSION

Correlations between the covariates and study variables reveal that higher levels of maternal education attained were linked to lower levels of body weight discrepancy for the child, more positive relationships between the mother and child, and more positive relationships with peers in the classroom. Consistent with the present findings, Austin and colleagues (2009) reveal that young girls with parents of lower education levels were more likely to report higher levels of body dissatisfaction. Additionally, consistent with the present findings, previous literature reveals an association between maternal education and mother-child relationship quality. The literature concludes that lower levels of maternal education predicted higher amounts of conflict in mother-child relationships and higher levels of maternal education predicted closeness in mother-child relationships (Zhang, 2012). Lastly, still consistent with the present findings, a



longitudinal study following children in first to sixth grade, finds that children with lower-educated parents have trouble with peer relationships, experiencing peer dislike and victimization (Horoz et al., 2022). Unsurprisingly, the present study yielded results that are consistent with the literature.

The present findings convey that having a greater percentage of low socioeconomic children at their middle schools was linked to higher levels of body weight discrepancy, less close relationships between mother and child, and less positive relationships with peers in the classroom. The present findings are consistent with previous research, Wang and colleagues (2005) convey that different socioeconomic statuses and ethnicities are associated with different levels of body weight dissatisfaction. Young boys with lower SES viewed themselves as too thin and expressed the desire to gain weight when compared to higher SES boys (Wang et al., 2005). However, high-SES Caucasian youth desired to be thinner than their current figure, having a higher body weight discrepancy (Wang et al., 2000). The literature conveys an association between SES and body weight dissatisfaction, however, different ethnicities and body standards for those cultures seem to play an important role. Consistent with the present findings, the literature reveals an association between family income and parent-child relationship quality. Zhang (2012) found that children in lower SES families had a higher conflict with their fathers than their higher SES counterparts. Lower-income families also predicted lower levels of relationship cohesion among young girls but not for boys, a possible explanation provided was that young girls are slightly better at communicating their negative feelings that are a result of familial stress (Zhang, 2012). Lastly, still consistent with the present findings, previous research reveals that lower SES children

tend to have peer groups with lower levels of peer acceptance, high levels of aggression and exclusion, and fewer protective factors such as caring friendships (Bukowski et al., 2020). The present study's correlational findings between SES and study variables remain consistent with the literature.

The present study found that when the children were going through pubertal development there were higher levels of body weight discrepancy, but there were no significant effects on positive mother-child relationships or positive peer relationships. Consistent with present findings, previous literature concludes that there is an association between pubertal developments and body image dissatisfaction. In a study of students aged 8-15, both boys and girls were more dissatisfied with their bodies when undergoing pubertal developments, they differed in the exact areas of their bodily dissatisfaction, however, both genders expressed dissatisfaction in their bodily appearance (Zhang et al., 2020). Surprisingly, the present study did not find a significant relationship between pubertal development and mother-child relationship quality, whereas previous literature does draw a connection between the two. Marceau and colleagues (2014) found that the tempo and timing of pubertal developments of both boys and girls do have an effect on the levels of conflict and closeness within parental relationships. The speed of pubertal development is associated with a decrease in parent-child relationship quality (Marceau et al., 2014). Unsurprisingly the present study did not find a direct link between pubertal developments and peer relationship quality. This may be due to other variables that have more of an influence on peer relationship quality besides pubertal development alone. Respectively, previous literature explores the increasing challenges accompanied by pubertal development such as increasing depressive symptoms and reassurance seeking

amongst peers, and the literature does find an association between depressive symptoms and reassurance seeking, during the pubertal developing years, with peer relationship quality (Prinstein et al., 2005).

Correlations between the study variables reveal that lower levels of child-reported body weight discrepancy were linked to more positive relationships between mother and child and with peers. Meaning, that when 6th-grade-aged children had less body weight discrepancy (their ideal weight was the same, or close to, their reported weight) they had more positive relationships with their mothers and their peers in the classroom. The present findings are consistent with previous research in that lower levels of body weight dissatisfaction are associated with more positive relationships with both peers and mothers (Carter et al., 2014; Michael et al., 2013). As for the moderation hypothesis, the current study attempted to explore if positive mother-child relationships would buffer the negative association, and serve as a protective factor, between body image discrepancy and peer relationship quality, however, this hypothesis was not supported. Possible explanations for this can include a lack of data gathered and missing sample variables that will be discussed. However, it is important to note the importance placed on the efforts to minimize preadolescent body image discrepancy, this could have important implications not only for the child but for both parent-child and peer relationships.

Limitations for the current study include sample demographics. The National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD) data set consisted of a majority of white participants. Including a more diverse sample with various races and cultures could affect

the results. This study was correlational in nature and thus directional effects and causality cannot be inferred from the present findings. The current study only used data collected for body weight discrepancy at one point in time, including multiple measures across different points of time within the child's development, including their pubertal development, which could affect the study's results. Finally, the study did not include the mother's body weight discrepancy or children's physical activity levels, including these measures, may influence the results.

Future research directions include using a more culturally diverse sample, including participants from different cultures could provide interesting comparisons across different races. Future research should also measure children's body weight discrepancy more than once across their developmental stages, incorporating body weight discrepancy measurements across time may provide a more reliable measure. Variables such as maternal body weight discrepancy and the children's physical activity levels should be incorporated to explore their association with the children's body weight discrepancy scores. Future research could explore whether the mother's body weight discrepancy scores have any significant effect on their children's body weight discrepancy and the other study variables (peer relationship quality and mother-child relationship quality). Incorporating physical activity levels may also have a significant association with the children's body weight discrepancy scores, peer relationship quality, and mother-child relationship quality. Future research should also explore alternative protective factors between body weight discrepancy and negative peer relationship quality. One possible moderator to explore is gender, whether boys' and girls' genders

buffer the negative association between their body weight discrepancy and their same-sex peers.

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