Maternal Behaviors and Restrained Eating and Body Dissatisfaction in Young Children

Doeschka J. Anschutz, MSc1*
Linda J.A. Kanters, MSc1
Tatjana Van Strien, PhD1,2
Ad A. Vermulst, PhD1
Rutger C.M.E. Engels, PhD1

ABSTRACT

Objective: The present study aimed at testing the relations between maternal weight concern and maternal encouragement to be thin as perceived by the child, and restraint and body dissatisfaction in young children.

Method: Cross-sectional data were collected among 501 children (aged 7–10), using self-reports on maternal behaviors, body dissatisfaction, and restraint. Height and weight were objectively measured. Model testing was conducted with M1, and multigroup tests were conducted to test differences between the sexes, and between younger and older children.

Results: Associations between the child's perception of maternal encouragement to be thin and child body dissatisfaction and restrained eating were found, whereas the child's perception of maternal weight concern was primarily related to child restrained eating. No sex differences were found, but the relations were stronger for the older children.

Conclusion: No to noly i n g i r l s , b u ti n boys as well the child's perception of maternal behaviors plays a role. At primary school age children may become more vulnerable to possible maternal influences.

Keywords: maternal behaviors; restraint; body dissatisfaction; young children

Introduction

Concerns about body weight and dieting behaviors are nowadays very common.1–3 Although most studies have focused on adolescents and adults, an increasing number of studies investigating young children show that body image concerns and weight-change behaviors are already present at a very young age.4,5 These are alarming findings, since body dissatisfaction and dieting in its extreme form are considered core characteristics of eating disorders, such as bulimia nervosa and anorexia nervosa.6,7

Since children spend much time with their family, parents are assumed to play important roles in the development of young children's body image and eating behaviors.8 The results of several studies indeed suggest that especially mothers are influential role models in shaping children's body image and eating behaviors.4,8 Two main processes by which mothers might influence their children's body image and eating behaviors are: (1) modeling and (2) encouragement to be thin. Little research has been done in young children, especially regarding maternal encouragement to be thin. The aim of the present study was to examine the role of maternal weight concern and encouragement to be thin in young children’s body dissatisfaction and restrained eating behaviors.

Modeling refers to the process of directly copying specific behaviors performed by others.10 Applied to eating behavior, an example of modeling is that when a mother engages in restrained eating in the presence of her child, the child will copy this behavior and engage in this type of behavior itself. However, studies that focused on modeling of maternal weight concerns and dieting behaviors in children revealed conflicting results. Most studies found support for a modeling effect11–15 although two studies found no support.16,17 Most earlier-mentioned studies used maternal reports of weight concern, although using the child's perception of maternal weight concern might be more valid, since perceptions of the child itself are more likely to influence their actual behaviors. Further, social desirability might be a confounder in mothers' reports.18 Therefore, in the current study, we used the child's perspective on maternal weight concern.
and encouragement to be thin. Yet, the results of the majority of studies so far suggest that children tend to model their mother’s weight concerns and dieting behaviors.

A more active way of influencing is maternal encouragement to be thin. Possible ways of encouraging a child to be thin are making critical comments about the child’s appearance, or more directly encouraging the child to engage in weight loss behavior (e.g., by telling the child to eat less). Body weight, desire to be thin and dieting behavior of young girls were found to be related to parent’s reported encouragement to lose weight. Further, it was found that encouragement to be thin was more strongly related to body dissatisfaction and dieting behavior than modeling behavior in young children. Although the results of these studies suggest that encouragement to be thin is related to body dissatisfaction and/or dieting behaviors in children, clearly more research is needed.

The results of studies on possible gender differences in maternal influence on body image and eating behavior in young boys and girls have conflicting outcomes. Although some studies found that boys were not at all or less affected by parental behaviors than girls, one study found that boys were affected as well. Therefore, more research is needed to further examine gender differences in maternal influence on body dissatisfaction and eating disturbance in young children.

Body image disturbances increase with age in young children because of physical growth and internalizing sociocultural body ideals. Therefore, it is likely that maternal behaviors are more strongly related to weight concerns and dieting behaviors in late childhood than in middle childhood. However, when children grow older, other factors such as peer and media influence might become more important with respect to weight concerns and dieting, when compared with maternal influences. To elucidate this further, it is necessary to include age differences.

In the present study, the relations between maternal weight concern and maternal encouragement to be thin as perceived by the child, and body dissatisfaction and restrained eating behavior of the child were examined in a large sample of primary school children aged between 7 and 10 years. We expected that the child’s perception of maternal weight concern as well as the child’s perception of maternal encouragement was related to both higher levels of body dissatisfaction and restrained eating in children. Additionally, we were interested in gender and age differences. Girls were compared with boys and children in middle childhood (7–8 years) with children in late childhood (9–10 years). We expected to find that the associations between the child’s perception of maternal behaviors, and children’s body dissatisfaction and restrained eating would be stronger in girls. Since age differences have never been explicitly examined before, we did not have any specific hypotheses about age differences in our research.

### Method

#### Participants

Participants in the present study was 593 boys and girls from eight different primary schools (28 classes) in the southeast of the Netherlands. Between two and five classes of each school participated, varying from grades 2 to 4 (in which the children are between 7 and 10 years old). In the Netherlands, most children enter primary school at the age of 4, and from the age of 6 they are obliged to do so. We asked the children to report their current and ideal body shape. Children who reported an ideal body shape, which was larger than the current body shape they reported, were excluded because we assumed that different processes regarding body dissatisfaction and restrained eating are involved in this group. Excluding these children (64 boys and 28 girls) resulted in a final sample consisting of 501 children; 242 boys (48.3%) and 259 girls (51.7%), with ages ranging between 7 and 10 years ($M = 8.27$ years, $SD = 0.96$). In grade 2 (31.8% of the children), children had a mean age of 7.28 years ($SD = 0.52$). In grade 3 (39.1% of the children), children had a mean age of 8.29 years ($SD = 0.53$). In grade 4 (29.1% of the children), children had a mean age of 9.33 years ($SD = 0.53$). The majority of were of Dutch origin (>95%), and a mixture of children from rural and non-rural areas from the Netherlands was included. BMI was recoded into a new variable, since BMI standards are highly sex and age dependent in young children. The new variable included four categories (based on Stichting Voedingscentrum Nederland, www.voedingscentrum.nl); (1) underweight, (2) normal weight, (3) overweight, and (4) obese. By classifying children into these categories, sex and age differences were taken into account. In the present study, 0.8% of the children were underweight, 80.3% had a normal weight, 12.9% were overweight, and 6.0% were obese. No differences were found between boys and girls or older and younger children in BMI category distribution.

#### Procedure

After gaining consent from the school to participate, the parents of the children were informed about the study...
by letter and asked to indicate whether they allowed (or not) their child to participate. It was emphasized that all collected data would remain confidential. According to Dutch standards, it was sufficient to get active consent from the parents for this survey study. The parents of only three children did not give their consent for their child’s participation. After gaining parental consent, the children completed the several questionnaires during class time in the presence of their teachers. Before the assessment started children were told that they could opt out of the study whenever they wanted. Children in second and third grades filled out the questionnaires in class. The research assistant read aloud the questions, clarified them when needed, and answered all possible queries. Children in the fourth grades filled out the questionnaires by themselves with a research assistant present to answer questions. Additionally, participants were individually weighed and measured by a research assistant, without their shoes. Completion of the assessment and measurement together, took between 50 and 70 min. After data collection was finished, the participating schools received information about the general results of the study.

**Measures**

**Perception of Maternal Weight Concerns.** A four-item scale measured the children’s perceptions of the weight concerns of their mothers. The items were: (1) “Is your mother on a diet?” (2) “Is it important to your mother to look good (clothes, weight, etc.)?” (3) “Does your mother exercise to become thinner?” and (4) “Does your mother say that she is too fat?” The children could answer each question with “no,” “sometimes,” or “yes.” Since no short scale existed for young children yet, this scale was composed for this study. Special care was taken for usage in young children. The questions were presented to the children in Dutch, so the earlier-mentioned items are translated into English. Cronbach’s α coefficient was 0.62.

**Perception of Maternal Encouragement to be Thin.** A four-item scale was composed to measure the children’s perceptions of the degree to which they experienced maternal encouragement to be thin. The items were: (1) “Does your mother tell you to eat less because you are becoming too fat?” (2) “Does your mother tell you to exercise to avoid becoming too fat?” (3) “Does your mother tell you to snack less to be thinner?” and (4) “Does your mother tell you that you are too fat?” The children filled out the questionnaire in Dutch (Cronbach’s α = 0.77).

**Restrained Eating.** The Children’s version of the Dutch Eating Behavior Questionnaire (DEBQ-C; 23) was used to measure the child’s restrained eating behavior. The restrained subscale of the DEBQ-C consists of seven items (e.g., “Do you deliberately eat food that is slimming?”). Response options were “no,” “sometimes,” or “yes.” This scale has a good internal consistency as well as external validity.23 Cronbach’s α was 0.74.

**Body Dissatisfaction.** The Children Figure Rating Scale was used to measure body image.24 This scale has widely been used to tap children’s body dissatisfaction.25,26 A series of nine body silhouette drawings of figures ranging from 1 “very thin” to 9 “very fat,” was presented to the children. They were asked to choose the drawing, which looked most like their own current body shape and the one which looked most like their ideal body shape. The difference between the child’s current body shape and their ideal body shape represented their body dissatisfaction. In this study, only children who were satisfied with their body or wanted to be thinner were included in the analyses. The use of the Figure Rating Scale has been shown to be valid for use in young children20 and to have good test–retest reliability.27

**Strategy for Analyses**

To examine the model as depicted in Figure 1 we applied Structural Equation Modeling by using the software package MPLUS 4.2.28 The variables maternal weight concern, maternal encouragement to be thin and restrained eating behavior of the child are latent variables measured with 4, 4, and 7 items, respectively, whereas the variables BMI and body dissatisfaction are manifest variables. Prior to testing the model, we inspected the measurement part of the model. We conducted a confirmatory factor analysis using maximum likelihood estimation on the total sample with the 15 indicators of the three latent variables. The fit of the factor model was satisfactory: χ² (87) = 163.96, p = .000, CFI = .949, and RMSEA = .042. The factor loadings varied between 0.47 and 0.80 indicating that the latent variables are adequately represented by their indicators. The dependent variable body dissatisfaction is a manifest variable with 60.3% of the children scoring in category 0, 27.1% in category 1, 9.0% in category 2, and the remainder (3.6%) in categories 3–5. We decided not to use the maximum likelihood estimator but the weighted least square method with adjusted mean χ²-square estimator, an estimation method specifically developed for ordered categorical (ordinal) dependent variables.28 To test model fit, standard χ²-square statistics are replaced by robust χ²-square statistics.28 As mentioned in the method section, data are gathered by sampling schools and classes within schools. The data have a multilevel structure (three levels) indicating that individual responses may not be independent. We compared the results of the three model tests (corrected for school, classes, and classes within schools) and found no essential differences (the same parameter estimates appeared to be significant and of similar magnitudes) between the three types of analyses, so the uncorrected results are presented.
Moderation effects of sex and age on structural paths were tested by $\chi^2$-square difference tests. Since differences between robust $\chi^2$-square statistics do not have a standard $\chi^2$-square distribution, the robust $\chi^2$-square values were first rescaled to standard $\chi^2$-square values according to the procedure described in Satorra and Bentler\textsuperscript{29} and Muthén.\textsuperscript{28}

**Results**

**Descriptive Analyses**

Means and standard deviations of all research variables are reported in Table 1. We found no significant differences in any of the model variables between boys and girls and between younger (7–8 years) and older children (9–10 years). A table with Pearson’s correlations of all variables is available on request.

**Structural Equation Modeling of the Total Sample**

The results of the SEM analysis for the total sample are given in Table 2. The fit of the model was good (CFI > .90, RMSEA < .08). BMI was multivariately positive, related to child’s perception of maternal weight concern, maternal encouragement, restrained eating, and body dissatisfaction. The child’s perception of maternal weight concern

<table>
<thead>
<tr>
<th>Table 1. Means and standard deviations of the model variables for the total sample, for boys and girls, and for younger (7–8 year) and older (9–10 year) children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>BMI</td>
</tr>
<tr>
<td>Child’s perception of maternal weight concern</td>
</tr>
<tr>
<td>Child’s perception of maternal encouragement</td>
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<tr>
<td>Child restrained eating</td>
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<tr>
<td>Child body dissatisfaction</td>
</tr>
</tbody>
</table>
was positively related to restrained eating but not related to body dissatisfaction. In other words, children who reported more maternal weight concern had higher restrained eating score themselves. As hypothesized, maternal encouragement to be thin was found to be positively related to both restrained eating and body dissatisfaction. Children who perceived more maternal encouragement to be thin reported higher restrained eating and body dissatisfaction scores.

**Multigroup Comparison: Boys versus Girls**

The parameter estimates of the structural paths of the unconstrained model for boys and girls are presented in Table 2. We tested possible differences between boys and girls by constraining the corresponding paths of boys and girls to be equal. The difference in $\chi^2$-square between the unconstrained model and the constrained model was not significant ($\Delta\chi^2 (8) = 12.76, p = .120$). This means that relationships between the variables of the model in Figure 1 did not differ between boys and girls.

**Multigroup Comparisons: Younger (7–8 Years) versus Older (9–10 Years) Children**

Parameter estimates of the unconstrained model for younger and older children are given in Table 2. The difference between the unconstrained and the constrained model (equal paths for younger and older children) was significant ($\Delta\chi^2 (8) = 37.60, p < .001$). Three paths were significantly different between the younger and older children, the path from BMI to the child’s perception of maternal weight concern ($\Delta\chi^2 (1) = 11.29, p = .001$), the path from the child’s perception of maternal encouragement to restrained eating ($\Delta\chi^2 (1) = 35.81, p < .001$) and the path from the child’s perception of maternal encouragement to body dissatisfaction ($\Delta\chi^2 (1) = 18.55, p < .001$). The positive relation between BMI and the child’s perception of maternal weight concerns was significant for younger children, but not significant for older children. The positive relation between the child’s perception of maternal encouragement to be thin and child restrained eating was not significant for younger children, but significant for older children. Finally, the positive relation between the child’s perception of maternal encouragement to be thin and child body dissatisfaction was stronger for older children than for younger children. Unfortunately, it was not possible to perform a multigroup analysis with BMI (normal weight vs. overweight children), since the group with overweight children was too small ($N = 92$). However, when we tested the model without the overweight children, we found the same pattern of results as for the total group.

**Conclusion**

First, the results of the total group will be discussed, and after that the results of the multigroup comparisons between girls and boys, and children

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**Table 2. Standardized estimates for total sample, sex-groups, and age-groups in the model for child restrained eating and body dissatisfaction**

<table>
<thead>
<tr>
<th>Path</th>
<th>Total Sample</th>
<th>Boys</th>
<th>Girls</th>
<th>7–8 Year</th>
<th>9–10 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N = 501$</td>
<td>$N = 242$</td>
<td>$N = 259$</td>
<td>$N = 292$</td>
<td>$N = 209$</td>
</tr>
<tr>
<td>BMI—child’s perception of maternal weight concern</td>
<td>0.18*</td>
<td>0.08</td>
<td>0.27*</td>
<td>0.32**</td>
<td>−0.04</td>
</tr>
<tr>
<td>BMI—child’s perception of maternal encouragement</td>
<td>0.52***</td>
<td>0.50**</td>
<td>0.54***</td>
<td>0.54**</td>
<td>0.52**</td>
</tr>
<tr>
<td>BMI—child restrained eating</td>
<td>0.14***</td>
<td>0.19***</td>
<td>0.11</td>
<td>0.16***</td>
<td>0.10</td>
</tr>
<tr>
<td>BMI—child body dissatisfaction</td>
<td>0.25***</td>
<td>0.22***</td>
<td>0.27***</td>
<td>0.26*</td>
<td>0.23***</td>
</tr>
<tr>
<td>Child’s perception of maternal weight concern—child restrained eating</td>
<td>0.26***</td>
<td>0.34***</td>
<td>0.19</td>
<td>0.32**</td>
<td>0.24***</td>
</tr>
<tr>
<td>Child’s perception of maternal weight concern—child body dissatisfaction</td>
<td>−0.09</td>
<td>−0.18</td>
<td>0.01</td>
<td>−0.07</td>
<td>−0.08</td>
</tr>
<tr>
<td>Child’s perception of maternal encouragement—child restrained eating</td>
<td>0.27***</td>
<td>0.27***</td>
<td>0.25***</td>
<td>0.12</td>
<td>0.45**</td>
</tr>
<tr>
<td>Child’s perception of maternal encouragement—child body dissatisfaction</td>
<td>0.31***</td>
<td>0.32***</td>
<td>0.30***</td>
<td>0.20***</td>
<td>0.47***</td>
</tr>
<tr>
<td>Correlations of disturbance terms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child’s perception of maternal weight concern—child’s perception of maternal encouragement</td>
<td>0.21**</td>
<td>0.19</td>
<td>0.21*</td>
<td>0.28**</td>
<td>0.12</td>
</tr>
<tr>
<td>Child restrained eating—child body dissatisfaction</td>
<td>0.19**</td>
<td>0.24</td>
<td>0.15***</td>
<td>0.17***</td>
<td>0.19*</td>
</tr>
</tbody>
</table>

| $\chi^2$ | 256.60 | 407.71 | 338.57 |
| Df | 111 | 246 | 246 |
| $p$ | 0.000 | 0.000 | 0.000 |
| CFI | 0.927 | 0.918 | 0.955 |
| RMSEA | 0.052 | 0.052 | 0.039 |

**Note:** * $p < .01$, ** $p < .001$, *** $p < .05$. 

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in middle and late childhood will be discussed. Higher maternal weight concern as perceived by the child was found to be related to higher restrained eating of the child, but was unrelated to children's body dissatisfaction. This suggests that if children perceive their mother to place high importance on appearance and engage in weight losing behaviors, they might adopt this, and engage themselves more in weight losing behaviors, such as dietary restraint. These findings are in line with those reporting a relation between maternal dieting and restrained eating of the child.11–15

Interestingly, the child’s perception of maternal weight concern was not found to be related to body dissatisfaction of the child. Perhaps, weight concern of the mother is less explicitly present and therefore less obvious to perceive and model for the child than weight losing behavior of the mother (i.e., restrained eating or exercising). Contrary to the results of the current study, some studies did find a relation between maternal weight concerns and child body dissatisfaction.15,30,31 However, modeling of maternal weight concerns was never examined in children this young, as previous studies used older children or adolescents in their samples. Older children and adolescents might more easily perceive complex feelings in others, like body concerns, and therefore be more susceptible for modeling maternal body concerns.

Perceiving more maternal encouragement to be thin was associated with higher body dissatisfaction and more restrained eating behaviors in children. Perhaps, maternal encouragement to be thin is more strongly related to the child’s restrained eating and especially body dissatisfaction than maternal weight concern, since verbal reinforcement might be more powerful than observational learning.32 Earlier studies also found a relation between maternal encouragement to be thin and higher weight concern and/or dieting behavior in children.15,77 In the present study, maternal encouragement to be thin was strongly related to child’s BMI, which probably indicates that if children have a higher BMI, their mothers are more likely to make comments about their weight or encourage them to lose weight. However, we controlled for BMI and even if we excluded children with overweight from the analyses, the same pattern was found regarding maternal encouragement. This suggests that some mothers encourage their children to be thin, regardless of the child’s BMI and that this is associated with restrained eating behavior and body dissatisfaction in children with a normal weight as well. But if a child is not overweight, why would mothers then encourage their child to be thin? Jaffe and Worobey32 indicated that mothers who were more concerned about being or becoming overweight themselves, worried more about their children. In addition, it was found that maternal dieting predicted more control with regard to the food intake of their child, such as pressuring their children to restrict food intake, exerted over the child’s eating behavior.34,35 In our study, the child’s perception of maternal weight concern was indeed moderately related with the child’s perception of maternal encouragement to be thin. However, further examination is required to investigate the underlying mechanisms regarding maternal encouragement to be thin.

Girls and boys had about similar scores on their perception of maternal weight concern, maternal encouragement to be thin, child restrained eating, or body dissatisfaction. Moreover, no differences were found between girls and boys regarding the relations found between maternal behaviors and child restrained eating and body dissatisfaction. Perhaps weight concerns and eating disturbance are increasing in boys and men nowadays.36 In Western societies, the beauty ideal for men is becoming more and more prominent, which might affect body image and eating disturbance in men as well.37 Our results suggest that future research should focus on boys’ weight concerns and eating pathology, since, at least at this age, boys do not differ from girls with respect to weight concern and restraint eating in general, neither in the way they are vulnerable for the impact of their mother.

The results of our study suggest that the associations between maternal encouragement to be thin and child restrained eating and body dissatisfaction are stronger in late childhood than in middle childhood. Perhaps, older children are more susceptible to maternal pressure, since body image becomes more important with increasing age.20,21 Interestingly, we did not find differences between the younger and older children in general on the child’s perception of maternal weight concern and encouragement to be thin. This suggests that the younger children do perceive maternal weight concerns and encouragement to be thin, but they are less inclined to turn these perceptions into actual behavioral or cognitive changes. Another explanation for the stronger relations we found for the older children is that prolonged exposure to maternal behaviors is related to stronger associations between maternal behaviors and child restrained eating and body dissatisfaction, since the older children are exposed to maternal weight concerns and encouragement to be thin for a longer period of time than the younger children. Longitudinal
research is needed to verify both these assumptions.

A few limitations of the current study should be addressed. As mentioned above, one limitation is the use of cross-sectional data. As a consequence, we cannot draw any causal conclusions. Although it seems more likely that maternal behaviors influence child restrained eating and body dissatisfaction in young children than the other way around, it might also be that children with higher restrained eating and body dissatisfaction perceive more maternal weight concern and maternal encouragement to be thin. Therefore, prospective designs are required to test the directions of the relations. Further, future research should also focus on the child’s perception of paternal behaviors since some studies found that fathers also affect body image and eating disturbance in young children. In addition, concerning maternal modeling, it is preferable to measure the same concept of restrained eating reported by the mother to test whether there is similarity between the mother’s own report and child’s reports on maternal behaviors. Nonetheless, we consider it better to use children’s perceptions of maternal behaviors like we did in the current study, since the perceptions of the child are influencing their actual behaviors and also because social desirability might be a confounder in mothers’ reports.

In the current study, we focused on restrained eating because we were interested in maternal influences on weight changing behavior and body image in children. In future research, it might be interesting to examine the relations between maternal behaviors and other eating behaviors, like emotional or external eating. In addition, besides family influences, other sociocultural influences, such as peers and the media, might affect young children’s eating behavior and body image as well. Another interesting suggestion for future examination of the relations between maternal behaviors and weight concern or dieting behavior in children is to use observational or experimental designs. Yet, probably not all children who show body dissatisfaction or restrained eating at a young age are developing severe body image or eating disturbance later on. Therefore, it would be interesting to determine what factors influence the trajectories of body image and eating behavior development.

To conclude, the present study found the child’s perception of maternal behaviors to be associated with child restrained eating and body dissatisfaction in both preadolescent girls and boys. The results suggest that mothers should be very cautious in showing their weight concerns or encouraging their child to be thin by making comments about its appearance or by actively encouraging it to engage in weight losing behaviors.

References