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Dietary Restraint of 5-year-old Girls: Associations with Internalization of the Thin Ideal and
Maternal, Media, and Peer Influences

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Abstract

Objective: Understanding sociocultural factors associated with the development of dieting tendencies is important for preventing future disordered eating. We explored individual and sociocultural factors associated with weight-focussed dietary restraint tendencies (described as dietary restraint) in 5-year-old girls. **Method:** Participants were 111 5-year-old girls and 109 of their mothers. Girls were interviewed about their dietary restraint, body image, appearance ideals, positive weight bias (attributing positive characteristics to thinner figures), and peer conversations. Mothers completed self-report questionnaires assessing dietary restraint and appearance ideals, as well as measures reporting on their daughter's media exposure and peer appearance interest. **Results:** Thirty-four percent of girls reported at least a moderate level of dietary restraint. While most girls were satisfied with their body size, half showed some internalization of the thin ideal. Girls' dietary restraint was correlated with weight bias favouring thinner bodies, and greater internalization of the thin ideal, media exposure, and appearance conversations with peers. Media exposure and appearance conversations were the strongest predictors of dietary restraint. **Discussion:** These cross-sectional findings suggest that the sociocultural environment of young girls may be important in the very early development of unhealthy dieting tendencies. Longitudinal research is necessary to identify whether these are prospective risk factors.

Key words: dietary restraint; young girls; mothers; media exposure; appearance conversations

Despite eating disorders typically emerging during adolescence, cases have been reported in early elementary school children (1.). Dietary restraint (the cognitive restriction of food intake for the purpose of controlling weight (2.)), is a key risk factor for developing eating disorders (3.) and is more prevalent in females than males (4.). As dietary restraint is reported by 35% of 5-year-old girls (2.), research examining risk factors for dietary restraint at this early age is needed in girls.

A number of individual and sociocultural risk factors for dietary restraint and disordered eating have been found in adolescence and pre-adolescence (5.). Greater dietary restraint and disordered eating have correlated with individual variables, including greater body dissatisfaction (6.), body mass index (BMI) (5.), internalization of the thin ideal (7.) and positive weight bias (8.). Sociocultural influences, including greater maternal dietary restraint and maternal internalization of the thin media ideal (9; 10.), appearance conversations with peers (11.), and media exposure (12.) have also correlated with more dietary restraint. Little research has been conducted in early childhood, and factors associated with dietary restraint in 5-year-old girls have yet to be determined.

We have extended existing research by examining multiple factors associated with dietary restraint in 5-year-old girls using child and mother reports. We hypothesised that girls' dietary restraint would be associated with individual factors (higher body dissatisfaction, BMI, and thin ideal internalization, and attributing positive characteristics to thinner figures (positive weight bias)) and sociocultural factors (higher maternal dietary restraint and thin ideal internalization, appearance conversations with peers, and media exposure).

Participants

Participants were 111 5-year-old girls ($M_{age} = 5.42$, $SD = 0.32$) and 109 of their mothers ($M_{age} = 39.80$, $SD = 4.44$). They were recruited into the longitudinal Children's Body

Image Development Study when children were three ($N = 165$) in Melbourne, Australia, via advertisements in locations where children frequent. The current study used the third wave data when children were first interviewed about dietary restraint.

Measures

Mothers completed a questionnaire including age, weight, and height. Children's height and weight were measured and standardized BMI z -scores for age and gender calculated (13.). Children were read questions. All internal consistencies were satisfactory considering children's age and number of items (see Table 1).

Child dietary restraint. An adaptation of the Dutch Eating Behavior Questionnaire for Children (DEBQ-C) Restraint scale suitable for 5-year-olds (14.) was used to assess girls' weight-focussed dietary restraint. Items were rated 1 (*no*), 2 (*sometimes*), or 3 (*all the time*).

Individual influences. Five age-matched female silhouette figures made from laminated card, and ranging in size from 1 (*very thin*) to 5 (*very fat*) were stimuli (8.). To assess body dissatisfaction, girls selected the figure that looked most like them (current) and the figure they wanted to look like (ideal), and current minus ideal discrepancy was calculated (8.). Zero indicated body satisfaction, while positive scores indicated desire to be thinner. To assess positive weight bias, children selected a figure to correspond to a child in a story who was *good*, *happy*, *fun*, and *clever*, and also to questions reflecting social inclusion or popularity (8.). Lower mean scores indicated greater positive weight bias (i.e., selecting thinner figures for positive characteristics).

Children's internalization of the thin ideal was assessed with two questions from the Sociocultural Attitudes Toward Appearance Questionnaire-3 (SATAQ-3; 15.): 'Would you like your body to look like the bodies of people in the movies?/ on television?' with ratings simplified to *yes* (1) or *no* (0). Responses were summed.

Sociocultural influences. Mothers' dietary restraint was assessed with the DEBQ Restraint scale (16.). Maternal internalization of media ideals was assessed with the SATAQ-3 Internalization–General Media subscale (15.).

Children's media exposure was estimated by mothers as the daily average number of hours (from 0 to 6) their child spent watching television and DVDs on a usual weekday and weekend day. Total hours per week were calculated.

Appearance conversations with peers were assessed using a 3-item adapted version of the Appearance Conversations scale (11.). Children responded *yes* (1) or *no* (0) to how often they talked with friends about clothes, looks, and hairstyles, along with non-appearance distractor items. Mothers rated children's peer appearance interest from 1 (*uninterested*) to 5 (*very interested*) on four items: 'How interested do you think your child's peers are in: the size/shape of their body?; what they wear?; their appearance?'

Procedure

University ethics committee approval was received. Parental written consent for self and child, and child verbal assent, were received. Data were collected at participants' homes and families received an AU\$10 shopping voucher and prize draw entry.

Results

Table 1 presents descriptive information. According to WHO (13.) BMI-for-age criteria, 82.9% of girls were healthy weight, 0.9% underweight, 12.6% overweight, and 3.6% obese. For the 106 (97.2%) mothers who provided anthropometric information ($M_{BMI} = 24.96$, $SD = 5.48$), 6.6% were underweight, 49.1% normal weight, 32.1% overweight, and 12.3% obese.

Girls' dietary restraint mean scores indicated that 34.2% reported dietary restraint at least *sometimes* (mean score ≥ 2). Categories were computed using a strategy previously described (17.). Item responses are shown in Supplementary Document 1. Body

dissatisfaction scores indicated that 71.2% were satisfied with their body size, 15.3% wanted to be thinner, and 13.5% wanted to be larger. Regarding girls' thin ideal internalization, 50.5% reported no internalization, 27.9% reported wanting their body to look like people either in movies *or* on television, and 21.6% reported wanting their body to look like both those people.

Dietary restraint was negatively correlated with positive weight bias, indicating greater restraint was associated with attributing positive qualities to thinner figures (Table 1). Higher dietary restraint was also associated with higher internalization, and more media exposure and appearance conversations with peers. When these four variables were entered into a multiple regression analysis, the model predicted 24.7% of variance in girls' dietary restraint ($p < .001$) (Table 2). Appearance conversations and media exposure were unique predictors. Media exposure was also related to higher BMI_z and greater girls' internalization was associated with peer appearance conversations.

Discussion

Our findings in 5-year-old girls revealed that appearance conversations with friends, media exposure, girls' thin ideal internalization, and positive weight biases, were related to girls' dietary restraint, partially supporting hypotheses.

Of concern, 34% of 5-year-old girls reported a moderate level of dietary restraint, consistent with previous findings (5.). Although the measure used may reflect dietary restraint tendencies and not caloric restriction, findings suggest that the pathway to disordered eating may start from an early age for girls.

As predicted, two indicators of individual endorsement of social values about thinness, thin ideal internalization and positive weight bias, were related to greater dietary restraint in girls, consistent with research in older females (7.). In our sample, however, child BMI_z and body dissatisfaction were not related to dietary restraint. These cross-sectional

findings suggest that dietary restraint was not dependent on a girls' actual or perceived body size but may rather be related to general social pressures and biases about how girls are *supposed* to look. Most were satisfied with their size, which may further explain findings. The relationship with positive weight bias suggests that girls may want to *avoid* becoming fat; potentially having implications for the onset of eating disorders and obesity, for which dietary restraint is a risk factor (18.). Thus, prevention efforts are necessary to assist very young girls to develop healthy relationships with food and their bodies, and healthy weight management strategies.

Girls' dietary restraint was related to sociocultural factors including time exposed to television and DVDs and child appearance conversations, with peer appearance interest related at the trend level. Our findings in young girls extend previous research in adolescent girls linking peer influences (19.) and media exposure (20.) to dieting-related behaviors. Findings are consistent with Dohnt and Tiggemann's (12.) findings in young girls wherein appearance conversations with peers were associated with body dissatisfaction, and media exposure with dieting awareness. Our study appears to be the first to demonstrate a relationship between peer or media influences and tendencies towards dietary restraint in very young girls. Further research exploring whether media influences relate to girls viewing appearance-focused media is needed to clarify this relationship. Maternal dietary restraint and internalization of the media ideal were not related to girls' dietary restraint in this study; consistent with adolescent findings that maternal risk factors are more likely to involve actively encouraging dieting or modelling observable, extreme weight-loss behaviors than internal attitudes or moderate dieting (21.).

A strength of this study is the combination of child and maternal reports, with mother's observations of the child's peer and media environment predicting dietary restraint tendencies reported by the child. The present study is limited by no test-retest information on

child measures and its cross-sectional nature, precluding prospective conclusions. Nonetheless, the study provides a strong foundation for future prospective and intervention research. Future research could explore thin ideal internalization as a mediator of relationships between sociocultural variables and children's dietary restraint. Although further prospective research is required, this study reinforces the need to consider sociocultural environments, even in very young children, in preventing disordered eating.

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Table 1.

Descriptive Statistics, Internal Consistency and Correlations for Dietary Restraint and Individual and Sociocultural Variables.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
<i>Child Individual Variables</i>										
1. Dietary Restraint ^C	-									
2. BMIz	.05	-								
3. Body Dissatisfaction ^C	.07	.04	-							
4. Positive Weight Bias ^{C a}	-.21*	-.05	-.14	-						
5. Child's Internalization ^{C ^}	.20*	.09	.003	-.09	-					
<i>Sociocultural Variables</i>										
6. Maternal Dietary Restraint ^M	-.04	.04	-.04	-.002	.07	-				
7. Maternal Media Internalization ^M	.08	-.13	-.06	.01	-.07	.41**	-			
8. Child Media Exposure ^{M ^}	.29**	.25**	-.10	-.18 ⁺	-.02	.19 ⁺	.24*	-		
9. Child Appearance Conversations ^C	.39**	.08	.15	-.13	.35**	.06	-.04	-.03	-	
10. Child's Peers' Appearance Interest ^M	.18 ⁺	-.003	-.05	-.07	-.04	.14	.36**	-.02	.12	-
Mean	1.74	0.03	-.05	2.58	0.71	2.49	21.52	6.70	1.23	2.30
Standard deviation	0.44	0.89	0.88	0.57	0.80	0.76	9.36	3.96	1.18	0.82
Range: Lowest score	1.00	-1.67	-4.00	1.00	0	1.10	9.00	0	0	1.00
Highest score	2.75	2.36	2.00	3.84	2.00	4.92	44.00	18.00	3.00	5.00
Internal consistency ^{CA}	.66	N/A	N/A	.62	.57 ^{SB}	.90	.96	N/A	.73	.84

* $p < .05$ ** $p < .01$ + $p < .10$; ^M Reported by mother; ^C Reported by child; ^a Lower scores indicate greater positive weight bias involving selecting thinner figures for positive characteristics; [^] Spearman correlation; ^{CA} Cronbach's alpha; ^{SB} Spearman-Brown analysis for 2-item scales indicated acceptable internal consistency .

Table 2.

Multiple Regression Analyses for Girls' Dietary Restraint

Predictor	<i>r</i>	<i>B</i>	<i>SE_B</i>	β
<i>Individual</i>				
BMIz	.05	-	-	-
Body Dissatisfaction ^C	.07	-	-	-
Positive Weight Bias ^{C a}	-.21*	-.09	.07	-.12
Child's Internalization ^{C ^}	.20*	.02	.05	.03
<i>Sociocultural</i>				
Maternal Dietary Restraint ^M	-.04	-	-	-
Maternal Media Internalization ^M	.08	-	-	-
Child Media Exposure (hrs/week) ^{M ^}	.29**	.03	.01	.27**
Child Appearance Conversations ^C	.39**	.14	.03	.38**
Child's Peers' Appearance Interest ^M	.18 ⁺	-	-	-

Note: $F(4, 106) = 8.26, p < .001$; * $p < .05$ ** $p < .01$ ⁺ $p < .10$; ^M Reported by mother; ^C Reported by child;

^a Lower scores indicate greater positive weight bias involving selecting thinner figures for positive characteristics; [^] Spearman correlation.