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# 'Mum's the word': Predictors and outcomes of weight concerns in pre-adolescent and early adolescent girls



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#### ABSTRACT

Predictors and outcomes of weight concerns in pre-adolescent and adolescent girls are well known, but few models have incorporated concerns reported directly by mothers as a predictor, and both eating and exercise outcomes. Using questionnaires, a comprehensive model of 232 pre-adolescent and early adolescent girls' weight concerns, eating restraint, and exercise behavior was tested. Structural equation modeling showed that daughters' weight concerns were predicted primarily by their perceptions of their mothers' concerns about the daughters' weight, as well as by daughters' BMI, appearance conversations with friends, and perceived media pressure. Mothers' concerns with their daughters' weight were indirectly associated with daughters' own concerns, via the daughters' perceptions of their mothers' concerns. Daughters' concerns with their weight were a strong predictor of eating restraint, but not exercise behavior.

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### Introduction

Pressures to achieve a socially desirable physique are pervasive among young women, and become particularly apparent during the formative years (Dohnt & Tiggemann, 2006). Such pressures are coupled with an emphasis on unrealistic standards of attractiveness, which for girls are often synonymous with being as thin as possible (Thøgersen-Ntoumani, Ntoumanis, & Nikitaras, 2010). The physical changes accompanying early adolescence take girls further away from this ideal. Hence, often girls' weight concerns increase from early to mid-adolescence (Lam & McHale, 2012; May, Kim, McHale, & Crouter, 2006). In turn, excessive weight concerns is an important risk factor of disordered eating, including eating restraint which is associated with diverse outcomes such as reduced fruit and vegetable intake (Neumark Sztainer, Paxton, Hannan, Haines, & Story, 2006), depressive symptoms (Cooper, Rose, & Turner,

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2005), suicide ideation and attempts (Brausch & Gutierrez, 2009; Crow, Eisenberg, Story, & Neumark-Sztainer, 2008), and weight gain (Neumark-Sztainer, Wall, Story, & Standish, 2012). Given that the prevalence of weight concerns and disordered eating behaviors is common amongst adolescents (Loth, Wall, Larson, & Neumark-Sztainer, 2015), identifying key antecedents of weight concerns has important health-related implications.

The aim of the present study was to develop and test an integrative model (see Fig. 1 in the Results section) that examined how social (media and peers), parental (mother's concerns about their daughters' body weight), and biological (objectively recorded BMI) factors predicted pre-adolescent and early adolescent girls' concerns about body weight, as well as associated outcomes such as eating restraint and exercise behavior.

Parents are thought to influence the weight concerns of their offspring (e.g., via active encouragement to diet or comments to their child about the child's weight; Balantekin, Savage, Marini, & Birch, 2014). Most research examining the role of parents (e.g., Thøgersen-Ntoumani et al., 2010) has used young peoples' reports of parental influence with only a few studies including a combination of parents' own reports of their attitudes and behaviors with their offspring's reports (Rodgers & Chabrol, 2009). The limited research that has used both types of reports has found that chil-

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dren's perceptions of parental encouragement *and* parents' actual behaviors are important determinants of weight concerns and body dissatisfaction (Haines, Neumark-Sztainer, Hannan, & Robinson-O'Brien, 2008). Mothers' concerns about their own body weight have been related to greater maternal encouragement of their daughters to lose weight (e.g., Francis & Birch, 2005). However, this research has been mainly conducted with children rather than adolescents, and as yet, it has not combined parental and adolescent reports in structural models in which other potentially important influences on weight concerns are also considered.

Besides parents, social factors such as peers and the media also contribute to the development of weight concerns and eating restraint in girls (e.g., see the revised tripartite influence model by Shroff & Thompson, 2006). It has been reported that adolescents create an 'appearance culture', partly through peer conversations about appearance. According to Van Tergouw (2011), the more conversations girls have with other girls about their appearance, the more likely it is that they will engage in appearance comparisons and become dissatisfied with their bodies. This has been empirically supported in studies showing that appearance conversations with peers often contribute to the internalization of media ideals of thinness for females, and are associated with peer criticism about appearance, and body image dissatisfaction (Jones, Vigfusdottir, & Lee, 2004; Lawler & Nixon, 2011). However, to the best of our knowledge, only a few studies have examined the relation between peer conversations and eating pathology, and not just dieting (e.g., Bardone-Cone, Brownstone, Higgins, Fitzsimmons-Craft, & Harney, 2013). Further, the role of appearance conversations with friends, when controlling for other socio-biological predictors of weight concerns in adolescents, has not been previously tested.

Media also play an important role in relaying weight and appearance-related information via the transmission of the thin beauty ideal. A review of previous meta-analyses concluded that mass media (e.g., TV and magazines) have a powerful influence on body-image related constructs, including weight concerns (Lopez-Guimera, Levine, Sanchez-Carracedo, & Fauquet, 2010). As a result, media pressure is an important construct to include in any model examining predictors and outcomes of weight concerns.

Adolescent girls' weight status (as assessed by BMI) is also an important variable to take into consideration in the examination of predictors of weight concerns and eating restraint. Not surprisingly, research shows that parents tend to be more concerned about their children's weight, and are more likely to actively encourage them to lose weight if their child is overweight or obese (Schreiber et al., 2014). Unfortunately, most previous studies have relied on self-reported height and weight (e.g., Field et al., 2005; Jones & Crawford, 2006; Papp, Urban, Czegledi, Babusa, & Tury, 2013), despite common underreporting of weight, thus possibly leading to inaccurate estimates of the associations between parental concerns and child BMI. Thus, in the present study, we employed objective assessment of BMI by measuring the adolescents' height and weight.

Most research examining behavioral outcomes of weight concerns in young people has focused on diet or eating-related constructs (such as eating restraint). Eating-related and exercise behaviors are seldom considered concurrently (Taylor, Wilson, & Mohr, 2011). This is surprising as exercise is an effective method of weight control and may contribute to weight loss in conjunction with dieting (Ho et al., 2013). For example, in a review of correlational studies and randomized trials, Pronk and Wing (1994) showed that the benefits of exercise for long-term weight maintenance were observed with different types of populations, diets, and exercise interventions. Hence, a unique aspect of the current study is that it estimates the effects of socio-biological and maternal factors on both eating restraint and exercise. Importantly, such effects

are hypothesized to be distal and indirect via children's weight concerns.

The present study extends previous scattered findings into a coherent and comprehensive model that tests the relative associations of social, biological, and maternal (assessed by both mother and daughter reports) factors to body weight concerns. We extended previous literature on adolescent weight concerns in a number of ways. First, we examined the viability of a structural model incorporating mothers' concerns about their child's weight (operationalized as mothers' own reports of encouragement for their daughter to lose weight), and daughters' perceptions of maternal concerns, along with other known socio-biological influences on weight concerns, in an effort to establish the relative contribution of these factors. Second, we adopted a stringent statistical approach allowing for the simultaneous examination of several predictors (biological, media, peers, parental variables), and outcomes of weight concerns. Third, we added exercise behavior as an outcome to the model. Fourth, we included a relatively large sample of mothers and daughters. Previous studies have included fewer than 115 pairs (Rodgers & Chabrol, 2009), thus potentially compromising statistical power. Finally, in contrast to most previous studies, objective (rather than self-reported) measures of height and weight were obtained.

It was hypothesized that support would be found for a model in which BMI, perceptions' of mothers' concerns, peer appearance conversations, and media pressure would all positively predict the weight concerns of the daughters. In turn, daughters' weight concerns were expected to positively predict eating restraint and exercise behaviors. Additionally, in a separate logistic regression analysis we expected to find that mother concerns and perceived mother concerns about daughter's weight, BMI, media pressures, and peer appearance conversations would positively predict the risk of eating disorders.

# Method

## **Participants and Procedure**

Two hundred and thirty two pre-adolescent and adolescent girls (and their mothers), enrolled in summer camps in Athens, Greece took part in the present study. The mean age of the mothers was  $43.98\,(SD=4.41)$ ; age range = 34-59), while the daughters were aged between 10 and 16 years, and had a mean age of  $12.26\,(SD=1.43)$ . The mean BMI of the daughters was  $19.84\,(SD=3.08)$ , with 79.10% either underweight or normal weight (there are currently no established cut-off points for underweight in children and adolescents), 18.60% were overweight, and 2.30% were obese, according to Cole, Bellizi, Flegal, and Dietz's (2000) age- and sex-specific criteria for classifying overweight and obesity in children. All participating girls and their mothers provided written consent forms; participants were treated according to the APA ethical guidelines.

## **Measures**

Mother variables. An adapted 4-item version of Moreno and Thelen's (1993) Family History of Eating Survey, previously used by Thelen and Cormier (1995), was used to assess the mothers' concerns about their daughters' weight. Three out of four items refer to the number of times the mother has told her daughter that she "weighs too much", "to eat less food or eat different foods in order to lose weight or keep from gaining weight", or that she should "exercise in order to lose weight or keep from gaining weight" in the past 12 months. The final item asks the mother how often she has "kept her daughter from eating foods that she likes so that she will lose weight or keep from gaining weight". All items were

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