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## Weight/shape and muscularity concerns and emotional problems in adolescent boys and girls: A cross-lagged panel analysis

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### ABSTRACT

**Introduction:** The goal of the present study was to identify the prospective relations between weight/shape and muscularity concerns and emotional problems in adolescents.

**Methods:** Self-report data of 966 German male and female adolescents were analyzed in a cross-lagged panel design.

**Results:** Analyses of latent means revealed significant correlations between weight/shape concern and emotional problems as well as between muscularity concern and emotional problems in both genders. Moreover, weight/shape concern predicted emotional problems prospectively, but only in girls. Regarding muscularity concern, we could not find any prospective relation with emotional problems in boys or girls from the general population.

**Conclusions:** It is assumed that as appearance is highly relevant for the self-concept in girls, concerns about the look might promote emotional problems. Thus, weight/shape concern should be addressed in the prevention of emotional problems in adolescent girls, whereas further research is necessary investigating the contribution of muscularity concern in this context.

Body image can be defined as a multidimensional construct which encompasses self-perceptions, thoughts, feelings, and actions concerning one's own body (Cash, 2012). Body image concerns represent the crucial cognitive-affective aspect of body image and arise when the subjective perception of the body differs from an ideal and this discrepancy is considered to be important to the person (Stice & Shaw, 2002; Wertheim & Paxton, 2012). Especially adolescence is a critical period for the emergence and amplification of body image concerns (Collishaw, Maughan, Natarajan, & Pickles, 2010; Costello, Copeland, & Angold, 2011; Ferreiro, Seoane, & Senra, 2014). Approximately 33% of adolescent girls and almost 25% of boys in a US sample reported a desire to change their body (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). In a large study of Spanish adolescents, aged 13–18 years, 53% of girls and almost 31% of boys reported medium to low body satisfaction (Ramos, Rivera, & Moreno, 2010). Similarly, 64% of girls and 35% of boys were dissatisfied with their weight status among a large sample of German adolescents (Finne, Bucksch, Lampert, & Kolip, 2011).

Over the past decades, gender-related differences according to body image concerns, that seem to correspond with the demands of the Western beauty standards, have been observed (Cafri & Thompson, 2004; Jones & Crawford, 2005; Jones, Bain, & King, 2008; McCreary & Sasse, 2000; Tiggemann, 2005). Whereas a thin figure seems to be central to women's physical attractiveness, men seem to strive for a strong, muscular body (Grogan & Richards, 2002; Grossbard, Lee, Neighbors, & Larimer, 2008; Wertheim & Paxton, 2012). However, there is increasing evidence that girls put emphasis on muscularity, by means of a toned figure, as well (Ricciardelli

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& McCabe, 2001; Wertheim & Paxton, 2012). Concerning boys, a lean body is thought to be necessary to enhance the visibility of muscularity (Fawkner, 2012). In consequence, both weight/shape and muscularity seem to be important in both genders to a certain extent. Nevertheless, most of the scales that are typically used in the assessment of body dissatisfaction focus on leanness and do not examine a desire to be both leaner and more muscular (Ricciardelli, 2012).

Body image concerns are not only relevant risk factors affecting the development of eating disorders (e.g., Bakalar, Shank, Vannucci, Radin, & Tanofsky-Kraff, 2015; Ferreiro, Seoane, & Senra, 2012; Grossbard, Atkins, Geisner, & Larimer, 2013; Stice & Shaw, 2002), but are also strongly related with diverse emotional problems in adolescence. There is cross-sectional evidence that supports a strong association between weight/shape concern and low self-esteem (e.g., Johnson & Wardle, 2005; van den Berg, Mond, Eisenberg, Ackard, & Neumark-Sztainer, 2010), as well as emotional problems (Fenton, Brooks, Spencer, & Morgan, 2010; Stice & Bearman, 2001), including depressive symptoms (e.g., Choi & Choi, 2016; McCreary & Sasse, 2000; Stice & Bearman, 2001) and anxiety (Duchesne et al., 2016; McCreary, 2012). It is worth noting that only one study (McCreary & Sasse, 2000) has examined muscularity concern and its association with depressive symptomatology in boys and girls to date. Their results support an association between muscularity concern and poorer self-esteem and more pronounced depressive symptoms, but only among boys.

Prospective research, analyzing the temporal association between body image concerns and emotional problems is limited. Regarding female adolescents, appearance concerns and dissatisfaction with weight and shape were reported to be crucial precursors of emotional problems 20 months up to eight years later (Johnson & Wardle, 2005; Ohring, Graber, & Brooks-Gunn, 2002; Stice & Bearman, 2001). Only Paxton, Neumark-Sztainer, Hannan, and Eisenberg (2006) explored possible gender differences in this context. They analyzed the relation between shape concern and depressive mood as well as low self-esteem in both female and male adolescents. Shape concern proved to be a relevant risk factor in both genders, but in different phases of adolescence over the course of five years. In early-adolescent girls (12 years old), shape concern predicted depressive mood and low self-esteem; the same result emerged in mid-adolescent boys (15 years old). In an experimental study by Birkeland et al. (2005), the presentation of magazine advertisements displaying attractive fashion models increased body dissatisfaction as well as depressed affect. Moreover, a systematic review on prevention approaches revealed that negative affect could be decreased as a consequence of prevention programs targeting body image concerns, providing support for a causal relationship (Watson et al., 2016).

There is also prospective evidence for a reverse relationship between body image concerns and emotional problems. For instance, Presnell, Bearman, and Stice (2004) identified negative affect as the strongest predictor for body dissatisfaction, but only in boys. In contrast, other studies reported negative self-evaluation and low self-esteem as core elements of emotional problems as strong risk factors for overconcern with weight and shape in adolescent girls (Allen, Byrne, McLean, & Davis, 2008; Wojtowicz & von Ranson, 2012). Experimental research in young female adults revealed that induction of negative mood resulted in increased body dissatisfaction, indicating a causal relationship (Haedt-Matt, Zalta, Forbush, & Keel, 2012).

Overall, the temporal association between body image concerns and emotional problems remains unclear and needs to be explored more precisely (Bergman & Scott, 2001; ter Bogt et al., 2006; Williams & Currie, 2000). Whereas the aforementioned studies exclusively analyzed unidirectional relations, the reciprocal relationship between body image concerns and emotional problems has only been addressed scarcely so far. Holsen, Kraft, and Røysamb (2001) reported that dissatisfaction with one's overall physical appearance predicted depressive mood in late-adolescent boys (aged 15–18 years) and in early-adolescent girls (aged 13–15 years). It is assumed that the age difference may reflect the typically later onset of puberty and appearance-related pressure in boys. There was no evidence for the reverse direction. Within the framework of the dual-pathway model of binge eating, the bidirectional analysis between body dissatisfaction and negative affect in adolescent girls revealed comparable results (Sehm & Warschburger, 2017). However, both studies addressed weight/shape concern only. Thus, further research is needed to elucidate the reciprocal relation between gender-sensitive measures of body image concerns and emotional problems.

To sum up, there is considerable empirical support for an association between body image concerns and emotional problems in both genders based on cross-sectional and prospective studies (Rawana, Morgan, Nguyen, & Craig, 2010). However, most of the longitudinal studies only addressed body dissatisfaction as either a risk factor for the development of emotional problems or as a consequence. In addition, they focused primarily on female populations as well as on concern about weight and shape or general satisfaction with one's own physical appearance. As body image concerns are relevant and associated with psychopathology in men as well, and as muscularity concern proved to be relevant in both genders (Hoffmann & Warschburger, 2017; Wertheim & Paxton, 2012), our study aims at overcoming the gap in the literature concerning these aspects. In addition, we want to expand upon the body of literature exploring the temporal precedence between body image concerns and emotional problems among adolescents.

Therefore, the main purpose of this investigation is to address both weight/shape concern and muscularity concern, and their prospective relationship with emotional problems in adolescent girls and boys in a cross-lagged design. Based on the studies outlined above, we assume that weight/shape concern precedes emotional problems. Because of the limited evidence in boys and muscularity concern in both genders, further analyses are performed in an exploratory fashion.

## 11. Methods

### 1.11.1. Participants and procedure

Participants were part of the PIER-study, a large longitudinal study at the University of Potsdam, Germany on risk factors for diverse psychological problems between childhood and early adolescence. They were part of a participant pool that had been recruited in 2005 from children in the German general population, living in urban and rural areas, distributed across different socio-economic classes, using a cluster sampling approach. Data collection for the current study took place in 2011/2012 (T1) and 2013

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