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Patterns of body image concerns in adolescence and early adulthood: A latent profile analysis

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ABSTRACT

The present study aimed at identifying latent profiles of body image concerns in adolescents and young adults. Subsequently, associations between these profiles and potentially harmful behaviors are examined. Self-report data of 758 male and female adolescents, aged 14 to 22 years, were analyzed. Participants provided demographic and anthropometric data and completed surveys on weight/shape and muscularity concern as well as on disturbed eating behaviors and dysfunctional exercise. Latent profile analyses of weight/shape concern and muscularity concern were performed separately for each gender. The analyses indicated three-class solutions in men and women. In both genders, the inconspicuous class, characterized by small amounts of weight/shape and muscularity concerns, was the largest one (86% in men, 68% in women). Whereas 10% of the men and 23% of the women were assigned to the borderline class, 4% of the men and 8% of the women formed the conspicuous class (marked weight/shape and muscularity concerns). Between genders, the degrees of muscularity concern differed in the borderline and inconspicuous classes, while the degrees of weight/shape concern differed in the inconspicuous class only. The comparable degrees of weight/shape and muscularity concerns in men and women in the affected classes underline the relevance of both aspects in both genders. Classes could be distinguished by harmful behaviors, like restrained eating or emotional exercise, proving the clinical significance of body image concerns.

The negative evaluation of one's own appearance is a widely distributed phenomenon among young adolescents (Mohnke & Warschburger, 2011). It can refer to the body as a whole (e.g., weight, shape, muscularity) or specific body parts (e.g., stomach, chest, nose) and goes along with experiencing negative effects and emotions (Wertheim & Paxton, 2012).

Body image concerns are affected by age and weight status: Over the course of adolescence, body dissatisfaction seems to increase and shows further growth during the transition to early adulthood. This increase in body dissatisfaction runs parallel to weight gain (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013). In general, overweight and obese persons tend to be more dissatisfied with their bodies (Presnell, Bearman, & Stice, 2004).

Body image concerns also show gender-specific differences: Whereas concern about weight and shape is more pronounced in female compared to male adolescents, the latter show increased muscle preoccupation (Hoffmann & Warschburger, 2017). Nonetheless, the current ideal female body should not only be slim but toned as well, emphasizing the relevance of fitness in our society (Simpson & Mazzeo, 2017). For men, muscles should be clearly defined and accompanied by slenderness to enhance their visibility (Fawkner, 2012). However, there are only a few studies that examine both types of body image concerns in both genders and try to reveal whether weight/shape concern and muscularity concern occur concurrently or singularly.

Cross-sectional analyses in a Norwegian sample revealed that a drive for muscularity (DMS; McCreary & Sasse, 2000) was moderately associated with a drive for thinness and body dissatisfaction (respective subscales of the EDI-2; Garner, 1991) in male, but not in female adolescents (12–18 years) (Bratland-Sanda & Sundgot-Borgen, 2012). In another study, using the same measures, approximately one-third of male and female college students (18–26 years) scored above the median concerning both drives for thinness and muscularity. Additionally, a smaller number of participants expressed either a drive for thinness only or a drive for muscularity only. The authors concluded that both aspects are likely to appear commonly in both genders (Kelley, Neufeld, & Musher-Eizenman, 2010).

More recently, person-centered approaches were applied to examine patterns of body image concerns in terms of concern with leanness (e.g., feeling fat or wanting to be thinner; as used by Shisslak et al., 1999),

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concern with muscularity (e.g., wanting to have toned or defined muscles; adapted from Shisslak et al., 1999) and related behaviors (product use to increase muscularity, purging, overeating, binge eating) in adolescent and adult men (Calzo et al., 2015; Calzo et al., 2016). In contrast to the well-known variable-centered methods that focus on relationships between different variables, person-centered approaches (e.g., cluster analysis, latent class analysis) focus on relationships between individuals and assign them preferably homogenous groups (Laursen & Hoff, 2006; Vermunt & Magidson, 2002). Most of the participants were classified as asymptomatic/healthy, i.e. they did not show any type of body image concerns or disturbed eating behaviors or the use of muscle-building products. The class that was characterized by a marked lean concern was associated with an increased probability for muscularity concern and dieting behavior. However, those participants who showed marked muscularity concern in association with the use of products to increase muscularity did not exhibit an increased probability for weight/shape concern (Calzo et al., 2015; Calzo et al., 2016). Therefore, there might be male adults with increased muscularity concern only, as well as others who are predominantly concerned about weight/shape, and in some cases additionally concerned with muscularity. These findings underline the relevance of assessing both muscularity and weight/shape concerns in male adults when it comes to body image concerns.

Regarding female college students, a cluster analysis (Girard, Chabrol, & Rodgers, 2017) used the drive for thinness and the drive for muscularity as indicators. Whereas the drive for thinness subscale (EDI-2; Garner, 1991) focuses on emotions and cognitions regarding thinness only, the drive for muscularity questionnaire (DMS; McCreary & Sasse, 2000) includes attitudes and behaviors regarding muscularity. The following patterns were identified: 23% of participants showed a drive for thinness only and 20% showed a drive for muscularity only; 16% indicated elevated scores on both scales, and 41% showed low scores on both scales. These findings indicate that both drives can occur alone or together in young female adults. For research on body image concerns in women, the focus should not only be on concerns about having a thin body, but should also include the desire for a toned body as well. With respect to eating behaviors, those women who indicated both a drive for thinness and a drive for muscularity showed more bulimic symptoms compared to the other patterns.

These studies made a valuable contribution to the understanding of the occurrence of body image concerns. However, as lean-oriented and/or muscularity-oriented behaviors were included as indicators of the latent classes/clusters, the exclusive patterns of body image concerns cannot be deduced directly. Combining measures of body image concerns and related behaviors in a latent profile analysis might lead to different results in comparison to the analysis of body image concerns alone. For example, there might be participants who exhibit body image concerns but do not show pathological eating behaviors, whereas others change their behaviors in order to achieve their ideal body. Therefore, after the analysis of the underlying patterns, their relation to potentially health-damaging behaviors was analyzed independently in a subsequent step in our study.

It is well documented that weight/shape concern can lead to disturbed eating behavior by means of restrained eating or binge eating and is regarded as a prominent risk factor for eating disorders in women (Stice, 2002; Stice & Shaw, 2002). Regarding muscularity concern, associations with unhealthy diets or intake of anabolic steroids are reported, as well as the potential danger of developing muscle dysmorphia in men (Cafri et al., 2005; Pope, Phillips, & Olivardia, 2000; Tod & Edwards, 2015). Another possibly damaging behavior related to body image concerns is dysfunctional exercise (White & Halliwell, 2010). This can be characterized by a highly frequent engagement in sports activities accompanied by emotional burdens associated with exercise (Shroff et al., 2006). Compulsive exercise shows a strong relationship to weight/shape concern in the context of eating disorders and occurs frequently when enhancing muscle mass in order to overcome muscularity concern (Meyer, Taranis, Goodwin, & Haycraft, 2011; Murray et al., 2017). Although different behaviors aimed at achieving low levels of body fat or high levels of muscle mass are conceptualized, evidence on the relationship between patterns of body image concerns and potentially harmful behavioral outcomes is sparse (Calzo et al., 2015; Calzo et al., 2016; Girard et al., 2017; Murray et al., 2017). Moreover, as illustrated above, most research on weight/shape concern and related behaviors has focused on female samples, whereas most research on muscularity concern and related behaviors is focused on male samples. The relationships between patterns of body image concerns and diverse potentially damaging behaviors should therefore be examined in both genders.

The present study aimed to identify patterns of body image concerns, namely weight/shape concern and muscularity concern, in adolescent and young adult men and women using latent profile analysis (LPA). Clustering participants with comparable degrees of weight/shape concern and muscularity concern together allows for further insights into the occurrence of body image concerns. Based on previous latent class and cluster analyses, we expected at least two latent profiles in male and female adolescents. As the data were assessed in a community sample, we further expected most participants to be classified as asymptomatic.

As age and weight status are established influencing factors in body image concerns, we analyzed their impact on class membership. It was hypothesized that participants in a potentially asymptomatic pattern are younger and exhibit a lower weight status compared to those in potentially symptomatic patterns.

Moreover, the relationship between class membership and various health-damaging behaviors (binge eating, restrained eating, muscularity-oriented behavior, exercise frequency, emotional exercise) was examined. It was assumed that participants in a potentially asymptomatic pattern show lower scores on these maladaptive behaviors in comparison to participants in potentially symptomatic patterns.

1. Material and methods

1.1. Participants and procedure

Participants were part of a study on intrapersonal developmental risk factors in a German community sample. They were recruited from a participant pool that had been assessed for the first time in 2005. At that time, a cluster sampling approach was applied in order to include children from regular primary schools representatively with regard to social background and area of residence. Participants who provided data at one of the two previous assessments (2011, 2013) were invited to take part in the current assessment and 769 agreed. Inclusion criteria for the present analysis were data on both weight/shape concern and muscularity concern, which were provided by 758 participants (56.1% female). The age of the participants ranged from 14 to 22 years ($M = 17.26$, $SD = 2.00$). Age was non-normally distributed with skewness of 0.58 ($SE = 0.09$) and kurtosis of -0.61 ($SE = 0.18$). The majority of the sample (78.1%) were normal weight (10th percentile ≤ BMI ≤ 90th percentile), 13.3% were underweight (BMI < 10th percentile), 7.2% overweight (BMI > 90th percentile), and 1.3% did not provide information on height and weight. In comparison with German reference data (Kurth & Schaffrath Rosario, 2007; Mensink et al., 2013), underweight