



Weight bias internalization across weight categories among school-aged children. Validation of the Weight Bias Internalization Scale for Children

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ABSTRACT

Anti-fat bias is widespread and is linked to the internalization of weight bias and psychosocial problems. The purpose of this study was to examine the internalization of weight bias among children across weight categories and to evaluate the psychometric properties of the Weight Bias Internalization Scale for Children (WBIS-C). Data were collected from 1484 primary school children and their parents. WBIS-C demonstrated good internal consistency ($\alpha = .86$) after exclusion of Item 1. The unitary factor structure was supported using exploratory and confirmatory factor analyses (factorial validity). Girls and overweight children reported higher WBIS-C scores in comparison to boys and non-overweight peers (known-groups validity). Convergent validity was shown by significant correlations with psychosocial problems. Internalization of weight bias explained additional variance in different indicators of psychosocial well-being. The results suggest that the WBIS-C is a psychometrically sound and informative tool to assess weight bias internalization among children.

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1. Introduction

Weight-related stigmatization is a widespread phenomenon that is associated with adverse psychological consequences, including low self-esteem, anxiety, depression, body dissatisfaction, and eating pathology (e.g., [Harriger & Thompson, 2012](#); [Menzel et al., 2010](#); [Puhl & King, 2013](#)). Although overweight and obese children face weight-related as well as competence-related teasing more frequently compared to their non-overweight peers ([Rojo-Moreno et al., 2013](#)), there is evidence that stigmatization experiences affect children across weight categories ([Jendryca & Warschburger, 2016](#)).

Given the fact that weight stigma is highly prevalent and socially accepted, it has been hypothesized that individuals commonly internalize negative weight biases and anti-fat attitudes ([Durso & Latner, 2008](#); [Ratcliffe & Ellison, 2013](#)). Weight bias internalization implies that an individual believes in certain weight-related stereotypes and applies them to him- or herself, resulting in negative self-evaluations ([Durso & Latner, 2008](#)).

Internalized weight bias is a construct that is distinct from anti-fat attitudes, body image, self-esteem, and internalization of

thin or muscular ideals ([Durso & Latner, 2008](#); [Vartanian & Novak, 2011](#)). In particular, while anti-fat attitudes consist of attributions made about “others,” weight bias internalization includes attributions made about the “self,” which in turn could have a negative impact on the individual. Further, body image is a multidimensional construct including the evaluation of and investment in the individual’s physical characteristics ([Voelker, Reel, & Greenleaf, 2015](#)), whereas internalized weight bias reflects a belief in social stereotypes related to overweight and obesity including the evaluation of one’s body weight and shape ([Durso & Latner, 2008](#)). There is evidence that weight bias internalization might be associated with self-esteem, but it is not the same construct, as weight bias internalization is a more specific construct that relates directly to weight stereotypes ([Durso & Latner, 2008](#)). Moreover, weight bias internalization, reflecting the belief that “fat is bad,” differs from the internalization of a thin or a muscular ideal, which mirrors the belief that one should strive to achieve the societal standard of attractiveness ([Vartanian & Novak, 2011](#)). Thus, weight bias internalization, anti-fat attitudes, body image, self-esteem, and internalization of a thin or muscular ideal are separate constructs, which might be related but are distinct from each other.

According to the theoretical model proposed by [Tylka et al. \(2014\)](#) weight stigma is linked with adverse physical and psychosocial health via several intermediate steps. In particular, it is asserted that weight stigma leads to the internalization of weight

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stigma that in turn causes increased body shame and appearance monitoring and ends in health problems. Recently, [Ratcliffe and Ellison \(2013\)](#) formulated a theoretical model that addresses the relationship between internalized weight stigma and a weight-stigmatizing environment. The authors hypothesized that external factors such as negative societal and interpersonal experiences of weight stigma are “the breeding ground” for the emergence of internalized weight stigma. Various factors, such as negative self-judgments about meaning of being an obese person, attentional and mood shifts, avoidance and safety behaviors, as well as eating and weight-related management behaviors, are considered to be essential for the maintenance of internalized weight stigma.

Weight bias internalization can therefore be considered an important factor that is associated with psychological distress among individuals with overweight and obesity ([Durso & Latner, 2008](#)). Consistent with this view, it has been shown that weight bias internalization is related to body image disturbances such as body dissatisfaction, body shame, weight and shape concerns, and fear of fat ([Carels et al., 2013](#); [Durso & Latner, 2008](#); [Roberto et al., 2012](#)). Based on the close association between the internalization of weight stigma and body image disturbances, body dissatisfaction might be considered a form of internalized stigma, in which an individual applies the undesirable appearance attributes to him- or herself ([Sikorski, Luppá, Luck, & Riedel-Heller, 2015](#)). Furthermore, previous studies in adults and adolescents have shown that weight bias internalization is positively related to somatoform symptoms ([Hilbert et al., 2014](#)), restrained eating ([Roberto et al., 2012](#)), binge eating ([Carels et al., 2013](#); [Schvey, Roberto, & White, 2013](#)), anxiety ([Roberto et al., 2012](#)), and depression ([Durso & Latner, 2008](#); [Hilbert et al., 2014](#); [Roberto et al., 2012](#); [Schvey et al., 2013](#)), and negatively associated with self-esteem and quality of life ([Hilbert et al., 2014](#); [Roberto et al., 2012](#)). These cross-sectional findings were supported by a recent experimental study ([Pearl & Puhl, 2016](#)), in which the induction of weight bias internalization led to lower self-esteem as well as more negative and less positive affect than the mere experience of weight bias.

Furthermore, weight bias internalization has been shown to significantly contribute to psychosocial problems beyond weight status, stigmatizing beliefs, and experiences of weight-related discrimination in overweight and obese participants ([Durso & Latner, 2008](#); [Durso et al., 2012](#); [Hilbert et al., 2014](#)). Based on the observation that even under- and ‘normal’-weight children perceive themselves as ‘overweight’ ([Kurth & Ellert, 2008](#)), [Pearl and Puhl \(2014\)](#) extended previous findings restricted to overweight individuals, by also including underweight as well as ‘normal’ weight participants in their sample, and showing that the internalization of weight bias was also associated with body dissatisfaction, anxiety, depression, low self-esteem, and binge eating among non-overweight individuals. These results suggest that internalized weight stigma affects individuals across weight categories. In a recent study among underweight and ‘normal’ weight individuals by [Schvey and White \(2015\)](#), it was shown that weight bias internalization was positively associated with depression, restrained eating, eating concerns, and weight and shape concerns, indicating that individuals regardless of weight may internalize weight bias, which is in turn related to poor psychological well-being.

Despite the relevance of weight bias internalization for psychosocial well-being, only two questionnaires for its assessment are available: the Weight Self-stigma Questionnaire, which measures self-devaluation and fear of enacted stigma ([Lillis, Luoma, Levin, & Hayes, 2010](#)), and the Weight Bias Internalization Scale (WBIS), which captures self-directed overweight stigma assessing a variety of factors relevant to internalized weight bias such as acceptance or rejection of weight status, desire for change, effect of perceived weight status on mood, ease of life, perceived personal value, and social interaction ([Durso & Latner, 2008](#)). The WBIS

shows good psychometric properties and is therefore the most commonly used instrument for assessing weight bias internalization in adulthood ([Durso & Latner, 2008](#); [Hilbert et al., 2014](#); [Hübner et al., 2016](#)) and adolescence ([Roberto et al., 2012](#)).

There are several validation studies that have analyzed different versions of the WBIS. In their original validation of the WBIS, [Durso and Latner \(2008\)](#) included 198 (164 women) overweight and obese individuals between the ages of 18 and 67. Cronbach’s alpha for the final 11-item scale was .90. Principal component analysis with a VARIMAX rotation indicated a two-component solution, with Component 1 explaining 44.86% of the variance and Component 2 explaining 13.14% of the variance. Due to the fact that the WBIS was considered to be unidimensional and the low variance explained by Component 2, a confirmatory factor analysis (CFA) with the component extraction set to one was conducted with the same sample. Factor loadings for each item and visual analysis of the scree plot supported the single factor solution. The scale showed strong partial correlations between the WBIS and body image concern, drive for thinness, and self-esteem, when adjusting for BMI.

Population norms and psychometric properties for the German version of the WBIS have been provided by [Hilbert et al. \(2014\)](#) in a representative community sample of 1092 participants between the ages of 14 and 89 with overweight and obesity. [Hilbert et al. \(2014\)](#) supported item homogeneity and internal consistency (Cronbach’s $\alpha = .91$) after the removal of one item (“As an overweight person, I feel that I am just as competent as anyone”). The single-structure of the 10-item WBIS was confirmed using CFA, and convergent validity was supported by significant correlations with depressive and somatoform symptoms.

Furthermore, [Pearl and Puhl \(2014\)](#) validated a modified version of the WBIS (WBIS-M) in a sample of 148 participants aged 19–70 across all weight categories. The word “overweight” was replaced by the words “my weight” in all respective items. The WBIS-M reached high internal consistency with a Cronbach’s α of .94. Moreover, higher WBIS-M levels corresponded with a range of psychological problems, such as body image concerns, pathological eating behavior, anxiety, depression, and low self-esteem.

In a recent study among 191 German adolescents aged 13–19 years seeking obesity treatment ([Ciupitu-Plath, Wiegand, & Babitsch, 2018](#)), the partially adapted WBIS (Weight Bias Internalization Scale for Youth WBIS-Y) demonstrated internal consistency with Cronbach’s $\alpha = .87$, and was easily understood and well accepted by participants. An exploratory principal component factor analysis (EFA) indicated two independent factors, explaining 44.70% and 11.19% of the total variance respectively, whereas the one-factor solution on the basis of a CFA with the same sample explained 44.70% of the total variance and indicated moderate goodness of fit. The one-factor solution was chosen based on the scree plot. The WBIS-Y was negatively associated with self-esteem, self-efficacy, and health-related quality of life, and positively with BMI and external body-related locus of control. Results from this study indicated that weight bias internalization is prevalent even among young people with obesity.

However, to our knowledge, no study has explored weight bias internalization among younger children across weight categories using [Pearl and Puhl’s \(2014\)](#) modified WBIS-M. Given the fact that childhood and adolescence are particularly critical periods to promote positive body image and healthy eating behaviors ([Halliwell, 2015](#); [Nolan & Eshleman, 2016](#)), and that youth of any weight are vulnerable to weight stigma ([Rojo-Moreno et al., 2013](#)) which negatively affects psychological functioning ([Jendrzyca & Warschburger, 2016](#)), it is important to explore weight bias internalization among children. Due to the lack of validated assessment tools for children and because research and clinical practice with children require specific assessment instruments considering their developmental level, the purpose of this study was to adapt the

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