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Psychometric properties of a short version of the Eating Attitudes Test (EAT-8) in a German representative sample

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ABSTRACT

Purpose: Disordered eating is common for all ages and sexes in the general population. However, only some individuals are known to develop clinically relevant eating disorders. There is a critical need of efficient, reliable and valid screening instruments to measure disordered eating for the general population. The Eating Attitudes Test was shortened into an 8-item-version to screen individuals at high risk of developing clinical eating disorders in a general population sample.
Methods: Psychometric properties (Cronbach's α, construct and concurrent validity and factor structure), cutoff scores (with sensitivity, specificity, positive and negative predictive value) and norms were determined in a representative sample of the German population ($N = 2527$). Factorial validity was investigated using item response modeling.
Results: Results confirmed reliability and validity of the questionnaire. Internal consistency and convergent validity were good. Analysis revealed different cutoff points for male and female participants. Values for sensitivity and specificity were satisfying and the positive predictive value was higher compared to other short screening instruments for disordered eating. Factorial analysis revealed a one-factor solution with an excellent model fit. The elimination of one item was discussed. Gender- and age-specific norms are reported.
Conclusions: Overall results indicated that the EAT-8 is an efficient instrument suitable for screening purposes in large general population samples.

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1. Introduction

Early detection of disordered eating is necessary to prevent clinically relevant eating disorders. The term “disordered eating” describes several body and weight associated symptoms (e.g. persistent dieting, weight concerns). Current research showed that eating disorders, subclinical eating disorders and high-risk behavior can be settled on a theoretical continuum ranging from asymptomatic eaters on one side to clinically diagnosable eating disorders on the other side (Aspen et al., 2014; Lindeman, Stark, & Keskivaara, 2001; Scarano & Kalodner-Martin, 1994). Groups only differ in symptom severity or intensity of disordered eating. However, some individuals with disordered eating behaviors are at high-risk of developing a clinical eating disorder.

Disordered eating is common in the general population. The prevalence of disordered eating in Germany ranges from 3.9% (Hilbert, de Zwaan, & Braehler, 2012) to 31.6% (Berger et al., 2011) depending on screening instrument and sample. Women show higher prevalence of disordered eating and clinical eating disorders than men. Weight concerns, dieting and negative body image are evaluated risk factors of developing an eating disorder (Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004; Stice, Marti, Shaw, & Jaconis, 2009). Individuals at high risk seem to show higher odds of psychiatric comorbidities including anxiety, depression or insomnia (Aspen et al., 2014; Dennard & Richards, 2013) and report lower quality of life (Sanftner, 2011). Despite common assumptions, recent longitudinal studies found that disordered eating behaviors either remain stable or even increase from childhood to adulthood (Herpertz-Dahlmann, Dempfle, Konrad, Klasen, & Ravens-Sieberer, 2014; Loth, MacLehose, Bucchianeri, Crow, & Neumark-Sztainer, 2014; Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011). Therefore early detection of high-risk individuals is important to reduce current impairments and shorten the time between onset and treatment of the disorder, which significantly increases recovery rates (Treasure, Claudino, & Zucker, 2010).

Screening instruments are used to detect cases with full and subclinical eating disorders as well as individuals at high risk (Jacobi, Abascal, & Taylor, 2004). With help of cutoff points it is possible to determine the prevalence of disordered eating in general population samples. To select risk groups in large samples, the efficiency and sufficient psychometric

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properties are of great importance. There are two short screening instruments of disordered eating, which are internationally known. These are the SCOFF (Morgan, Reid, & Lacey, 1999) and the Weight Concerns Scale (Killen et al., 1994). The Weight Concerns Scale includes five items which focus on weight concerns and do not assess symptoms like bingeing or purging. Because of different response sets, the determination of the total score is quite complex. In Germany, there is no validation study of the German Weight Concerns Scale. The SCOFF (Morgan et al., 1999) is a five item measure, developed as a screening tool for eating disorders in primary care. There is only one study which assessed psychometric properties of the German version of the SCOFF. In this particular study the SCOFF showed acceptable values for sensitivity and specificity, but reliability and positive predictive value (PPV) were low (Berger et al., 2011).

The Eating Attitudes Test (EAT) is a self-report measure originally developed as a screening instrument for early detection of anorexia nervosa (Garner & Garfinkel, 1979). The original EAT consisted of 40 items measuring symptoms of anorexia nervosa on a 6-point Likert scale. An abbreviated form containing 26 items was later developed (Garner, Olmstedt, Bohr, & Garfinkel, 1982), and translated into German (Meermann & Vandereycken, 1987). The EAT achieved good psychometric properties of reliability and validity and is useful in different cross-cultural settings. It reached reasonable sensitivity and specificity but very low PPV, due to low prevalence of eating disorders (for a review: Garfinkel and Newman (2001)). It was concluded that the EAT is useful for "screening eating disturbances in general, in the population at risk overall or in specific subgroups […and] as the first part of a 2-part diagnostic screen, if the second part involves clinical interview" (Garfinkel & Newman, 2001). Nevertheless the EAT consisting of 26 items and a 6-point Likert scale, is too complex when applied to general health surveys. Therefore, a short version of the EAT consisting of 13 items was proposed (Berger et al., 2012) which was applied recently in a representative sample of the German population (Richter, Braehler, Strauss, & Berger, 2014). The EAT-13 revealed a high applicability for different ages and sexes as well as good psychometric properties.

Although the EAT-13 is shorter than the original version, its length may be problematic due to the fact that every item raises additional costs in general health surveys. Furthermore, the examination of the total score requires recoding item values and therefore reduces analytical efficiency. In accordance to this a short version of the EAT with 8 items and a dichotomized answering scale was developed.

The aim of the current study is to evaluate whether the EAT-8 is useful for the screening of individuals with disordered eating behavior in general health research. Psychometric properties of the EAT-8 were determined and compared to psychometric properties of other short measures of disordered eating. Factorial validity was assessed by applying item response modeling. Additionally, construct and concurrent validity were investigated using other short measures of disordered eating. For screening purposes a cutoff point was proposed which should help facilitate the selection of high-risk individuals in the general population.

2. Method

2.1. Recruitment and sample

This study was part of a representative general-population-survey in Germany conducted by the University of Leipzig. Participants aged ≥14 years were recruited in two stages between February and April 2014 by an independent agency specialized in market, opinion, and social research (USUMA, Berlin, Germany). A three-stage random-route sampling procedure with 258 sample points in all German states was applied. A total of 2527 individuals participated in the assessment (response rate 54.8%, see Fig. 1). Participants in the present sample did not deviate substantially in main demographic variables (sex, age, region, Body Mass Index) from data of the national census on a representation basis in Germany of 2013–2014 (Federal Statistical Office, 2013, 2014). However, in the present sample there is a bias regarding the educational level. Compared to the national census, 5% more people who graduated after ten years of school and 6% less who graduated after twelve years of school participated in the study.

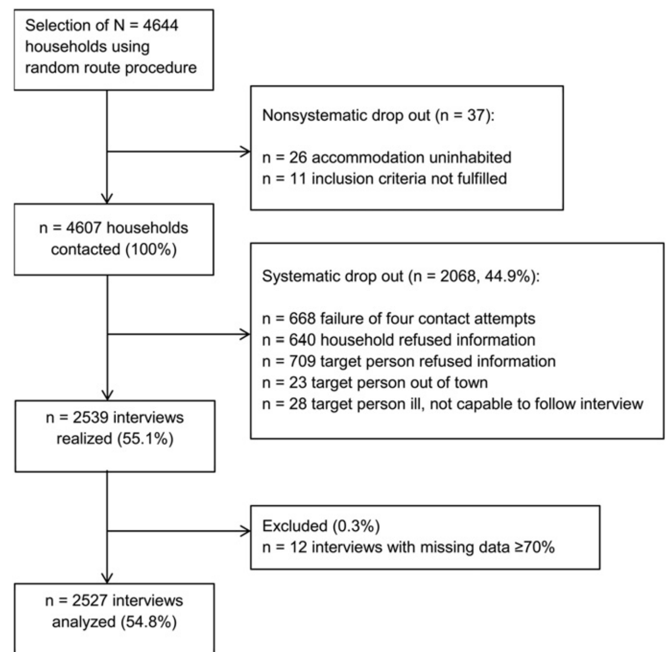

Fig. 1. Flow-chart of the sample.

All participants gave their informed consent prior to inclusion. Households were visited by trained interviewers and a maximum of four contact attempts were conducted per household. Demographic information was assessed face-to-face and further information was collected through a paper/pencil self-report. The study was approved by the Ethics Committees of the Universities of Leipzig and Jena (Germany).

2.2. Measures

The EAT-8 is a short version of the Eating Attitudes Test[1] (Garner & Garfinkel, 1979). It assesses disordered eating as a self-report measure including 8 items and a dichotomized response format (1 = "I agree somewhat" and 0 = "I disagree somewhat"). Through the determination of the total score the EAT-8 should classify into a low risk and a high risk group, whereas the optimal cutoff point has to be determined. The psychometric properties of the short version have not been investigated. The test revision of the EAT-13 (Berger et al., 2012) and its reduction to 8 items were based on data from a German representative sample from 2013 (Richter et al., 2014). Revision was carried out evaluating psychometric statistics and item content. Items with low corrected item-total correlations were deleted and internal consistency (Cronbach's α) was maximized. Furthermore, experts identified items similar in content with high inter-item-correlations, of these only one item was included in the short version.

Due to limited capacities extensive psychometric testing was not possible in this large general population survey. The establishment of an interview such as the Structured Clinical Interview for DSM IV-TR (First, Spitzer, Gibbon, & Williams, 2002), as the gold standard for validation would have been very time consuming and expensive. It was therefore decided to use a self-report measure based on the diagnostic

[1] Items from the EAT-26 have been reproduced with permission.

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