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German version of the Yale Food Addiction Scale 2.0: Prevalence and correlates of 'food addiction' in students and obese individuals

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ABSTRACT

The Yale Food Addiction Scale (YFAS) measures addiction-like eating of palatable foods based on the seven diagnostic criteria for substance dependence in the fourth revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Most recently, a new version of the YFAS has been developed based on the revised eleven diagnostic criteria for substance use disorder in DSM-5. This YFAS 2.0 was translated into German and used among other measures in a study with 455 university students (89% female) and in a study with 138 obese patients presenting for bariatric surgery (78% female). In the student sample, the one-factorial structure of the English version could be replicated and internal consistency was $\alpha = 0.90$. The diagnostic threshold for 'food addiction' was met by 10% of the sample. 'Food addiction' diagnoses were associated with higher body mass, binge eating frequency, trait food craving, and attentional impulsivity as well as with lower perceived self-regulatory success in dieting. In the obese sample, the diagnostic threshold for 'food addiction' was met by 47% of participants. Again, 'food addiction' symptomatology was associated with higher binge eating frequency and attentional impulsivity. However, those with a 'food addiction' diagnosis did not differ from those without a diagnosis in body mass. To conclude, psychometric properties of the English YFAS 2.0 were replicated for the German YFAS 2.0. Prevalence rates and correlates of 'food addiction' as measured with the YFAS 2.0 were similar to those found with the previous version of the YFAS. Thus, the German YFAS 2.0 appears to be a reliable measure that can be used for the investigation of addiction-like eating behavior, analogous to the original version of the YFAS and the English YFAS 2.0.

1. Introduction

'Food addiction' refers to the idea that certain foods (e.g., highly processed, high-calorie foods) may have an addictive potential and that some forms of overeating may represent an addicted behavior (Ifland et al., 2015). Although this concept has generated some controversy in the scientific community (Benton, 2010; Rogers & Smit, 2000; Wilson, 2010; Ziauddeen & Fletcher, 2013), it has received increasing interest in recent years (Davis & Carter, 2009, 2014; Meule, 2015). The popularity of the 'food addiction' concept can be, in part, attributed to the development of the *Yale Food Addiction Scale* (YFAS; Gearhardt, Corbin, & Brownell, 2009), which was the first standardized self-report measure for the assessment of addiction-like eating based on the diagnostic criteria for substance dependence in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994).

In 2013, a new version of the DSM (DSM-5) was released, which includes revised diagnostic criteria for substance use disorder (American Psychiatric Association, 2013). Specifically, four new criteria were added and diagnostic thresholds were lowered such that the presence of two symptoms (and a clinically significant impairment or distress) suffices to receive a diagnosis of substance use disorder (for a discussion of the four new criteria in relation to food and eating, see Meule & Gearhardt, 2014b). Given these substantial changes in the diagnostic criteria for substance use disorder, the YFAS has been revised recently (Gearhardt, Corbin, & Brownell, 2016). This new version—the YFAS 2.0—measures eleven 'food addiction' symptoms: (1) Consuming large amounts of

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food or eating more than planned (*amounts*), (2) unsuccessful attempts to cut down (*attempts*), (3) great deal of time spent in buying or consuming food or recover from overeating (*time*), (4) important activities given up due to eating (*activities*), (5) overeating despite physical or emotional consequences (*consequences*), (6) need to eat more to achieve the same effects (*tolerance*), (7) withdrawal symptoms when cutting down on certain foods (*withdrawal*), (8) frequent cravings for certain foods (*craving*), (9) failure in role obligations due to eating (*obligations*), (10) overeating despite interpersonal or social problems (*problems*), and (11) overeating in physically hazardous situations (*situations*). Additionally, the YFAS 2.0 differs from the original YFAS in some other aspects as well (e.g., changes in item wordings and response options; Gearhardt et al., 2016).

The aim of the current studies was to evaluate the psychometric properties and correlates of a German translation of the YFAS 2.0. In study 1, a large, predominantly student sample was investigated online. Based on the findings in the validation studies of the English YFAS 2.0 (Gearhardt et al., 2016), it was expected that the eleven YFAS 2.0 symptoms would have a one-factorial structure and high internal consistency. Those with a diagnosis were hypothesized to have higher BMI and eating pathology (i.e., more days with binge eating, more frequent food cravings, and lower self-regulatory success in dieting) and to be more likely female than those without a diagnosis (Gearhardt et al., 2016; Pursey, Stanwell, Gearhardt, Collins, & Burrows, 2014). Based on findings with the previous version of the YFAS, it was expected that those with a YFAS 2.0 diagnosis would report higher impulsivity than those without a diagnosis (Davis et al., 2011; Murphy, Stojek, & MacKillop, 2014), particularly regarding attentional impulsivity (Ceccarini, Manzoni, Castelnuovo, & Molinari, 2015; Meule, Lutz, Vögele, & Kübler, 2012; Meule, Vögele, & Kübler, 2012).

In study 2, a sample of obese individuals presenting for bariatric surgery was investigated with a paper-and-pencil version of the YFAS 2.0. Based on findings with the YFAS 2.0 and with the previous version of the YFAS, it was expected that a substantially larger proportion of participants than in study 1 would receive a diagnosis (Gearhardt et al., 2016; Meule, Heckel, Jurowich, Vögele, & Kübler, 2014; Pursey et al., 2014). Similar to study 1, those with a diagnosis were hypothesized to have higher eating pathology (i.e., more days with binge eating, higher eating concern, weight concern, and shape concern) and higher impulsivity than those without a diagnosis, particularly regarding attentional impulsivity (e.g., Gearhardt et al., 2016; Meule, Heckel, et al., 2014). In contrast to study 1, however, gender and BMI were expected to be unrelated to YFAS 2.0 diagnoses as these variables did not differ between obese individuals with and obese individuals without 'food addiction' based on the previous version of the YFAS (Meule, 2012). Finally, age and dietary restraint were also expected to be unrelated to YFAS 2.0 diagnoses (Gearhardt et al., 2016; Meule, Heckel, et al., 2014).

2. Study 1

2.1. Methods

2.1.1. Participants

Participants were recruited in February and March 2015 via students' mailing lists at various universities in German-speaking countries (Germany, Austria, Switzerland, Luxembourg) by providing a link to the study's website at www.soscisurvey.de. Six-hundred and seventeen individuals started the study. Participants who were identified by the website's quality check to have answered questions too rapidly were excluded ($n = 16$). Moreover, data from participants who immediately terminated the study after the instructions or did not fully complete the YFAS were excluded from analyses ($n = 146$). The final sample comprised $n = 455$ participants (89.0% female, $n = 405$). Most participants were students (79.8%, $n = 363$) and had German citizenship (82.6%, $n = 376$). Mean age was $M = 25.57$ years ($SD = 6.97$) and mean BMI was $M = 22.32$ kg/m^2 ($SD = 3.65$). Most participants had normal weight (77.8%, $n = 354$, BMI = 18.50–24.99 kg/m^2) and few were underweight (6.8%, $n = 31$, BMI < 18.50 kg/m^2), overweight (11.6%, $n = 53$, BMI = 25.00–29.99 kg/m^2), or obese (3.7%, $n = 17$, BMI ≥ 30.00 kg/m^2).

2.1.2. Measures

2.1.2.1. YFAS 2.0. The YFAS 2.0 (Gearhardt et al., 2016) assesses addiction-like eating during the past twelve months. The scale consists of 35 items, which are scored on an eight-point scale ranging from *never* to *every day*. A symptom count can be calculated by adding up all endorsed symptoms and, thus, scores can range between zero and eleven. Moreover, based on the diagnostic thresholds for substance use disorder in DSM-5, different severity levels can be differentiated: mild 'food addiction' (indicated by meeting two or three symptoms), moderate 'food addiction' (indicated by meeting four or five symptoms), and severe 'food addiction' (indicated by meeting six or more symptoms). All 'food addiction' diagnoses also require the presence of clinically significant impairment or distress due to the eating behavior. The English version of the YFAS 2.0 was translated into German by the first author and translated back into English by a bilingual speaker, who did not have any knowledge about the original version. Discrepancies between the back-translation and the original form were discussed and adjustments were made to the German translation as necessary (Appendix A).

2.1.2.2. Food Cravings Questionnaire – Trait – reduced (FCQ-T-r). The German version of the FCQ-T-r (Hormes & Meule, 2016; Meule, Hermann, & Kübler, 2014) was used for measuring general food cravings. The scale consists of 15 items, which are scored on a six-point scale ranging from *never/not applicable* to *always*. Higher scores indicate more frequent food craving experiences. Internal consistency was $\alpha = 0.95$.

2.1.2.3. Binge days. Items #13–15 of the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Hilbert & Tuschen-Caffier, 2006) were used for measuring binge eating severity. These items ask participants to indicate (1) how many times they consumed large amounts of food within the past 28 days, (2) how many times they felt that they lost control over eating, and (3) on how many days they consumed large amounts *and* had a loss of control. The first two items act as primers for the third item and, thus, only the third item, which assesses the number of binge days in the past 28 days was analyzed.

2.1.2.4. Perceived Self-Regulatory Success in Dieting Scale (PSRS). The German version of the PSRS (Meule, Papies, & Kübler, 2012) was used for measuring subjectively perceived success in eating-related self-regulation. The scale consists of three items, which are scored on a seven-point scale anchored not *successful/not difficult* and *very successful/very difficult*. Higher scores indicate higher perceived self-regulatory success. Internal consistency was $\alpha = 0.71$.