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Research report

Cross-cultural validity of the Intuitive Eating Scale-2. Psychometric evaluation in a sample of the general French population ☆ **

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ABSTRACT

Intuitive eating is an adaptive dietary behavior that emphasizes eating in response to physiological hunger and satiety cues. The Intuitive Eating Scale-2 (IES-2) measures such attitudes and behaviors. The aim of the present study was to adapt the IES-2 to the French context and to test its psychometric properties in 335 women and 297 men participating in the NutriNet-Santé study. We evaluated the construct validity of the IES-2 by testing hypotheses with regard to its factor structure, relationships with scores of the revised 21-item Three Factor Eating Questionnaire and the Center for Epidemiologic Studies Depression scale, and differences between "a priori" relevant subgroups. First, the exploratory factor analysis revealed three main dimensions: Eating for Physical Rather than Emotional Reasons, Reliance on Hunger and Satiety Cues, and Unconditional Permission to Eat. Second-order confirmatory factor analysis upheld the 3-factor solution influenced by a broader intuitive eating dimension. IES-2 total score was negatively related to cognitive restraint ($r = -0.31$, $P < 0.0001$), emotional eating ($r = -0.58$, $P < 0.0001$), uncontrolled eating ($r = -0.40$, $P < 0.0001$), and depressive symptoms ($r = -0.20$, $P < 0.0001$). IES-2 subscales showed similar correlations. Women had lower scores than did men for the IES-2 total scale (3.3 in women vs. 3.5 in men, $P < 0.0001$), Eating for Physical Reasons, and Unconditional Permission to Eat subscales. Current or former dieters had lower scores on the IES-2 total scale and on all subscales than did those who had never dieted (all $P < 0.01$). Finally, results showed satisfactory reliability for the IES-2 total scores (internal consistency = 0.85 and test–retest reliability = 0.79 over a mean 8-week period) and for its subscales. Thus, the French IES-2 can be considered a useful instrument for assessing adult intuitive eating behaviors in empirical and epidemiological studies in the general population.

Introduction

In a social context where thinness is perceived as an ideal, weight-loss programs based on energy restriction are becoming more and more common (French Agency for Food, Environmental and Occupational Health & Safety (ANSES), 2010). Despite the relative short-term efficiency of such programs, the long-term benefits are questionable, as the majority of individuals eventually regain the weight they had lost (Jeffery et al., 2000; Mann et al., 2007). In addition, individuals following energy-restricted diets are more likely to display maladaptive eating behaviors such as emotional eating (Konttinen, Haukkala, Sarlio-Lähteenkorva, Silventoinen, & Jousilahti, 2009; Péneau, Ménard, Méjean, Bellisle, & Hercberg, 2013), and to develop eating disorders (Patton, Selzer, Coffey, Carlin, & Wolfe, 1999).

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** The French version of the questionnaire is available through the corresponding author by email.

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As a result, "non-dieting" strategies based on adaptive behaviors that promote a healthier food–mind–body connection have emerged. One such adaptive behavior is intuitive eating characterized by eating in response to physiological hunger and satiety cues rather than external and/or emotional cues, as well as low preoccupation with food (Tribole & Resch, 2003; Tylka, 2006). Implementation of intuitive eating strategies via intervention studies has been shown to positively impact psychological health outcomes, such as self-esteem, body image, to reduce depressive symptoms (Bacon, Stern, Van Loan, & Keim, 2005; Hawley et al., 2008; Provencher et al., 2009), and to improve physical health indicators including blood pressure and cholesterol levels (Bacon et al., 2005). Intuitive eating programs have also achieved long-term weight maintenance in overweight or obese women (Bacon et al., 2005; Hawley et al., 2008; Provencher et al., 2009). In cross-sectional studies, intuitive eating has been associated with improved psychological health measures such as self-esteem or reduced negative affect (Tylka, 2006; Tylka & Kroon Van Diest, 2013; Tylka & Wilcox, 2006), and with reduced eating disorder symptomatology (Denny, Loth, Eisenberg, & Neumark-Sztainer, 2013; Madden, Leong, Gray, & Horwath, 2012; Tylka, 2006; Tylka & Kroon Van Diest, 2013) as well as lower body mass index (BMI) (Denny et al., 2013; Hawks, Merill, & Madanat, 2004; Madden et al., 2012; Tylka, 2006; Tylka & Kroon Van Diest, 2013; Webb & Hardin, 2012), lower triglyceride levels and cardiovascular risk (Hawks, Madanat, & Harris, 2005). There is also some evidence that intuitive eating is associated with a healthier diet, especially vegetable intake and time taken to eat a meal (Madden et al., 2012). An intuitive eating program has also helped participants improve their dietary intake as measured by a dietary quality score (Hawley et al., 2008). Although intuitive eating has shown promising results, almost all intervention studies thus far have targeted overweight/obese women and most of the cross-sectional studies have been limited to small samples and female university students.

To our knowledge, two instruments have been developed to measure intuitive eating. The first one was developed by Hawks et al. (2004) and consisted of 27 items assessing four dimensions of the behavior: 1/intrinsic eating, 2/extrinsic eating, 3/anti-dieting, and 4/self-care. Shortly afterwards, Tylka's original 21-item Intuitive Eating Scale (IES) (Tylka, 2006) was published, identifying three central features of this behavior: 1/unconditional permission to eat, 2/eating for physical rather than emotional reasons, and 3/reliance on hunger and satiety cues. Tylka's initial IES was validated in a sample of college women and was later used in a cross-sectional study involving a large sample of women aged 40–50 years (Madden et al., 2012). Although the original version demonstrated good psychometric properties, Tylka and Kroon Van Diest (2013) developed a revised version, the 23-item Intuitive Eating Scale-2 (IES-2), which included a fourth dimension called Body Food-Choice Congruence and comprised more positively-worded items. The IES-2 proved to be valid and reliable in both male and female college students in the U.S. (Tylka & Kroon Van Diest, 2013).

French and U.S. populations differ in attitudes to food (Rozin, Fischler, Imada, Sarubin, & Wrzesniewski, 1999; Rozin, Remick, & Fischler, 2011) and in the prevalence of overweight (World Health Organization, 2011). It would thus be of particular interest to assess whether intuitive eating encompasses similar principles in both countries and whether the positive associations with nutritional status and dietary behaviors observed in New Zealand (Madden et al., 2012) and U.S. college student samples (Denny et al., 2013; Smith & Hawks, 2006; Tylka & Kroon Van Diest, 2013) is confirmed in France. To our knowledge, no French version of the IES-2 questionnaire exists. To accurately measure intuitive eating in a large French-speaking population, the questionnaire must be cross-culturally adapted with further evaluation of the validity of the translated instrument (Beaton, Bombardier, Guillemin, & Ferraz, 2000).

The purpose of the present study was therefore to adapt the IES-2 to the French context and test its psychometric properties in a large sample derived from the general population. Specifically, we aimed at evaluating the construct validity of the translated instrument, i.e., studying its factor structure, testing its correlation with other scales assessing maladaptive eating behaviors and psychological well-being, and comparing scores between subgroups with "a priori" differences in intuitive eating behaviors. We also examined the instrument's internal consistency and test–retest reliability.

Methods

Instrument assessing intuitive eating

Questionnaire items

The 23-item Intuitive Eating Scale-2 (IES-2; Tylka & Kroon Van Diest, 2013) includes 4 dimensions: 1/Eating for Physical Rather than Emotional Reasons (referred to as Eating for Physical Reasons in the manuscript, 8 items), e.g., "I find other ways to cope with stress and anxiety than by eating," 2/Unconditional Permission to Eat (6 items), e.g., "I do NOT follow eating rules or dieting plans that dictate what, when, and/or how much to eat," 3/Reliance on Hunger and Satiety Cues (6 items), e.g., "I trust my body to tell me when to eat", and 4/Body-Food Choice Congruence (3 items), e.g., "I mostly eat foods that give my body energy and stamina." Items are rated on a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) with each point on the scale represented by a word anchor. Individual item scores were summed in each of the four subscales, which were then summed up into a total intuitive eating score. Next, the resulting scores were divided by the number of items in each subscale or in the total IES-2 scale, leading to a possible range from 1 to 5. Higher scores indicated greater levels of intuitive eating or its dimensions. The original version of IES-2 has been validated in male and female college students in the U.S. with evidence of internal consistency reliability (α between 0.81 and 0.93), 3-week test–retest reliability, and construct validity (Tylka & Kroon Van Diest, 2013).

French adaptation protocol

The IES-2 was cross-culturally adapted from English into French following the guidelines proposed by Beaton et al. (2000). Forward translations were independently performed by two bilingual translators informed about the concepts underlying the questionnaire and one bilingual translator naïve to the concepts being measured; all three were native French speakers and specialized in nutrition. A synthesis of the three translations was created. Then, two bilingual, native English translators, unfamiliar with the original English version, back-translated the French items. All translations were reviewed by the expert committee composed of all translators to develop the pre-final version of the questionnaire. Dr. Tracy Tylka, the researcher who developed the original IES-2 scale (Tylka & Kroon Van Diest, 2013), provided her agreement and also feedback and advice during the scale adaptation process. Next, the questionnaire was pre-tested in a sample of 36 individuals including fellow researchers, colleagues, family members and friends in order to evaluate item comprehension. These individuals were asked to express in a few words what they thought was meant by each item or to give a concrete example of a particular situation. Overall, all items were well understood except for item 9 ("I have forbidden foods that I don't allow myself to eat"), for which we added the following clarification: "This affirmation does not concern foods that are forbidden for religious or philosophical convictions."