Dimensionality and Psychometric Properties of an Italian Translation of the Intuitive Eating Scale-2 (IES-2): An Assessment using a Bifactor Exploratory Structural Equation Modelling Framework

Viren Swami[1-2], Christophe Maïano[3], Jennifer Todd[1-2], Marta Ghisi[4], Valentina Cardi[4], Gioia Bottesi[4], & Silvia Cerea[4]

[1]School of Psychology and Sport Science, Anglia Ruskin University, Cambridge, United Kingdom

[2]Centre for Psychological Medicine, Perdana University, Kuala Lumpur, Malaysia

[3]Cyberpsychology Laboratory and Department of Psychoeducation and Psychology, Université du Québec en Outaouais, Saint-Jérôme, Canada

[4]Department of General Psychology, University of Padova, Padova, Italy

Address correspondence to: Dr. Silvia Cerea, Department of General Psychology, University of Padua, Via Venezia, 8 35131, Padua, Italy. e-mail: silvia.cerea@unipd.it Phone: +39-049-8276918; Fax: ++39 049 827 6600

Abstract

The construct of intuitive eating is most often measured using the 23-item Intuitive Eating Scale-2 (IES-2), but previous studies have typically relied solely on confirmatory factor analysis (CFA) to understand IES-2 dimensionality. In contrast, a bifactor exploratory structural equation modelling (B-ESEM) framework offers a more realistic account of IES-2 multidimensionality. Here, we assessed the psychometric properties of a novel Italian translation using a combination of exploratory factor analysis and B-ESEM. A total of 950 adults completed the IES-2 alongside measures of positive body image, disordered eating, and psychological well-being. Results indicated that a 4-factor B-ESEM model had adequate fit to the data and that fit was improved when the correlated uniqueness of seven negatively worded IES-2 items was accounted for. This model of IES-2 scores showed adequate internal consistency and good test-retest reliability up to three weeks. Evidence of construct validity was good in terms of a global IES-2 factor, and broadly supported in terms of its specific-factors. These results highlight the utility of a B-ESEM framework for understanding the dimensionality of IES-2 scores and may help scholars better understand the extent to which the IES-2 adequately operationalises the construct of intuitive eating.

Keywords: Intuitive eating; Eating styles; Test adaptation; Italy; Exploratory structural equation modelling; Bifactor analysis

1. Introduction

In response to the recognition that eating behaviours are shaped by a range of social cues, emotional states, and dieting behaviours (Moore & Cunningham, 2012), scholars have increasingly focused on the construct of intuitive eating. Broadly speaking, *intuitive eating* refers to a set of adaptive, healthy eating behaviours that are characterised by a reliance on internal hunger and satiety cues rather than situational and emotional cues (Tribole, 2017; Tribole & Resch, 2012). Individuals who eat intuitively are more aware of and trust their body's physiological cues (i.e., physical hunger), give themselves unconditional permission to eat, are not preoccupied with food and dieting, and choose foods for the purpose of supporting or enhancing their body's functioning (Tylka & Kroon Van Diest, 2013). Intuitive eating is now postulated as an important non-dieting approach to promoting healthy eating, weight gain prevention, and improved psychological well-being (for reviews, see Bruce & Ricciardelli, 2016; Linardon et al., 2021).

The most widely-used instrument to measure intuitive eating is the Intuitive Eating Scale-2 (IES-2; Tylka & Kroon Van Diest, 2013), a revision of the earlier Intuitive Eating Scale (Tylka, 2006). The IES-2 is a 23-item measure that has been found to reduce to four dimensions in college students from the United States, based on exploratory factor analysis (EFA). Specifically, the four dimensions assess: *Unconditional Permission to Eat* (i.e., an individual's willingness to eat when hungry and a refusal to label certain foods as forbidden; 6 items), *Eating for Physical Rather than Emotional Reasons* (i.e., eating when one is physically hungry rather than to cope with emotional distress; 8 items), *Reliance on Hunger and Satiety Cues* (i.e., an individual's trust in their internal hunger and satiety cues and reliance on these cues to guide eating behaviours; 6 items), and *Body-Food Choice Congruence* (i.e., a tendency to make food choices that honour one's health and body functioning; 3 items). This 4-dimensional model of intuitive eating has also been shown to have adequate fit indices via confirmatory factor analysis (CFA) in college students from the United States (Tylka & Kroon Van Diest, 2013).

Beyond the parent study, evidence of the factorial validity of IES-2 scores has been equivocal. Some test adaptation studies have supported the parent 4-factor model through CFA (Bas et al., 2017; Carbonneau et al., 2016; Duarte et al., 2016; Nejati et al., 2021; Ruzanska & Warschburger, 2017; van Dyck et al., 2016), whereas two studies have supported the 4-factor model following omission of several items (Akırmak et al., 2020; da Silva et al., 2020). However, it is important to note that, because these studies have only examined the fit of the parent model, it is not possible to determine whether alternative models may have provided a better fit to the data (for discussions, see Swami & Barron, 2019; Swami et al., 2021). Indeed, where studies have used EFA or an EFA-to-CFA strategy, there have been difficulties replicating the 4-factor structure of IES-2 scores. Thus, studies with racial minority participants in the United States have supported models of IES-2 scores consisting of five or six dimensions (e.g., Khalsa et al., 2019; Madanat et al., 2020;), whereas studies with French (Camilleri et al., 2015) and Romanian adults (Vintilă et al., 2020) have supported a 3-factor model of IES-2 scores. In addition, one study with Malaysian adults extracted a 3-factor model of scores, though this and other models tested using CFA had sub-optimal fit (Swami, Todd et al., 2020).

One explanation for these equivocal findings is that they reflect real ethno-cultural/national differences in the construct of intuitive eating (Strodl et al., 2020; Vintilă et al., 2020). An alternative – though not necessarily mutually exclusive – explanation is that there are inherent problems with the way that IES-2 scores have traditionally been modelled. First, the IES-2 includes 16 positively worded and seven negatively worded items, which may be beneficial in terms of minimising acquiescence, affirmation, or agreement biases (Weijters et al., 2013). However, greater cognitive effort is required to respond to negatively worded items (Sliter & Zickar, 2014) and the inclusion of negatively worded items often leads to method effects that results in spurious covariances among items (Marsh, 1996). Such method effects can be viewed as “noise” variance that should be controlled in analyses or modelled as correlated uniqueness among the indicators (Marsh, 1996), though we are not aware of any previous IES-2 study that has done so.

A second issue relates to lower-order multidimensionality, or how facets of intuitive eating should be modelled. In CFA, items can only load on their respective hypothesised latent factors, where cross-loadings are forced to be zero (Marsh et al., 2009; Morin et al., 2016a, 2020). This method assumes that items associated with each IES-2 factor are “pure” indicators of that factor and there will be no associations between items and non-target conceptually-related constructs (i.e., an independent clusters model in which all items have zero factor loadings on all factors except the one factor they were designed to measure). In turn, this assumption frequently results in inflated estimates of factor correlations and hence model misspecification (Asparouhov et al., 2015; Marsh et al., 2011, 2014), which may explain problems confirming the 4-factor IES-2 model in some studies. Indeed, the assumption of zero cross-loadings seems highly unlikely, especially given that IES-2 items often do cross-load when allowed to (e.g., Swami, Todd et al., 2020; Vintilă et al., 2020) and given that IES-2 factors are frequently moderately-to-strongly correlated, which may be due to the non-estimation of cross-loadings.

A third issue relates to global multidimensionality, or how a global intuitive eating factor co-exists with lower-order constructs assessed using the same items. To date, all studies that have assessed this issue have relied on a higher-order model of intuitive eating (i.e., where the four lower-order intuitive eating factors were themselves used to assess higher-order representation), with mixed support (e.g., Camilleri et al., 2015; Tylka & Kroon Van Diest, 2013; Vintilă et al., 2020). However, higher-order models may be inherently flawed because they assume that associations between indicators and the higher-order factor are indirect (i.e., mediated by the lower-order factors) and that associations between the indicators and the unique part of the first-order factor are also mediated by the lower-order factor (Brunet et al., 2016; Gignac, 2016). Instead, there is now growing consensus that bifactor models should be preferred to higher-order modelling, as they provide more realistic representations of multidimensional associations (Morin et al., 2016a, 2020). In bifactor models, items are allowed to define a global G-factor (i.e., intuitive eating) and one specific S-factor (e.g., body-food choice congruence), with all S-factors specified as orthogonal to one another and in relation to the G-factor (Morin et al., 2016a, 2016b). This method allows for the total item covariance matrix to be separated into: (i) a global component that explains the variance shared among responses to all items, and; (ii) specific factors that explain the covariance associated with items subsets not already explained by the global component.

1.1 The Present Study

In the present study, we contribute to ongoing discussions about the IES-2 through an examination of the psychometric properties of a novel Italian translation of the instrument. Our primary objective was to consider the dimensionality of Italian IES-2 scores in view of the issues discussed above. Specifically, we adopted an analytic framework that combined EFA and exploratory structural equation modelling (ESEM). Utilising EFA in a first split-half subsample allows us to determine item behaviour in our dataset (i.e., we are able to ascertain the best-fitting model of IES-2 scores in our dataset without limiting modelling; Swami & Barron, 2019). In contrast, ESEM is an analytic strategy that relaxes independent clusters model constraints by incorporating aspects of EFA (i.e., allowing for cross-loadings) and CFA (i.e., the use of advanced statistical methods; Marsh et al., 2013, 2014; Morin et al., 2013). ESEM has been shown to result in improved fit and less strongly correlated factors than CFA solutions (e.g., Morin & Maïano, 2011) and has been recommended for the examination of factorial validity of multidimensional body image and body image-related instruments in place of CFA (Swami et al., 2021). Moreover, using ESEM in a second split-half subsample also allows to cross-validate the findings from our initial EFA.

A further benefit of utilising ESEM is that it allows us to fully address issues of lower- and higher-order dimensionality of IES-2 scores in a manner that EFA is not able to. Specifically, a bifactor-exploratory structural equation modelling (B-ESEM) framework provides a strategy for dealing with both cross-loadings and inflated G-factor loadings, as well as inflated cross-loadings that sometimes occurs in ESEM (Morin et al., 2016a, 2016b). Thus, unlike previous studies that have only modelled IES-2 global multidimensionality based on higher-order models, we provide the first test of IES-2 global multidimensionality based on bifactor modelling. A final benefit of the ESEM approach is that we are able to correlate the uniqueness of the seven negatively worded items, which would allow for the first test of whether these items are contributing to "noise" variance that should be removed and controlled. As a preliminary hypothesis, we expected that a 4-factor bifactor model of IES-2 with correlated uniqueness for the seven negatively worded items would show better fit than all alternative models.

Beyond factorial validity, we also considered the invariance of the derived (i.e., optimal) measurement model across gender. This is important so as to allow comparisons of Italian IES-2 latent scores across gender (Chen, 2007), but also given evidence from earlier studies that gender invariance is mixed: while a small handful of studies have supported full scalar invariance across gender (Duarte et al., 2016; Swami, Todd et al., 2020; Vintilă et al., 2020), at least one study reported only being able to obtain metric invariance (da Silva et al., 2020). Finally, given that we are dealing with a novel translation of the IES-2, we also examined score reliability, test-retest reliability after three weeks, and construct validity. In terms of the latter, we expected that intuitive eating would be significantly associated with indices of positive body image (i.e., body appreciation and functionality appreciation), psychological well-being (self-esteem), eating disorder symptomatology, and body mass index (BMI).

2. Method

2.1. **Participants**

Participants were 500 women and 450 men from Italy who ranged in age from 18 to 71 years (*M* = 26, *SD* = 8) and in self-reported body mass index (BMI) from 15.8 to 58.1 kg/m^2 (*M* = 23.3, *SD* = 4.6). All participants were Italian citizens and, in terms of occupation, 53.3% were students, 21.1% were in full-time employment, 3.7% were in part-time employment, and the remainder had some other occupational status. A subset of this participant pool (*n* = 149; 96 women and 53 men) were invited to complete the IES-2 at two time-points three weeks apart. These participants ranged in age from 18 to 71 years (*M* = 31, *SD* = 12) and in self-reported BMI from 17.1 to 58.1 kg/m^2 (*M* = 23.3, *SD* = 5.0).

2.2. Measures

2.2.1. Intuitive eating. All participants were asked to complete a novel translation of the 23-item IES-2 (Tylka & Kroon Van Diest, 2013). All items were rated on a 5-point scale ranging from 1 (*strongly disagree*; Italian: *fortemente in disaccordo*) to 5 (*strongly agree*; Italian: *fortemente d'accordo)*. The method of translating the IES-2 is reported in Section 2.3 and items in English and Italian are reported in the Appendix.

2.2.2. Body appreciation. Participants completed the 10-item Body Appreciation Scale-2 (BAS-2; Tylka & Wood-Barcalow, 2015; Italian translation: Casale et al., 2021), which assesses acceptance of one's body, respect and care for one's body, and protection of one's body from unrealistic beauty standards. All items were rated on a 5-point scale (1 = *never*, 5 = *always*) and an overall score was computed as the mean of all items, so that higher scores reflect greater body appreciation. Scores on the Italian version of the BAS-2 have been shown to reduce to a 1-dimensional factor and to have adequate internal consistency and construct validity (Casale et al., 2021). In the present study, internal consistency as assessed using McDonald's ω for BAS-2 scores was .95 (95% CI = .94, .96) in women and .94 (95% CI = .93, .95) in men.

2.2.3. Functionality appreciation. Participants were asked to complete the Functionality Appreciation Scale (FAS; Alleva et al., 2017; Italian translation: Cerea et al., 2021). This is a 7-item instrument that assesses the extent to which individuals appreciate, respect, and honour their bodies for what they are capable of doing. All items were rated on a 5-point scale ranging from 1 (*never*) to 5 (*always*), and an overall score was computed as the mean of all 7 items. Higher scores on this measure indicate greater functionality appreciation. Scores on the Italian version of the FAS have been shown to have a 1-dimensional factor structure, adequate internal consistency, good test-retest reliability up to three weeks, and good construct validity (Cerea et al., 2021). In the present study, McDonald's ω was .89 (95% CI = .87, .91) in women and .89 (95% CI = .86, .92) in men.

2.3.4. Disordered eating. We used the Drive for Thinness (DT; 7 items), Bulimia (B; 7 items), and Body Dissatisfaction (BD; 9 items) subscales of the Eating Disorder Inventory-3 (EDI-3; Garner, 2004; Italian translation: Giannini et al., 2008), a self-report questionnaire assessing psychological features and behaviours associated with disordered eating on a 6-point Likert scale (1 = *never*, 6 = *always*). Subscale scores were computed as the mean of all relevant items, where higher scores represent greater disordered eating symptomology. Scores on the Italian version of the EDI-3 have adequate internal consistency and construct validity in clinical and non-clinical samples (Giannini et al., 2008). In the present study, McDonald's ω for EDI-3 subscales was as follows: EDI-DT, women: .91 (95% CI = .89, .92), men: .87 (95% CI = .85, .90); EDI-B, women: .87 (95% CI = .85, .89), men: .83 (95% CI = .78, .87); EDI-BD, women: .88 (95% CI = .86, .90), men: .87 (95% CI = .84, .89).

2.2.5. Self-esteem. Participants completed the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; Italian translation: Prezza et al., 1997), a 10-item self-report questionnaire assessing global self-esteem on a 4-point Likert scale (1 = *strongly disagree*, 4 = *strongly agree*). Higher scores represent greater self-esteem. Good internal consistency values and adequate construct validity have been reported for scores on the Italian version of the RSES (Prezza et al., 1997). In the present study, McDonald's ω for RSES scores was .90 (95% CI = .89, .92) in women and .89 (95% CI = .87, .91) in men.

2.2.6. Body mass index. We asked participants to self-report their height and weight information. These data were used to compute BMI as kg/m^2.

2.3. Test Adaptation

To develop an Italian translation of the IES-2, we used the 5-stage procedure recommended by Beaton and colleagues (2000). First, an informed and an uninformed translator independently forward-translated the IES-2 items, instructions, and response options from English to Italian. Next, a third translator examined the two forward-translations, resolved any discrepancies, and produced a synthesised translation. Third, two new independent translators who were naïve to the IES-2 back-translated the synthesised translation into English. Fourth, a bilingual committee comprising all the aforementioned translators and authors of the present study considered the forward- and back-translations. Because the committee did not identify any concerns at this stage, we proceeded a fifth stage, in which a pre-final version of the IES-2 was pre-tested in a purposively-selected sample of 15 individuals (women n = 9, men n = 6; age M = 24.67 years, SD = 2.69). These participants were asked to rate each item for understanding on a 5-point scale (1 = *do not understand at all*, 5 = *understanding completely*). The mean responses per item were then assessed and, given high ratings for all items (all Ms ≥ 4.40), no further revisions were made to item content.

2.4. Procedures

The present data come from a larger study, portions of which have been reported elsewhere (Cerea et al., 2021). Ethics approval for the study was obtained from the departmental ethics committee at the School of Psychology, University of Padova (approval code: 2871BB770B52DDDABE6903EFFD81C9C7). Between September 2020 and January 2021, participants were recruited via advertisements placed on social media sites and supplemented through the use of a snowball sampling method. Inclusion criteria included being an Italian citizen and at least 18 years old. When a participant agreed to take part, they were asked to provide digital informed consent before completing an online survey containing the scales listed above in a pre-randomised order, as well as demographic items (gender, age, and occupational status). The items of the IES-2 were presented by subscale (Unconditional Permission to Eat items first, Eating for Physical Rather than Emotional Reasons items second, Reliance on Hunger and Satiety Cues items third, and Body-Food Choice Congruence items last), as recommended by the instrument's lead developer (Tracy Tylka, personal communication, February 16, 2020). To ensure that no participant completed the survey more than once, we examined personal codes provided by participants (consisting of the first letters of their first and last names followed by their year of birth), as well Internet Protocol (IP) addresses. The survey was anonymous and participants took part on a voluntary basis and without reimbursement. Three weeks after initial testing, a randomly-selected subsample of 150 participants were invited to complete a follow-up survey. All but one of these participants agreed and completed only the IES-2 following the same procedures as above. Personal codes were used to link test and retest data.

2.5. Analytic Strategy

2.5.1. Data treatment. There were no missing responses in the dataset, as participants were prompted to respond to all items. Prior to analyses, all negatively keyed IES-2 items were reverse-coded so that all reported loadings were positive. To examine the dimensionality of IES-2 scores in the present study, we used an EFA-to-ESEM approach. So as to have adequate sample sizes for both sets of analyses, we split the main dataset using a computer-generated random seed, resulting in one split-half for EFA (total n = 476; women n = 254, men n = 222) and a second split-half for ESEM (total n = 474; women n = 246, men n = 228). There were no significant differences between the two subsamples in terms of mean age, $t(948) = 0.27$, $p = .978$, $d = 0.02$, and BMI, $t(948) = 0.97$, $p = .334$, $d = 0.06$, as well as the distribution of women and men, $\chi^2(1) = 0.20$, $p = .652$.

2.5.2. Exploratory factor analysis and gender invariance. EFAs were performed using Mplus 8.5's (Muthén & Muthén, 2019) robust weighted least squares estimator with mean and variance adjusted statistics (WLSMV). In a first step, eight EFAs with one to eight correlated latent factors were examined (henceforth Models 1-1 to 1-8) using Mplus's ESEM capabilities. The decision to select eight as the upper limit was exploratory; that is, given that previous work has indicated a possibility that IES-2 scores reduce to up to six factors, we selected a higher upper limit to account for this possibility in the present dataset. As recommended by Marsh et al. (2009, 2014), the EFAs were estimated with an oblique geomin rotation and an epsilon value of .5. The optimum number of factors to retain in this model was determined based on Horn's (1965) parallel analysis. This test was conducted using the *psych* package v.2.0.12 (Revelle, 2020) in *R* v.4.0.3 using a weighted least square factor method, polychoric correlations, and a total of 50 randomly generated data sets.

Parallel analysis was complemented by examining the following fit indices: the Steiger-Lind root mean square error of approximation (RMSEA) and its 90% CI (values close to .06 considered to be indicative of good fit and up to .08 indicative of adequate fit), the standardised root mean square residual (SRMR; values < .09 indicative of good fit), the Tucker-Lewis index (TLI; values close to or > .95 indicative of good fit), and the comparative fit index (CFI; values close to or > .95 indicative of adequate fit) (Hu & Bentler, 1999; Steiger, 2007). Nevertheless, in the literature it is not uncommon that RMSEA and the CFI-TLI diverge (Lai & Green, 2016). Indeed, the poorer performance of the RMSEA with categorical data analyses is well documented and traditional guidelines may be too strict or inadequate under certain circumstances (e.g., Monroe & Cai, 2015). The composite reliability of scales from the best factor solution was estimated using McDonald's (1970) omega (ω), with values greater than .70 reflecting adequate internal reliability (Nunnally, 1978).

In a second step, the optimal EFA model was examined separately in women and men. Next, the measurement invariance of this EFA model was examined across gender using the following sequence (Morin et al., 2011): (i) configural invariance; (ii) weak invariance (loadings); (iii) strong invariance (thresholds); (iv) strict invariance (uniquenesses); (v) invariance of the latent variances/covariances; and (vi) invariance of latent mean factors. Model comparisons (i.e., the preceding model served as comparison) were based on changes (Δ) in CFIs, TLIs, and RMSEAs. A sequence was considered as invariant when ΔCFIs-ΔTLIs were ≤ -.01 and ΔRMSEAs ≤ -. 015 (Chen, 2007; Cheung & Rensvold, 2002).

2.5.3. Bifactor-exploratory structural equation modelling and gender invariance. The optimal EFA solution obtained from the first split-half subsample was examined using ESEM and B-ESEM. As recommended in the literature (e.g., Asparouhov & Muthén, 2009; Browne, 2001), both of these models used target rotation (i.e., all cross-loadings were "targeted" to be as close to zero as possible). The B-ESEM model comprises one more factor than the ESEM model: in the B-ESEM model, all items have a main loading on both a global factor (G-factor) and on their specific factors (S-factors). The analyses were performed using Mplus 8.5 (Muthén & Muthén, 2019) and the WLSMV estimator. Additionally, ESEM and B-ESEM models were examined in order to control for the (potential) methodological artifact introduced by the seven negatively worded items (Items #1, 2, 4, 5, 9, 10, and 11; see Appendix) in the IES-2 (Marsh et al., 2010). In this model, the uniqueness of these seven items were all correlated (i.e., correlated uniqueness or CU; Marsh, 1996). Fit indices used to identify the optimal model were identical to those reported in Section 2.5.2. In a second step, the optimal model (ESEM or B-ESEM) retained in the first step – with or without CU – was examined separately in men and women, and its measurement invariance across gender was examined, so as to cross-validate the results from the test of invariance in the first split-half subsample. The same sequence as that reported in Section 2.5.2 was used, with the exception of the addition of the invariance of CU if the model with CU were retained.

2.5.4. Measurement invariance over time and test-retest reliability. The optimal model (ESEM or B-ESEM) retained with the second split-half subsample (with or without CU) was used to examine measurement invariance over time and test-retest reliability. The same sequence as the one reported in Section 2.5.2 was used, with the exception of the addition of the invariance of CU if the model with CU were retained. The most invariant model obtained across the two time points was then used to obtain estimates of test-retest correlations between latent factors.

2.5.5. Construct validity. Construct validity was examined in the overall sample using a structural equation model (SEM) in which the IES-2 factor structure was estimated based on the model (ESEM or B-ESEM) retained with the second split-half subsample (with or without CU). In this model, the latent factors of the IES-2 and the observed scores of body appreciation, functionality appreciation, eating disorder symptomatology, and self-esteem, and BMI were all correlated. Based on Cohen (1992), values ≤ .10 were considered weak, ~ .30 were considered moderate, and ~ .50 were considered strong correlations.

3. Results

3.1 Exploratory Factor Analysis and Invariance Across Gender

3.1.1. Exploratory factor analysis. Eight *a priori* EFA models (Models 1-1 to 1-8) with one to eight factors were examined (see Table 1 for fit statistics). The results showed that, for models with one and two factors (Models 1-1 and 1-2), fit indices were uniformly unsatisfactory (CFI-TLI < .90; RMSEA >.10, SRMR > .09). For models with three to five factors (Models 1-3 to 1-5), CFI/TLI and SRMR values were acceptable (CFI-TLI > .90 or > .95; SRMR < .09), but unsatisfactory for RMSEA (> .08). Finally, in EFA models with six and seven factors, fit indices were all satisfactory (CFI-TLI > .95; RMSEA < .08; SRMR < .09). The eight-factor EFA model failed to converge.

Examination of EFA models indicated that the 4-factor solution was identical to the parent model proposed by Tylka and Kroon Van Diest (2013). In contrast, the 5- to 7-factor solutions proposed models in which items measuring two of the four factors (i.e., Eating for Physical Rather than Emotional Reasons and Reliance on Hunger and Satiety Cues, respectively) were split in two or three dimensions. Additionally, as illustrated in Figure 1, parallel analysis showed that the data were best represented by a 4-factor solution. Therefore, based on the combination of fit indices and results of parallel analysis (Swami et al., 2021), the 4-factor EFA model was retained for subsequent analyses.

The standardised parameter estimates, composite reliability coefficients, and latent factor correlations for the 4-factor EFA model are reported in Table 2. The first (Eating for Physical Rather than Emotional Reasons) and second (Unconditional Permission to Eat) factors both had moderate to large loadings and cross-loadings of a lower magnitude. The third factor (Reliance on Hunger and Satiety Cues) had moderate to large loadings and cross-loadings of a lower magnitude, except for Items #6, 7, and 8. Finally, the fourth factor (Body-Food Choice Congruence) had large loadings and cross-loadings of a lower magnitude. As shown in Table 2, all composite reliability coefficients were excellent (> .85) and latent factor correlations were mostly significant, with a small-to-moderate magnitude. These results confirm the relative independence of the latent factors.

3.1.2. Gender invariance. Goodness-of-fit statistics of the 4-factor model tested separately in men and women are reported in Table 1 (Models 2-1 and 2-2). Results showed that, for men and women, CFI-TLI and SRMR values were acceptable (CFI-TLI > .90 or > .95; SRMR < .09), but less satisfactory for the RMSEA (> .08). Additionally, goodness-of-fit statistics from the measurement invariance test across gender are reported in Table 1 (Models 2-3 to 2-8). Results supported the complete (configural, weak, strong, strict, latent variance-covariance invariance, and latent mean) invariance of the 4-factor model.

3.2. Exploratory Structural Equation Modelling, Bifactor Analysis, and Gender Invariance

3.2.1. Exploratory structural equation modelling and bifactor analysis. Goodness-of-fit statistics for the 4-factor ESEM and B-ESEM models with and without CU are reported in Table 1 (Models 3-1 to 3-4). Results from the 4-factor ESEM model without CU (Model 3-1) showed that CFI-TLI and SRMR values were acceptable (CFI/TLI > .90 or > .95; SRMR < .09), but RMSEA (> .08) was unsatisfactory. Conversely, all fit indices were acceptable for the B-ESEM model (Model 3-3) without CU. In addition, the ESEM and B-ESEM model with CU (Models 3-2 and 3-4) resulted in substantial improvement in relative fit (ΔCFI-ΔTLI > +.010) compared to their counterpart models without CU. Therefore, the ESEM-CU and B-ESEM-CU models were retained. Comparisons of fit indices for both of these models supported the superiority of the B-ESEM-CU model. Nevertheless, as suggested by Morin et al. (2016a), parameter estimates from the ESEM-CU and B-ESEM-CU models were inspected (see Tables 3 and 4).

The ESEM-CU model had substantial main factor loadings (λ =.430-.967) coupled with reasonably small, yet non-negligible, cross-loadings (λ = .004-.387). Additionally, estimates of composite reliability were excellent (ω = .820-.922) and latent factor correlations were mostly statistically significant (except for Eating for Physical Rather than Emotional Reasons and Unconditional Permission to Eat) with a small-to-moderate magnitude. The B-ESEM-CU model showed that the G-factor was internally consistent (ω = .933) and well-defined (λ =.302-.874), except for some items (very small and non-significant) that remain substantial in their S-factors (Items #1, 3, 9, 16, and 17). Additional results revealed four well-defined S-factors: Eating for Physical Rather than Emotional Reasons (λ = .471-.685, ω = .865), Unconditional Permission to Eat (λ = .471-.810, ω = .825), and Body-Food Choice Congruence (λ = .581-.726, ω = .823). However, the Reliance on Hunger and Satiety Cues S-factor was well-less defined (λ = .108-.712, ω = .812) and this could be attributed to two items (Items #6 and 7) that mainly serve to define the G-factor. In sum, the results from the B-ESEM model suggest that a global estimate of intuitive eating could be used and that enough specificity remained to estimate S-factors from the IES-2. This model was thus retained for subsequent analyses.

3.2.2. Gender invariance. Goodness-of-fit statistics of the B-ESEM-CU model tested separately in women and men are reported in Table 1 (Models 4-1 and 4-2). Results showed that all fit indices were acceptable (CFI-TLI > .90 or > .95; RMSEA ≤ .08) for women and men. Additionally, goodness-of-fit statistics from the measurement invariance tests across gender are reported in Table 1 (Models 4-3 to 4-9). Results supported the complete measurement invariance of the B-ESEM-CU model. However, results revealed the presence of statistically significant latent mean differences across men and women (Model 4-9 was not supported). More specifically, they showed that women compared to men tended to present significantly lower scores on the G-factor (-.25, p = .02) and the Eating for Physical Rather than Emotional Reasons S-factor (-.71, $p < .001$).

3.3. Measurement Invariance Over Time and Test-Retest Reliability

Goodness-of-fit of the models used to test measurement invariance over time of the IES-2 (Models 5-1 to 5-7) are presented in Table 1. The results supported complete measurement invariance of the IES-2 factors over the 3-week period. Results from the most invariant of these models (latent mean invariance) revealed a 3-week test-retest correlation of .85 for the G-factor, .83 for the Eating for Physical Rather than Emotional Reasons S-factor, .86 for the Unconditional Permission to Eat S-factor, .54 for the Reliance on Hunger and Satiety Cues S-factor, and .74 for the Body-Food Choice Congruence S-factor.

3.4. Construct Validity

The SEM including the IES-2 latent factors and the other measures provided an acceptable level of fit to the data, $\chi^2(253) = 1218.313$, CFI = .971, TLI = .951, RMSEA = .063 (90% CI = .060, .067), SRMR = .023. The results from this model are reported in Table 5, and show that the IES-2 G-factor was significantly and (a) positively correlated with self-esteem, functionality appreciation, and body appreciation; and (b) negatively correlated with eating disorder symptomatology and BMI. Results for the S-factors were mostly similar, although some associations were weaker in strength than comparable associations with the G-factor, and some associations did not reach significance. Of note, the association between the Eating for Physical Rather than Emotional Reasons S-factor and functionality appreciation, and between the Unconditional Permission to Eat S-factor and BMI and one of the EDI-3 subscales (bulimia symptoms), respectively, were non-significant.

4. Discussion

This is the first study to examine the psychometric properties of the IES-2 – in this case of an Italian translation – using an ESEM framework and additionally accounting for global dimensionality via bifactor analyses as well as for the correlated uniqueness of negatively worded IES-2 items. Our results showed that a B-ESEM model that accounted for the correlated uniqueness of negatively worded items had optimal and improved fit compared to all other examined models, although the ESEM model (i.e., without a G-factor) that accounted for negatively worded items also showed optimal fit. The B-ESEM-CU model also showed adequate internal consistency both in terms of the G- and S-factors, had adequate test-retest reliability up to three weeks, and generally showed adequate construct validity, particularly in terms of the G-factor. Overall, these findings make a number of important contributions to scholarly understanding of the IES-2, which we elaborate upon below.

First, our results indicated that scores on the Italian IES-2 could be conceptualised as a 4-factor model, which was identical to the parent model proposed by Tylka and Kroon Van Diest (2013). This is consistent with IES-2 models that have been proposed in other CFA-based studies (e.g., Carbonneau et al., 2016; Duarte et al., 2016; 2021; Ruzanska & Warschburger, 2017; van Dyck et al., 2016), although we suggest that an ESEM framework offers a more plausible and realistic accounting of IES-2 dimensionality than CFA. As we explained earlier, ESEM is superior to CFA when dealing with lower-order multidimensionality because it allows for cross-loadings (Marsh et al., 2009; Morin et al., 2016a, 2020), which is a more realistic account of IES-2 item behaviour. In this sense, it may be useful to re-examine the fit of both EFA-derived and parent models of the IES-2 in national or linguistic contexts where fit has previously been shown to be poor (e.g., Swami et al., 2020; Vintilă et al., 2020). Doing so would offer a test of whether the previously-reported poor fit of IES-2 models in some nations is a function of limitations in the extent to which IES-2 measures the construct of intuitive eating in those contexts or a limitation of the sole use of CFA.

Second, our results suggest that it is possible to conceptualise IES-2 scores as consisting of four S-factors and a global intuitive eating factor (i.e., a B-ESEM model). In contrast to previous studies that have modelled the IES-2 as consisting of a higher-order factor (i.e., where associations between indicators and the higher-order factor are indirect or mediated by the lower-order factors and where associations between the indicators and the unique part of the first-order factor are also mediated by the lower-order factor), a bifactor model likely provides a more realistic representation of multidimensional IES-2 space. That is, we suggest that there may be value to conceptualising the total IES-2 item covariance matrix to be separated into a global component that explains the variance shared among responses to all IES-2 items, and four specific factors that explain the covariance associated with items subsets not already explained by the global component. Indeed, in the present study, both the G-factor and S-factors were internally consistent and reliable across three weeks, which suggests a degree of robustness to this model.

Third, our results suggest that the seven negatively worded items of the IES-2 may be introducing a degree of artefactual variance to IES-2 models. In all previous studies using the IES-2, researchers have consistently ignored the potential wording effect by introducing negatively worded items. However, this practice of ignoring wording effects may have led to biased estimates of measurement reliability, as well biased estimates of relationships between IES-2 factors and other variables (see Gu et al., 2015). In contrast, our results suggest that controlling for the uniqueness of the seven negatively worded items improved the fit of both the ESEM and B-ESEM models of IES-2 scores. As Gu and colleagues (2017) have suggested, when an instrument includes both positive and negative words, it will be important to control for wording effects and use the bifactor model for further analyses.

From a more practical point-of-view, the present results indicate that the IES-2 is a reliable and valid instrument for use in Italian-speaking populations. In terms of validity indices, our results indicated that IES-2 scores generally had adequate construct validity, insofar as most associations with scores on measures of positive body image, disordered eating, psychological well-being, and BMI were significant and in the expected directions. As shown in Table 5, indices of construct validity were uniformly supported in terms of the IES-

2 G-factor, and were broadly supported in terms of the S-factors. Overall, associations between IES-2 S-factors and scores on additional measures included in the present study were weaker than comparable associations with the G-factor. Nevertheless, from a practical point-of-view, our results suggest that researchers seeking to use the Italian IES-2 may use either latent G-factor scores or S-factor scores in their analyses, as both are supported in terms of reliability and validity. This could be done ideally by using a B-ESEM latent variable model as in the present study or by using the Mplus FSCORE algorithm to obtain scores on the G-factor and S-factors, which could then be used in conjunction with other scores from other measures (Maïano et al., 2021; Perreira et al., 2018).

The present results also showed that the B-ESEM-CU model of IES-2 scores was invariant across gender. In broad outline, these results are consistent with previous studies showing that IES-2 scores achieve full scalar invariance across gender (e.g., Duarte et al., 2016; Swami, Todd et al., 2020; Vintilă et al., 2020). Comparison of latent means across gender in the present study suggested few gendered effects: latent means were invariant in the first split-half subsample, whereas in the second split-half subsample men had significantly higher scores on the G-factor and the Eating for Physical Rather than Emotional Reasons S-factor only. Broadly speaking, however, these gendered effects are consistent with the findings of Tylka and Kroon Van Diest (2013), who reported that men had significantly higher IES-2 scores than women, although effect sizes were comparatively larger in the parent compared to the present study.

As we have outlined above, a strength of the present study was the application of a B-ESEM framework that additionally controlled for the correlated uniqueness of negatively worded items. Nevertheless, there were a number of limitations to the present study, which we acknowledge. First, given that participants were recruited online, we cannot claim that our sample was representative of the wider Italian population. In future work, it may be useful to examine the impact that regional differences have on the validity of IES-2 scores, particularly as eating practices and obesity rates are known to vary widely across Italian regions (e.g., Lauria et al., 2019). Second, our data were collected in the context of the novel coronavirus (COVID-19) pandemic, during which time Italy underwent various forms of nationally-mandated lockdowns. It is difficult to know how both the pandemic and attendant lockdown measures may have impacted our results, although it is important to note that other studies in Italy have shown that conditions of lockdown increased indices of emotional eating (e.g., Cecchetto et al., 2021) and that respondents used food to manage distress during periods of lockdown (Di Renzo et al., 2020).

Setting aside these limitations, the present study indicates that there may be value to utilising a B-ESEM framework to better understand the structure of IES-2 scores. In addition, our findings highlight the importance of accounting for the correlated uniqueness of the negatively worded IES-2 items. We appreciate that our work may raise more questions than they currently answer *vis-à-vis* the conceptualisation of IES-2 scores, especially given the novelty of the application of a B-ESEM-CU framework to the IES-2. That is, given this novelty, it becomes difficult to draw direct comparisons between our findings and those reported in previous studies. Nevertheless, we believe that the application of B-ESEM frameworks will likely help scholars develop fuller understandings of the nature, conceptualisation, and operationalisation of the construct of intuitive eating. Going forward, such a framework may also help resolve questions about the efficacy of the IES-2 at operationalising the construct of intuitive eating in diverse social, national, and linguistic groups.

Acknowledgements

The study was supported by a grant from MIUR (Dipartimenti di Eccellenza DM 11/05/2017 n. 262) to the Department of General Psychology.

References

Akırmak, Ü., Bakıner, E., Boratav, H. B., & Güneri, G. (2021). Cross-cultural adaptation of the Intuitive Eating Scale-2: Psychometric evaluation in a sample in Turkey. *Current Psychology*. Advance online publication. https://doi.org/10.1007/s12144-018-0024-3

Alleva, J. M., Tylka, T. L., & Kroon Van Diest, A. M. (2017). The Functionality Appreciation Scale (FAS): Development and psychometric properties in U.S. community women and men. *Body Image*, *23*, 28-44. https://doi.org/10.1016/j.bodyim.2017.07.008

Asparouhov, T., & Muthén, B. (2009). Exploratory structural equation modeling. *Structural Equation Modeling*, *16*(3), 397-438. https://doi.org/10.1080/1075510903008204

Asparouhov, T., Muthén, B., & Morin, A. J. S. (2015). Bayesian structural equation modeling with cross-loadings and residual covariances: Comments on Stromeyer et al. *Journal of Management*, *41*(6), 1561-1577. https://doi.org/10.1177/0149206315591075

Bas, M., Esen, K., Saglam, F., Arıtıcı, G., Cengiz, E., Köksal, S.& Buyukkaragoz, H. (2017). Turkish version of the Intuitive Eating Scale-2: Validity and reliability among university students. *Appetite*, *114*, 391-397. https://doi.org/10.1016/j.appet.2017.04.017

Beaton, D., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, *25*(24), 3186-3191.

Browne, M. W. (2001) An overview of analytic rotation in exploratory factor analysis. *Multivariate Behavioral Research*, *36*(1), 111-150. https://doi.org/10.1207/S15327906MBR3601_05

Bruce, L. J., & Ricciardelli, L. A. (2016). A systematic review of psychosocial correlates of intuitive eating among adult women. *Appetite*, *96*, 454-472. https://doi.org/10.1016/j.appet.2015.10.012

Brunet, J., Gunnel, K. E., Teixeira, P., Sabiston, C. M., & Bélanger, M. (2016). Should we be looking at the forest or the trees? Overall psychological need satisfaction and individual needs as predictors of physical activity. *Journal of Sport and Exercise Psychology*, *38*(4), 317-330. https://doi.org/10.1123/jsep.2016-0256

Camilleri, G. M., Méjean, C., Bellisle, F., Andreeva, V. A., Sautron, V., Hercberg, S., & Péneau, S. (2015). Cross-cultural validity of the Intuitive Eating Scale-2: Psychometric evaluation in a sample of the general French population. *Appetite*, *84*, 34-42. https://doi.org/10.1016/j.appet.2014.09.009

Carbonneau, E., Carbonneau, N., Lamarche, B., Provencher, V., Bégin, C., Bradette-Laplante, M., Lamerée, C., & Lemieux, S. (2016). Validation of a French-Canadian adaptation of the Intuitive Eating Scale-2 for the adult population. *Appetite*, *105*, 37-45. https://doi.org/10.1016/j.appet.2016.05.001

Casale, S., Prostamo, A., Giovannetti, S., & Fioravanti, G. (2021). Translation and validation of an Italian version of the Body Appreciation Scale-2. *Body Image*, *37*, 1-5. https://doi.org/10.1016/j.bodyim.2021.01.005

Cecchetto, C., Aiello, M., Gentili, C., Ionta, S., & Osimo, S. A. (2021). Increased emotional eating during COVID-19 associated with lockdown, psychological and social distress. *Appetite*, *160*, 105122. https://doi.org/10.1016/j.appet.2021.105122

Cerea, S., Todd, J., Ghisi, M., Mancin, P., & Swami, V. (2021). Psychometric properties of an Italian translation of the Functionality Appreciation Scale (FAS). *Body Image*, *38*, 210-218. https://doi.org/10.1016/j.bodyim.2021.04.007

Charter, R. A., & Feldt, L. S. (2001). Meaning of reliability in terms of correct and incorrect clinical decisions: The art of decision making is still alive. *Journal of Clinical and Experimental Neuropsychology*, *23*(4), 530-537. https://doi.org/10.1076/jcen.23.4.530.1227

Chen, F. F. (2007). Sensitivity of goodness of fit indices to lack of measurement invariance. *Structural Equation Modeling*, *14*(3), 464-504. https://doi.org/10.1207/s15328007sem1203_7

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, *9*(2), 233-255. https://doi.org/10.1207/s15328007sem0902_5

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, *7*(3), 309-319. https://doi.org/10.1037/1040-3590.7.3.309

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155-159. https://doi.org/10.1037/0033-2909.112.1.155

Comrey, A. L., & Lee, H. B. (1992). *A first course in factor analysis*. Lawrence Erlbaum.

Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, *1*(1), 16-29. https://doi.org/10.1037/1082-989X.1.1.16

da Silva, W. R., Neves, A. N., Ferreira, L., Campos, J. A. D. B., & Swami, V. (2019). A psychometric investigation of Brazilian Portuguese versions of the Caregiver Eating Messages Scale and the Intuitive Eating Scale-2. *Eating and Weight Disorders*, *25*, 221-230. https://doi.org/10.1007/s40519-018-0557-3

Di Renzo, L., Gualteri, P., Cinello, G., Bigioni, G., Soldati, L., Attinà, A., Bianco, F. F., Caparello, G., Camodeca, V., Carrano, E., Ferraro, S., Giannattasio, S., Leggeri, C., Rampello, T., Lo Presti, L., Tarsitano, M. G., & De Lorenzo, A. (2020). Psychological aspects and eating habits during COVID-19 home confinements: Results of EHLC-COVID-19 Italian online survey. *Nutrients*, *12*(7), 2152. https://doi.org/10.3390/nu12072152

Duarte, C., Gouveia, J. P., & Mendes, A. (2016). Psychometric properties of the Intuitive Eating Scale-2 and association with binge eating symptoms in a Portuguese community sample. *International Journal of Psychology and Psychological Therapy*, *16*(3), 329-341.

Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology*, *105*(3), 399-412. https://doi.org/10.1111/bjop.12046

Garner, D.M. (2004). *Eating disorder inventory-3 (EDI-3). Professional manual.* Psychological Assessment Resources.

Giannini, M., Pannocchia, L., Dalle Grave, R., Muratori, F., & Viglione, V. (2008). *EDI-3 Eating Disorder Inventory-3: Manuale*. OS Organizzazioni Speciali.

Gignac, G. E. (2016). The higher-order model imposes a proportionality constraint: That is why the bifactor model tends to fit better. *Intelligence*, *55*, 57-68. https://doi.org/10.1016/j.intell.2016.01.006

Goretzko, D., Pham, T. T. H., & Bühner, M. (2020). Exploratory factor analysis: Current use, methodological developments and recommendations for good practice. *Current Psychology*. Advanced online publication. https://doi.org/10.1007/s12144-019-00300-2

Gu, H., Wen, Z., & Fan, X. (2015). The impact of wording effect on reliability and validity of the Core Self-Evaluation Scale (CSES): A bi-factor perspective. *Personality and Individual Differences*, *83*, 142-147. https://doi.org/10.1016/j.paid.2015.04.006

Gu, H., Wen, Z., & Fan, X. (2017). Examining and controlling for wording effect in a self-report measure: A Monte Carlo simulation study. *Structural Equation Modeling*, *24*(4), 545-555. https://doi.org/10.1080/10705511.2017.1286228

Hair, J. F. Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate data analysis* (7th ed.). Macmillan.

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *32*, 179-185. https://doi.org/10.1007/BF02289447

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Khalsa, A. S., Stough, C. O., Garr, K., Copeland, K. A., Kharofa, R. Y., & Woo, J. G. (2019). Factor structure of the Intuitive Eating Scale-2 among a low-income and racial minority population. *Appetite*, *142*, 104390. https://doi.org/10.1016/j.appet.2019.104390

Lai, K., & Green, S. B. (2016). The problem with having two watches: Assessment of fit when RMSEA and CFI disagree. *Multivariate Behavioral Research*, *51*(2-3), 220-239. https://doi.org/10.1080/00273171.2015.1135306

Lauria, L., Spinelli, A., Buoncristiano, M., & Nardone, P. (2019). Decline of childhood overweight and obesity in Italy from 2008 to 2016: Results from 5 rounds of the population-based surveillance system. *BMC Public Health*, *19*, 618. https://doi.org/10.1186/s12889-019-6946-3

Linardon, J., Tylka, T. L., & Fuller-Tyszkiewicz, M. (2021). Intuitive eating and its psychological correlates: A meta-analysis. *International Journal of Eating Disorders*. Advanced online publication. https://doi.org/10.1002/eat.23509

Lorenzo-Seva, U., & ten Berge, J. M. F. (2006). Tucker's congruence coefficient as a meaningful index of factor similarity. *Methodology*, *2*, 57-64. https://doi.org/10.1027/1614-1881.2.2.57

Madanat, H., Hawks, J., Gonzales, A., Miranda, E., Walsh-Buhi, E. R., Takemoto, M., & Gaida, E. (2020). Assessing evidence of validity for the Intuitive Eating Scale-2 among adult Latina women. *Health*, *12*(4), 99310. https://doi.org/health.2020.124024

Maïano, C., Morin, A.J.S., Aimé, A. Lepage, G., & Bouchard, S. (2021). Psychometric

Properties of the Body Checking Questionnaire (BCQ) and of the Body Checking Cognitions Scale (BCCS): A bifactor-exploratory structural equation modeling approach. *Assessment*, *28*(2), 632-646. https://doi.org/10.1177/1073191119858411

Marsh, H. W. (1996). Positive and negative global self-esteem: A substantively meaningful distinction or artifactors? *Journal of Personality and Social Psychology*, *70*(4), 810-819. https://doi.org/10.1037/0022-3514.70.4.810

Marsh, H. W., Muthén, B., Asparouhov, T., Lüdtke, O., Robitzsch, A., Morin, A. J. S., & Trautwein, U. (2009). Exploratory structural equation modeling, integrating CFA and EFA: Application to students' evaluations of university teaching. *Structural Equation Modeling,* 16(3), 439-476. https://doi.org/10.1080/10705510903008220.

Marsh, H. W., Liem, G. A. D., Martin, A. J., Morin, A. J. S., & Nagengast, B. (2011). Methodological measurement fruitfulness of exploratory structural equation modeling (ESEM): New approaches to key substantive issues in motivation and engagement. *Journal of Psychoeducational Assessment*, *29*(4), 322-346. https://doi.org/10.1177/0734282911406657

Marsh, H. W., Nagengast, B., & Morin, A. J. S. (2013). Measurement invariance of big-five factors over the life span: ESEM tests of gender, age, plasticity, maturity, and la dolce vita effects. *Developmental Psychology*, *49*(6), 1194-1218. https://doi.org/10.1037/a0026913

Marsh, H. W., Morin, A. J. S., Parker, P. D., & Kaur, G. (2014). Exploratory structural equation modeling: An integration of the best features of exploratory and confirmatory factor analysis. *Annual Review of Clinical Psychology*, *10*, 85-110. https://doi.org/10.1146/annurev-clinpsy-032813-153700

Marsh, H. W., Scalas, L. F., & Nagengast, B. (2010). Longitudinal tests of competing factor structures for the Rosenberg Self-Esteem Scale: Traits, ephemeral artifacts, and stable response styles. *Psychological Assessment*, *22*, 366-381. https://doi.org/10.1037/a0019225

McDonald, R. P. (1970). Theoretical foundations of principal factor analysis, canonical factor analysis, and alpha factor analysis. *British Journal of Mathematical and Statistical Psychology*, *23*, 1-21. https://doi.org/10.1111/j.2044-8317.1970.tb00432.x

Meade, A. W., Johnson, E. C., & Braddy, P. W. (2008). Power and sensitivity of alternative fit indices in tests of measurement invariance. *Journal of Applied Psychology*, *93*(3), 568-592. https://doi.org/10.1037/0021-9010.93.3.568

Monroe, S., & Cai, L. (2015). Evaluating structural equation models for categorical outcomes: A new test statistic and a practical challenge of interpretation. *Multivariate Behavioral Research*, *50*(6), 569-583. https://doi.org/10.1080/00273171.2015.1032398

Moore, C. J., & Cunningham, S. A. (2012). Social position, psychological stress, and obesity: A systematic review. *Journal of the Academy of Nutrition and Dietetics*, *112*(4), 518-526. https://doi.org/10.1016/j.jand.2011.12.001

Morin, A. J. S., Arens, A., & Marsh, H. (2016a). A bifactor exploratory structural equation modeling framework for the identification of distinct sources of construct-relevant psychometric multidimensionality. *Structural Equation Modeling*, *23*(1), 116-139. https://doi.org/10.1080/10705511.2014.961800

Morin, A. J. S., Arens, A., Tran, A., & Caci, H. (2016b). Exploring sources of construct-relevant multidimensionality in psychiatric measurement: A tutorial and illustration using the Composite Scale of Morningness. *International Journal of Methods in Psychiatric Research*, *25*(4), 277-288. https://doi.org/10.1002/mpr.1485

Morin, A. J. S., Marsh, H. W., & Nagengast, B. (2013). Exploratory structural equation modeling. In G. R. Hancock & R. O. Mueller (Eds.), *Structural equation modeling: a second course* (pp. 395-436). Information Age Publishing, Inc.

Morin, A. J. S., & Maïano, C. (2011). Cross-validation of the short form of the Physical Self-Inventory (PSI-18) using exploratory structural equation modeling (ESEM). *Psychology of Sport and Exercise*, *12*, 540–554. https://doi.org/10.1016/j.psychsport.2011.04.003

Morin, A. J. S., Moullec, G., Maïano, C., Layet, L., Just, J.-L., & Ninot, G. (2011). Psychometric properties of the Center for Epidemiologic Studies Depression Scale (CES-D) in French clinical and nonclinical adults. *Revue d'Épidémiologie et de Santé Publique*, *59*, 327-340. https://doi.org/10.1016/j.respe.2011.03.061

Morin, A. J. S., Myers, N. D., & Lee, S. M. (2020). Modern factor analytic techniques: Bifactors models, exploratory structural equation modeling (ESEM), and bifactor-ESEM. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of sport psychology* (4th ed., pp. 1044-1073). Wiley. https://doi.org/10.1002/9781119568124.ch51

Muthén, L. K., & Muthén, B. (2019). *Mplus user's guide.* Muthén & Muthén.

Nejati, B., Fan, C.-W., Boone, W. J., Griffiths, M. D., Lin, C.-Y., & Pakpour, A. H. (2021). Validating the Persian Intuitive Eating Scale-2 among breast cancer survivors who are overweight/obese. *Evaluation and the Health Professions*. Advance online publication. https://doi.org/10.1177/016328720965688

Nunnally, J. C. (1978). *Psychometric theory*. McGraw-Hill.

Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*. Lawrence Erlbaum.

Perreira, T.A., Morin, A.J.S., Hebert, M., Gillet, N., Houle, S.A., & Berta, W. (2018). The short form of the Workplace Affective Commitment Multidimensional Questionnaire (WACMQ-S): A bifactor-ESEM approach among healthcare professionals. *Journal of Vocational Behavior, 106,* 62-83. https://doi.org/10.1016/j.jvb.2017.12.004

Prezza, M., Trombaccia, F.R., Armento, L. (1997). *La scala dell'autostima di Rosenberg: traduzione e validazione Italiana*. *Giunti Organizzazioni Speciali*, *223*, 35–44.

Revelle, W. R. (2019). *psych*: *Procedures for personality and psychological research.* https://cran.r-project.org/web/packages/psych/index.html

Rosenberg, M. (1965). *Society and the Adolescent Self-Image*. Princeton University Press, Princeton.

Ruzanska, U., & Warschburger, P. (2017). Psychometric evaluation of the German version of the Intuitive Eating-Scale-2 in a community sample. *Appetite*, *117*, 126-134. https://doi.org/10.1016/j.appet.2017.06.018

Shrout, P. E. (1998). Measurement reliability and agreement in psychiatry. *Statistical Methods in Medical Research*, *7*(3), 301-317. https://doi.org/10.1177/096228029800700306

Sliter, K. A., & Zickar, M. J. (2014). An IRT examination of the psychometric functioning of negatively worded personality items. *Educational and Psychological Measurement*, *74*(2), 214-226. https://doi.org/10.1177/0013164413504584

Steiger, J. H. (2007). Understanding the limitations of global fit assessment in structural equation modeling. *Personality and Individual Differences*, *42*, 893-898. https://doi.org/10.1016/j.paid.2006.09.017

Strodl, E., Markey, C., Aimé, A., Rodgers, R. F., Dion, J., LoCoco, G., Gullo, S., McCabe, M., Mellor, D., Granero-Gallegos, A., Sicilia, A., Castelnuovo, G., Probst, M., Maïano, C., Manzoni, G. M., Begin, C., Blackburn, M.-E., Pietrabissa, G., Alcaraz-Ibánez, M., … Fuller-Tyszkiewicz, M. (2020). A cross-country examination of emotional eating, restrained eating and intuitive eating: Measurement Invariance across eight countries. *Body Image*, *35*, 245-254. https://doi.org/10.1016/j.bodyim.2020.09.013

Swami, V., & Barron, D. (2019). Translation and validation of body image instruments: Challenges, good practice guidelines, and reporting recommendations for test adaptation. *Body Image*, *31*, 204-220. https://doi.org/10.1016/j.bodyim.2018.08.014

Swami, V., Todd, J., & Barron, D. (2021). Translation and validation of body image instruments: An addendum to Swami and Barron (2019) in the form of frequently asked questions. *Body Image*, *37*, 214-224. https://doi.org/10.1016/j.bodyim.2021.03.002

Swami, V., Todd, J., Zahari, H. S., Mohd. Khatib, N. A., Toh, E. K. L., & Barron, D. (2020). Dimensional structure, psychometric properties, and sex and ethnic invariance of a Bahasa Malaysia (Malay) translation of the Intuitive Eating Scale (IES-2). *Body Image*, *32*, 167-179. https://doi.org/j.bodyim.2020.01.003

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (6th ed.) Allyn & Bacon.

Tribole, E. (2017). Intuitive eating: Research update. *SCAN's Pulse*, *36*, 1-5.

Tribole, E., & Resch, E. (2012). *Intuitive eating: A recovery book for the chronic dieter* (2nd ed.). St. Martin's Griffin.

Tucker, L. R. (1951). *A method for synthesis of factor analysis studies* (Personnel Research Section Report No. 984). Department of the Army.

Tylka, T. L. (2006). Development and psychometric evaluation of a measure of intuitive eating. *Journal of Counseling Psychology*, *53*(2), 226-240. https://doi.org/10.1037/0022-0167.53.2.226

Tylka, T. L., & Kroon Van Diest, A. M. (2013). The Intuitive Eating Scale-2: Item refinement and psychometric evaluation with college women and men. *Journal of Counseling Psychology*, *60*(1), 137-153. https://doi.org/10.1037/a0030893

Tylka, T. L., & Wood-Barcalow, N. L. (2015). The Body Appreciation Scale-2: Item refinement and psychometric evaluation. *Body Image*, *12*, 53-67. https://doi.org/10.1016/j.bodyim.2014.09.006

van Dyck, Z., Herbert, B. M., Happ, C., Kleveman, G. V., & Vögele, C. (2016). German version of the Intuitive Eating Scale: Psychometric evaluation and application to an eating disordered population. *Appetite*, *105*, 798-807. https://doi.org/10.1016/j.appet.2016.07.019

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods*, *3*(1), 4-70. https://doi.org/10.1177/109442810031002

Vintilă, M., Todd, J., Goian, C., Tudorel, O., Barbat, C. A., & Swami, V. (2020). The Romanian version of the Intuitive Eating Scale-2: Assessment of its psychometric properties and gender invariance in Romanian adults. *Body Image*, *35*, 225-236. https://doi.org/10.1016/j.bodyim.2020.09.009

Weijters, B., Baumgartner, H., & Schillewaert, N. (2013). Reversed item bias: An integrative model. *Psychological Methods*, *18*(3), 320-334. https://doi.org/10.1037/a0032121

Worthington, R., & Whittaker, T. (2006). Scale development research: A content analysis and recommendations for best practice. *Counseling Psychologist*, *34*, 806-838. https://doi.org/10.1177/0011000006288127

Tables and Figures

Table 1

Goodness-of-Fit Statistics for the IES-2

Models	Sample	Nº	Description	Wχ²	*df*	CFI	TLI	RMSEA	RMSEA 90% CI LB	RMSEA 90% CI UB	SRMR	CM	ΔWχ²	*df*	*p*	ΔCFI	ΔTLI	ΔRMSEA
EFA	First split-half	1-1	1-factor	5316.212*	230	.735	.709	.216	.211	.221	.214	-	-	-	-	-	-	-
		1-2	2-factor	3284.922*	208	.840	.805	.176	.171	.182	.149	-	-	-	-	-	-	-
		1-3	3-factor	1516.494*	187	.931	.906	.122	.117	.128	.064	-	-	-	-	-	-	-
		1-4	4-factor	978.399*	167	.958	.936	.101	.095	.107	.044	-	-	-	-	-	-	-
		1-5	5-factor	708.582*	148	.971	.950	.089	.083	.096	.035	-	-	-	-	-	-	-
		1-6	6-factor	446.507*	130	.984	.968	.072	.064	.079	.026	-	-	-	-	-	-	-
		1-7	7-factor	302.640*	113	.990	.978	.059	.051	.068	.021	-	-	-	-	-	-	-
		1-8	8-factor	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-	-	-	-	-
ESEM: MI across gender	First split-half	2-1	Men	484.684*	167	.961	.940	.093	.083	.102	.040	-	-	-	-	-	-	-
		2-2	Women	600.999*	167	.960	.939	.101	.092	.110	.038	-	-	-	-	-	-	-
		2-3	Configural invariance	1077.075*	334	.960	.940	.097	.090	.103	.039	-	-	-	-	-	-	-
		2-4	Weak invariance	830.611*	410	.977	.972	.066	.059	.072	.043	2-3	98.641	76	.04	+.017	+.032	-.031
		2-5	Strong invariance	878.090*	475	.978	.977	.060	.054	.066	.046	2-4	97.383	65	.006	+.001	+.005	-.006
		2-6	Strict invariance	957.055*	498	.975	.975	.062	.056	.068	.048	2-5	95.045	23	<.001	-.003	-.002	+.002
		2-7	Variance-Covariance invariance	780.837*	508	.985	.985	.048	.041	.054	.063	2-6	22.183	10	.01	+.010	+.010	-.014
		2-8	Latent mean invariance	903.258*	512	.979	.979	.057	.051	.063	.065	2-7	39.329	4	<.001	-.006	-.006	+.009

Notes. IES-2 = Intuitive Eating Scale - second version; Wχ² = robust weighed least square (WLSMV) chi-square; df = degrees of freedom; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; 90% CI = 90% confidence interval of the RMSEA; LB = lower bound; UB = upper bound; SRMR = standardised root mean square residual; CM = comparison model; CU = correlated uniqueness; EFA = exploratory factor analyses; ESEM = exploratory structural equation modeling; B-ESEM = bifactor ESEM; MI = measurement invariance; Δ = change from the previous model; ΔWχ² = WLSMV chi square difference test (calculated with the Mplus DIFFTEST function). The fact that WLSMV χ² values are not exact, but "estimated" as the closest integer necessary to obtain a correct *p* value explains the fact that the χ² and the resulting CFI values can be non-monotonic with model complexity. [a] Because one response category was not used in one time point for one item, the responses to this item were recoded into fewer categories; * $p \leq .01$

Table 1. (continued)

Models	Samples	Nº	Description	Wχ²	*df*	CFI	TLI	RMSEA	RMSEA 90% CI LB	RMSEA 90% CI UB	SRMR	CM	ΔWχ²	*df*	*p*	ΔCFI	ΔTLI	ΔRMSEA
ESEM	Second split-half	3-1	4-factor	901.821*	167	.958	.936	.096	.090	.103	.033	-	-	-	-	-	-	-
		3-2	4-factor-CU	608.778*	146	.973	.954	.082	.075	.089	.027	-	-	-	-	-	-	-
B-ESEM		3-3	4-factor	610.133*	148	.973	.954	.081	.075	.088	.027							
		3-4	4-factor-CU	410.460*	127	.984	.967	.069	.061	.076	.021							
B-ESEM-CU: MI across gender	Second split-half	4-1	Men	261.262*	127	.977	.954	.068	.056	.080	.028	-	-	-	-	-	-	-
		4-2	Women	312.615*	127	.983	.966	.077	.066	.088	.024	-	-	-	-	-	-	-
		4-3	Configural invariance	551.156*	254	.982	.965	.070	.062	.078	.027	-	-	-	-	-	-	-
		4-4	Weak invariance	525.420*	344	.989	.984	.047	.039	.055	.033	4-3	112.198	90	.06	+.007	+.019	-.023
		4-5	Strong invariance	578.227*	408	.990	.987	.042	.034	.050	.035	4-4	81.900	64	.07	+.001	+.003	-.005
		4-6	Strict invariance	638.139*	431	.988	.986	.045	.037	.052	.037	4-5	66.957	23	<.001	-.002	-.001	+.003
		4-7	CU invariance	647.093*	452	.988	.987	.043	.035	.050	.037	4-6	16.491	21	.74	.000	+.001	-.002
		4-8	Variance-Covariance invariance	607.757*	467	.992	.991	.036	.027	.043	.053	4-7	37.155	15	.001	+.004	+.004	-.007
		4-9	Latent mean invariance	809.313*	472	.980	.979	.055	.048	.061	.055	4-8	69.658	5	<.001	-.008	-.012	+.019
B-ESEM-CU: MI across time	Total sample	5-1	Configural invariance	947.667*	735	.986	.980	.044	.035	.052	.034	-	-	-	-	-	-	-
		5-2	Weak invariance	1022.287*	825	.987	.983	.040	.031	.048	.041	5-1	103.182	90	.004	+.001	+.003	-.004
		5-3	Strong invariance[a]	1124.310*	888	.984	.981	.042	.034	.050	.044	5-2	134.821	63	<.001	-.003	-.002	+.002
		5-4	Strict invariance	1154.096*	911	.983	.981	.042	.034	.050	.046	5-3	39.185	23	.02	-.001	.001	.001
		5-5	CU invariance	1173.667*	932	.984	.982	.042	.034	.049	.046	5-4	27.677	21	.15	+.001	+.001	.001
		5-6	Variance-Covariance invariance	1187.137*	947	.984	.982	.041	.033	.049	.052	5-5	35.113	15	.002	.001	.001	-.001
		5-7	Latent mean invariance	1210.538*	952	.982	.981	.043	.035	.050	.052	5-6	28.593	5	<.001	-.002	-.001	+.002

Table 2

Standardized Parameters Estimates from the Exploratory Factor Analyses of the IES-2 in the first split-half subsample

Items	EPR (λ)	UPE (λ)	RHSC (λ)	BFC (λ)	δ
1	*-.012*	**.654**	*.041*	-.248	.477
2	**.913**	-.087	.133	-.108	.130
3	*-.059*	**.760**	*-.065*	*.112*	.448
4	.193	**.564**	.173	.071	.530
5	**.805**	*-.054*	*.047*	.127	.263
6	.131	.117	**.591**	.344	.277
7	*.021*	.115	**.594**	.435	.237
8	*.035*	.140	**.722**	.315	.147
9	*.007*	**.757**	*.037*	*-.052*	.404
10	**.835**	*.000*	.138	*-.011*	.226
11	**.910**	*-.045*	.144	-.091	.122
12	**.596**	.172	*.044*	.185	.504
13	**.534**	*-.018*	*-.039*	.201	.641
14	**.612**	.075	-.074	.335	.455
15	**.645**	.147	.082	.248	.373
16	-.080	**.742**	*.048*	-.084	.413
17	*-.055*	**.615**	.196	-.203	.493
18	*.019*	-.127	.134	**.647**	.477
19	-.043	-.161	.070	**.897**	.122
20	*-.027*	*-.010*	.047	**.883**	.201
21	.136	.114	**.626**	.167	.391
22	*.048*	*.003*	**.889**	*-.047*	.209
23	.045	*-.010*	**.950**	*-.046*	.104
ω	.927	.858	.933	.880	
EPR	-				
UPE	*.039*	-			
RHSC	.274	.235	-		
BFC	.223	-.081	.334	-	

Note. IES-2 = Intuitive Eating Scale-2; EPR = Eating for Physical Rather than Emotional Reasons; λ = factor loadings; UPE = Unconditional Permission to Eat; RHSC = Reliance on Hunger and Satiety Cues; BFC = Body-Food Choice Congruence; δ = Uniqueness; ω = McDonald's omega. Non-significant loadings and correlations are underlined and italicised.

Table 3.

Standardized Parameters Estimates from the Exploratory Structural Equation Model with Correlated Uniqueness of the IES-2 in the second split-half subsample.

Items	EPR (λ)	UPE (λ)	RHSC (λ)	BFC (λ)	δ
1	*.035*	**.605**	*-.069*	-.212	.566
3	-.205	**.678**	.113	*.077*	.483
4	.208	**.459**	.145	*.017*	.658
9	*-.065*	**.597**	*.028*	*-.053*	.618
16	-.125	**.814**	*-.019*	*.048*	.343
17	.094	**.646**	*.051*	-.206	.491
2	**.740**	*-.004*	*.004*	*.021*	.437
5	**.751**	-.277	.109	-.077	.346
10	**.737**	*.022*	.065	*.022*	.393
11	**.794**	*.015*	*-.025*	*.016*	.377
12	**.805**	.208	*-.051*	*.055*	.312
13	**.667**	-.147	.084	*-.037*	.507
14	**.789**	-.085	*.047*	-.082	.388
15	**.787**	.100	*-.020*	*.050*	.353
6	.387	.161	**.430**	.250	.248
7	.175	.105	**.512**	.309	.346
8	.113	.163	**.714**	.172	.192
21	.144	*.065*	**.627**	.154	.373
22	*-.021*	*.040*	**.908**	-.104	.225
23	*-.008*	.016	**.967**	-.062	.101
18	*-.019*	*-.021*	*.070*	**.723**	.446
19	*.023*	-.187	.143	**.786**	.202
20	*-.020*	*-.048*	*.041*	**.876**	.206
ω	.922	.820	.921	.869	
EPR	-				
UPE	*.010*	-			
RHSC	.446	.264	-		
BFC	.404	-.141	.354	-	

Note. IES-2 = Intuitive Eating Scale-2; EPR = Eating for Physical Rather than Emotional Reasons; λ = factor loadings; UPE = Unconditional Permission to Eat; RHSC = Reliance on Hunger and Satiety Cues; BFC = Body-Food Choice Congruence; δ = Uniqueness; ω = McDonald's omega. Non-significant loadings and correlations are underlined and italicised.

Table 4.

Standardized Parameters Estimates from the Bifactor Exploratory Structural Equation Model with Correlated Uniqueness of the IES-2 in the second split-half subsample

Items	EPR (λ) S-factor	UPE (λ) S-factor	RHSC (λ) S-factor	BFC (λ) S-factor	G-factor	δ
1	*-.055*	**.603**	*-.031*	-.271	***-.021***	.559
3	-.208	**.672**	.118	*-.005*	***.098***	.482
4	.150	**.471**	.163	*.015*	**.302**	.637
9	*-.084*	**.598**	*.085*	-.095	***.031***	.618
16	-.121	**.810**	.076	*-.005*	***.031***	.322
17	*.044*	**.672**	.121	-.206	***.062***	.485
2	**.481**	*-.063*	-.092	*-.047*	**.575**	.423
5	**.603**	-.247	.105	*.036*	**.457**	.354
10	**.471**	*-.035*	*-.050*	*-.056*	**.625**	.380
11	**.541**	*-.035*	-.083	*-.024*	**.571**	.373
12	**.529**	.143	-.093	*-.014*	**.616**	.311
13	**.552**	-.127	.109	*.061*	**.420**	.487
14	**.685**	*-.045*	.122	*.063*	**.432**	.323
15	**.519**	*.038*	-.085	*-.016*	**.610**	.350
6	.100	.073	***.108***	*-.003*	**.874**	.210
7	-.105	*.002*	***.122***	*.022*	**.845**	.259
8	-.077	.143	**.388**	*-.029*	**.811**	.164
21	*.000*	*.063*	**.347**	*.026*	**.714**	.365
22	*.045*	.197	**.712**	*.024*	**.520**	.182
23	*.001*	.156	**.678**	*.009*	**.640**	.106
18	*-.017*	-.114	*-.001*	**.581**	**.458**	.440
19	*.042*	-.274	.053	**.660**	**.535**	.198
20	*.005*	-.154	*-.015*	**.726**	**.507**	.192
ω	.865	.825	.812	.823	.933	

Note. IES-2 = Intuitive Eating Scale - second version; EPR = Eating for Physical Rather than Emotional Reasons; λ = factor loadings; UPE = Unconditional Permission to Eat; RHSC = Reliance on Hunger and Satiety Cues; BFC = Body-Food Choice Congruence; S-factor = specific factor; G-factor = global factor; δ = Uniqueness; ω = McDonald's omega. Non-significant loadings are underlined and italicized.

Table 5.

Construct Validity Analyses of the IES-2

Measures	IES-2				
	EPR S-factor	UPE S-factor	RHSC S-factor	BFC S-factor	G-factor
Self-esteem	.186***	.102***	.065*	.168***	.281***
Drive for thinness	-.319***	-.517***	-.270***	-.138***	-.327***
Bulimia symptoms	-.628***	-.009	-.240***	-.145***	-.423***
Body dissatisfaction	-.292***	-.224***	-.226***	-.197***	-.474***
Functionality appreciation	-.029	.110***	.068*	.302***	.430***
Body appreciation	.147***	.146***	.113***	.326***	.490***
Body mass index	-.153***	-.059	-.082**	-.095**	-.245***

Notes. IES-2 = Intuitive Eating Scale-2; EPR = Eating for Physical Rather than Emotional Reasons; UPE = Unconditional Permission to Eat; RHSC = Reliance on Hunger and Satiety Cues; BFC = Body-Food Choice Congruence; S-factor = specific factor; G-factor = global factor.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

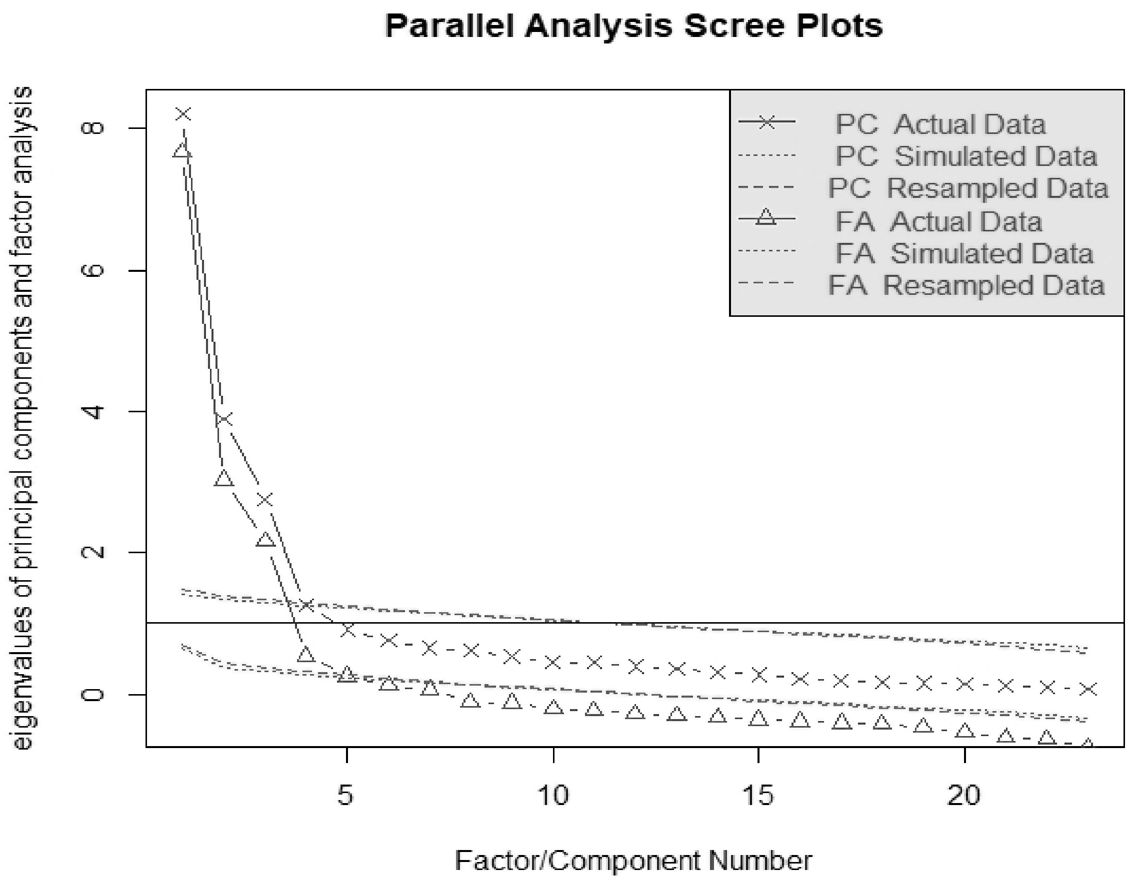

Figure 1. Scree plot and parallel analysis from the exploratory factor analysis of the Intuitive Eating Scale-2 in the first split-half subsample. *Note*. PC = principal component; FA = factor analysis

Appendix 1

Intuitive Eating Scale-2 Items in English and (in Italics) Italian.

Item	
1	I try to avoid certain foods high in fat, carbohydrates, or calories / *Cerco di evitare alcuni cibi ad alto contenuto di grassi, carboidrati o calorie*
2	I find myself eating when I'm feeling emotional (e.g., anxious, depressed, sad), even when I'm not physically hungry / *Mi capita di mangiare quando mi sento emotivo/a (ad esempio, ansioso/a, depresso/a, triste), anche se non ho fisicamente fame*
3	If I am craving a certain food, I allow myself to have it / *Se desidero fortemente un certo cibo, me lo concedo*
4	I get mad at myself for eating something unhealthy / *Mi arrabbio con me stesso/a quando mangio qualcosa di non salutare*
5	I find myself eating when I am lonely, even when I'm not physically hungry */ Mi capita di mangiare quando sono solo/a, anche se non ho fisicamente fame*
6	I trust my body to tell me when to eat / *Ho fiducia nel fatto che il mio corpo mi dica quando mangiare*
7	I trust my body to tell me what to eat / *Ho fiducia nel fatto che il mio corpo mi dica cosa mangiare*
8	I trust my body to tell me how much to eat / *Ho fiducia nel fatto che il mio corpo mi dica quanto mangiare*
9	I have forbidden foods that I don't allow myself to eat / *Ho cibi proibiti che non mi concedo di mangiare*
10	I use food to help me soothe my negative emotions / *Uso il cibo per alleviare le mie emozioni negative*

11 I find myself eating when I am stressed out, even when I'm not physically hungry / *Mi capita di mangiare quando sono stressato/a, anche se non ho fisicamente fame*

12 I am able to cope with my negative emotions (e.g., anxiety, sadness) without turning to food for comfort / *Sono capace di gestire le mie emozioni negative (ad esempio, ansia e tristezza) senza cercare conforto nel cibo*

13 When I am bored, I do NOT eat just for something to do / *Quando sono annoiato/a, NON mangio solo per fare qualcosa*

14 When I am lonely, I do NOT turn to food for comfort / *Quando sono solo/a, non cerco conforto nel cibo*

15 I find other ways to cope with stress and anxiety than by eating / *Trovo altri modi per gestire stress e ansia che non siano mangiare*

16 I allow myself to eat what food I desire at the moment / *Mi concedo di mangiare qualsiasi cibo io desideri in un determinato momento*

17 I do NOT follow eating rules or dieting plans that dictate what, when, and/or how much to eat / *Non seguo regole alimentari o diete che prescrivano cosa, quando e/o quanto mangiare*

18 Most of the time, I desire to eat nutritious foods / *Desidero mangiare cibi nutrienti la maggior parte delle volte*

19 I mostly eat foods that make my body perform efficiently (well) / *Mangio prevalentemente cibi che permettano al mio corpo di funzionare in maniera efficiente (bene)*

20 I mostly eat foods that give my body energy and stamina / *Mangio prevalentemente cibi che diano al mio corpo energia e forza*

21	I rely on my hunger signals to tell me when to eat / *Faccio affidamento sui miei segnali di fame per sapere quando mangiare*
22	I rely on my fullness (satiety) signals to tell me when to stop eating / *Faccio affidamento sui miei segnali di sazietà per sapere quando smettere di mangiare*
23	I trust my body to tell me when to stop eating / *Ho fiducia nel fatto che il mio corpo mi dica quando smettere di mangiare*