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When Intuitive Eating appears as a protective factor for disordered eating behaviours: Study of the psychometric properties of the Intuitive Eating Scale - 2 and associated processes

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Abstract

Intuitive eating is defined as an adaptive form of eating characterized by the ability of connecting with and understanding one's physical hunger and satiety internal signals, rather than eating for emotional reasons. The primary aim of the present study was to assess the psychometric properties of the Intuitive Eating Scale-2 (IES-2) in the Portuguese population. Furthermore, this study aimed at analysing intuitive eating as a mediator in the relationship between body image flexibility and binge eating, controlling for the effect of depression.

This study was conducted in a sample of 545 women. The factorial structure of the IES-2 was tested through a second-order confirmatory factor analysis, following the same procedure as the authors of the original IES-2 (Tylka & Kroon Van Diest, 2013). A four-factorial structure was corroborated: 1) Unconditional Permission to Eat; 2) Eating for Physical Reasons Rather Than Emotional Reasons; 3) Reliance on Hunger and Satiety Cues; 4) and Body-Food Choice Congruence. The IES-2 total scores and most IES-2 subscales scores were inversely associated with eating psychopathology, namely binge eating, body mass index, and body shame, and anxiety, depressive and stress symptoms. The IES-2 total score and subscales were also positively related to favourable social comparisons through physical appearance, decentering, and body image flexibility. The scale revealed adequate discriminant validity, adequate construct validity (convergent and divergent) and good temporal stability.

Findings indicate that the Portuguese version of the IES-2 suggests adequate reliability and validity, being a useful tool for assessing an adaptive form of eating behaviour.

Key Words: intuitive eating, Intuitive Eating Scale-2, binge eating, body image flexibility, psychometric properties, second-order confirmatory factor analysis

Quando a Alimentação Intuitiva surge como um fator protetor do comportamento alimentar perturbado: Estudo das Propriedades Psicométricas da Escala de Alimentação Intuitiva - 2 e dos processos associados

Resumo

A alimentação intuitiva consiste numa forma de alimentação adaptativa caracterizada por uma capacidade de conexão e compreensão de pistas internas de fome e saciedade para guiar a ingestão de alimentos, em vez de recorrer a pistas emocionais. O principal objetivo do presente estudo consistiu em avaliar as propriedades psicométricas da Escala de Alimentação Intuitiva-2 (EAI-2) na população Portuguesa. Além disto, propôs-se analisar o efeito mediador da alimentação intuitiva na relação entre a flexibilidade psicológica em relação à imagem corporal e a ingestão alimentar compulsiva, controlando o efeito da depressão.

O estudo foi conduzido numa amostra de 545 sujeitos do sexo feminino. Examinou-se a estrutura fatorial da escala através de uma análise fatorial confirmatória de segunda-ordem, seguindo-se o mesmo procedimento dos autores da versão original da EAI-2 (Tylka & Kroon Van Diest, 2013). Foi corroborada uma estrutura factorial composta por quatro fatores: 1) Permissão Incondicional para Comer; 2) Comer por Razões Físicas em vez de Razões Emocionais; 3) Confiança em Pistas Internas de Fome e Saciedade; 4) e Escolha Congruente entre Corpo-Comida. Foram encontradas associações negativas entre a escala total e as subescalas da EAI-2 e psicopatologia alimentar, nomeadamente ingestão alimentar compulsiva, índice de massa corporal, vergonha corporal, e sintomas ansiosos, depressivos e *stress*. As pontuações para a escala total e as subescalas da EAI-2 revelaram-se ainda positivamente associadas com medidas de comparação social favorável através da aparência física, descentração, e flexibilidade psicológica em relação à imagem corporal. A escala revelou validades discriminante e de construto (i.e., convergente e divergente) adequadas e uma boa estabilidade temporal.

Os resultados indicaram que a versão Portuguesa da EAI-2 possui fidelidade e validade adequadas, sendo deste modo um instrumento útil para avaliar uma forma adaptativa de comportamento alimentar.

Palavras-chave: alimentação intuitiva, Escala de Alimentação Intuitiva-2, ingestão alimentar compulsiva, flexibilidade psicológica em relação à imagem corporal, propriedades psicométricas, análise fatorial confirmatória de segunda-ordem

Acknowledgment

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Introduction

Eating disorders are characterized by a devastating drive to be thin and a morbid fear of gaining weight and losing control over eating, being more frequent between adolescent girls and young women (Fairburn, 2008). Eating disorders involve great levels of psychological and social damage, with significant rates of psychiatric comorbidity (e.g., depression; Hudson, Hiripi, Pope, & Kessler, 2007) and increased mortality (Fairburn & Harrison, 2003). The existent pressure in Western societies to have a thin body shape and the notion that physical appearance is a central self-evaluative dimension (Troop, Allan, Treasure, & Katzman, 2003) to achieve for social advantages and social rank (Burkle, Ryckman, Gold, Thornton, & Audesse, 1999) have been pointed out as important factors playing on the vulnerability for eating pathology (Ferreira, Pinto-Gouveia, & Duarte, 2013). Research has found that thin-ideal internalization promotes body image dissatisfaction, which in turns leads to dieting efforts that are intended to alter body shape, getting closer of what is socially valued. In particular, body image dissatisfaction was found to lead to dieting and to contribute to negative affect (Stice, 2001; Stice, Marti, Rohde, & Shaw, 2011). Consequently, dieting and negative affect were found to increase the risk for eating disordered behaviour, namely binge eating. Specifically, research has shown that binge eating may occur in response to acute caloric deprivation, but may also serve as a distraction or escape from unwanted thoughts and emotional experiences (Goldfield, Adamo, Rutherford, & Legg, 2008; Stice, 2001). Thus, individuals with binge eating present great difficulties for regulating one's food intake (Fairburn & Wilson, 1993).

It has been suggested that as opposite to disordered eating behaviour is adaptive or *intuitive eating*. This construct is defined as an adaptive form of eating motivated by physical reasons, with an individual relying on one's connection with and understanding of physical hunger and satiety internal signals, rather than emotional reasons (Tribole & Resch, 1996). Some scholars (e.g., Tribole & Resch, 1996) argued that intuitive eating involves a natural ability that allow good nutrition at a healthy weight, through a stronger connection with one's body's physical needs and eating in a way that supports health. Specifically, individuals who eat intuitively are not worried about controlling one's food intake and do not label certain foods as *bad* or *good*. They are aware of and trust their body's internal hunger and satiety signals and use these different internal signals to determine when, what, and how much to eat. Theoretically, individuals who have high levels of intuitive eating eat when physically hungry and stop when they are satisfied. These individuals are capable of intuitively sense the nutritional needs of the body, considering the full range of food possibilities. Precisely, they often choose foods for the purpose of honouring their health and body's functioning. In this way, the nutritional needs of the body are satisfied without references to dieting (i.e., predetermined thinness-driven inflexible eating rules) and emotional states (i.e., eating for comfort and distraction

from negative emotions; Tribole & Resch, 1996).

Researchers who started the study of intuitive eating began to advocate an anti-dieting movement based on the assumption that restrained dieting was not sustainable and might contribute to negative outcomes, such as increased risk of eating disorders, low self-esteem, and an overall sense of failure among dieters (Gast & Hawks, 2000). According to this approach, intuitive eating, defined as the ability to rely on internal and satiety cues to initiate food consumption and eating cessation (Tribole & Resch, 1996), was promoted primarily as a sustainable avenue for maintaining a healthy body weight without restrictive dieting (e.g., Hansen & Goodman, 1999). Intuitive eating gained therefore popularity and new possibilities for future research were opened.

Nevertheless, the study of eating-related attitudes and behaviours have been relying on measures that do not seem to be related enough to the construct of intuitive eating and that are primarily focused on eating psychopathology. Specifically, low scores in measures, such as the Eating Attitudes Test–26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982), the Eating Disorder Inventory–3 (Garner, 2004), and the Eating Disorders Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994, 2008) have been regarded as indicators of adaptive eating because they reflect low levels or the absence of characteristics associated with clinical eating disorders (e.g., binge eating). However, Tribole and Resch (1996) argued that adaptive eating is more than just the absence of these characteristics. This is, adaptive eating may be negatively related to, but be more than the mere absence of eating disorder symptoms.

Hawks, Merril, and Madanat (2004) created the first measure of adaptive eating, the Intuitive Eating Scale, that follow the principles proposed in the literature (e.g., Tribole & Resch, 1996), with the aim of creating a potential tool for professionals. The scale included 30 Likert-type items that were validated in a sample of 391 college students. Four factors were identified: 1) intrinsic eating, as a measure of internal motivation for eating based on responsiveness to hunger and physical prompts; 2) extrinsic eating, indicating a lack of external influences on eating decisions; 3) anti-dieting, indicating disagreement with dieting practices and behaviours; 4) and self-care, indicating a preference for health and fitness over attractiveness. The Cronbach's alpha coefficients ranged from .42 to .93. The test-retest reliability analysis supported intuitive eating as a relatively stable trait. However, the low value of internal consistency reliability for intrinsic eating subscale (.42), and the self-care subscale that did not share the predictive properties of other subscales, were weaker validity indicators. Thus, such limitations indicated the refinement of the scale in order to provide more support for intuitive eating as a measurable construct with important implications.

Posteriorly, Tylka (2006) developed a new measure, namely the Intuitive Eating Scale (IES; Tylka, 2006). In order to provide empirical support for the IES, the psychometric properties were tested with a sample of 1260 femalle college students, being the first scale to adequately measure

this construct. An exploratory factor analysis revealed a 25-item structure with three factors: 1) Unconditional Permission to Eat (UPE), which reflects individuals' readiness to eat in response to internal physiological hunger cues and the food that is desired at the moment (i.e., individuals who allow themselves to eat unconditionally do not try to ignore their hunger cues and do not label certain foods as nonacceptable); 2) Eating for Physical Reasons Rather Than Emotional Reasons (EPR), which represents the ability to eat when physically hungry, and not to cope with emotional distress, such loneliness, boredom, and anxiety; 3) Reliance on Hunger and Satiety Cues (RHSC) that is about determining when and how much to eat, trusting in one's internal hunger and satiety signals and reliance on these signals to guide their eating behaviour (Tribole & Resch, 1996). Then, a confirmatory factor analysis found that this factorial structure had adequate fit to the data, after four items being deleted. A final structure with 21-items IES was obtained. The IES showed good values of internal consistency, test-retest reliability over a 3-week period, and construct validity. Additionally, research using this measure suggested that unconditional permission to eat whatever food is desired based on internal signals, regardless of nutrient or caloric content, might decrease preoccupation with food (Avalos & Tylka, 2006; Tylka, 2006). Also, research showed that women with a higher ability to regulate food intake based on physical hunger signals, present a lower food intake, with a lower engagement in binge eating, and lower levels of preoccupation with food (Tylka & Wilcox, 2006).

The Portuguese version of IES (Duarte, Pinto-Gouveia, & Azevedo, 2013) was examined in women from the general population and results replicated the original three-factor structure (Tylka, 2006), and indicated an adequate internal consistency, discriminant validity, construct validity and temporal stability.Additionally, Dockendorff, Petrie, Greenleaf, and Martin (2012) extended the work of Tylka (2006) reporting the good psychometric properties of the IES in a sample of middle school boys and girls.

Recently, Tylka and Kroon Van Diest (2013) refined the scale. The authors included items written to assess the presence of intuitive eating attitudes and behaviours (e.g., "I allow myself to eat what food I desire at the moment") with the intent of measuring more than the absence of dieting and emotional eating (since that in the original IES, 13 out of 21-items were written to assess the absence of intuitive eating, and had to be reverse scored to measure this construct; e.g., "I use food to help me soothe my negative emotions"). Furthermore**,** items were added to the scale with the aim of assessing a fourth domain of intuitive eating articulated by Tribole and Resch (2003) that comprise the Body–Food Choice Congruence (B-FCC) subscale. This domain assesses a component of intuitive eating that honour health by practicing a gentle nutrition, that is, the tendency for choosing foods that promote one's health and body functioning (Tribole & Resch, 1996). The new developed Intuitive Eating Scale-2 (IES-2) was initially composed by 38-items. An exploratory factor analysis retained 23-items with a four-factor solution which accounted for 65.06% of the variance for college women and 63.92% for college men. This factor structure was

confirmed in a subsequent second-order confirmatory factor analysis for the overall sample.

The development of a measure of intuitive eating allowed for gathering a growing knowledge on the role of intuitive eating on relevant indicators of mental health. Specifically, research in this field has found strong negative associations between intuitive eating and eating disorder symptomatology (Shouse & Nilsson, 2011; Tylka, 2006; Tylka & Kroon Van Diest, 2013; Tylka & Wilcox, 2006), body shame, poor awareness of internal body states, such as emotions, hunger, and satiety (i.e., poor interoceptive awareness), negative affect (Tylka & Kroon Van Diest, 2013), thin-ideal internalization (Tylka, 2006; Tylka & Kroon Van Diest, 2013), and body mass index (Augustus-Horvath & Tylka, 2011; Dockendorff et al., 2012; Tylka, 2006; Tylka & Kroon Van Diest, 2013). Further investigations on this field revealed that intuitive eating was found to be positively associated with body appreciation (Augustus-Horvarth & Tylka, 2011; Avalos & Tylka, 2006; Tylka & Kroon Van Diest, 2013) and positive affect (Tylka & Kroon van Diest, 2013). Intuitive eating has also been found associated with a number of measures of psychological health and/or well-being, such as self-esteem, optimism, proactive coping, satisfaction with life (Tylka, 2006; Tylka & Kroon Van Diest, 2013; Tylka & Wilcox, 2006), and awareness and acceptance of emotions and different emotional states (Shouse & Nilsson, 2011). Thus, results found by the previous research provide preliminary data revealing that intuitive eating may have important benefits for physical and mental health, namely eating related attitudes and behaviours. This justifies the importance of continuing to investigate this construct and its correlates.

Theoretical and empirical accounts have also been relating intuitive eating with mindfulness and acceptance-based approaches to eating psychopathology (Bacon & Aphramor, 2011), since they focus on the cultivation of greater awareness of hunger and satiety cues as well as on emotional states and external triggers to eating behaviour. These approaches promote therefore emotion regulation and a more adaptive and decentered relationship with one's internal experiences. In fact, this ability to observe one's thoughts and emotions as temporary and objective events in the mind, that do not require particular behaviours in their response (e.g., eating; Fresco et al., 2007), has been highlighted as a key mechanism in recent mindfulness-based approaches to body image and eating difficulties (e.g., Kristeller, Baer, & Quillian-Wolever, 2006).

Another aspect of the new approaches focuses on the ability to experience the difficult perceptions, sensations, feelings, thoughts, and beliefs associated with one's body fully and intentionally while pursuing chosen values, defined as *body image flexibility* (Sandoz, Wilson, Merwin, & Kellum, 2013). Body image flexibility has been highlighted as a protective factor for eating psychopathology (e.g., Ferreira, Pinto-Gouveia, & Duarte, 2011). On the other hand, inflexibility with distressing thoughts and feelings seems to be associated with eating psychopathology (e.g., Merwin, Zucker, Lacy, & Elliott, 2010), namely binge eating (Barnes &

Tantleff-Dunn, 2010).

Despite the constructs of psychological flexibility (i.e., in particular this one related to body image) and intuitive eating seem theoretically coherent and able to work as protective factors for eating psychopathology, namely binge eating, this association was not yet examined.

Thus, research has been suggesting the importance of promoting adaptive eating and acceptance. Understanding how individuals may to learn to recognize and trust their body's cues and to adopt a decentered and nonreactive attitude to negative emotions or thoughts to regulate their eating behaviour, may have important implications at both prevention and intervention levels. Nonetheless, research on the role and interaction of an adaptive relationship with one's body and eating to explain lower levels of disordered eating behaviours, namely in women (Tylka, 2006; Tylka & Kroon Van Diest, 2013), remains scant. Thus, the development and examinations of measures that may accurately capture adaptive attitudes regarding body image and eating behaviours, such as intuitive eating, seems to be of particular importance.

The current study aimed at testing the factorial structure and the psychometric properties of the IES-2. Also, the current study intended to examine the associations between intuitive eating and other measures of well-being, as body image flexibility and decentering, favourable comparisons with others based on the physical appearance domain, and also measures associated with eating psychopathology, namely binge eating, body mass index, body image shame, and general psychopathology. Moreover, a complementary analysis was conducted to further understand the role of intuitive eating among other processes relevant to eating behaviours. In particular, a mediator model was tested investigating whether body image flexibility predicts lower levels of binge eating, through its impact on higher levels of intuitive eating.

Methods

Participants

Six hundred and twenty-seven females from the Portuguese general population were recruited to participate in the current study. Data from 24 women who did not complete at least 90% of any given measure were not entered into the data. In order to obtain a similar sample to that used for Tylka and Kroon Van Diest (2013) participants with an age range between 18 and 55 years were included, being eliminated data from 26 participants. Twelve participants whose education was below the 5th grade, and 20 cases whose Mahalanobis Distance values indicated to be outliers were deleted, obtaining a final sample of 545 participants. Two hundred and seventy-nine (51.2 %) were undergraduate female Portuguese students and 266 (48.8%) were participants recruited from the general population.

The sample presented an age range mean of 28.30 (SD = 10.20) years, and a years of education mean of 13.00 (SD = 2.66). Two hundred and seventy-eight (51%) were students, 126 (23.1%) presented medium

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socioeconomic status, 102 (18.8%) presented low socioeconomic status, and 39 (7.1%) were others conditions. Regarding marital status, 363 (66.7%) of the participants were single, 145 (26.7%) were married, 23 (4.2%) were divorced, 12 (2.2%) were living with partner, and one (0.2 %) widow. The participants' Body Mass Index (BMI) mean was 22.69 (*SD* = 3.70). Four hundred and seventeen participants (76.51%) belonged to the interval "normal weight", 97 (17.80%) belonged to the interval "pre-obese", 20 (3.67%) belonged to the interval "obese class I", six (1.10%) belonged to the interval "obese class II", and five (0.92%) belonged to the interval "underweight" (WHO, 1995). Forty-six participants, randomly selected from the original sample, completed the retest of IES-2 after a 3 to 4 week interval.

Procedure

All the participants in this study were volunteers who gave their informed consent to answer a set of self-report questionnaires. They were, previously, informed about all the procedures and aims of this research, and of the confidentiality of their answers. The sample of the general population was a convenience sample, obtained in different industrial sectors and other contexts. The sample of students was obtained in Higher Education Institutions of the central region of Portugal, particularly in the context of the classroom, after formal consent of the teacher responsible for its class. All involved institutions provided their consent to conduct this study.

Measures

The psychometric properties of the instruments constituting the research protocol are described in the following text.

Body Mass Index (BMI). BMI was measured trough the individual's weight divided by the squared height (Kg/m^2).

Intuitive Eating Scale -2 (IES-2; Tylka & Kroon Van Diest, 2013; Portuguese version of Duarte & Pinto-Gouveia, 2013). IES-2 allows the assessment of participants' tendency to eat intuitively. The IES-2 includes 23-items that compose four subscales: 1) Eating for Physical Reasons Rather Than Emotional Reasons (EPR with 8-items [e.g., "I find myself eating when I am lonely, even when I'm not physically hungry"]); 2) Unconditional Permission to Eat (UPE with 6-items [e.g., "If I am craving a certain food, I allow myself to have it"]); 3) Reliance on Hunger and Satiety Cues (RHSC with 6-items [e.g., "I trust my body to tell me how much to eat"]); 4) and Body-Food Choice Congruence (B-FCC with 3-items [e.g., "Most of the time, I desire to eat nutritious foods"]). Participants are asked to rate each item on a 5-point Likert scale (1 = *Strongly disagree* to 5 = *Strongly agree*) selecting the option that best describes their attitudes or behaviours. High values suggest higher levels of intuitive eating. The total 23-item IES-2 presented a Cronbach's alpha value of .87, EPR subscale of .93, UPE subscale of .81, RHSC subscale of .88, and B-FCC subscale of .87, for females. It also showed high levels of convergent validity and test-retest reliability across 3-week. The translation and adaptation of the Portuguese

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version of the IES-2 was performed by investigators that dominate English and Portuguese languages through rigorous procedures of translation and back translation, with the consent of the authors of the original scale. The content of the items was discussed with experts in the field.

Eating Disorders Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994, 2008; Portuguese version of Machado, 2007) is a self-report version of Eating Disorders Examination (EDE; Fairburn & Cooper, 1993) and the clinical interview mostly used by clinicians and researchers to assess eating psychopathology. This scale provides four sub-scales: Restraint (5-items), Eating Concern (5-items), Weight Concern (5-items) and Shape Concern (8-items). The global score is the average of the four subscale scores. Higher EDE-Q scores reveal greater severity of eating psychopathology. This scale revealed Cronbach's alpha values ranging from .78 for the Eating Concern subscale to .93 for the Shape Concern subscale. In the current study, the following values were obtained: .80 for the Restraint, .78 for the Eating Concern, .93 for the Shape Concern, .83 for the Weight Concern and .90 for the total EDE-Q.

Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982; Portuguese version of Duarte, Pinto-Gouveia, & Ferreira, 2014). The BES is a 16-item scale that assesses attitudes (i.e., eating large amounts of foods) and feeling/cognitions (i.e., loss of control, fear, and guilt of being unable to stop eating) of binge eating. Each item includes a group of statements and participants are asked to select one sentence that best describes their experience. Items are rated on either a 3 or 4 point scale, and the total score can vary between 0-46 points, measuring the severity of binge eating. High scores (equalling or exceeding a value of 27) reflect severe levels of binge eating. Low scores (i.e., less than or equalling a value of 17) indicate likely minimal to absent problems of binge eating. The original version demonstrated high internal consistency. The Portuguese version also revealed high internal consistency (.88) in a nonclinical sample. In the present study a Cronbach's alpha value of .88 was obtained.

Social Comparison through Physical Appearance Scale (SCPAS; Ferreira et al., 2013). This scale assesses social comparison, according to how one compares oneself with others, using physical appearance (e.g., *Upper/Lower, Different/Equal*). This instrument has two parts: Part A, with 11-items, assesses social comparison with proximal targets, such as colleagues and friends; and Part B, with 12-items, in which the comparison targets are models, actresses and other celebrities. The participants are asked to indicate the value that best reflect how they feel compared to the other people, using a Likert scale (1-10 points). This scale showed high Cronbach's alpha values of .94 in Part A (Peers) and .96 in Part B (Models); Ferreira et al., 2013). In current study, the internal consistency reliability value was of .94 for the subscale peers and of .96 for the subscale models.

Depression Anxiety Stress Scales - 21 (DASS-21; Lovibond & Lovibond, 1995; Portuguese version of Pais-Ribeiro, Honrado, & Leal, 2004). This is a short version from the original version (Depression Anxiety Stress Scales – 42) developed by Lovibond and Lovibond's (1995). The

DASS-21 consists of three subscales, with 7-items each, assessing depression, anxiety, and stress symptoms. Participants respond on a 4-point scale (0-3) the extent to which each statement has been experienced over the past week. The original version had good internal consistency reliability with Cronbach's alpha values of .88 for depression, .82 for anxiety, and .90 for stress (Henry & Crawford, 2005). Also, Portuguese version (Pais-Ribeiro, Honrado, & Leal, 2004) presented high values of .85 for depression, .74 for anxiety, and .81 for stress. The present research also found good internal consistency reliability with Cronbach's alpha coefficients of .87 for the subscale depression, .85 for the subscale anxiety, and of .91 for the subscale stress.

Body Image Shame Scale (BISS; Duarte, Pinto-Gouveia, Ferreira, & Batista, 2013)**.** The BISS assesses body image shame. This scale consists of two subscales, with 7-items each: 1) the externalized body image shame subscale reports the avoidance degree of social situations in order to avoid negative evaluations, regarding one's body image, by others; 2) the internalized body image shame subscale reports the presence of negative self-evaluations about one's body image and the presence of behaviours in order to manipulate body image exposure. The participants are asked to rate each item, through a 5-point Likert scale (ranging from 0 = *Never* to 4 = *Almost always),* the frequency with which they experience feelings of shame regarding one's body image. The original version revealed good internal consistency reliability with values of .92 for total scale, .89 for the subscale externalized body image shame, and .90 for the subscale internalized body image shame. The present research analysed only the total scale and was found good internal consistency reliability with a Cronbach's coefficient alpha of .95.

Experiences Questionnaire (EQ; Fresco et al., 2007; Portuguese version of Pinto-Gouveia, Gregório, Duarte, & Simões, 2012) is a 20-item self-report inventory that was designed to measure decentering, that is, the capacity to observe one's thoughts and feelings as temporary, objective events in the mind, as opposed to reflections of the self that are necessarily true. The EQ assesses decentering through 14-items and includes 6 control items measuring rumination. Participants are asked about how often they have similar experiences to those described. Items are rated on a 5-point Likert scale (1 = *Never,* 5 = *All the time*). The Cronbach's coefficients alpha revealed high internal consistency reliability, both for the original and the Portuguese versions, respectively, .83 and .91. In the current study, the internal consistency reliability value was of .84.

Body Image–Acceptance and Action Questionnaire (BI-AAQ; Sandoz, et al., 2013; Portuguese version of Ferreira, et al., 2011). This measure includes 12 items and assesses body image flexibility, that is, the ability to experience the ongoing perceptions, thoughts, beliefs, sensations and feelings, related with one's body entirely and intentionally while pursuing chosen values. Participants are asked to rate the truth of each statement as it applies to them. Items are rated in 7-points Likert scale from 1 (*never true*) to 7 (*always true*). Internal consistency reliability was high for the original

version (i.e., .92 and .93, in four administrations with three different samples) and also for Portuguese version (.95). The present research found good internal consistency reliability with a Cronbach's coefficient alpha of .96.

The descriptive statistics for each measure are presented in Table 2.

Analytic Procedure

A second-order confirmatory factor analysis (CFA) was conducted using the version 20.0 of the SPSS (Statistical Package for the Social Sciences) and the software AMOS (version 20, SPSS Inc, Chicago, IL, USA) to analyse the factorial structure of the Portuguese version of the IES-2.

The internal consistency reliability of the IES-2 was assessed through the Cronbach's coefficients alpha and item-total correlation. The composite reliability (CR) and average variance extracted (AVE) were calculated manually to additionally measure construct reliability and convergent validity of the factors.

The convergent and divergent validities were also assessed by computing *Pearson* product-moment correlation coefficients between the subscales and the total of the IES-2 and the other study variables. Correlations with a magnitude between .10 and .30 were considered low, .30 and .50 were considered moderate, and correlations greater than .50 were considered with a high magnitude, according to Cohen (1988).

Test-retest reliability was examined through *Pearson* product-moment correlations and Student *t*-Test for Paired-Samples.

To better understand if the IES-2 discriminates between participants with low scores of binge eating and participants with moderate to high scores of binge eating a Student *t*-Test for independent samples was conducted.

Finally, the mediator effect of intuitive eating (mediator measured by the IES-2) on the relationship between body image flexibility (independent variable assessed by the BI-AAQ) and binge eating (dependent variable measured by the BES), controlling for the effect of depression (measured by the DASS-21), was examined in a path analysis on a dual mediator model, using the software AMOS.

The results obtained with $p < .05$ were considered statistically significant.

Results

Confirmatory Factor Analysis of the IES-2

The measurement model of the IES-2 was examined through a second-order confirmatory factor analysis (CFA) in order to understand if the theoretical model proposed by Tylka and Kroon Van Diest (2013) was capable of reproducing the same correlational structure of manifest variables observed in the current sample. Multivariate normality assumption was

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preliminarily examined. Skewness and Kurtosis values ranged between -1.10 and 0.67, which are acceptable values, which did not indicate a serious bias to normal distribution (SK < |3| and Ku < |10|; Kline, 2005). Adequacy of the model fit was determined using a series of recommended goodness-of-fit indices (Kline, 2005; Tabachnik & Fidell, 2007; Maroco, 2010): first was used the chi-square goodness-of-fit index – $\chi^2_{(df)}$ – whose no significant result suggests that the data are consistent with the model. Nevertheless, since this index is very sensitive to the sample size, we examined other global fit indices: the normed chi-square (CMIN/*df*) whose value is acceptable when CMIN/*df* < 5 (Arbuckle, 2008; Maroco, 2010); the comparative fit index (CFI), and the Tucker and Lewis index (TLI). These last indices range between 0 (i.e., no fit) and 1 (i.e., perfect fit) with values ≥ .90 suggesting an adequate fit (Byrne, 2010). We also examined the Root Mean Square Error of Approximation index (RMSAE) which indicate that the model fit is adequate when RMSEA < .08 (Arbuckle, 2008). The quality of the local fit was assessed by factor loadings (i.e., Standardized Regression Weights) and individual reliability of the items (i.e., Squared Multiple Correlations).

The model tested in the second-order CFA was identical to the measurement model proposed by the authors of the original version of the scale. We used the same procedure as the authors of the original IES-2 with a maximum Likelihood estimation and the covariance matrix as input. Figure 1 shows the graphic representation of the theoretical model initially tested.
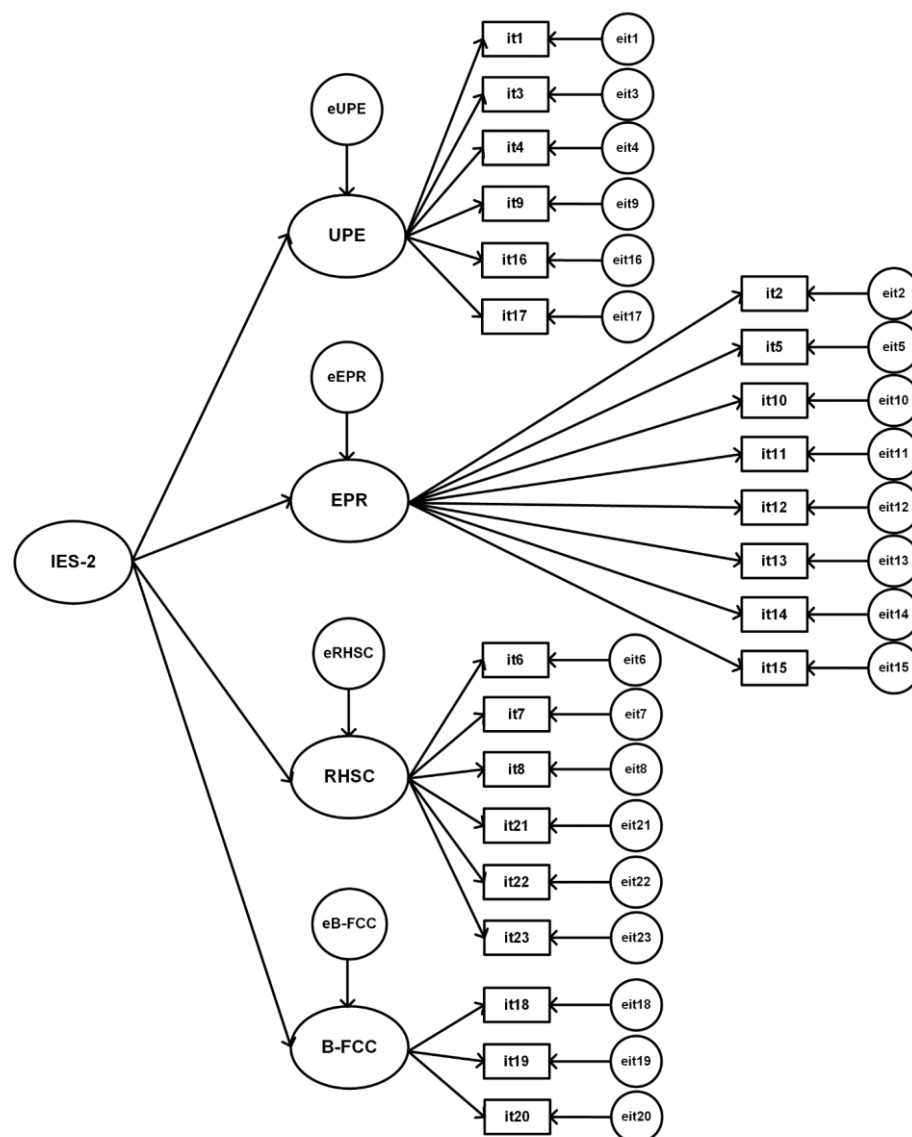
Figure 1. Graphic representation of the IES-2 original factorial structure.

The hypothesized model presented the following fit indices: $\chi^2_{(226)} = 1193.07$ ($p < .001$) and CMIN/df = 5.28; CFI = .85; TLI = .83; RMSEA = .09, 95% CI = [.08 to .09]; $p < .001$. The analysis of these indices indicated that the model had an inadequate fit to the data (Byrne, 2010; Arbuckle, 2008; Maroco, 2010). Were found higher modification indices (MI) between errors of the items 22 and 23 (MI = 165.44), 13 and 14 (MI = 98.57), 12 and 15 (MI = 41.92), 21 and 22 (MI = 32.69), and 14 and 15 (MI = 29.23). Given that some of these items had similar content they were expected to share method variance (i.e., two items that begin with "When I am lonely, I do NOT...," two items that end with "...to tell me when to stop eating," and two items that end with "...signals to tell me when to...") and thus they were progressively correlated (permitting correlated error within the same subscale) according to recommended standards (Kline, 2005). This resulted in improvement of the model, with the final four-factor model presenting the

following model fit indices: $\chi^2_{(221)} = 773.926$ and CMIN/df = 3.50, $p < .001$; CFI = .91; TLI = .90; RMSEA = .07, 95% CI = [.06 to .07]; $p < .001$. The analysis of these indices indicated that the model had a good adequacy of fit (Arbuckle, 2008; Byrne, 2010; Maroco, 2010).

Regarding the individual parameters, all the items, excluding items 13 (.41) and 18 (.49), saturated in the four factors in the sense postulated with factor weights ranging from .60 (item 1) to .68 (item 16) for UPE, .41 (item 13) to .89 (item 11) for EPR, .54 (item 22) to .84 (item 6) for RHSC, and .49 (item 18) to .88 (item 19) for B-FCC. The individual reliability's values ranged from .37 (item 1) to .46 (item16) for UPE, .17 (item 13) to .79 (item 11) for EPR, .30 (item 22) to .71 (item 6) for RHSC, and .24 (item 18) to .77 (item 19) for B-FCC. Even though results indicated that items 13 ("When I am bored, I do NOT eat just for something to do") and 18 ("Most of the time, I desire to eat nutritious foods") were problematic, they were maintained in the model keeping the original factorial structure of the IES-2. Overall, all items loaded significantly on their respective first-order latent factor, and each first-order factor loaded significantly on the second-order intuitive eating factor (Table 1).

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Table 1.

Standardized Item Factor Loadings from Confirmatory Factor Analysis, properties of Items of IES-2, Corrected item-total correlations and Cronbach's Alphas (α) if Item deleted in each of the four factors (N = 545)

Factor and IES-2 item	First-order λ	R^2	Second-order	M	SD	Item-total Correlation	α if item deleted
Factor 1: UPE (α = .80)			.34				
1. I try to avoid certain foods high in fat, carbohydrates, or calories.	.60	.37		2.77	1.12	.56	.76
4. I get mad at myself for eating something unhealthy 9. I have forbidden foods that I don't allow myself to eat.	.61	.37		3.23	1.16	.54	.77
9. I have forbidden foods that I don't allow myself to eat.	.62	.39		3.58	1.11	.57	.76
3. If I am craving a certain food, I allow myself to have it.	.62	.39		3.84	0.79	.53	.77
16. I allow myself to eat what food I desire at the moment.	.68	.46		3.66	0.85	.56	.77
17. I do NOT follow eating rules or dieting plans that dictate what, when, and/or how much to eat.	.67	.45		3.58	1.02	.59	.76
Factor 2: EPR (α = .90)			.47				
2. I find myself eating when I'm feeling emotional (e.g., anxious, depressed, sad), even when I'm not physically hungry.	.87	.76		3.01	1.18	.78	.88
5. I find myself eating when I am lonely, even when I'm not physically hungry.	.76	.58		3.24	1.11	.70	.88
10. I use food to help me soothe my negative emotions.	.87	.75		3.44	1.14	.79	.88
11. I find myself eating when I am stressed out, even when I'm not physically hungry.	.89	.79		3.25	1.18	.79	.88
12. I am able to cope with my negative emotions (e.g., anxiety, sadness) without turning to food for comfort.	.59	.34		3.59	1.02	.60	.90
13. When I am bored, I do NOT eat just for something to do.	.41	.17		3.40	1.05	.46	.91
14. When I am lonely, I do NOT turn to food for comfort.	.70	.48		3.58	1.02	.75	.88
15. I find other ways to cope with	.63	.41		3.93	0.79	.67	.89

stress and anxiety than by eating.

				M	SD		
Factor 3 : RHSC (α = .88)			.90				
6. I trust my body to tell me when to eat.	.84	.71		3.50	0.93	.74	.85
7. I trust my body to tell me what to eat.	.71	.50		3.07	0.91	.62	.87
8. I trust my body to tell me how much to eat.	.81	.65		3.39	0.92	.72	.85
21. I rely on my hunger signals to tell me when to eat.	.68	.47		3.57	0.80	.66	.86
22. I rely on my fullness (satiety) signals to tell me when to stop eating.	.54	.30		3.72	0.83	.61	.87
23. I trust my body to tell me when to stop eating.	.74	.55		3.61	0.87	.76	.84
Factor 4 : B-FCC (α = .77)			.41				
18. Most of the time, I desire to eat nutritious foods.	.49	.24		3.54	0.79	.46	.85
19. I mostly eat foods that make my body perform efficiently (well).	.88	.77		3.64	0.80	.69	.58
20. I mostly eat foods that give my body energy and stamina.	.84	.71		3.61	0.72	.67	.61

Internal consistency reliability, composite reliability and average variance extracted

Table 1 presents the means (*M*), standard deviations (*SD*), item-total correlation and the internal reliability coefficients of the IES-2 for subscales and total.

Results suggested good internal consistency reliability for the total IES-2 and the four dimensions (see Table 1). Respectively, were found high values of internal consistency reliability for total scale of .88, .80 for UPE, .90 for EPR, .88 for RHSC, and modest for B-FCC with a Cronbach's coefficient alpha of .77 (Nunnally & Bernstein, 1994).

All items showed item-total correlation coefficients of .46 or above, pointing out the quality and suitability of the items for each subscale. Accordingly, were found values that ranged between .46 (items 13 and 18) and .79 (item 11). All single items were correlated with the totality of each subscale, presenting values that ranged between .53 and .59 for UPE, .46 and .79 for EPR, .61 and .77 for RHSC, and .46 and .69 for B-FCC.

Deleting any item would result in an improvement in the value of internal consistency. An exception were items 13 and 18 which results indicated that deleting item 13 from EPR would result in a negligible improvement of the internal consistency reliability of the subscale EPR (α = .91); and the removal of item 18 from B-FCC would improve the internal consistency of B-FCC (α = .85; see Table 1).

Nonetheless, composite reliability values of .87 for UPE, .93 for EPR, .92 for RHSC, and .86 for B-FCC were obtained. Regarding average variance extracted (AVE) were found values of .53 for UPE, .65 for EPR, .66 for RHSC, and .68 for B-FCC. These results indicated high construct reliability and adequate convergent validity. The discriminant validity of the subscales was assessed through the comparison of AVE and the squared correlation between subscale (r^2) values. Being AVE values of the subscales higher than r^2 between each pair of the subscales, results suggested that the four factors have good discriminant validity.

IES-2 association with other measures

Pearson's (*r*) product-moment correlation coefficients were calculated to measure the degree of linear correlation between the four factors and the total scale (Table 2). The total IES-2 was found to be positive and significantly correlated with the four subscales of the IES-2, presenting high magnitudes of correlation for the subscales UPE, EPR and RHSC, and moderate for B-FCC.Thus, it was observed that the subscales EPR and RHSC were found to be positive and significantly correlated, presenting a moderate magnitude of correlation; the subscales RHSC and B-FCC were found to be positive and significantly correlated, presenting a moderate magnitude of correlation; the subscale UPE was positive and significantly correlated with EPR and RHSC, presenting low magnitudes of correlation; and the subscales EPR and B-FCC were found to be positive and significantly correlated, presenting a low magnitude of correlation.

The results revealed that the total IES-2 and the subscale UPE were negative and significantly correlated with the subscales assessed by the EDE-Q and its total, presenting moderate and high magnitudes of correlation, respectively. The subscales EPR and RHSC were also negative and significantly correlated with the subscales of EDE-Q and its total, presenting moderate magnitudes of correlation, excluding the subscale restraint which presented low magnitudes of correlation. Low magnitudes of correlation were also verified between the subscale B-FCC and all subscales (excluding the subscale restraint) and the total score of the EDE-Q.

Regarding binge eating symptoms, it was found that the total IES-2 and the subscales EPR and RHSC were negative and strongly correlated with the BES. The subscale UPE was found to be negative and moderately correlated with the BES. The subscale B-FCC was also negative and significantly correlated with the BES, presenting a low magnitude of correlation.

In regard to the correlations between the IES-2 total score and subscales and the remaining study variables, the total IES-2 and the subscale UPE were found to be negative and significantly correlated, presenting moderate magnitudes of correlation, with the BMI. The remaining subscales EPR, RHSC and B-FCC were found to be negative and significantly correlated, presenting low magnitudes of correlation, with the BMI.

The total IES-2 was found to be negative and significantly correlated

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with the total BISS, presenting a high magnitude of correlation. The subscales EPR and RHSC were found to be negative and significantly correlated with the total BISS, presenting moderate magnitudes of correlation. The subscales UPE and B-FCC were found to be negative and significantly correlated with the total BISS, with low magnitudes of correlation.

The total IES-2 was found to be negative and significantly correlated with anxiety, depression and stress, presenting low magnitudes of correlation. The subscale EPR was found to be negative and significantly correlated with anxiety, depression and stress, presenting low magnitudes of correlation. Also, the subscale RHSC was verified to be negative and significantly associated with depression and stress, with low magnitudes of correlation. The subscale B-FCC was found to be negative and significantly correlated with depression, presenting a low magnitude of correlation.

It was also verified that the total IES-2 and the subscales EPR, RHSC, and B-FCC were positive and significantly correlated with social comparison through physical appearance, both peers and models, presenting low magnitudes of correlation. A low magnitude of correlation, positive and statistically significant, was also found between the subscales UPE and social comparison with models.

The total IES-2 and the subscale EPR were found to be positive and significantly correlated with decentering, presenting moderate magnitudes of correlation. Regarding other subscales, UPE, RHSC, and B-FCC were found to be positive and significantly correlated with decentering, presenting low magnitudes of correlation.

Finally, the total IES-2 was found to be positive and significantly correlated with body image flexibility, presenting a high magnitude of correlation. The subscales UPE, EPR, and RHSC were found to be positive and significantly correlated with body image flexibility, presenting moderate magnitudes of correlation. The subscale B-FCC was found to be positive and significantly correlated with body image flexibility, presenting a low magnitude of correlation.

Table 2.

Pearson (r) product-moment correlation coefficients between the four factors and the total IES-2 and the remaining study variables (N = 545)

	M	*SD*	UPE	EPR	RHSC	B-FCC	total IES-2
UPE	3.44	0.72	1				
EPR	3.43	0.82	.22**	1			
RHSC	3.48	0.69	.27**	.41**	1		
B-FCC	3.60	0.64	-.08	.24**	.32**	1	
total IES-2	3.47	0.51	.57**	.83**	.74**	.38**	1
BMI	22.69	3.70	-.36**	-.30**	-.28**	-.13**	-.42**
BES	6.70	6.49	-.31**	-.61**	-.51**	-.29**	-.69**
total EDE-Q	0.99	1.04	-.51**	-.45**	-.44**	-.18**	-.62**
Restraint	0.76	1.06	-.55**	-.26**	-.28**	-.02	-.45**
Eating Concern	0.51	0.84	-.40**	-.46**	-.44**	-.19**	-.59**
Weight Concern	1.31	1.36	-.41**	-.43**	-.43**	-.21**	-.58**
Shape Concern	1.36	1.45	-.44**	-.43**	-.41**	-.20**	-.58**
DASS-21							
Depression	3.49	3.94	-.02	-.27**	-.12**	-.12**	-.22**
Anxiety	3.12	3.80	-.05	-.20**	-.03	-.06	-.15**
Stress	6.16	4.77	-.04	-.20**	-.14**	-.06	-.19**
SCPAS							
Peers	63.86	16.04	.07	.22**	.13**	.17**	.22**
Models	57.79	17.97	.12**	.28**	.19**	.16**	.30**
BISS	0.92	0.80	-.28**	-.46**	-.34**	-.21**	-.51**
EQ	34.20	5.18	.11*	.32**	.22**	.25**	.34**
BI-AAQ	67.61	15.65	.39**	.42**	.38**	.19**	.55**

Note: IES-2 = Intuitive Eating Scale 2; UPE = Unconditional Permission to Eat; EPR = Eating for Physical Reasons Rather Than Emotional Reasons; RHSC = Reliance on Hunger and Satiety Cues; B-FCC = Body-Food Choice Congruence; BMI = Body Mass Index; BES = Binge Eating Scale; EDE-Q = Eating Disorders Examination Questionnaire; DASS-21 = Depression Anxiety Stress Scales – 21; SCPAS = Social Comparison through Physical Appearance Scale; BISS = Body Image Shame Scale; EQ = Experiences Questionnaire; BI-AAQ = Body Image – Acceptance and Action Questionnaire.
** $p < .001$. * $p < .05$.

Ability of the IES-2 to discriminate between participants with moderate to high scores of binge eating from low scores of binge eating

With the purpose to examine the ability of the IES-2 in discriminating between participants with moderate or high scores of binge eating from normative or low scores of binge eating – according to the cut-off score of 17 the BES (Gormally et al., 1982) - were compared two groups selected from the total sample with similar demographic characteristics through a *t*-Test of Student for Independent Samples (Table 3). The first group was composed by 39 participants with moderate to high scores of binge eating and the second group was composed by 43 participants with low scores of

binge eating. The two groups did not present statistically significant differences regarding demographic variables (age and years of education).

The two groups revealed statistically significant differences in IES-2 and its subscales, with participants with higher scores of binge eating presenting lower scores of intuitive eating compared to participants with lower levels of binge eating. An exception was verified in the subscale UPE, regarding which the two groups did not present statistically significant differences. Nonetheless, there was a trend for the group with higher levels of binge eating to present lower levels on the subscale UPE, in comparison to the group with lower levels of binge eating.

Table 3.

Ability of the IES-2 in discriminating between participants with moderate or high scores of binge eating from participants with low scores of binge eating

	Low BE (n = 43)		Moderate to high BE (n = 39)			
	M	*SD*	*M*	*SD*	*t*	*p*
total IES-2	3.29	0.42	2.64	0.43	-6.86	< .001
Unconditional Permission to Eat	3.28	0.48	3.07	0.75	-1.57	= .129
Eating for Physical Reasons Rather Than Emotional Reasons	3.10	0.73	2.30	0.70	-5.08	< .001
Reliance on Hunger and Satiety Cues	3.38	0.77	2.48	0.64	-5.78	< .001
Body-Food Choice Congruence	3.60	0.65	3.03	0.79	-3.54	< .005
Age	27.81	10.95	28.13	10.99	0.13	= .897
Years of education	12.60	2.21	12.26	2.58	-0.65	= .516

Note: Low BE = Participants with low scores of Binge Eating; Moderate to high BE = Participants with moderate to high scores of Binge Eating.

Test–retest reliability

Pearson's (*r*) *c*orrelation coefficients and Student *t*-Test for Paired-Samples were used to estimate the stability of the IES-2 scores. Forty-six participants were randomly selected to fill the second administration of the IES-2 after a 4-month period.

The magnitudes of correlation between the first and the second administrations were high, respectively, .78 for total IES-2, .77 for UPE, .81 for EPR, .78 for RHSC, and .67 for B-FCC (*p* < .001). Also, no statistically significant differences between test and retest were found, which confirms the temporal stability of the instrument (IES-2 total, *t* = 0.05, *p* = .963; UPE, *t* = 0.28, *p* = .784; EPR, *t* = -0.71, *p* = .480; RHSC, *t* = 0.20, *p* = .841; B-FCC, *t* = 1.64, *p* = .109).

The mediator effect of intuitive eating on the relationship between body image flexibility and binge eating

The mediator model was tested through a path analysis, which is considered as an adequate statistical methodology which allows for the simultaneous examination of structural relationships, and the direct and indirect effects between exogenous and endogenous variables, controlling for associated errors (Byrne, 2010; Kline, 2005; Maroco, 2010).

Prior to examining the model *Pearson* Product-moment correlation analyses were conducted to examine the correlations between body image flexibility, binge eating, intuitive eating and depression. Findings confirmed that the variables presented significant correlations between them ($p < .001$). In particular, body image flexibility was negative and strongly correlated with binge eating ($r = -.63$) and depression ($r = -.38$). Lastly, a significant positive association was found between binge eating and depressive symptoms ($r = .28$).

The Maximum Likelihood method was conducted to test for the significance of the model path coefficients and to compute fit indices. The following goodness-of-fit indices were elected to analyse the plausibility of the model: $\chi^2_{(df)}$; CMIN/df; TLI; CFI; and RMSEA. The significance of the effects was analysed by the Bootstrap resampling procedure (with 2000 samples). The results were achieved as significantly different from zero at the .05 level if the 95% CI not included the zero (Kline, 2005).

On the initial saturated model all paths were statistically significant except for the direct effect of depression on binge eating ($b = .09$; SEb = .05; $Z = 1.85$; $p = .065$; $\beta = .06$). This path was eliminated and the model was re-specified. The nested model revealed a very good model fit ($\chi^2_{(1)} = 3.40$; $p = .07$; CMIN/$df = 3.40$; CFI = 1.00; TLI = .98; RMSEA= .07; $p = .248$).

All the paths were statistically significant and the model explained 56% of binge eating variance. Additionally, 30% of intuitive eating variance and 13% of depression variance were explained by body image flexibility.

Body image flexibility predicted lower levels of binge eating presenting a total effect of -.63 and a direct effect of -.36 ($b = -.15$; SEb = .01; $Z = -10.60$; $p < .001$). Also, body image flexibility presented a direct effect of .55 on increased intuitive eating ($b = .02$; SEb = .001; $Z = 15.07$; $p < .001$) and of -.37 on decreased depression ($b = -.09$; SEb = .01; $Z = -9.15$; $p < .001$; $\beta = -.37$). Intuitive eating negatively predicted binge eating presenting a direct effect of -.49 ($b = -6.20$; SEb = .43; $Z = -14.34$; $p < .001$).

The indirect effect was examined and was found that body image flexibility decrease binge eating levels through higher levels of intuitive eating ($\beta = -.27$; 95% CI = [-.31, -.22]) while controlling for the effect of depression. The effect was considered highly significant ($p < .001$) according to the bootstrap resampling method. Figure 2 shows the nested model with standardized regression coefficients and standardized regression weights.

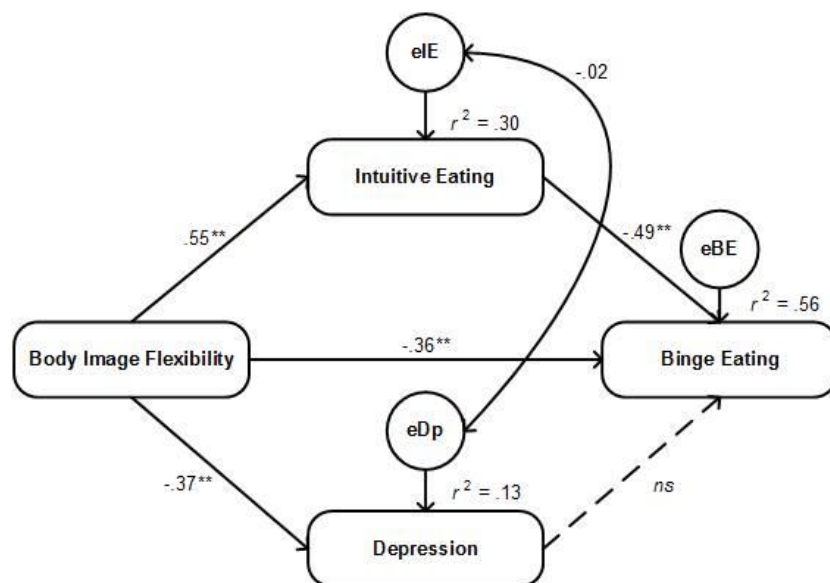When Intuitive Eating appears as a protective factor for disordered eating behaviours:
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Figure 2. The nested model.

** *p* < .001

Discussion

This study aimed at examining the psychometric properties of a new version of the measure of intuitive eating (Tylka & Kroon Van Diest, 2013), a self-report scale that enables, in a brief, valid and reliable way, to assess if subjects have the ability to regulate their food intake by responding to internal hunger and satiety cues rather than emotional cues. In particular, this study aimed at contributing to provide psychometric support for a self-report measure of intuitive eating in a sample of Portuguese women from general population and college students, with an ample age range. The use of this sample pretended to answer to a limitation pointed out by Tylka and Kroon Van Diest (2013), since they used a sample composed only by college students, making difficult the generalization of the scale use in more representative samples of the general population.

On what concerns the psychometric qualities of the IES-2, the original four-factor structure was replicated through a second-order confirmatory factor analysis (CFA): Unconditional Permission to Eat (6-items), Eating for Physical Reasons Rather Than Emotional Reasons (8-items), Reliance on Hunger and Satiety Cues (6-items) and Body-Food Choice Congruence (3-items). The hypothesized latent factors loaded on a higher order latent factor (in particular, RHSC subscale presented higher factor loading on the second-order intuitive eating, as found by Tylka and Kroon Van Diest, 2013), providing empirical support for the assertion that IES-2 factors are theoretically distinct and assess domains of the intuitive eating construct. As expected the chi-square goodness-of-fit index was significant given the large sample size. Nonetheless, The other goodness-of-fit indexes were overall adequate. However, regarding the individual parameters, findings suggested

that the items 13 ("When I am bored, I do NOT eat just for something to do") and 18 ("Most of the time, I desire to eat nutritious foods") were problematic, and their elimination could possibly allow achieving a better model fit to the data. A possible explanation for the results obtained for these items may rely on the fact that these items may be worded with ambiguous content resulting in a difficult understanding for the Portuguese population. Specifically, item 18 was written to assess the desire for eating nutritious foods most of the time, but according to the Portuguese culture and generally adopted eating pattern based on Mediterranean diet, it is possible to get a variety of answers on what each individual considers healthy or nutritious. Further studies should verify if these items remain problematic, thus pondering their clarification or exclusion from the Portuguese version of the IES-2.

Overall, the 23 IES-2 items were found to measure intuitive eating with good reliability. Specifically, internal reliability coefficients for the total and subscales were high, indicating that this instrument has a good reliability as item-total correlations, being a good indicator of construct validity (i.e., corroborating the quality and adequacy of the items to what this scale measure). However, results revealed that the Cronbach's alpha coefficients of the subscales EPR and B-FCC would improve with the deletion of items 13 and 18, respectively. These findings are congruent with findings in the second-order CFA indicating that future research should play a closer attention to the translation and adaption of these items in order to achieve items more easily understood according to our culture. Nevertheless, the remaining internal reliability analysis, confirmed that the scale presents high composite reliability and the average variance extracted results revealed also adequate.

Also, the Portuguese version of the IES-2 revealed good temporal stability for the total and subscales, as found by Tylka and Kroon Van Diest (2013).

Construct validity for the IES-2, was also corroborated through the positive and significantly associations between the total scale and the subscales IES-2, and the remaining study variables. Results supported a strong negative relationship between intuitive eating and two measures of self-report disordered eating behaviour, namely global eating psychopathology assessed by EDE-Q (Fairburn & Beglin, 1994), and binge eating assessed by BES (Gormally et al., 1982). These results provide support for previous research in which intuitive eating was found to be negatively related to eating disordered behaviour, indicating that higher levels of overall intuitive eating corresponded to lower levels of eating disorder symptomatology (e.g., Tylka, 2006; Tylka & Kroon Van Diest, 2013). Moreover, intuitive eating was also negatively related to BMI, body image shame, and anxiety, depressive and stress symptoms. This was not surprising given the theoretical and empirical evidences suggested in previous research in which intuitive eating was inversely associated with BMI (e.g., Augustus-Horvath & Tylka, 2011; Tylka, 2006; Tylka & Kroon Van Diest, 2013), body dissatisfaction, drive for thinness, thin-ideal

internalization (Dockendorff et al., 2012; Tylka, 2006), and body shame (Tylka & Kroon Van Diest, 2013). Furthermore, research has found that this form of adaptive eating has been associated to few indicators, not only related to eating and body, but also related to general psychopathology, such as depressive symptomatology (Dockendorff et al., 2012; Tylka & Kroon Van Diest, 2013), Construct validity depends, nevertheless, not only on relationships with the outcome of interest, but also on association with other variables. Thus, intuitive eating was positively related to social comparison through physical appearance suggesting that women that present higher intuitive eating compare themselves more favourably both with peers as with models (that may represent the sociocultural ideal thin body). These results add to the existing studies which demonstrate this association between unfavourable comparisons and psychopathology (e.g., Ferreira et al., 2013; Troop et al., 2003), to clarify the relationship between adaptive eating and favourable comparisons. Intuitive eating was also positively related with decentering, and with body image flexibility. These findings indicated that women who are intuitive eaters are more aware of their body needs, respecting and following their internal hunger and satiety cues independently of their internal events (e.g., about their body image). Moreover, these findings suggest that these individuals seem to be more prone to observe their difficult thoughts and feelings as they are, without engaging in specific automatic behaviours in response to them (e.g., binge eating behaviours in response to negative affect; Safran & Segal, 1990). Thus, IES-2 presented good convergent and divergent validities for Portuguese version, contributing to an increased knowledge about the link between intuitive eating and constructs that seemed to be theoretically associated.

At overall, the B-FCC subscale did not show great results compared to the other subscales. Thus, future studies should continue to investigate the relevance of this subscale, and the accessibility of understanding this type of items between people from the general population.

The sensitivity of the scale in discriminating between groups of participants with low scores of binge eating from participants with moderate to high scores of binge eating from the general population was established. In fact, the participants who presented lower intuitive eating also presented higher levels of binge eating, in comparison to them who presented moderate to higher levels of intuitive eating.

Results from the path analysis further supported the relevance of intuitive eating on the understanding of lower levels of binge eating behaviours. In fact, results provided support for the hypothesis that higher levels of body image flexibility predict lower levels of binge eating, being this effect stronger when considering the mediator mechanism of intuitive eating. Specifically, this model revealed that higher levels of body image flexibility explain lower levels of binge eating and this effect was enhanced through higher levels of intuitive eating. Thus, higher levels of body image flexibility leads to a more adaptive eating and, this in turn, leads to lower engagement in binge eating attitudes and behaviours (which are considered in the literature as reactive behaviours to avoid negative affect; e.g.,

Goldfield et al., 2008). Specifically, the model provided evidences for the protective role of body image flexibility for the occurrence of binge eating, having higher effect when intuitive eating is present. Additionally, intuitive eating seems to be a protective factor against a reactive form of eating (i.e., binge eating). In fact, the ability to eat intuitively may promote an awareness of initiation and cessation of eating intake based on internal hunger and satiety cues to guide eating behaviour. Precisely, food is not consumed unconsciously being instead appreciated and satisfying the hunger needs of the human body and health (Tribole & Resch, 1996). Also, these effects were significant while controlling for the effect of depressive symptoms. To sum up, the model accounted for 56 % of the variance in binge eating, with the effect of body image flexibility being partially mediated by intuitive eating.

These results suggest the relevance of promoting and developing skills to experience and accept inner perceptions, feelings and thoughts associated with one's body and the development of a more adaptive relationship with eating. That is, developing more attention and respect for one's hunger and satiety cues, rather than regulating one's food intake through a rigid control over eating (e.g., driven by the desire to reach unrealistic weight goals to achieve a thin-ideal image).

In conclusion, the present study suggests that the IES-2 in its Portuguese version present good psychometric properties in a wide sample of women from the general population. In particular, this study confirmed that IES-2 may be a useful tool that measure intuitive eating (i.e., validity) and does it so consistently (i.e., reliability). And also contributes to a better understanding of how the IES-2 is associated to constructs which have been highlighted as important in the treatment of eating psychopathology, namely psychological flexibility. These findings extend previous research on the preliminary IES (Tylka, 2006; the Portuguese version of IES, Duarte et al., 2013), and the original version of IES-2 (Tylka & Kroon Van Diest, 2013).

Nonetheless, the results should be considered taking into account some limitations. First, despite the current study was conducted in a sample with an ample age range, the participants were only females. Thus, further work is needed to validate the scale and corroborate the present results using samples with men, in order to provide generalizability of the results to different populations (i.e., since that previous research (Tylka & Kroon Van Diest, 2013] suggested that the measurement model revealed invariant between genders, at overall). Additionally, future studies should confirm the invariability and robustness of the scale, in other samples. In particular, future research should consider whether items 13 and 18 translation and adaptation for the Portuguese population should be subject to improvement, taking into consideration cultural issues in the items' interpretation.

Moreover, future research should comprise clinical samples (e.g., patients with binge eating) to achieve more evidences for the IES-2 as a clinically useful tool, for instance sensitive to changes throughout psychological intervention programmes.

Also, data from the present study are exclusively self-report, which

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does not ensure that the participants understood the items and successfully reported their eating behaviours and real perceptions.

Furthermore, the model of the mediator effect was considered to be plausible and to adequately explain lower levels of binge eating in women from the Portuguese general population. However, further studies should test its effect in other samples (e.g., patients with clinically significant levels of binge eating), and using distinct designs (e.g., longitudinal), since the cross-sectional design of the current study limits causal conclusions to be drawn.

Regardless of these limitations, the current study contributes for a wider examination of the intuitive eating construct and provides an understanding of the psychometric properties of the Portuguese version of the scale, tested in a large sample of Portuguese women including general population and students. At overall, the IES-2 is an adequate measure, with good results, allowing improvement on research and intervention in eating behaviour and body image fields.

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