Spanish version of the irrational food beliefs scale

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Abstract

Objective: The aim of the study was to develop a Spanish adaptation of the Irrational Food Beliefs Scale (IFBS). This is important due not only to the scarcity and limitations of existing instruments in Spanish, but also to the potential of the IFBS in terms of studying the difficulties some people face in achieving healthy weight control.

Methods: Subjects were 323 secondary-level and high-school students (12-20 years; 152 females, 171 males). In addition to the IFBS, we determined the body mass index and analysed the following variables: influence of the aesthetic body shape model, perceived stress, coping strategies, self-esteem and variables from the Eating Disorders Inventory-2.

Results: The factor analysis yielded two factors corresponding to irrational and rational beliefs about food. The internal consistency (Cronbach’s alpha coefficient) of the IFBS as a whole and of the irrational and rational subscales was 0.863, 0.881 and 0.779, respectively. The analysis of correlations with the abovementioned variables showed an adequate construct validity.

Discussion: The Spanish version of the IFBS fulfils the psychometric requirements for a measure of irrational/rational food beliefs and shows adequate internal consistency and construct validity.

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Key words: Food beliefs. Irrational beliefs. Eating disorders. Obesity. Weight control.

Resumen

Objetivo: El propósito del estudio fue adaptar la Irrational Food Beliefs Scale (IFBS) a la población española. La escasez y limitaciones de instrumentos similares en nuestra lengua y las posibilidades de la IFBS para estudiar las dificultades en el control de peso de manera saludable justifican el trabajo.

Métodos: Fueron aceptados 323 estudiantes de educación secundaria y bachillerato (12-20 años; 152 mujeres, 171 hombres). Además de la IFBS, se determinó el índice de masa corporal y se analizaron las siguientes variables: influencia del modelo estético corporal, estrés percibido, estrategias de afrontamiento, autoestima y variables del Eating Disorders Inventory-2.

Resultados: El análisis factorial sugirió dos factores que representan las creencias irracionales y racionales sobre los alimentos. El índice de consistencia interna del IFBS y de sus subescalas fue de 0.863, 0.881 y 0.779, respectivamente. El análisis de correlaciones con las variables mencionadas demostró una adecuada validez de constructo.

Discusión: La IFBS, en su versión española, cubre los requisitos psicométricos para medir las creencias racionales-irracionales acerca de los alimentos, con una adecuada consistencia interna y validez de constructo.

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Introduction

Obesity and overweight have become two of the most serious health problems facing society, with recent studies in Spain reporting a prevalence of 15.5% for obesity, and 39.2% for overweight. Among school-age children the prevalence of overweightness and obesity is particularly high in the USA, the UK and south-west Europe. Research in Spain among the population aged 2-24 years has reported rates of 13.9% for obesity and 12.4% for overweight (26.3% overall).

Eating disorders (ED) are also a common problem, with the rate of anorexia nervosa among women being 0.5%, ten times the prevalence found among men. In the case of bulimia nervosa the prevalence is 1.1-4.2%, and once again the majority of sufferers are women, although the gender difference is less marked than for anorexia nervosa.

Since the construct of irrational beliefs was first formulated the association between cognitive distortions and certain behaviours, for example, phobias, has been demonstrated. These findings have been replicated in the field of ED, where research has reported a high presence of irrational thoughts and behaviours related to weight, food and body image.

One of the most relevant cognitive factors involved in the maintenance and poor control of body weight seems to be dichotomous thinking. Thus, in the treatment of obesity it has been shown that this factor can be a predictor of new weight gain. In the context of ED, patients commonly classify foods into good (lower in calories) and avoid others (higher in calories). Indeed, ED patients hold dysfunctional beliefs about diet, with especially negative thoughts concerning food. More specifically, research has shown a relationship between irrational beliefs and bulimic symptoms, as well as between such beliefs and the relative success achieved by obese people in maintaining weight loss.

The general aim of the present study was to analyse, in a Spanish population, the psychometric properties of the IFBS, including its factor structure and internal consistency. In addition, and in order to determine the construct validity, we analysed the relationships between the IFBS and several variables (Body Mass Index, Questionnaire on Influences on Body Shape Model, Perceived Stress Questionnaire, Coping Strategies Inventory, Rosenberg Self-Esteem Scale and the Eating Disorders Inventory-2) so as to evaluate the convergent and discriminant validity.

METHODS

Participants

The initial number of 571 participants was subsequently reduced to 527 after any incomplete protocols were rejected. Regarding the IFBS, only in seven cases (1.22%) the questionnaire was incomplete and then they were rejected. Among the participants nobody showed any comprehension and/or language difficulties. They were all adolescents aged 12-20 years (mean 15.83, SD=1.35) and were either secondary or high school students drawn from two state schools. There were 268 females and 303 males, a ratio that corresponded to the gender demographics of the two schools. After rejecting the incomplete protocols there were 260 females (49.33%) and 267 males (50.67%).

Objective

Some research has focussed on the variable locus of control, other studies have analysed learned expectancies about the reinforcement of foods, and more recently, it has been developed a questionnaire to measure the relative reinforcing value of different foods.

Abreviaturas

IFBS: Irrational Food Beliefs Scale
USA: United States of America
UK: United Kingdom
ED: Eating Disorders
M: Mean; SD: Standard Deviation
BMI: Body Mass Index
CIMEC: Cuestionario de Influencias del Modelo Estético Corporal; CIMEC-V: idem-Varones.
PSQ: Perceived Stress Questionnaire
CSI: Coping Strategies Inventory
SES: Self Esteem Scale
EDI-2: Eating Disorders Inventory-2

Measures

Body Mass Index (BMI)

The students were weighed and measured (without their shoes) using calibrated electronic instruments and the BMI scores (weight in Kg/height in m squared) were calculated.

Questionnaire on Influences on Body Shape Model (CIMEC and CIMEC-V)

This instrument was designed to assess the influence of the prevailing aesthetic model in both normal and clinical populations. The original questionnaire (CIMEC), which was validated in girls, was subsequently adapted for boys (CIMEC-V) and it has been shown to be adequate for assessing socio-cultural influences on the aesthetic body shape model19. The questionnaire measures the influence of ideal models, the concern with being thin, the influence of social models, family influences, the influence of friends, interpersonal influences, behaviours aimed at weight loss, body-related anxiety, the influence of advertising and the concern with being fat. The CIMEC and CIMEC-V used here were the 40-item versions. Each item has three possible responses: a great deal, slightly or not at all. The original study in which the instrument was validated reported adequate reliability (Cronbach’s alpha > 0.70).

Perceived Stress Questionnaire (PSQ)

This instrument was specifically designed to evaluate stress in clinical psychosomatic research and comprises 30 items that differentially measure the general and recent forms of perceived stress. The present study used the Spanish version of the PSQ (19), which has shown adequate internal consistency (Cohen’s a coefficient = 0.90) and test-retest reliability (r=0.80), as well as adequate predictive validity in stress-related disorders.

Coping Strategies Inventory (CSI)

Once again, the Spanish version was used here20. The inventory consists of a test in which eight primary strategies (problem solving, self-criticism, emotional expression, wishful thinking, social support, cognitive restructuring, problem avoidance and social withdrawal), four secondary strategies (adaptive and maladaptive coping with problems, adaptive and maladaptive coping with emotions) and two tertiary strategies (adaptive and maladaptive coping) are explored on the basis of the description of a stressful situation. Subjects respond to 72 items scored on a five-point Likert scale, such that they indicate how often in the described situation they did what is expressed in each item. Finally, they respond to a further item about the perceived effectiveness of their coping. In its Spanish version the questionnaire has shown adequate internal consistency, with Cronbach’s coefficients for the different factors between 0.63 and 0.89.

Self-Esteem Scale (SES)

This scale is widely used in psychological research, both social and clinical, and comprises ten items that measure global self-esteem. The present study used the Spanish version of the instrument21, which shows adequate internal consistency (Cronbach’s a coefficient = 0.87), test-retest reliability (r=0.72) and construct validity.

Eating Disorders Inventory-2 (EDI-2)

A self-report questionnaire with 11 subscales (drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interceptive awareness, maturity fears, asceticism, impulse regulation and social insecurity), the scores of which provide a profile that can be compared with norms for patients and the normal population22. The internal consistency ranges between 0.83 and 0.92 in patient samples and between 0.65 and 0.93 in various non-clinical samples. Test-retest reliability ranges between 0.41 and 0.97 depending on the sample, and the inventory shows adequate construct validity.

Procedure

The Spanish version of the IFBS was obtained by conducting a translation and back translation procedure. Twenty students were randomly selected from the sample for preliminary testing in order to confirm that the scale could be read and understood by the age group of interest. During test administration the students were asked for their interpretations of the questions. Their suggestions and comments were then used to prepare the instructions and to ensure that the participants had no difficulties reading the items.

In the case of students under the age of eighteen, parental consent and the child’s assent were obtained before the data were collected. Parents were asked to return the consent form even in the event that they did not want their children to participate in the research, in this case indicating no consent. Students over the age of eighteen provided their own consent and their parents were informed about the nature of the study, which was conducted with the permission and collaboration of the heads of the respective schools, and having obtained the approval of the Ethics and Deontology Department of them.

Once informed consent had been obtained, students completed the abovementioned questionnaires in group sessions with no time limit; this was done in classroom time in the presence of a psychologist and a dietician. One session was used to measure weight and height, while a further two were dedicated to
questionnaire administration. All participants volunteered to take part in the study and none of them received any kind of recompense for responding to the questionnaires.

Results

Factor structure and internal consistency of the IFBS

A factor analysis was conducted using principal components extraction with varimax rotation. Various indicators of the high degree of inter-relationship between the variables confirmed the suitability of the analysis: Bartlett’s test of sphericity gave X²=4575.56 (significance<0.0001), while the Kaiser-Meyer-Olkin index was 0.853. The number of factors was determined by considering those with eigenvalues above 1, as well as through examination of the scree plot. The best solution from the principal factors analysis of the 57 items of the IFBS revealed two factors corresponding to the two subscales (irrational and rational beliefs), as reported by the authors of the questionnaire. The irrational beliefs sub-scale measures cognitive distortions and unhealthy beliefs and attitudes related with food, whereas the rational beliefs sub-scale refers to beliefs that are consistent with current guidelines on healthy eating.

Table 1 shows the rotated factor loadings, the explained variance and the accumulated variance.

The first factor, which explains 34.76% of the total variance, groups together the 41 items of the irrational beliefs sub-scale of the IFBS. The second factor explains 18.90% of the total variance and groups together the remaining 16 items, those from the rational beliefs sub-scale.

The internal consistency of the IFBS and its subscales was determined by calculating Cronbach’s alpha coefficient. The irrational beliefs factor gave α=0.881, while the rational beliefs factor yielded α=0.779. Overall, the IFBS had α=0.863.

Correlation of the IFBS with other variables

There was a negative and significant correlation (p<0.01) between the irrational beliefs sub-scale of the IFBS and BMI (r=-0.21).

As regards the IFBS and the CIMEC the analysis of correlations showed a positive and significant correlation (p<0.01) between CIMEC total score and the irrational beliefs sub-scale of the IFBS (r=0.22). With respect to the different areas of influence explored by the CIMEC, there were positive and significant correlations (p<0.01) between the irrational beliefs sub-scale of the IFBS and the concern with being thin (r=0.20), the influence of friends (r=0.20) and the influence of advertising (r=0.23).

The irrational beliefs sub-scale of the IFBS was positively correlated with perceived stress, both general (r=0.17; p<0.01) and recent (r=0.14; p<0.05).

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
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Table I

Factor structure (principal components with varimax rotation) and explained variance

Subscales of the EDI-2 | IFB subscale | RFB subscale
 Drive for thinness | 0.082 | 0.114
 Bulimia | 0.32** | -0.013
 Body dissatisfaction | 0.051 | 0.107
 Ineffectiveness | 0.110 | -0.100
 Perfectionism | 0.034 | 0.075
 Interpersonal distrust | 0.100 | -0.037
 Interceptive awareness | 0.259* | -0.006
 Maturity fears | 0.059 | 0.108
 Asceticism | 0.100 | 0.066
 Impulse regulation | 0.268* | 0.012
 Social insecurity | 0.175* | -0.149*  

IFB: Irrational Food Beliefs; RFB: Rational Food Beliefs. 
*p<0.01.
As regards the CSI and the IFBS the analysis revealed a positive and significant correlation between the irrational beliefs sub-scale and self-criticism (r=0.17; p<0.01), maladaptive coping with emotions (r=0.15; p<0.01), and maladaptive coping (r=0.12; p<0.05). The irrational beliefs sub-scale was negatively and significantly correlated with the CSI score for perceived effectiveness of coping (r=-0.14; p<0.05). As regards the rational beliefs sub-scale of the IFBS, this showed a positive correlation with social support (r=0.14; p<0.05).

The irrational beliefs sub-scale of the IFBS was also negatively and significantly correlated with self-esteem (r=-0.21; p<0.01).

The relationship between the IFBS and specific eating pathology was determined by means of the EDI-2, the results being shown in Table II. The most important findings are the correlations observed between the irrational beliefs sub-scale of the IFBS and bulimia, interoceptive awareness, impulse regulation and social insecurity.

**Differences between girls and boys**

Although there were no significant differences between girls and boys as regards the irrational beliefs sub-scale (M=75.10, SD=14.21; and M=75.46, SD=15.82, respectively), such differences were observed with respect to the rational beliefs sub-scale (M=51.00, SD=7.67; and M=46.47, SD=9.02; p<0.001). Within the rational beliefs sub-scale the most significant differences (p<0.0001) were obtained on items 12 (Healthy eating should be a way of life) and 56 (I believe in the food pyramid as a guide to healthy eating) [girls and boys, respectively: M=3.39, SD=0.71; and M=2.97, SD=0.98 on item 12; M=3.20, SD=0.75; and M=2.77, SD=0.77 on item 56].

**Discussion**

As in the original research that validated the IFBS, the present study obtained two factors corresponding to the irrational and rational beliefs subscales, with 41 and 16 items, respectively. The irrational sub-scale measures cognitive distortions and unhealthy beliefs and attitudes related to food, whereas the rational sub-scale refers to current guidelines on healthy eating. In general, this validation study of the Spanish version of the IFBS, conducted with adolescents, fulfils the requirements for measuring the construct "irrational beliefs about food". The reliability analysis showed that both the total IFBS and its two subscales have adequate internal consistency.

In the original study the rational beliefs sub-scale of the IFBS showed no significant, positive correlations with any of the variables analysed, a finding that was replicated here with the exception of the "social support" strategy of the CSI; this coping strategy refers to the search for emotional support, and is considered to be adaptive in comparison to "social withdrawal".

In contrast to the original research the present study found a negative and significant correlation between the irrational beliefs sub-scale of the IFBS and BMI; however, BMI was here calculated using weight and height measurements taken from participants as part of the study, whereas in the original research it was calculated on self-reported weight and height values, which may introduce a degree of bias. The observed correlation is consistent with the fact that using similar instruments a relationship has been found between thoughts related to food, low body esteem and dietary restriction.

The present study demonstrates the relationship between the influence of the aesthetic body shape model and irrational food beliefs, especially as regards the concern with being thin and the influence of friends and advertising. As a common denominator, the anxiety produced by the prevailing aesthetic body shape model among adolescents appears to be related to irrational thoughts about food that are geared toward weight loss. The influence of the media (of advertising) on the development of eating disorders may explain some of the correlations found here.

The relationship between stress and eating disorders has been explained in terms of the link between cognitive constructs (for example, thoughts about food) and certain eating behaviours. The present study reveals a certain relationship between the perceived stress of adolescents and their irrational food beliefs. This relationship has also been reported for a number of eating behaviours, it being found that dietary profile changes in line with an increase in perceived stress. Similarly, perceived stress in everyday life has been related to a greater risk of eating disorders.

Coping difficulties in the context of eating disorders have been widely studied, and research has found that maladaptive coping with emotions is associated with episodes of binging; furthermore, it appears that sub-groups of patients with eating disorders could be established on the basis of the coping strategies they use. In the present study the irrational beliefs sub-scale was positively correlated with strategies such as self-criticism and maladaptive coping with emotions, and negatively correlated with the perceived effectiveness of coping with problems and emotions. These findings, together with the negative correlation between irrational food beliefs and self-esteem (which was observed both here and in the original study), seem to support the idea of distinguishing potential sub-groups of eating disorder patients on the basis of variables other than the traditional categories of restrictive vs. purging, since doing so may have therapeutic and prognostic implications.

As regards the relationship between irrational food beliefs and symptoms of eating disorders, the present study found correlations between irrational thoughts...
Irrational food beliefs scale may increase the risk of losing control over eating behaviour. The same occurs with the relationship between irrational beliefs and impulse regulation, which has been associated with a worse prognosis in eating disorders on the basis of poorer coping with emotions. Finally, social anxiety has also been linked to the irrational beliefs sub-scale. Given that this sub-scale refers to social insecurity, as measured by the EDI-2.

For the age range of the present sample, there are differences between girls and boys as regards the rational beliefs sub-scale. Given that this sub-scale refers to compensatory restrictive practices (lower BMI).

**Limitations**

The present validation study was conducted with a group of healthy adolescents, and therefore future investigations would need to apply the IFBS to adolescent clinical samples, those with eating disorders, overweightness or obesity. Indeed, the clinical implications which irrational food beliefs might have, in terms of both weight gain and weight loss or maintenance, would constitute the main contribution of the scale when it comes to working with these specific distortions, as well as with others that are found in these patients (such as those related to body image).

A further point is that the psychometric properties of the scale now need to be investigated in a population of healthy Spanish adults, who were not included in the present study.

Future research should also analyse the relationship between irrational/rational food beliefs and actual food intake, both in terms of calorie content and macronutrient/micronutrient composition. These aspects would need to be analysed in the context of eating disorders and in overweight/obese subjects, and for both child/adolescent and adult populations.

**References**


Appendix

Irrational food beliefs scale (Spanish version)

IRRATIONAL FOOD BELIEFS SCALE (Spanish version)
(Adaptation and validation by Jáuregui and Bolanños, 2010)

A continuación leerá algunas frases sobre pensamientos acerca de la alimentación. Lea cada una de ellas y escoja la puntuación con la que mejor se identifique en cuanto a lo que piensa respecto a cada frase. No hay respuestas “buenas” ni “malas”.

Utilice las siguientes puntuaciones para elegir una, con la que más esté de acuerdo:
1 = Muy en desacuerdo
2 = En desacuerdo
3 = De acuerdo
4 = Completamente de acuerdo

1. La comida es un sustituto del placer ____________________________________________________________________________
2. Algunos alimentos pueden relajarte ________________________________________________________________________________
3. Comer sano no lleva más tiempo que hacerlo de forma insana __________________________________________________________________
4. Posiblemente no podría vivir sin mi comida favorita ____________________________________________________________________
5. Hacer la comida a la parrilla o a la plancha son formas sanas de cocinar ____________________________________________________________
6. Mi mayor placer en la vida es comer __________________________________________________________________________________
7. Comer es una buena forma de superar el aburrimiento __________________________________________________________________
8. El ejercicio puede anular los efectos de una mala alimentación __________________________________________________________________
9. Comer sano no tiene que implicar abandonar por completo mis comidas favoritas ______________________________________________________
10. La comida es una buena forma de salir de la depresión ____________________________________________________________________
11. Las reuniones sociales no son tan divertidas sin comida ____________________________________________________________________
12. Comer sano debería ser un estilo de vida ________________________________________________________________________________
13. Si nadie me ve comiendo algo, las calorías no cuentan ______________________________________________________________________
14. Sólo las comidas con mucha grasa saben bien ____________________________________________________________________________
15. La única manera de hacer dieta es una dieta de choque __________________________________________________________________
16. Una buena forma de reducir el estrés es comer _________________________________________________________________________
17. La clave de una dieta sana es lograr un equilibrio sobre lo que se come __________________________________________________________________
18. Algunas comidas son irresistibles ______________________________________________________________________________________
19. Si algo es “light” puedes comer todo lo que quieras _______________________________________________________________________
20. Las grasas no saturadas son mejores que las saturadas _____________________________________________________________________
21. El desayuno es la comida más importante del día __________________________________________________________________________
22. Si comes algo que no debías debes sentirte culpable ______________________________________________________________________
23. Hay alimentos de los que puedes tomar lo que quieras sin ganar peso __________________________________________________________________
24. Uno/a debería esforzarse por tomar cinco raciones al día de frutas y verduras __________________________________________________________________
25. No puedo controlar mi peso porque me encanta comer ______________________________________________________________________
26. Hay algunos alimentos con los que no logro controlar lo que como __________________________________________________________________
27. No puedo vivir sin los dulces _________________________________________________________________________________________
28. Es importante tomar al menos seis raciones al día del grupo de alimentos que incluye pan, cereales, arroz o pasta __________________________________________________________________
29. Comer sano puede reducir el riesgo de algunas enfermedades como el cáncer, la diabetes o la enfermedad coronaria ____________
30. Todas las reuniones sociales deben centrarse en la comida __________________________________________________________________
31. Algunos alimentos son adictivos ______________________________________________________________________________________
32. La comida es un placer para mí y no tengo por qué controlar lo que como __________________________________________________________________
33. La comida es un buen sustituto del sexo ________________________________________________________________________________
34. ¡Al infierno con lo saludable! Que me dejen comer lo que quiera ____________________________________________________________________
35. Los alimentos enriquecidos con calcio son necesarios para fortalecer los huesos __________________________________________________________________
36. No ganarás peso por nada que comas antes de las ocho de la tarde __________________________________________________________________
37. Si primero hago ejercicio, luego puedo comer lo que quiera __________________________________________________________________
38. Si el sobrepeso es algo genético, ¿por qué preocuparse por perder peso? __________________________________________________________________
39. Los alimentos como frutas y verduras no tienen calorías ____________________________________________________________________

>>>
## Appendix

### Irrational food beliefs scale (Spanish version) (cont.)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>40.</td>
<td>Hay momentos en los que “necesito” ciertos alimentos</td>
</tr>
<tr>
<td>41.</td>
<td>Uno/a debería elegir carnes magras o bajas en grasa</td>
</tr>
<tr>
<td>42.</td>
<td>Se puede beber todo lo que se quiera sin ganar peso</td>
</tr>
<tr>
<td>43.</td>
<td>Una pequeña cantidad de grasa es necesaria en una dieta sana</td>
</tr>
<tr>
<td>44.</td>
<td>La felicidad puede alcanzarse con la comida</td>
</tr>
<tr>
<td>45.</td>
<td>Puedes comer todo lo que quieras siempre que sea bajo en grasa</td>
</tr>
<tr>
<td>46.</td>
<td>Una vez que comes algo malo, te has cargado la dieta</td>
</tr>
<tr>
<td>47.</td>
<td>Creo que es importante comer sólo cuando se tiene hambre</td>
</tr>
<tr>
<td>48.</td>
<td>Como el alcohol no tiene grasa, no te hace ganar peso</td>
</tr>
<tr>
<td>49.</td>
<td>Lo que alguien come, realmente no tiene efecto en su salud</td>
</tr>
<tr>
<td>50.</td>
<td>Es un castigo tener que comer ciertos alimentos como frutas y verduras</td>
</tr>
<tr>
<td>51.</td>
<td>Hacer dieta es abandonar el placer de comer</td>
</tr>
<tr>
<td>52.</td>
<td>La comida “light” es aburrida</td>
</tr>
<tr>
<td>53.</td>
<td>Uno/a debería esforzarse por hacer tres comidas saludables al día</td>
</tr>
<tr>
<td>54.</td>
<td>No poder comer lo que apetece te hace entristecer</td>
</tr>
<tr>
<td>55.</td>
<td>Comer puede ayudar a superar la soledad</td>
</tr>
<tr>
<td>56.</td>
<td>Creo en la pirámide de los alimentos como guía para comer de forma saludable</td>
</tr>
<tr>
<td>57.</td>
<td>Si se hace ejercicio no importa lo que se coma</td>
</tr>
</tbody>
</table>