145 - RISK COMPONENT OF EATING DISORDER: APPLICATION OF THE ITEM RESPONSE THEORY

KALINE DA SILVA LIMA
JOSEMBERG MOURA DE ANDRADE
UNIVERSIDADE FEDERAL DA PARAÍBA, JOÃO PESSOA –PB, BRASIL
kaline.s.lima@hotmail.com

INTRODUCTION

Eating disorders (ED) are characterized by abnormal eating behavior patterns, excessive concern with weight control and altered perceptions about the own body (GONÇALVES et al., 2013). The most cited EDs are anorexia nervosa (AN); bulimia nervosa (BN); binge eating disorder (BED) and eating disorder not otherwise specified (EDNOS).

AN is characterized by a calorie restriction lower than body requirements, below normal weight for age, intense fear of gaining weight, disturbances in self-perception of the body and a refusal to recognize the severity of low body weight (APA, 2013). It is presented in two subtypes of anorexia: restrictive AN, which limits caloric intake and consumption of carbohydrates and lipids; and purgative AN, characterized by frequent episodes of binge eating followed by purging, such as induction of vomiting, use of laxatives, and diuretics (GONÇALVES et al., 2013).

BN is characterized by frequent episodes of uncontrollable ingestion of food in an amount greater than the common and feeling of loss of control, which refers to an episode of binge eating. After the compulsion, a bulimic person attempts to compensate for high caloric intake through purging methods, such as self-induced vomiting, use of laxatives, diuretics, fasting, or excessive exercise. The BED refers to occurrences of compulsions without the use of compensatory behavior, but followed by feelings of lack of control, guilt and suffering.

Furthermore, there is the category EDNOS, used in cases where typical symptoms of an ED that result in clinically significant suffering and/or impairment in quality of life are observed. The clinician chooses not to specify when there is insufficient information to make a more accurate diagnosis, such as in emergency rooms (APA, 2013).

Deviations from eating behavior can lead to numerous physical illnesses (cachexia, obesity, diabetes, hypertension, ulcers). In addition, patients with ED often experience gradual deterioration of oral functions, defenses against oral diseases and bone mass, due to malnutrition (YAGI et al., 2012). There are also major psychological losses, such as anxiety and depression (MCBRIDE et al., 2013). In addition, ED patients show a significantly lower quality of life when compared to the general population (ÁGH et al., 2016). According to Ximenes et al. (2011), 15% of patients come to death due to medical complications or suicide.

Regarding the evaluation of ED, one of the strategies used is the use of psychological measures. Among the main instruments found in the national literature, there is the Eating Disorder Inventory (EDI-3), not yet validated for Brazil, developed by Garner (2004). The instrument is composed of 91 items that evaluate 12 subscales, three of which evaluate the Eating Disorder Risk Composite (EDRC): Drive for thinness (DT), Bulimia (B) and Body Dissatisfaction (BD). The other 9 subscales evaluate the psychopathological aspects that make up the General Psychological Maladjustment Composite (GPMC): Low Self-Esteem (LSE), Personal Alienation (PA), Interpersonal Alienation (IA), Interoceptive Deficits (ID), Emotional Dysregulation (ED), Perfectionism (P), Asceticism (A), Maturity Fears (MF).

Taking into account that there are no studies of the application of IRT with this instrument and the relevance and necessity of the study of these disorders in Brazil, the present study proposes to evaluate the psychometric quality of the EDRC in Brazilian samples from the Item Response Theory (IRT).

METHOD

Participants

A total of 658 people from three groups (University students from a public institution, adolescent high school students from a public school and a clinical sample) participated in the study. The sample size calculation was based on the EDRC score verified in a pilot study with 179 people, of which 92 were university students from 10 different courses, 77 adolescents and 19 patients diagnosed with ED. For the sample of university students and adolescents, a sample calculation based on stratified sampling proportional to the size of the strata (number of students in the courses) was used. For the clinical sample, a calculation based on simple random sampling was used for population of unknown size.

The sample of university students had 512 people aged between 16 and 51 years (M = 23.16, SD = 5.52), 51.5% were women, 48.1% were men and 0.4% were of another gender. The majority declared themselves single (87.3%), Catholic (41.3%), and with family income between one and three minimum wages (34.3%). In the sample of adolescents, 71 high school students aged 14 to 18 (M = 16.45, SD = 1.10) participated, 63.4% of the female gender and 36.4% of the male gender. The majority declared themselves single (97.2%), Catholic (47.9%), with family income between one and three minimum wages (42.9%). The clinical sample consisted of 75 people between 16 and 51 years old (M = 29.43; SD = 7.82), being 92% women and 6.7% men. The majority affirmed that they were single (48%), Catholic (34.7%) and had family income between one and three minimum wages (34.7%). This sample included people with anorexia (f = 4,% = 5.4), bulimia (f = 16,% = 21.6), binge eating (f = 41,% = 55.4), EDNOS (f = 2; % = 2.7) and anxiety (f = 11;% = 14.9), as an associated comorbidity.

Instruments

We used 25 items of the EDI-3 for the Eating Disorder Risk Composite (EDRC), with the itemization of items in a system of 0 to 4 points (ranging from "always" to "never"). These were distributed in three subscales: Drive for thinness (DT) with seven items that measure the extreme desire to be thinner, concern about diet, concern about weight, and an intense fear of gaining weight; Bulimia (B), which measures the tendency of thoughts or involvement in episodes of binge eating followed by purging methods as a result of the stressor events throughout 8 items; or Body Dissatisfaction (BD), which assesses dissatisfaction with body shape and/or size, or of specific body parts, containing 10 items. The internal consistency of the original

EDRC ranged from 0.90 to 0.97 between the four diagnostic groups and the three normative groups. For all three EDRC scales, all consistencies ranged from 0.80 to 0.90 in the normative groups. The median reliabilities for the scales were 0.84, 0.74 and 0.85 (GARNER, 2004).

In addition, it was used a questionnaire with questions regarding sociodemographic data (age, gender, marital status, religion and family income).

Procedures

The study was approved by the Committee of Ethics in Research of the Health Sciences Center of the Federal University of Paraíba (Comitê de Ética em Pesquisa do Centro de Ciências da Saúde da Universidade Federal da Paraíba) - CEP / CCS (CAAE: 67184817.0.0000.5188), taking into account the Brazilian Ethical Resolutions, evidencing Resolution 510/16 of the National Health Council (CNS). The applications occurred in a collective and individual environment, where the participants were informed about the objectives of the study and the guarantee of autonomy, secrecy and confidentiality of the individual information.

Data analysis

The programs IBM-SPSS, version 21.0 and R version 3.2.4 were used for the tabulation, treatment and analysis of the data. The profile was drawn by means of descriptive statistics. In relation to IRT, the basic assumptions were checked: unidimensionality and local independence, by means of factorial analysis with polychromatic correlation with the pysch package. Subsequently, the parameters of the items (difficulty and discrimination) were evaluated through Samegima's Graded Response Model (SGRM). Finally, the total information curves (CIT) of the instrument, item information curves (CII) and characteristic curves of the items (CCI) were checked.

RESULTS

TABLE1 - PARAMETERS OF EDRC ITENS

Items	λ	h²	a	b1	b2	b3	b4
1	0,25	0,06	0,47	0,69	1,79	4,15	6,30
2	0,79	0,62	2,30	-0,53	0,16	0,54	0,92
4	0,58	0,34	1,14	-0,73	0,41	0,92	1,75
5	0,47	0,22	0,88	-1,25	0,18	1,87	1,89
7	0,75	0,56	2,17	-0,66	-0,13	0,25	0,69
9	0,72	0,51	1,60	0,31	0,72	1,10	1,56
11	0,85	0,72	2,79	-0,03	0,43	0,76	1,11
12	0,72	0,52	1,97	-0,94	-0,67	0,00	0,66
16	0,80	0,63	2,31	-0,28	0,27	0,64	0,95
19	0,63	0,39	1,49	-1,10	-0,49	0,44	1,33
25	0,73	0,53	1,87	-0,13	0,64	1,08	1,62
28	0,82	0,67	2,10	0,37	0,88	1,26	1,74
31	0,34	0,11	0,60	-1,21	0,22	1,35	2,70
32	0,87	0,75	3,16	-0,10	0,45	0,82	1,11
38	0,72	0,52	1,80	-0,64	0,18	0,74	1,38
45	0,76	0,58	1,80	0,45	1,03	1,37	1,65
46	0,69	0,48	1,49	0,64	1,35	1,82	2,13
47	0,71	0,50	1,72	0,00	0,83	1,17	1,58
49	0,85	0,72	3,18	-0,43	0,05	0,30	0,65
53	0,82	0,67	2,19	1,08	1,44	1,77	1,98
55	0,50	0,24	0,94	0,10	1,27	1,85	2,67
59	0,59	0,35	1,16	1,14	1,96	2,31	2,68
61	0,73	0,53	0,69	0,79	1,44	1,77	2,26
62	0,52	0,26	0,98	-0,89	-0,28	0,87	1,77
64	0,85	0,72	2,46	0,30	0,89	1,20	1,52

Note: λ: Factor load; h²: Communality; b_1, b_2, b_3, b_4 = Thresholds.

The factorial analysis with fixed polymorphic correlations in one factor revealed that the one-dimensional solution explains 49% of the total variance. As can be seen in Table 2, factorial loads varied between 0.25 (item 1) and 0.97 (item 32). The communes were between 0.06 (item 1) and 0.75 (item 32). Table 2 also presents the parameters of the items using the SGRM model.

The calibration of this set of items suggested that in the SGRM model the discrimination ranged from 0.47 (item 1) to 3.18 (item 49). Only items 1 and 31 did not obtain satisfactory discrimination (a> 0.60) according to Nakano, Primi and Nunes (2015). Table 1 shows that the items covered a large portion of theta, presenting b (tresholds) between -1.25 (b1 of item 5) and 6.30 (b4 of item 1).

FIGURE 1 - TOTAL AND ERROR INFORMATION CURVES
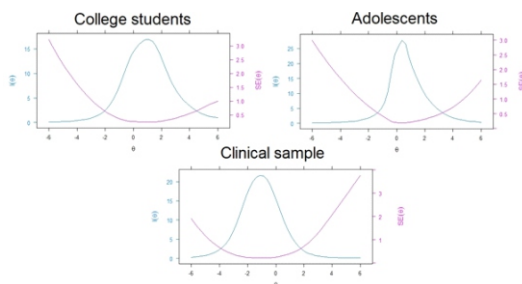
When analyzing the total information curves of the EDRC in figure 1 separated by samples, it was observed that in the group of university students, there is more information than error between -2 and 5, whereas in the group of adolescents the information covered a smaller region of the between -1.5 and 3.5. In the clinical sample, the instrument was more valid between -4 and 2.

FIGURE 2 – CHARACTERISTIC CURVES OF ITEMS 1 AND 49
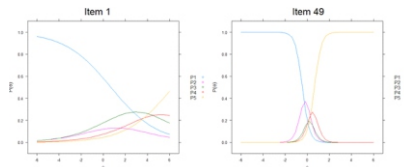
Finally, the CCIs of each item were evaluated. Figure 2 illustrates the CCI of the worst and most discriminating items. It was observed that in item 1 the three intermediate response categories were overlapped by the categories of extremities (values 0 and 4). While in item 49 it is observed that the categories from the extremities were the most endorsed, category 1 was most likely around theta 0 and categories 2 and 3 were overlapped by category 4. It is emphasized that most of the items present a recurrent pattern similar to item 49.

DISCUSSION

The objective of this study was the initial effort to investigate the psychometric properties of EDRC as the main component of EDI-3 through IRT. It is emphasized that studies were not found in the literature that applied such an analysis method with said measuring instrument.

The results proved to be adequate since most of the items were discriminative (a> 0.60), which suggests an adequate capacity to distinguish individuals located in different regions of the latent trait investigated. The test information curve showed the accuracy provided by the instrument for certain levels of latent traits, which showed that, although it was developed for use primarily with the clinical population, it could be potentially useful for university students as well.

Despite the satisfactory results, this study is not exempt from limitations, such as the reduced clinical sample resulting from the difficulty of participation of people diagnosed with ED. A comparative study with other IRT models, as well as multidimensional IRT testing, is required in future studies. In addition, studies such as analysis of the invariance of parameters in different sociodemographic groups, such as gender and clinical group and control, and analysis of the Differential Item Functioning (DIF), become essential for a refinement in the items and a more in-depth investigation. In the long term, the risk component of ED may contribute to the evaluation of groups in multiple contexts, and especially in the context of psychodiagnosis. In general, we are confident to offer relevant data showing that EDRC is a valid measure capable of discriminating traits of risk of eating disorder.

KEYWORDS: eating disorders; item response theory; psychological instrument.

REFERENCES

ÁGH, T. et al. A systematic review of the health-related quality of life and economic burdens of anorexia nervosa, bulimia nervosa, and binge eating disorder. Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, v. 21, n. 3, p. 353-364, 2016.

AMERICAN PSYCHIATRY ASSOCIATION. Feeding and eating disorders. Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Edited by American Psychiatric Association, 2013.

GARNER, D.M. EDI 3: Eating disorder inventory-3: Professional manual. Psychological Assessment Resources, 2004.

GONÇALVES, J.A. et al. Transtornos alimentares na infância e na adolescência. Revista Paulista de Pediatria. v.31, n.1, p.96-103, 2013.

MCBRIDE, O. et al. Profiling disordered eating patterns and body mass index (BMI) in the English general population. Social psychiatry and psychiatric epidemiology, v. 48, n. 5, p. 783-793, 2013.

NAKANO, T. C.; PRIMI, R.; NUNES, C. H. S. S. Análise de itens e Teoria de Resposta ao Item (TRI). In HUTZ, C. S.; BANDEIRA; D.R.; TRENTINI, C. M. (Org.). Psicometria. Porto Alegre: Artmed, 2015. p. 97-124.

XIMENES, R. C. C., COLARES, V., BERTULINO, T., COUTO, G. B. L. Versão brasileira do BITE para uso em adolescentes. Arquivos Brasileiros de Psicologia, v. 63, n. 1, p. 52-63, 2011.

YAGI, T. et al. The role of ghrelin, salivary secretions, and dental care in eating disorders. Nutrients, v. 4, n. 8, p. 967-989, 2012.

RISK COMPONENT OF EATING DISORDER: APPLICATION OF THE ITEM RESPONSE THEORY

The objective of this research was to evaluate the psychometric quality of the items from the Eating Disorder Risk Composite (EDRC), which is part of the Eating Disorder Inventory (EDI-3), in Brazilian samples. The EDI-3 is a self-reporting instrument composed of 91 items divided into 12 subscales. Three of these subscales make up the EDRC: 1) Drive for thinness (DT); 2) Bulimia (B); 3) Body dissatisfaction (BD). The items were answered from a six-point Likert scale ranging from Always to Never. A total of 512 university students between the ages of 16 and 51 participated in the study, as well as 71 adolescents with high school education aged 14 to 18, and a clinical sample of 75 people aged 16 to 51 years. In addition to EDI-3, participants answered a sociodemographic questionnaire. The data collection took place in a public school, in a Public University, and in Clinics of Psychology. Regarding data analysis, the parameters a (difficulty) and b (discrimination) were verified through the Samejima Gradual Response Model for politomic items. As a result, it was observed that most of the items were discriminative and covered different levels of ED risk. The analyzed data added psychometric information about the quality of the items that contribute to the validation of the measurement instrument, and in turn, make possible its use in the field of research and psychological evaluation.

KEYWORDS: eating disorders; item response theory; psychological instrument.

COMPOSANT DE RISQUE DE TRANSTORN ALIMENTAIRE: APPLICATION DE LA THÉORIE DE RÉPONSE À L'ARTICLE

L'objectif de cette recherche est d'évaluer la qualité psychométrique des éléments de la composante du risque de troubles de l'alimentation (EDRC), qui fait partie de l'inventaire des troubles alimentaires (EDI-3), dans des échantillons brésiliens. L'EDI-3 est un instrument d'auto-déclaration composé de 91 éléments répartis en 12 sous-échelles. Trois de ces sous-échelles constituent l'EDRC: 1) Désir de perdre du poids (DT); 2) la boulimie (B); 3) Insatisfaction corporelle (BD). Les items ont été répondus à partir d'une échelle de Likert en six points allant de Toujours à Jamais. Un total de 512 étudiants universitaires âgés de 16 à 51 ans ont participé à l'étude, 71 adolescents ayant un diplôme d'études secondaires âgés de 14 à 18 ans; et un échantillon clinique de 75 personnes âgées de 16 à 51 ans. En plus de l'EDI-3, les participants ont répondu à un questionnaire sociodémographique. La collecte des données a eu lieu dans une école publique, dans une université publique, dans des cliniques de psychologie. En ce qui concerne l'analyse des données, les paramètres a (difficulté) et b (discrimination) ont été vérifiés à l'aide du modèle de réponse progressive de Samejima pour les items politomiques. En conséquence, il a été observé que la plupart des items étaient discriminatoires et couvraient différents niveaux de risque AT. Les données analysées ont ajouté des informations psychométriques sur la qualité des éléments qui contribuent à la validation de l'instrument de mesure et, à son tour, rendent possible son utilisation dans le domaine de la recherche et de l'évaluation psychologique.

MOTS-CLÉS: troubles de l'alimentation; théorie de la réponse à l'item; instrument psychologique.

COMPONENTE DE RIESGO DE TRANSTORNO ALIMENTAR: APLICACIÓN DE LA TEORÍA DE RESPUESTA AL ITEM

El objetivo de esta investigación fue evaluar la calidad psicométrica de los ítems del Componente de Riesgo de Trastorno Alimentar (EDRC), que forma parte del Inventario de Desorden Alimentar (EDI-3), en muestras brasileñas. El EDI-3 es un instrumento de auto-relato compuesto por 91 ítems divididos en 12 subescalas. Tres de estas subescalas componen el EDRC: 1) Deseo de adelgazarse (DT); 2) Bulimia (B); 3) Insatisfacción corporal (BD). Los elementos fueron respondidos a partir de una escala tipo Likert de seis puntos variando entre Siempre y Nunca. Participaron del estudio 512 Universitarios entre 16 y 51 años, 71 Adolescentes de enseñanza media con edades entre 14 y 18 años; y una muestra clínica de 75 personas con edades entre 16 y 51 años. Además del EDI-3, los participantes respondieron a un cuestionario sociodemográfico. La recolección de datos ocurrió en una escuela pública, en una Universidad Pública, en Clínicas de Psicología. En el análisis de datos, se verificaron los parámetros a (dificultad) y b (discriminación) por medio del Modelo de Respuestas Graduales de Samejima para ítems politómicos. Como resultado, se observó que la mayoría de los ítems se presentaron discriminatorios y que cubrían diferentes niveles de riesgo de TA. Los datos analizados añadieron informaciones psicométricas acerca de la calidad de los ítems que contribuyen a la validación del instrumento de medida, ya su vez, posibilitar su uso en el ámbito de investigaciones y de la evaluación psicológica.

PALABRAS CLAVES: trastornos alimenticios; teoría de respuesta al ítem; instrumento psicológico.

COMPONENTE DE RISCO DE TRANSTORNO ALIMENTAR: APLICAÇÃO DA TEORIA DE RESPOSTA AO ITEM

O objetivo desta pesquisa foi avaliar a qualidade psicométrica dos itens do Componente de Risco de transtorno Alimentar (EDRC), que faz parte do Inventário de Desordem Alimentar (EDI-3), em amostras brasileiras. O EDI-3 é um instrumento de auto-relato composto por 91 itens divididos em 12 subescalas. Três destas subescalas compõem o EDRC: 1) Desejo de emagrecer (DT); 2) Bulimia (B); 3) Insatisfação corporal (BD). Os itens foram respondidos a partir de uma escala tipo Likert de seis pontos variando entre Sempre e Nunca. Participaram do estudo 512 Universitários entre 16 e 51 anos, 71 Adolescentes de ensino médio com idades entre 14 e 18 anos; e uma amostra clínica de 75 pessoas com idades entre 16 e 51 anos. Além do EDI-3, os participantes responderam a um questionário sociodemográfico. A coleta de dados ocorreu em uma escola pública, em uma Universidade Pública e em Clínicas de Psicologia. Referente a análise de dados, verificou-se os parâmetros a (dificuldade) e b (discriminação) por meio do Modelo de Respostas Graduais de Samejima para itens politômicos. Como resultado, observou-se que a maior parte dos itens se apresentaram discriminativos e que abrangeram diferentes níveis de risco de transtorno alimentar. Os dados analisados acrescentaram informações psicométricas acerca qualidade dos itens que contribuam para a validação do instrumento de medida, e por sua vez, possibilitará o seu uso no âmbito de pesquisas e da avaliação psicológica.

PALAVRAS-CHAVES: transtornos alimentares; teoria de resposta ao item; instrumento psicológico.