

Benign and Malicious Envy Scale: Cross-cultural adaptation and validity evidence for adolescents

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Abstract

Although there are few Brazilian studies on this subject, envy is a universal phenomenon present in the cultural and social spheres. This research aimed to conduct a cross-cultural adaptation to Brazilian Portuguese and to evaluate validity evidence for the Benign and Malicious Envy Scale (BeMaS), a measure of benign and malicious envy. A total of 248 adolescents aged between 12 and 17 ($M=13.93 \pm 1.39$, 47.9% boys) participated in this research. Evidence of validity based on content, internal structure, relationship to other variables (stress, anxiety, depression, and life satisfaction), and reliability indicators were estimated. The exploratory factor analysis suggested the adequacy of the internal structure composed of two factors, demonstrating the equivalence of the internal structure with the original version and good indicators of reliability ($\omega = 0.760$ e 0.823) and relationships with external variables consistent with the theoretical hypotheses. The Results suggest the adequacy of the instrument.

Keywords: transcultural adaptation; internal structure; envy; test validity; social comparison.

ESCALA DE INVEJA BENIGNA E MALICIOSA: ADAPTAÇÃO TRANSCULTURAL E EVIDÊNCIAS DE VALIDADE PARA ADOLESCENTES

Resumo

Embora ainda pouco explorada nos estudos nacionais, a inveja é um fenômeno universal e observado nas esferas sociais e multiculturais. Esta pesquisa teve como principal objetivo a adaptação transcultural para o português brasileiro e avaliação de evidência de validade da Escala de Inveja Benigna e Maliciosa (BeMaS), instrumento que avalia dimensões benigna e maliciosa da inveja disposicional. Participaram 248 adolescentes, com idade entre 12 e 17 anos ($M = 13,93 \pm 1,39$, 47,9% meninos). Foram estimadas evidências de validade baseadas no conteúdo, na estrutura interna, na relação com outras variáveis (estresse, ansiedade, depressão e satisfação com a vida) e nos indicadores de precisão. A Análise Fatorial Exploratória sugeriu a adequação da estrutura com dois fatores da versão brasileira da BeMaS, demonstrando equivalência da estrutura interna com a versão original, bem como bons indicadores de precisão ($\omega = 0,760$ e $0,823$) e relações com variáveis externas coerentes com as hipóteses teóricas. Os resultados sugerem adequação do instrumento.

Palavras-chave: adaptação transcultural; estrutura interna; inveja; validade do teste;

ESCALA DE ENVIDIA BENIGNA Y MALICIOSA: ADAPTACIÓN TRANSCULTURAL Y EVIDENCIA DE VALIDEZ PARA ADOLESCENTES

Resumen

Aunque hay pocos estudios brasileños acerca del tema, la envidia es un fenómeno universal presente en las esferas cultural y social. Esta investigación tuvo como objetivo llevar a cabo una adaptación transcultural al portugués brasileño y evaluar la evidencia de validez de la Escala de Envidia Benigna y Maliciosa (BeMaS), una medida de la envidia benigna y maliciosa. Un total de 248 adolescentes, de 12 a 17 años de edad ($M = 13.93 \pm 1.39$, 47.9% de los niños) participaron en esta investigación. Se estimaron las evidencias de validez basadas en el contenido, la estructura interna, la relación con otras variables (estrés, ansiedad, depresión y satisfacción con la vida) y los indicadores de confiabilidad. El análisis factorial exploratorio sugirió la adecuación de la estructura interna compuesta por dos factores, lo que demuestra la equivalencia con la versión original, así como buenos indicadores de confiabilidad ($\omega = 0.760$ e 0.823) y relaciones con variables externas consistentes con el hipótesis teóricas. Los resultados sugieren la adecuación del instrumento.

Palabras clave: calidad psicométrica; estructura interna; validez del test; inveja; comparación social.

1. Introduction

Envy is considered an emotion indistinctly present in different cultures and can manifest itself during the interaction between at least two individuals. In this interaction, one or both parties may experience the need to feel superior (or at an advantage) compared to the other and demonstrate the desire to obtain what the other possesses (Medeiros, Soares, Nascimento, Silva, & Gouveia, 2016). Among aspects commonly envied, personal characteristics, achievements, success, and possessions stand out (Smith & Kim, 2007). Considering this, envy can be understood as a negative emotional response to the comparison between one person's superior qualities and/or achievements in relation to another (Lange & Crusius, 2015).

Envy has historically been understood as an episodic construct, that is, as a set of hostile reactions towards the envied person or object in which cognitive, behavioral, and emotional aspects are involved, being therefore classified as negative (Crusius, Gonzalez, Lange, & Cohen-Charash, 2019; Van de Ven, 2016). However, current studies have considered individual characteristics in their investigations,

highlighting a concept in which envy can also present dispositional aspects, such as a feeling of inferiority (triggered by the tendency to attribute negative conclusions to yourself when compared to another person) and the presence of a sense of subjective injustice (Kwiatkowska, Rogoza, & Volkodav, 2020). Therefore, a proposal for a two-dimensional structure of envy has been observed, in which positive and negative aspects of the emotion are considered (Lange & Crusius, 2015).

This two-dimensional proposal favors a broader understanding of the phenomenon, as it contemplates its negative aspect (traditionally attributed to the phenomenon), and also considers the same feeling of comparison and negative self-perception due to the achievements and skills of the other person, without the expression of hostility typically associated with the term (Smith & Kim, 2007). This understanding of envy has been investigated by several authors over previous decades (Foster, 1972; Rawls, 1971; Silver & Sabini, 1978), considering two aspects of the term, namely “malicious envy” and “benign envy” (Parrott, 1991). According to Van de Ven, Zeelenberg, and Pieters (2009), the main difference between these two aspects of envy concerns the desire to develop skills and improve habits and behaviors that result from benign envy. Accordingly, malicious envy would be associated with the intention to cause harm to the other, expressing hostility and negative behaviors.

Although this way of comprehending envy is relatively recent, Van de Ven (2016) emphasized that there are specific words or expressions to discriminate between benign and malicious envy in many languages. The author quotes the words “beneiden” and “missgönnen” in German, “imrenme” and “haste” in Turkish, “zazdrość” and “zawiść” in Polish, while in Russian there are the expressions “white envy” and “black envy” and in Portuguese, there are “good envy” and “bad envy”. From this perspective, the proposal to comprehend the phenomenon is also supported by lexical aspects in different languages and cultures. Empirically, studies indicate the adequacy of this structure in a two-dimensional model (Lange & Crusius, 2015) through the development of a measurement instrument (Primi, 2010), the Benign and Malicious Envy Scale (BeMaS).

Originally, the BeMaS was developed for the German language, with the first step of its development process being the construction of a set of items to evaluate the two expressions of envy. For this, 23 items were generated, theoretically oriented toward the evaluation of benign envy (e.g., “If someone has superior qualities, achievements, or possessions, I try to attain them for myself”). Another 25 items

were also created to assess malicious envy (e.g., “Seeing other people’s achievements makes me resent them”). The items are answered using a six-point Likert-type scale, ranging from 1 (strongly disagree) to 6 (strongly agree) (Lange & Crusius, 2015).

After the evaluation of the quality of the items’ contents by specialists, they were submitted to an Exploratory Factor Analysis (EFA), which revealed the adequacy of the structure composed of two factors. Based on the results of this procedure, the authors of the BeMaS selected six items for each subscale. After these actions, the authors investigated the accuracy of the BeMaS, with good internal consistency indices found for the subscales, $\alpha = .85$ for the benign envy factor and $.89$ for malicious envy, and no correlation between the factors ($r = .01$, $p = .89$). Additionally, correlation indices were observed with the Dispositional Envy Scale (DES), which assesses the negative dimension of envy, with the results indicating no correlation with the benign envy factor ($r = .04$, $p = .46$) and a positive association with the malicious envy scale ($r = .65$, $p < .001$). This verified validity evidence based on the relationship between the external variable of the discriminant and convergent type and the BeMaS (American Educational Research Association [AERA], American Psychological Association [APA], & National Council of Measurement in Education [NCME], 2014).

This first study provided knowledge of the psychometric properties and enabled the refinement of the content of some items and the exclusion of two of them, which motivated the authors to test the adequacy of this structure in an independent sample composed of 933 adults. It was used the Confirmatory Factor Analysis (CFA) procedure, with the fit indices of the measurement model providing new evidence of validity for the instrument $\chi^2(34) = 189.89$, $p < .001$, Goodness of Fit Index (GFI) = $.96$, Comparative Fit Index (CFI) = $.97$, Adjusted Goodness of Fit Index (AGFI) = $.93$, and Root Mean Square Error of Approximation (RMSEA) = $.07$. Lange and Crusius (2015) also verified the association between the BeMaS and the variables “hope for success” and “fear of failure” and confirmed the hypotheses that hope for success was predicted by benign envy ($\beta = .71$, $p < .001$) and that fear of failure was predicted by malicious envy ($\beta = .33$, $p < .001$).

Considering the promising results obtained with the instrument, the BeMaS has been the target of several studies to adapt the scale to different cultures, such as Japanese (Sawada & Fujii, 2016), Spanish (Navarro-Carrillo, Beltrán-Morillas, Valor-Segura, & Expósito, 2017), American, Russian and Polish (Kwiatkowska et al., 2020); in all cases maintaining the internal structure, composed of two factors, and

good indicators of reliability. It should be noted that the BeMaS is a new instrument, with its final version only published in 2015. However, other studies on the cross-cultural adaptation of this instrument have been developed, although not yet published, for countries such as Bosnia, Bulgaria, China, Estonia, the Netherlands, Hungary, Indonesia, Iran, Portugal, Russia, Serbia, Turkey, Ukraine and Vietnam⁴. Through the BeMaS, this two-dimensional understanding of envy has been associated with other psychological variables, such as self-efficacy, self-esteem, and goal motivation (Navarro-Carrilo et al., 2017; Sawada & Fujii, 2016).

Lange and Crusius (2015) evaluated the envy of 370 athlete runners, 208 half-marathon runners, and 162 full marathon runners, and observed that benign dispositional envy positively predicted the objectives for the race ($\beta = 0.19$; $p < 0.04$) and performance ($\beta = 0.17$; $p < 0.05$); unlike malicious dispositional envy, which was not associated with these variables. In turn, Sawada and Fujii (2016) evaluated 240 Japanese university students and found positive associations between benign envy and self-esteem ($r = 0.26$; $p < 0.001$) and academic performance ($r = 0.16$; $p < 0.05$). A negative association was also found between malicious envy and self-esteem ($r = -0.21$; $p < 0.001$). Based on these results, the authors emphasized the positive aspects of social comparison. Finally, Navarro-Carrilo et al. (2017) verified, through path analysis, the predictive power of the self-efficacy, self-esteem, and perceived control variables regarding envy (sum of the 10 items). The results indicated that all the variables, self-efficacy ($\beta = -0.24$, $p < 0.001$), self-esteem ($\beta = -0.18$, $p = 0.001$) and perceived control ($\beta = -0.34$, $p < 0.001$) negatively and significantly predicted envy, suggesting that people with lower levels in these variables would tend to have higher levels of envy.

Based on the above, studies have been developed on this new comprehension of envy in the international context. However, few studies of this nature from a Brazilian perspective demonstrate an important gap. Accordingly, the main aims of the present study were to carry out the first cross-cultural adaptation study of the BeMaS to Brazilian Portuguese and to evaluate the psychometric properties of this version of the instrument. More specifically, the intention was to estimate the initial evidence of validity based on the internal structure, relationships with other variables, such as stress, anxiety, and depression, through the DAAS-21 (Lovibond

4 <https://osf.io/pgr9u/wiki/home/>

& Lovibond, 1995; Patias, Machado, Bandeira, & Dell’Aglío, 2016), and the reliability of the Brazilian version of the BeMaS.

2. Method

2.1 Participants

The sample consisted of 248 adolescents of both sexes (47.9% male), aged between 12 and 17 years old ($M = 13.93 \pm 1.39$), students of a private school located in the state of São Paulo. The descriptive analysis of the data is presented in Figure 2.1.1.

Figure 2.1.1. Sample Features.

Variable	N	%
Gender		
Feminine	115	46.37
Masculine	119	47.98
Lacking	14	5.65
Total	248	100.00
Age		
12	34	13.71
13	62	25.00
14	55	22.18
15	42	16.94
16	19	7.67
17	12	4.83
Lacking	24	9.67
Total	248	100.00
Education		
EFII		
7th grade	58	23.38
8th grade	68	27.41
9th grade	67	27.02
EM		
1st grade	29	11.7
2nd grade	14	5.65
3rd grade	12	4.84
Lacking	0	0.00
Total	248	100.00

2.1 Instruments

- *Benign and Malicious Envy Scale – BeMaS*, composed of ten items, it aims to assess benign and malicious envy through routine situations (Lange & Crusius, 2015) and is answered on a six-point Likert-type scale (from strongly agree to strongly disagree). It is structured in two factors: benign envy (five items) and malicious envy (five items); they aim to discriminate different motivations, such as hope for success and fear of failure. It also favors the identification of specific behaviors, such as active avoidance, in contrast to goal-directed behaviors. Good reliability indices were identified for each of the factors, as previously mentioned.
- *Depression, anxiety and stress scale – DASS-21*, composed of 21 items, this scale evaluates and discriminates symptoms of anxiety, stress, and depression based on the Tripartite Model (Lovibond & Lovibond, 1995). It is structured in three components that group seven items each, namely: 1. presence of negative affect, focused on depressed mood, insomnia, and irritability; 2. specific factors of depression, evaluating anhedonia and absence of positive affect); and 3. specific symptoms of anxiety, discriminating somatic tension and hyperactivity. It has a Likert-type response scale of four points. Psychometric studies indicate the adequacy of the instrument for the Brazilian reality, with the internal structure composed of three factors and good internal consistency indices (Patias et al., 2016).
- *Satisfaction With Life Scale – SWLS*, composed of five statements that assess the individual's judgment of life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985), it is answered on a seven-point Likert-type scale. Psychometric studies indicate the instrument's suitability for the Brazilian reality by grouping items in a unidimensional structure and good indicators of internal consistency (Zanon, Bardagi, Layus & Hutz, 2014).

2.3 Procedures

2.3.1 Cross-cultural adaptation

The BeMaS adaptation process for Portuguese started with the formal request and authorization from the authors of the original version of the instrument, who made the English version of the scale available for the process. This instrument was translated into Brazilian Portuguese by three bilingual (Portuguese-English)

researchers, specialists in psychological assessment, and familiar with studies on envy. Subsequently, a group composed of three researchers (different from those that carried out the initial translation) constructed a synthesis version of the translations. It should be noted that there were no discrepancies among the translations or difficulties in establishing the synthesis version. Lastly, the synthesis version was translated back into English (back-translation) by an independent researcher (AERA, APA, & NCME, 2014). In possession of the final version, again, the group of specialists that carried out the synthesis met to assess the equivalence between the back-translated and synthesis versions.

The final version was presented to 15 adolescents and 10 university students to assess the clarity and intelligibility of the items that comprised the instruments, the best way to present the application instructions, and modification of words that were difficult to understand. It should be noted that the procedures used were carried out in accordance with international guidelines for the cross-cultural adaptation of psychological measurement instruments (AERA, APA, & NCME, 2014) and were shared with the authors of the original version of the instrument, obtaining their consent for its use.

2.3.2 Data analysis

To assess the internal structure of the BeMaS, EFA was used with the Unweighted Least Squares (ULS) estimation method and Promax oblique rotation, based on polychoric correlation matrices. The option of using these procedures was derived from simulation studies that indicate their adequacy when estimating the parameters of measurement models by means of ordinal variables, e.g., a Likert-type scale (Forero, Maydeu-Olivares & Gallardo-Pujol, 2009).

Different methods were used to guide the retention of the appropriate number of factors to represent the data set, namely: Parallel Analysis (PA), based on Minimum Rank Factor Analysis, which had 500 correlation matrices estimated randomly through the permutation method; Hull Method (Timmerman & Lorezo-Seva, 2011); and Exploratory Graph Analysis (EGA) Method (Golino & Epskamp, 2017).

Finally, the model indicated by the factor retention methods was tested using EFA. A resource provided by the Factor software allows the evaluation of the measurement model estimated through the EFA by means of indices commonly used in the analysis of structural equations. An important characteristic of this

method is the possibility of obtaining these indices in the estimation of saturated models. These models are, therefore, less restrictive when compared to models in which the items are modeled to present factor loadings in only one factor, which can penalize the fit indices of these models (Marsh et al., 2020). Accordingly, the estimated model was evaluated based on the adequacy of the X^2/df , CFI, GFI, and RMSEA indices. The following criteria, $X^2/df < 3$, CFI and GFI $> .90$, and RMSEA $< .08$ were taken as the reference values (Lara & Alexis, 2014). These analyses were performed using the Factor version 10.3 statistical software (Fernando & Lorenzo-Seva, 2018) and the EGA statistical package in the R environment (Golino & Epskamp, 2017).

Cronbach's alpha coefficients and McDonald's Omega coefficients were used to evaluate the reliability indicators of the BeMaS. As indicated by the literature, for both coefficients, values equal to or greater than .70 are considered good indicators of reliability (Tabachnick & Fidell, 2018). Finally, evidence of validity was estimated based on the relationship of the BeMaS with other convergent and discriminant type variables. For this, Pearson's correlation indices were calculated between the mean scores presented by adolescents in the different envy dimensions and the stress, anxiety, depression, and satisfaction with life variables. The choice of a parametric correlation technique was based on the normality indicators observed for the variables submitted to analysis.

2.3.3 Data collection and ethical procedures

After approval of the study by the Ethics Committee of the Federal University of Pernambuco, under number 26318619.2.0000.5191, the data collection process began with the delivery of consent forms to those responsible and to the adolescents. Those that chose to participate had to return the duly completed documents. Subsequently, the instruments were applied collectively at a specific date and time, with an average duration of 30 minutes.

3. Results

Preliminary analyses, conducted by means of Exploratory Factor Analysis (EFA), indicated adequacy of the correlation matrix, with Kaiser-Meyer-Olkin (KMO) indices = .789 and significant Bartlett's Sphericity Test (10) 349.9 ($p < .001$),

suggesting that latent variables could explain the associations among the data set. Additionally, it was not necessary to use corrections to obtain a semi-positively defined matrix (Lorenzo-Seva & Ferrando, 2020).

According to the theoretical hypothesis, the results of the factor retention methods indicated the relevance of the structure composed of two factors. The results of the Parallel Analysis (PA) and Hull Method are presented in Figure 3.1, in which the percentages of the explained variance of the estimated factors are verified through the real data and the random data, and fit indices concerning the Hull method, CFI, degree of freedom and Scree test value.

Figure 3.1. Methods of factor retention.

Number of factors	Parallel analysis			Hull Method		
	Real data	Random Data	Variance (95%)	CFI	DF	Scree test
1	376.006	203.595	235.430	0,54	35	1.087
2	293.334	176.408	200.228	0,987	26	27.452
3	86.269	152.920	172.948	1.001	18	0.000
4	68.798	131.283	146.903			
5	64.104	109.273	125.872			
6	48.312	88.032	105.224			
7	31.869	67.634	86.134			
8	28.425	46.434	67.250			
9	0.2883	24.421	43.892			

DF: degree of freedom.

Concerning the PA, it appears that only the first two factors presented explained variances (EV) higher than the mean of the variances estimated through the randomly obtained matrices and the explained variance value allocated in the 95th percentile. Regarding the Hull method, it was also observed that the two-factor structure obtained the highest Scree test value, which indicates the best ratio between fit indices and degree of freedom presented among the possible factorial solutions (Timmerman & Lorenzo-Seva, 2011). Furthermore, similar results were observed with the EGA method, which suggested the adequacy of the

Figure 3.3. BeMaS exploratory factorial model.

EFA			
Itens	F1	F2	h2
1		0.627	0.399
2	0.695		0.490
3		0.752	0.590
4		0.588	0.365
5	0.738		0.543
6	0.798		0.636
7		0.769	0.602
8	0.705		0.503
9		0.748	0.563
10	0.653		0.430
Corr.	0.049		
E.V	31.69	29.02	
Total E.V	60.72		
Alfa	0.722	0.821	
Ômega	0.761	0.823	

As presented in Figure 3.3, the factor loadings of Factor 1 varied between .653 (item 10) and .798 (item 6), while for Factor 2, they varied between .588 (item 4) and .769 (item 7), with these results indicating the adequacy of all the factor loadings, all being statistically different from zero ($p < .001$). The theoretical interpretation of the factors demonstrates that Factor 1 grouped the items referring to malicious envy while Factor 2 grouped the items that contained content related to benign envy. Regarding the amount of shared variance in the factor presented by the items, the commonality values indicated that they varied between .365 (item 4) and .636 (item 6), therefore, being adequate. Additionally, the results from the EFA also indicated the adequacy of the two-factor model $X^2 = 42.534$, $df = 26$, $p = .021$; $X^2/df = 1.63$; CFI = .974; GFI = .983; RMSEA = .072 (95%CI 0.036 - 0.082).

Also regarding the internal structure, there was an absence of correlation between the factors and the potential of the factorial structure, composed of two factors, to explain 60.72% of the total variance of the data, 31.69%, and 29.02%,

respectively. The reliability indices of the factors that compose the BeMaS were satisfactory, with alphas greater than .722 and omegas greater than .761. Finally, the correlations between the scores presented by the adolescents in the BeMaS factors and the scores presented in the different factors of the DASS-21 and in the SWLS were estimated, the results of which are presented in Figure 3.4. Figure 3.4 shows that the indicators of malicious envy presented positive correlations of moderate magnitude with the anxiety and depression variables. However, the higher correlation index with anxiety ($r = .392$; $p < .001$) stands out. Correlations of low magnitude of malicious envy with the stress (positive) and satisfaction with life (negative) variables were also observed. These results indicate the tendency of people with a high level of malicious envy to show, also, a decline in mental health indicators and in satisfaction with life. Conversely, there was a positive association of low magnitude between benign envy and the satisfaction with life indicator.

Figure 3.4. Correlation between BeMaS, DASS-21 and ESV.

	Benign envy	Malicious envy	Stress	Anxiety	Depression	Satisfaction with life
Benign envy	–					
Malicious envy	0.049	–				
Stress	0.001	0.240**	–			
Anxiety	-0.097	0.392**	0.611**	–		
Depression	-0.087	0.363**	0.600**	0.603**	–	
Satisfaction with life	0.205*	-0.250**	-0.435**	-0.391**	-0.538**	–

* $p < 0.01$, ** $p < 0.001$.

4. Discussion

The aims of this study were the cross-cultural adaptation of the Benign and Malicious Envy Scale (BeMaS) to Brazilian Portuguese and the investigation of the initial evidence of the validity of the Brazilian instrument. As a further objective, we sought to fulfill the need to accumulate scientific evidence for the multidimensional comprehension of envy as a psychological phenomenon, as proposed by Lange and Crusius (2015). Understanding envy as a psychological phenomenon is currently being considered in the international literature based on a two-dimensional model. However, this does not occur in the Brazilian context due to the absence of an

instrument that is based on this conceptual comprehension. What is observed is the comprehension of envy as a unidimensional psychological construct of an exclusively destructive character, with the provision of measurement instruments that are based on this theoretical comprehension (Medeiros et al., 2016; Milfont & Gouveia, 2009).

The results obtained in the present study are consistent with those observed in the studies of the original version of the BeMaS (Lange & Crusius, 2015) and in the versions of the instrument adapted for other cultures, such as Japanese (Sawada & Fujii, 2016), Spanish (Navarro-Carrilo, 2017) and American (Kwiatkowska et al., 2020). They corroborate the theoretical expectation of the internal structure composed of two groups of items coherent with the contents referring to benign envy and malicious envy. This two-factor structure was indicated by all the factor retention methods used in the study, and the items did not present any cross factor loading (> 0.1). The EFA also indicated theoretical/empirical adequacy of the Brazilian version of the BeMaS, providing the initial evidence of validity based on the internal structure of this version (AERA, APA, & NCME, 2014).

The study by Kwiatkowska et al. (2020) verified, through Confirmatory Factor Analysis, the structural adequacy with two factors for four different social groups that lived in the United States of America (Germans, Americans, Russians, and Poles), composing a total sample of 2,792 participants who responded to the scale in their mother tongues. These results, combined with those observed in the present study, indicate the stability of the two-factor structure, as it has been shown to be adequate through the use of different methods such as EFA and CFA, for example. It should be highlighted that the authors observed only configural invariance between the groups evaluated, therefore, it was not possible to establish metric and scalar invariance. The results of the studies indicated the universality of the factorial structure and composition of items by factor, despite the equivalence of 0.08% of the factor loadings of the items in their respective factors and of 20% of the intercepts of the items.

In this sense, it is suggested that future studies with the Brazilian version of the BeMaS use larger samples in order to estimate evidence of invariance in the parameters of the measurement model, through multigroup analyses, with different group formations such as sex, age group (adults and older adults) and groups from different contexts, such as educational (school and university) and sports (different

modalities), among others. Intercultural invariance studies should also be carried out, using samples from other countries.

Regarding the reliability indicators, this study's results indicate low levels of error associated with the estimation of the participants' scores, with alphas greater than 0.722 and omegas greater than 0.761 (McDonald, 1999). These results are slightly lower than those observed in the original version of the scale, with alphas of 0.85 for the benign envy factor and 0.89 for the malicious envy factor (Lange & Crusis, 2015). It should be noted that Cronbach's alpha coefficient is a statistic influenced by the number of participants who respond to the instrument and the number of items on the scales. Accordingly, the slight difference in favor of the results of the original version may have occurred due to the larger sample size ($N = 365$). However, these results are less discrepant when comparing the omega coefficients, which are less influenced by these factors. The reliability indicators were also consistent with the other versions of the BeMaS (Kwiatkowska et al., 2020; Navarro-Carrilo et al., 2017; Sawada & Fujii, 2016) and, therefore, suggest the adequacy of the initial evidence of the reliability of the Brazilian version (AERA, APA, & NCME, 2014).

This evidence, added to that observed with other versions of the BeMaS, should not be restricted to the level of the instruments, but comprehended as empirical evidence that supports the understanding of the psychological phenomenon of interest, in this case, envy. According to Primi (2010), one of the main objectives when developing a measurement instrument is to operationalize a psychological theory through observable events (item of the tests), opening the way for this theory to be empirically tested and developed for a determined scientific field. The results of the present study provide new empirical evidence for the multidimensional comprehension of envy that has been developing over recent decades (Foster, 1972; Parrott, 1991; Van de Ven et al., 2009) and can be comprehended from the perspective of the validation of this theoretical proposal (Primi, 2010), which, until now, had not been applied in the Brazilian context or with adolescents.

Regarding validity based on the relationship with variables external to the BeMaS, associations were found between the benign and malicious envy factors and the external stress, anxiety, depression, and life satisfaction variables. In agreement with the theoretical perspective, what was observed, in general, was a moderate positive association between malicious envy and the aspects limiting adolescents' mental health, such as stress and anxiety, and a negative association

with life satisfaction. These results corroborate the theoretical expectation that people with negative envy, who tend to direct their feelings and behaviors so that people superior to them lose their qualities, achievements, or possessions, also experience higher levels of tension and psychological discomfort. Accordingly, the higher correlation value observed with the anxiety variable stands out, which is defined as the presence of negative affects, irritability, insomnia, and an unpleasant psychological state associated with the condition of high emotional distress (Varela, Pereira, Pereira, & Santos, 2017). Conversely, adolescents with high levels of malicious envy presented a decrease in the level of satisfaction with their own lives (Diener et al., 1985), which justifies the psychological engagement to destroy the possessions and qualities of those that, according to their comprehension, have better lives (Crusius et al., 2019; Lange & Crusius, 2015).

Finally, there was a positive association between benign envy and life satisfaction. According to the theoretical proposal that gave rise to the development of the items that compose benign envy, these results corroborate the hypothesis of association between these variables, since this type of envy would lead people to develop new skills and improve aspects of their life when comparing themselves with other subjects. Psychological engagement would focus on the development of one's own qualities and potentialities and not on the destruction of the qualities of others (Van de Ven, 2016; Van de Ven et al., 2009). Therefore, when responding to the perception of their own lives, the respondents tended to present higher levels of satisfaction. These results are consistent with those observed by Sawada and Fuji (2016), who, although did not work specifically with life satisfaction, observed correlations with similar directions and magnitudes when assessing self-esteem, as did Navarro-Carrilo et al. (2017) when assessing self-efficacy and self-esteem.

5. Final Considerations

The Brazilian version of the BeMaS proved to be an adequate measure for assessing the two dimensions of envy in adolescents. The use of different procedures made it possible to evaluate different sources of validity and reliability evidence. The results obtained in this study were very consistent with those observed in studies carried out with the original (German) version and versions adapted for other cultures. It is considered that the BeMaS can contribute to the development of the comprehension of envy in the Brazilian context, given that, until now, this

construct had only been studied considering the unidimensional theoretical concept. Finally, some limitations should be highlighted, such as the need to expand the data collection in order to have larger and more representative samples of the Brazilian cultural territorial area, aiming to contribute to the evaluation of new validity evidence, as well as to the development of future interpretative standards for the instrument scores. Therefore, caution is suggested in generalizing the results presented.

References

- American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington: American Educational Research Association.
- Crusius, J., Gonzalez, M. F., Lange, J., & Cohen-Charash, Y. (2019). Envy: An adversarial review and comparison of two competing views. *Emotion Review*, 12(1), 3–21. doi:10.1177/1754073919873131
- Diener, B. C., Holcomb, P. J., & Dykman, R. A. (1985). P300 in major depressive disorder. *Psychiatry Research*, 15(3), 175–184. doi:10.1016/0165-1781(85)90074-5
- Ferrando, P. J., & Lorenzo-Seva U. (2018). Assessing the quality and appropriateness of factor solutions and factor score estimates in exploratory item factor analysis. *Educational and Psychological Measurement*, 78, 762–780. doi:10.1177/0013164417719308
- Ferrando, P. J., & Lorenzo-Seva, U. (2017). Program FACTOR at 10: Origins, development and future directions. *Psicothema*, 29(2), 236–241. doi:10.7334/psicothema2016.304
- Forero, C. G., Maydeu-Olivares, A., & Gallardo-Pujol, D. (2009). Análise de fatores com indicadores ordinais: Estudo de Monte Carlo comparando a estimativa de DWLS e ULS. *Modelagem da Equação Estrutural*, 16(4), 625–641. doi:10.1080/10705510903203573
- Foster, G. (1972). The anatomy of envy. *Current Anthropology*, 13, 165–202.
- Golino, H. F., & Epskamp, S. (2017). Exploratory graph analysis: A new approach for estimating the number of dimensions in psychological research. *Plos One*, 12(6), e0174035. doi:10.1371/journal.pone.0174035
- Kwiatkowska, M. M., Rogoza, R., & Volkodav, T. (2020). Psychometric properties of the Benign and Malicious Envy Scale: Assessment of structure, reliability, and measurement invariance across the United States, Germany, Russia, and Poland. *Current Psychology*, 2020. doi:10.1007/s12144-020-00802-4

- Lange, J., & Crusius, J. (2015). Dispositional envy revisited: Unraveling the motivational dynamics of benign and malicious envy. *Personality and Social Psychology Bulletin*, 41(2), 284–294. doi:10.1177/0146167214564959
- Lara, D., & Alexis, S. (2014). ¿Matrices policóricas/tetracóricas o matrices Pearson? Un estudio metodológico. *Revista Argentina de Ciencias del Comportamiento*, 6(1), 39–48. doi: 10.30882/1852.4206.v6.n1.6357
- Lorenzo-Seva, U., & Ferrando, P. J. (2020). Not positive definite correlation matrices in exploratory item factor analysis: Causes, consequences and a proposed solution. *Structural Equation Modeling: A Multidisciplinary Journal*, 28(1), 138–147. doi:10.1080/10705511.2020.1735393
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck depression and anxiety inventories. *Behaviour Research and Therapy*, 33(3), 335–343. doi:10.1016/j.rbp.2012.05.003
- Marsh, H. W., Guo, J., Dicke, T., Parker, P. D., & Craven, R. G. (2020). Confirmatory Factor Analysis (CFA), Exploratory Structural Equation Modeling (ESEM), and Set-ESEM: Optimal balance between goodness of fit and parsimony. *Multivariate Behavioral Research*, 55(1), 102–119. doi:10.1080/00273171.2019.1602503
- McDonald, R. P. (1999). *Test theory: A unified treatment*. Mahwah, NJ: L. Erlbaum Associates.
- Medeiros, E. D. D., Soares, A. K. S., Nascimento, A. M. D., Silva, J. B. S., & Gouveia, V. V. (2016). An ungrateful disposition: Psychometric Properties of the Dispositional Envy Scale in Brazil. *Paidéia*, 26(65), 351–358. doi:10.1590/1982-43272665201605
- Milfont T. L., & Gouveia V. V. (2009). A capital sin: Dispositional envy and its relations to wellbeing. *Revista Interamericana de Psicología*, 43(3), 547–551.
- Navarro-Carrillo, G., Beltrán-Morillas, A., Valor-Segura, I., & Expósito, F. (2017): What is behind envy? Approach from a psychosocial perspective. *Revista de Psicología Social*, 32(2), 217–245. doi:10.1080/02134748.2017.1297354
- Parrott, W. G. (1991). The emotional experiences of envy and jealousy. In P. Salovey (Ed.), *The psychology of jealousy and envy* (pp. 3–30). New York: Guilford.
- Patias, N. D., Machado, W. D. L., Bandeira, D. R., & Dell’Aglío, D. D. (2016). Depression Anxiety and Stress Scale (DASS-21)–Short Form: Adaptation and validation for Brazilian adolescents. *Psico-USF*, 21(3), 459–469. doi:10.1590/1413-82712016210302

- Primi, R. (2010). Avaliação psicológica no Brasil: Fundamentos, situação atual e direções para o futuro. *Psicologia: Teoria e Pesquisa*, 26(esp.), 25–35. doi:10.1590/S0102-37722010000500003
- Rawls, J. (1971). *A theory of justice*. Cambridge, MA: Harvard University Press.
- Sawada, M., & Fujii, T. (2016). Do envious people show better performance?: Focusing on the function of benign envy as personality trait. *The Japanese Journal of Psychology*, 87(2), 198–204. doi:10.4992/jjpsy.87.15316
- Silver, M., & Sabini, J. (1978). The perception of envy. *Social Psychology*, 41(2), 105–117.
- Smith, R. H., & Kim, S. H. (2007). Comprehending envy. *Psychological Bulletin*, 133, 46–64. doi:10.1037/0033-2909.133.1.46
- Tabachnick, B. G., & Fidell, L. S. (2018). *Using multivariate statistics*. New Jersey: Person.
- Timmerman, M. E., & Lorenzo-Seva, U. (2011). Dimensionality assessment of ordered polytomous items with Parallel Analysis. *Psychological Methods*, 16, 209–220. doi:10.1037/a0023353
- Van de Ven, N. (2016). Envy and its consequences: Why it is useful to distinguish between benign and malicious envy. *Social and Personality Psychology Compass*, 10(6), 337–349. doi:10.1111/spc3.12253
- Van de Ven, N., Zeelenberg, M., & Pieters, R. (2009). Leveling up and down: The experience of benign and malicious envy. *Emotion*, 9, 419–429. doi:10.1037/a0015669
- Varela, A., Pereira, A., Pereira, A., & Santos, J.C. (2017). Distress psicológico: contributos para a adaptação portuguesa do SQ-48. *Psicologia, Saúde & Doenças*, 18(2), 278–296. doi: 10.15309/17psd180201
- Zanon, C., Bardagi, M. P., Layous, K., & Hutz, C. S. (2014). Validation of the Satisfaction with Life Scale to Brazilians: Evidences of measurement noninvariance across Brazil and US. *Social Indicators Research*, 119, 443–453. doi: 10.1007/s11205-013-0478-5

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