Multistudy Report

Cross-Cultural Comparison of the Benign and Malicious Envy Scale (BeMaS) Across Serbian and US Samples and Further Validation

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Abstract: The aim of this research was to validate the dual conception of envy in Serbian culture, measured by the Benign and Malicious Envy Scale (BeMaS). In Study 1 ($N = 404$), the results confirmed cross-cultural invariance of the Malicious Envy scale across Serbian and US samples, with the US sample obtaining higher scores. However, two items in the Benign Envy scale showed significant differential item functioning across samples. Nonetheless, both scales in Serbian showed adequate measurement precision (information) and the expected distinction in relations with narcissistic admiration, narcissistic rivalry, and self-esteem, with more aversive characteristics associated with Malicious Envy. In Study 2 ($N = 404$), Malicious Envy showed a negative relation with Conscientiousness and Openness, as well as higher negative correlations with Honesty-Humility, Agreeableness, psychopathy, and sadism compared to Benign Envy. Furthermore, Malicious Envy showed higher positive correlations with psychological distress, while Benign Envy showed negative correlations with some aspects of distress. The results support good psychometric properties of BeMaS scores of the Serbian adaptation and add to the cross-cultural validity of the dual conception of envy.

Keywords: Benign and Malicious Envy Scale, differential item functioning, item response theory, cross-cultural comparison, validity

Envy emerges as a result of unfavorable social comparison, in which another person is deemed superior to oneself in terms of a valued possession, quality, or achievement (Parrott & Smith, 1993). Even though envy can be viewed as an episodic emotion, there are also reasons to recognize a dispositional form of envy (Smith et al., 1999; Lange, Blatz, et al., 2018). There are several partly distinct conceptualizations of envy (see Lange, Weidman, et al., 2018), but most theorists agree on two crucial characteristics of envy. First, envy arises from upward social comparison, rendering the image of the self as inferior. Second is the psychological pain experienced due to upward social comparison, such as the feeling of inferiority (e.g., Miceli & Castelfranchi, 2007) or feelings of hostility, resentment, and hopelessness (e.g., Smith & Kim, 2007). Envy plays an important role in mental health as well as interpersonal relations. It has been related to poor mental health outcomes, including

depression (Appel et al., 2015), and lowered self-esteem (Smith et al., 1999). Furthermore, envious individuals can go as far as to inflict harm on others (Duffy et al., 2012) or hurt the self or a valued object, so that the other person would not have it (Zizzo & Oswald, 2001).

However, not all authors embrace the ill-will component as inherent to envy. Instead, some emphasize the importance of the desire to level out the differences in status, which could be achieved either by leveling down the envied person or leveling up oneself (Lange & Crusius, 2015). Therefore, we will focus on this dual-facet conceptualization of envy by which it is possible to distinguish between benign and malicious envy (van de Ven et al., 2009; Lange et al., 2016). The benign form is characterized by the desire to improve oneself and emulate the envied person. The malicious form refers to what is traditionally recognized as envy and it is characterized by direct or indirect aggression toward the envied person. Both forms stem from the upward social comparison that is unfavorable to one's self-image and they both include the painful emotional component of tormenting feelings of inferiority (Lange & Crusius, 2015; Lange, Blatz, et al., 2018). This distinguishes

benign envy from positive emotions such as admiration (Lange & Crusius, 2015; van de Ven et al., 2015).

Indeed, several languages have distinct words for two forms of envy, for example, German (*beneiden* and *missgönnen,* Lange & Crusius, 2015), Polish (*zazdrość* and *zawiść,* Kwiatkowska et al., 2020) or Urdu (*rashk* and *hassad,* Khan et al., 2017). The Serbian language does not make this linguistic distinction and the used term (*zavist*) only refers to the malicious form. However, previous research has suggested that even in languages like Serbian, it is possible to discern two different emotional states related to envy (Lange, Weidman, et al., 2018).

The distinction between the two forms of envy is reflected in motivational, emotional, cognitive, and personality functioning. If the unfavorable social comparison ignites the achievement motive coupled with hope for success and a sense of personal control, the resulting emotion is benign envy. By contrast, if this motive is coupled with the fear of failure and the perception of the other's advantage as undeserved, the resulting emotion is malicious envy (Lange & Crusius, 2015; Lange et al., 2016). While experiencing both benign and malicious envy is similarly painful, previous research recognized some positive emotional components of the experience of benign envy (van de Ven et al., 2009). For instance, benign envy has been shown to be related to hope for success, a higher perception of personal control, and social potency (Lange et al., 2016). Additionally, benign envy positively predicted psychological well-being, while malicious envy negatively predicted well-being through a decreased sense of personal control (Briki, 2019). Furthermore, malicious and not benign envy predicts schadenfreude or joy at the misfortune of others (Lange, Weidman, et al., 2018; van de Ven et al., 2015). Although both forms of envy have been found to be related to narcissism, benign envy has been related to narcissistic admiration, while malicious envy has been related to narcissistic rivalry and consequently, to the propensity for social conflict (Lange et al., 2016). Malicious envy has also been uniquely related to psychopathy from the Dark Triad constellation while both benign and malicious envy have been related to Machiavellianism (Lange, Paulhus, et al., 2018). Furthermore, in a study conducted on a sample of marathon runners, benign envy was coupled with an enhanced achievement, which was mediated by higher goal setting, while malicious envy predicted goal disengagement (Lange & Crusius, 2015). These studies have established differential dynamics and performance-related outcomes of the two forms of envy.

The Present Study

Given that the two forms of envy can have different outcomes in terms of mental health outcomes and interpersonal relations, we sought to empirically validate the dual conception of envy in the Serbian culture and to establish the psychometric characteristics of the instrument constructed on the basis of this conception, namely, the Benign and Malicious Envy Scale (BeMaS; Lange & Crusius, 2015).

Given the presented theoretical and empirical rationale, we expected to validate the two forms of envy in the local cultural context. The scale has primarily been tested in the Western cultural context, for example, in Germany and the US (Lange & Crusius, 2015). Although cross-cultural validity has been established in other cultures, that is, in Japanese (Sawada & Fujii, 2016), and Turkish (Çırpan & Özdoğru, 2017), only in one study cross-cultural measurement invariance was tested across samples from Poland, Germany, Russia, and the US (Kwiatkowska et al., 2020). Since the most widely used instruments in personality and social psychology failed to provide measurement invariance across different groups (Hussey & Hughes, 2020), determining cross-cultural validity in a more precise and rigorous way seems warranted. This study was designed to contribute to the existing literature and confirm the validity of the dual conception of envy in a more collectivistic society compared to most of the previously studied countries (Hofstede, 2001), that is, in Serbian society, as well as in the context of a language that does not linguistically differentiate between the two forms of envy.

Study 1

The aim of Study 1 was to explore differential item functioning (DIF) of the BeMaS across samples from Serbia and the US as well as to test other psychometric properties of the Serbian adaptation of the BeMaS by using the Item Response Theory (IRT) analysis. We expected that the BeMaS would achieve cross-cultural invariance across Serbian and US samples and that the Serbian adaptation of the BeMaS would show good α and ω reliability coefficients and measurement precision (information) across the entire range of scale scores. Furthermore, convergent and discriminant validity of the Serbian adaptation was tested via correlations with measures of narcissism and self-esteem. Although both envy forms should correlate with narcissism, in line with previous studies, we expected that the Benign Envy scale would show a higher correlation with narcissistic admiration and a lower correlation with narcissistic rivalry, compared to the Malicious Envy scale (e.g., Lange et al., 2016). This would contribute to their discriminant validity. Moreover, since Benign Envy has been related to positive outcomes (e.g., better well-being, see Briki, 2019; hope for success and a higher sense of personal control, see Lange et al., 2016), we expected that it would show a positive correlation with self-esteem, unlike Malicious Envy.

Participants and Procedure

The Serbian sample comprised 404 students ($M = 21.73$, $SD = 4.86$), 74.8% of whom were female. The data for this study were collected within a larger cross–cultural study that aimed to determine cross–cultural validity of several instruments ("Cross-cultural study on narcissism, envy, shyness, and humor" led by researchers at the Cardinal Stefan Wyszyński University in Warsaw, Poland). There were no excluded participants or missing data. Participants were recruited among university students, in exchange for course credit. Prior to data collection, Research Ethics Board approval was obtained from the Commission of Ethics and Bioethics at Cardinal Stefan Wyszyński University in Warsaw, Poland (registration number: KEiB – 14/2017).

The US sample was extracted from Lange, Paulhus, et al. (2018), whereby 5 MTurk samples (https://osf.io/mb74v/) in this study were merged and selected subsample which matches the Serbian sample in both sample size and age (the upper third of the total sample). Only those who reported that English was their mother tongue were included. The extracted sample comprised 417 participants (41.7% females).

Instruments

The Benign and Malicious Envy Scale (BeMaS; Lange & Crusius, 2015, for the Serbian adaptation see https://osf.io/3msne/) consists of 10 items with a 6-point Likert scale (from 1 = *strongly disagree* to 6 = *strongly agree*). Five items refer to Benign Envy and the remaining 5 refer to Malicious Envy. Besides the BeMaS, two more measures were used: (1) a short-version of the Narcissistic Admiration and Rivalry Questionnaire (NARQ-S; Back et al., 2013, for the Serbian adaptation of the long-version of the scale see Gojković et al., 2019), which comprises 6 items with a 6-point Likert scale (from 1 = *not agree at all* to 6 = *agree completely*), of which 3 items measure Narcissistic Admiration ($\alpha = .80$) and the remaining 3 measure Narcissistic Rivalry ($\alpha = .56$). Since this is the first use of NARQ-S, model fit in this study was good: CFI = .98, TLI = .96, RMSEA = .07, 90% CI [.03, .10], SRMR = .04, and better than one-factor solution ($\Delta\chi^2(1) = 48.17$, $p < .001$); (2) the Single-Item Self-Esteem Scale (Robins et al., 2001), which contains one item with a 7-point Likert scale (from 1 = *not very true of me* to 7 = *very true of me*).

Data Analysis

First, a confirmatory factor analysis (CFA) with a maximum likelihood estimator was conducted in order to test a two-factor model of the BeMaS ("lavaan" R package; Rosseel, 2012). In line with recommendations required indices for an excellent fit are RMSEA and SRMR < .06, and TLI and CFI > .95, and for an acceptable fit are RMSEA and SRMR < .08, and TLI and CFI > .89 (Greiff & Allen, 2018). A substantive convergent validity is achieved when all item loadings are significant and the average variance extracted (AVE; see Fornell & Larcker, 1981) is higher than .50 within each factor.

Second, the IRT analysis was applied in order to: (1) detect DIF between Serbian and US samples, and (2) test the psychometric properties of the Serbian version. Items flagged for DIF indicated that participants of two samples, who have equal levels of the latent trait, do not have the same probability of endorsing the item. There are two types of DIF: (1) uniform, in which DIF effect remains constant across the continuum of the latent trait, and (2) nonuniform, in which the strength or direction of the DIF effect is not the same across the continuum of the latent trait. Change higher than 0.02 in McFadden's pseudo R^2 indicated significant DIF ("lordif" R package, Choi et al., 2011). In addition to DIF, differential test functioning (DTF) was also calculated to assess the impact of DIF on the total scale score. DTF was calculated via an analysis of covariance in which the sample (Serbian or the US) was entered as a factor, the average score only on DIF-free items as the covariate, and the total average score on all items as the dependent variable. The resulting difference in mean total scores between samples was then divided by the standard deviation of the US group to obtain effect size (d_{DTF}). This effect size was interpreted in accordance with Cohen's (1988) rule of thumb: 0.2 for a small effect, 0.5 for a moderate effect, and 0.8 or higher for a large effect.

Furthermore, the IRT graded response model was conducted in "ltm" R package (Rizopoulos, 2006). Two item parameters were analyzed: difficulty (β), which refers to the amount of the latent trait necessary to have a 50% chance of endorsing the item, and discrimination (a), which indicated how well an item can differentiate between participants at different trait levels. Discrimination parameters up to 0.64 are low, those between 0.65 and 1.34 are moderate, those between 1.35 and 1.69 are high, and those over 1.7 are very high (Baker, 2001). The key characteristic in the IRT is information, which reflects measurement reliability or precision at each level of the latent trait. Prior the main IRT analysis, the unidimensionality of each scale was tested via parallel analysis, and absence of misfit combinations of items.

Third, convergent and discriminant validity correlations with narcissism and self-esteem measures were calculated with Steiger's Z test for testing the significance of dependent correlations.

The sample size was determined in line with recommendations that for multi-group modeling the rule of thumb is a minimum of 100 cases/observations per group (Kline, 2016).

Data and R code for both studies are available at https://osf.io/3msne/.

Design and Analysis Transparency Statement

We report how we determined our sample size, all data exclusions (if any), all data inclusion/exclusion criteria, whether inclusion/exclusion criteria were established prior to data analysis, all measures in the study, and all analyses including all tested models. If we use inferential tests, we report exact p values, effect sizes, and 95% confidence or credible intervals.

Results

The results of the CFA showed that the US version had excellent CFI, TLI, and SRMR indices, while RMSEA was acceptable ($\chi^2(34) = 116.03$, CFI = .96, TLI = .95, RMSEA = .08, 90% CI [.06, .09], SRMR = .05). The Serbian version had excellent CFI and TLI, acceptable SRMR, and questionable RMSEA ($\chi^2(34) = 137.08$, CFI = .95, TLI = .93, RMSEA = .09, 90% CI [.07, .10], SRMR = .08). Overall, the majority of the indices for the Serbian version had acceptable model fit. One-factor model was included for model comparison in line with other conceptualizations of envy (e.g., Miceli & Castelfranchi, 2007). Results showed that the two-factor model was better than the one-factor model in both samples (Serbian: $\Delta\chi^2(1) = 540.69$, $p < .001$; the US: $\Delta\chi^2(1) = 1237.4$, $p < .001$). All loadings on the Serbian version were significant and high (ranged from .55 to .84) and the correlation between the two factors was significant although low ($r = .34$, $p < .001$). Both scales of the Serbian adaptation showed high AVE values (Benign Envy: AVE = .51; Malicious Envy: AVE = .57), which confirmed their convergent validity (Table 1). Reliability based on Cronbach's α and McDonald's ω coefficients was good for both scales (Table 1). There were no sex differences in either of the scales (Benign Envy: $t(402) = -0.60$, $p = .551$, $d = 0.07$; Malicious Envy: $t(402) = -0.40$, $p = .689$, $d = 0.05$).

Both scales showed unidimensionality (see Figure A in the supplementary material available at https://osf.io/3msne/) and correlations between the residuals were small within the scales, ranged from −.15 to .11. There were no flagged two-way or three-way misfit combinations of items (see Table A in the supplementary material available at https://osf.io/3msne/). The DIF analysis on the Benign Envy scale resulted in 2 items flagged for DIF (Figure 1). Both flagged items showed uniform DIF. Discrimination parameters were higher in the US sample. Item response

functions suggested that category threshold parameters for the US sample were uniformly smaller than those for the Serbian sample (Figure 1). Thus, participants in the US sample were more likely to endorse these items. Effect size for the DTF effect was moderate ($d_{\text{DTF}} = 0.47$). Thus, it can be concluded that responses on these two items are culturally specific, which precludes comparison between the samples.

No items on the Malicious Envy scale were flagged for DIF. Thus, a comparison including scores on this scale was justified. The results showed that the US sample had higher malicious envy compared to the Serbian sample, with a large effect size ($t(819) = -15.30$, $p < .001$, $M_{\text{Diff}} = -1.11$, 95% CI [-1.25, -0.97], $d = 1.07$). In order to check whether sex influenced the obtained differences due to the unbalanced sex distribution across cultural groups, an additional two-way factor ANOVA was conducted with sex and culture as factors. The results showed that there was neither a significant effect of sex, $F(1, 817) = 1.61$, $p = .205$, nor a significant interaction between sex and culture, $F(1, 817) = 0.60$, $p = .440$. Thus, differences in Malicious Envy could be attributed to the effect of the culture.

The IRT analysis on the Serbian adaption of the BeMaS showed that two items (B3 and M1) had high discrimination parameters, while the rest of the items had very high discrimination parameters (Table 2). Benign Envy items adequately discriminated among people along with the whole trait range, while Malicious Envy items were more "difficult" to endorse (e.g., for choosing category "1," the average level of the trait is needed). It should be noted that items flagged for DIF (B3 and B4) were the most difficult and had the lowest (although still high according to cutoff values) discrimination parameter in the Benign Envy scale.

The IRT analysis showed good information on both scales, with the Benign Envy scale being most informative in the range of average scores and Malicious Envy in the range of above-average scores (Figure 2).

Furthermore, correlations with narcissism dimensions showed that Benign Envy correlated higher with admiration and lower with rivalry compared to Malicious Envy, even after controlling for the shared variance among Benign Envy and Malicious Envy scales (Table 3). The correlation with Narcissistic Rivalry was still higher for Malicious Envy (.79) compared to Benign Envy (.40, Steiger's $Z = 10.32$, $p < .001$) after the correction for low reliability of Narcissistic Rivalry. Moreover, BE correlated positively with self-esteem whereas Malicious Envy correlated negatively with it, although both correlations were among the lowest. The same pattern remained after controlling for the shared variance, but the correlations were somewhat higher.

Table 1. Descriptives and reliabilities for the BeMaS in Serbian and US samples

	Serbia (n = 404)				US (n = 417)			
	M	SD	α	Ω	M	SD	α	ω
Benign envy	3.43	1.28	.83	.84	4.17	1.06	.86	.86
Malicious envy	1.58	0.85	.87	.87	2.69	1.19	.90	.90
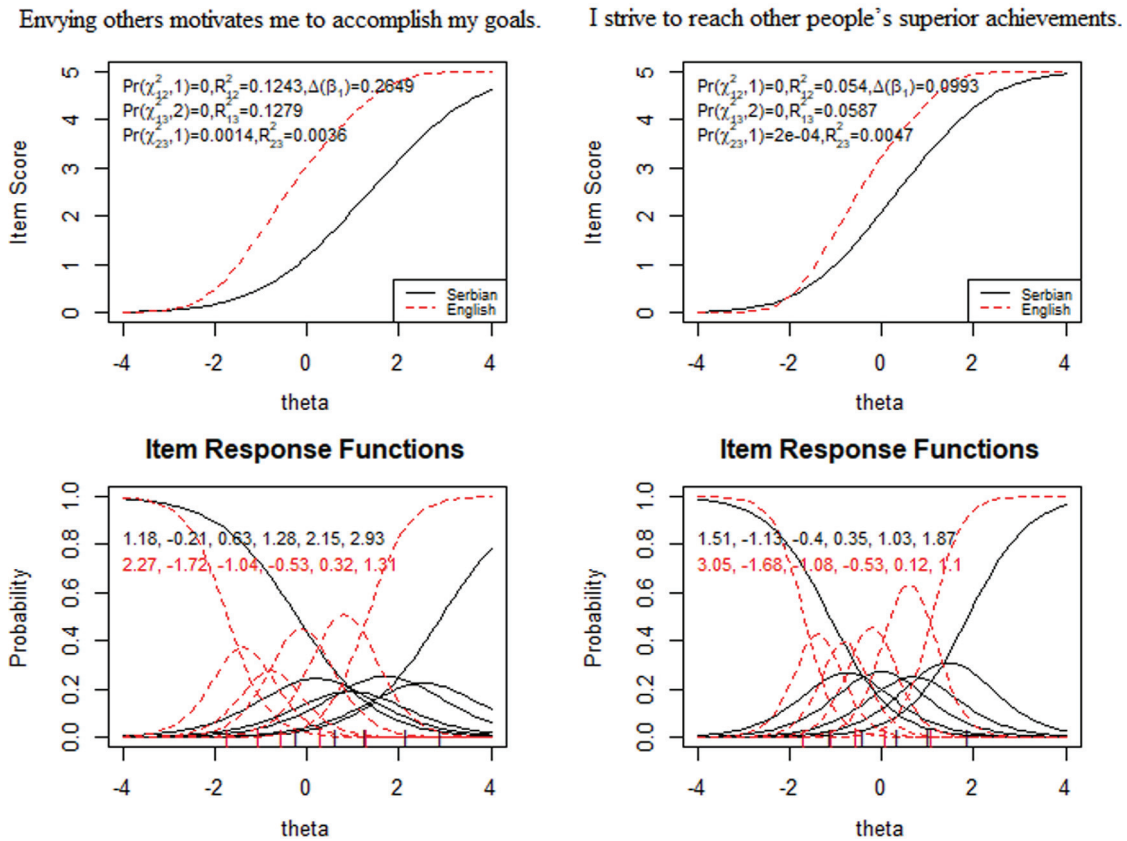
Figure 1. Benign Envy items with differential item functioning across Serbian and US samples.

Table 2. Item Response Theory parameters of items of the Serbian adaptation of the BeMaS

Item code	No. in BeMaS	β_1	β_2	β_3	β_4	β_5	a
B1	1	−1.37	−0.82	−0.41	0.14	0.98	2.07
B2	3	−1.82	−1.34	−0.72	−0.08	0.71	2.44
B3	4	−0.15	0.57	1.12	1.87	2.53	1.40
B4	7	−0.91	−0.30	0.30	0.88	1.59	1.86
B5	9	−1.06	−0.60	−0.16	0.36	0.84	3.63
M1	2	−0.17	0.83	1.56	2.58	3.37	1.43
M2	5	0.73	1.33	1.82	2.30	2.53	3.18
M3	6	0.51	1.08	1.45	1.97	2.29	3.57
M4	8	0.79	1.42	1.69	2.04	2.66	3.50
M5	10	0.70	1.39	1.81	2.41	2.94	3.05

Note. β_{1-4} = item difficulty parameter for each response category, a = discrimination parameter.
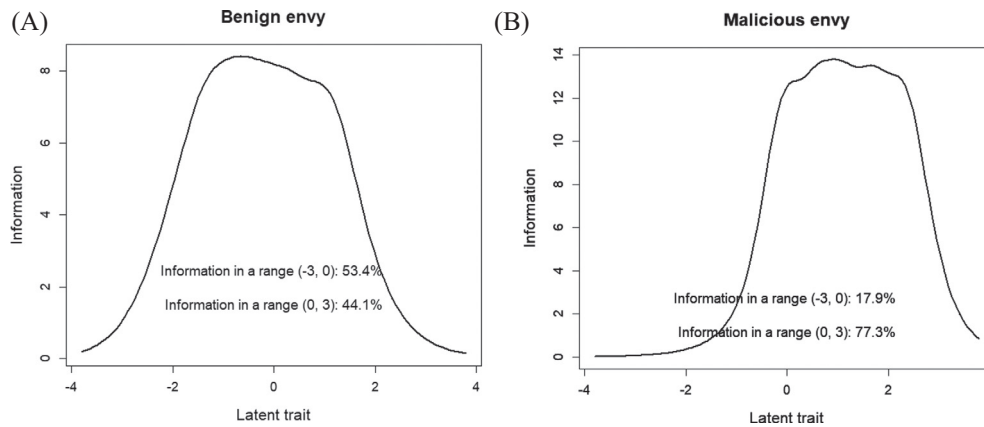
Figure 2. Information of the Serbian adaptation of Benign Envy (A) and Malicious Envy (B) scales.

Table 3. Zero-order and partial correlations between the Serbian adaptation of the BeMaS and narcissism and self-esteem measures

	Benign envy	Malicious envy	Steiger's Z
Malicious envy	.35***	1	–
Narcissistic admiration	.28*** (.24***)	.17** (.08)	0.21*
Narcissistic rivalry	.27*** (.10*)	.55*** (.51***)	−5.68***
Self-esteem	.12* (.21***)	−.21*** (−.27***)	5.87***

Note. Presented in the parentheses are partial correlations for BeMaS scales, after controlling for the other scale from the BeMaS. Steiger's Z was calculated on zero-order correlations. ***$p < .001$; **$p < .01$; *$p < .05$.

Discussion

The results of Study 1 supported the proposed two-factor solution of the Serbian adaptation of the BeMaS, with low correlations among factors. Both Benign Envy and Malicious Envy scales had a good internal consistency, which is in line with previous studies (e.g., Lange & Crusius, 2015). The results of the IRT analysis supported good measurement precision of both scales. However, it was noticeable that the Malicious Envy scale was more precise in the above-average score range. Thus, it seems more appropriate for those who could manifest this more socially aversive form of envy. This phenomenon commonly occurs with measures of socially undesirable traits (e.g., Dinić et al., 2018). Almost all items of the Malicious Envy scale were difficult to endorse, which affected measurement precision at lower trait levels.

Furthermore, the results of the DIF analysis showed that two items from the Benign Envy scale were not cross-culturally invariant ("Envying others motivates me to accomplish my goals" and "I strive to reach other people's superior achievements"). These two items seem to be more general and do not include direct, explicit comparison with another person, but rather a general feeling of envy as a source of motivation. By comparison, other items from the Benign Envy scale included direct comparison with others and a direct source of perceived threat (e.g., "When

I envy others…"; "If I notice that another person is better than me…").

On the other hand, the Malicious Envy scale achieved cross-cultural invariance. Participants from the US showed higher Malicious Envy scores compared to participants from Serbia. While the mainstream American culture is characterized by high individualism and orientation toward self, Serbian culture is more collectivistic (Hofstede, 2001). Thus, differences in malicious envy could indicate that individualistic cultures prioritize personal benefits over group benefits, coupled with a more competitive environment. It should be mentioned that in only one study, measurement invariance of the BeMaS was tested across samples from the US, Germany, Poland, and Russia and results showed that the largest number of non-invariant parameters concerned the Polish sample (Kwiatkowska et al., 2020). However, additional analysis showed that the scale could be considered as invariant since less than 25% of parameters were non-invariant.

To sum up, the two forms of envy, malicious and benign, were confirmed in the Serbian culture, despite the fact that there is no linguistic distinction between these forms. However, only the Malicious Envy scale showed cross-cultural invariance. Thus, participants from the Serbian sample obtained lower Malicious Envy scores, which could reflect the different social norms in these two cultures.

In line with some previous studies, both forms of envy were found to be positively related to narcissism (Lange et al., 2016). However, Benign Envy was more strongly related to Narcissistic Admiration, consistent with perceiving the envied person as socially potent, while Malicious Envy was more strongly related to Narcissistic Rivalry, which implies a clearer propensity for social conflict (Lange et al., 2016). Moreover, Malicious Envy showed a higher and negative relation to self-esteem compared to Benign Envy, which showed the opposite direction of the relation. This adds to previous literature on the relationship between envy and self-esteem (Smith et al., 1999), specifying that this relation depends on the type of envy experienced. Thus, correlations with narcissism and self-esteem confirmed the convergent and discriminative validity of the Serbian adaptation of the BeMaS, indicating a more aversive nature of malicious envy.

Study 2

The aim of Study 2 was to further validate the Serbian adaptation of the BeMaS. In previous studies, Benign Envy was associated with Machiavellianism and to a lesser extent with grandiose narcissism, while Malicious Envy was associated with both Machiavellianism and psychopathy from the Dark Triad (e.g., Lange, Paulhus, et al., 2018). Among HEXACO traits, Honesty-Humility could be seen as the "core" element of the Dark Tetrad (the Dark Triad + sadism, e.g., Book et al., 2016). Previous studies have shown that both forms of envy predict morally questionable behaviors (see Crusius et al., 2020), including those whose predisposition is Honesty-Humility, such as deception and manipulative interpersonal behavior. Thus, for convergent validity, we expected that both envy scales would show strong negative correlations with Honesty-Humility and positive with dark traits. In line with previous studies (e.g., Lange, Paulhus, et al., 2018), correlations with Malicious Envy should be higher for these traits, with the exception of narcissism, which should contribute to the discriminant validity of the two envy forms. For further testing of the discriminant validity, we expected that correlations with the remaining HEXACO traits would be lower compared to correlations with Honesty-Humility and Dark Tetrad traits. Moreover, since Malicious Envy is characterized by low self-control (e.g., Briki, 2019; Crusius et al., 2020), we expect that it would show a stronger negative correlation with Conscientiousness, compared to Benign Envy. Additionally, as Malicious Envy involves hostile feelings toward superior others (e.g., Crusius et al., 2020), we expect that it would negatively correlate with Agreeableness, which contains hostility, anger, and impatience on its negative pole in the HEXACO model (e.g., Ashton &

Lee, 2009). Criterion validity was further tested by establishing correlations with aspects of psychological distress. In a recent review study, Crusius et al. (2020) highlighted that both aspects of envy could be functional or dysfunctional, depending on the context. However, when general self-report measures were included without any experimental manipulation, previous studies showed that Benign Envy positively predicted well-being while the opposite was true for Malicious Envy (Briki, 2019). Therefore, we expected that both Benign Envy and Malicious Envy scales would significantly correlate with psychological distress, although Malicious Envy should be more strongly related to indicators of distress.

Participants and Procedure

The sample comprised 404 participants (49.5% males) from the general population from Serbia, aged between 20 and 76 years ($M = 34.59$, $SD = 11.95$), of whom 32.2% had finished high school, 29% were university students, 12.6% had finished college, and 26.2% had a university degree. The sample was collected by trained undergraduate students as a part of their pre-exam activity. In order to collect data from a heterogeneous sample, each student collected data from six participants, in accordance with the given gender and age quotas (three age groups: 20–29, 30–39, 40 years and older, with both male and female participants in each age group). The data for this study were collected within a larger study, which also contained data for other instruments. The study of Dinić, Sadiković, et al. (2020) was conducted from the same dataset, but with different instruments and aims. There were no excluded participants or missing data. The study was approved by the Ethical Committee of the Department of Psychology, Faculty of Philosophy, University of Novi Sad, Serbia, which is the Second Instance Commission of the Ethical Committee of the Serbian Psychological Society.

Instruments

Five instruments were administered:
(1) The BeMaS;
(2) The HEXACO-60 (Ashton & Lee, 2009, for the Serbian adaptation of the long version see Međedović et al., 2019, and for short see, for example, Dinić et al., 2018), which is a 60-item measure of six traits from the lexical HEXACO model of personality: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience;
(3) The Short Dark Triad (SD3; Jones & Paulhus, 2014, for the Serbian adaptation see Dinić et al., 2018), which measures three dark traits, that is, the Dark Triad (Machiavellianism, narcissism, and psychopathy), with 9 items per trait;

(4) The Short Sadistic Impulse Scale (SSIS; O'Meara et al., 2011, for the Serbian adaptation see Dinić, Bulut Allred, et al., 2020), which contains 10 items and measures sadism as the fourth dark trait;

(5) The Clinical Outcomes in Routine Evaluation – Outcome Measure CORE-OM (Evans et al., 2000), which contains 34 items measuring four aspects of psychological distress – (poor) subjective well-being (4 items), problems and symptoms including anxiety, depression, somatic symptoms, and the like (12), (poor) functioning, including general functioning and functioning in close and social relationships (12), and risk, including harm to self and harm to others (6), with higher scores corresponding to higher psychological distress. Due to the similarity between the Serbian and Croatian languages, an already established Croatian translation (Jokić-Begić et al., 2014) was adapted to the Serbian language. For the Serbian adaptation, see Dinić, Sadiković, et al. (2020) in which the same dataset was used but with other aims and sets of instruments. All measures contain a 5-point Likert-type scale for answering. Cronbach's αs and ωs are presented in Table 3.

Data Analysis

First, a CFA was conducted in order to check the model fit on this sample. To determine the model fit, the same criteria were used as in Study 1 (see Greiff & Allen, 2018). For the minimum sample size for CFA, we followed the recommendation of $N = 200$ (Kline, 2016). Second, convergent and discriminant validity correlations with used measures were calculated, with Steiger's Z test for testing the significance of dependent correlations. Profile similarity between the two scales was calculated by Cronbach and Gleser's (1953) D statistics based on Euclidean distances. Lower values indicated greater profile similarity and D could be interpreted as Cohen's d. The value of 0.41 was interpreted as the minimum effect size representing a "practically" significant effect for social science data (Ferguson, 2009).

Design and Analysis Transparency Statement

We report how we determined our sample size, all data exclusions (if any), all data inclusion/exclusion criteria, whether inclusion/exclusion criteria were established prior to data analysis, all measures in the study, and all analyses including all tested models. If we use inferential tests, we report exact p values, effect sizes, and 95% confidence or credible intervals.

Results

The results of the CFA confirmed that the two-factor model was better than the one-factor model ($\Delta\chi^2(1) = 583.45$, $p <$ .001). In the two-factor model solution, CFI and TLI showed good model fit, SRMR questionable, and RMSEA poor ($\chi^2(34) = 167.23$, CFI = .92, TLI = .90, RMSEA = .10, 95% CI [.08, .11], SRMR = .09). Correlations between the residuals were small within the scales, ranged from −.05 to .04. The highest modification indices include the B3 item which had significant DIF in Study 1. However, considering that only one fit index (RMSEA) showed poor model fit, we kept the original two-factor model in further analyses. All loadings were high, ranging from .69 to .85, with a significant but low correlation between factors ($r =$ .33, $p <$ .001). Moreover, AVE was .53 for Benign Envy and .49 for Malicious Envy, indicating adequate convergent validity.

Cronbach's αs for BeMaS scales were good (Table 4) and McDonald's ω coefficients were .84 for Benign Envy and .83 for Malicious Envy scales. Compared to Benign Envy, Malicious Envy showed higher negative correlations with Honesty-Humility, Agreeableness, Conscientiousness, and Openness and higher positive correlations with psychopathy and sadism. Regarding relations with psychological distress, Malicious Envy showed higher positive correlations with psychopathological problems/symptoms, general and interpersonal functioning, and risky behaviors. In a similar vein, Benign Envy showed a higher negative correlation with poor well-being, indicating that better well-being was related to benign envy. Partial correlations mostly showed the same relationship pattern, with some exceptions. First, the Benign Envy scale showed a significant negative correlation with sadism and a significant positive correlation with Conscientiousness when the shared variance with the Malicious Envy scale was controlled. Second, the Malicious Envy scale showed a significant positive correlation with poor well-being. All these correlations were small. Profile similarity between Benign Envy and Malicious Envy scales was .91, which indicated a large distinction between the scales.

Discussion

The results of Study 2 add further support to the validation of the Serbian adaptation of the BeMaS based on the distinction between the two forms of envy which showed large profile dissimilarity. Compared to Benign Envy, the Malicious Envy scale showed significantly higher negative correlations with Conscientiousness and Openness, which indicated that impulsivity and rigid behavioral patterns were related to malicious envy. Other studies have also shown that a lack of self-control is a specific correlate of malicious but not benign envy (e.g., Briki, 2019).

In line with previous findings (e.g., Lange, Paulhus, et al., 2018), both forms of envy were positively related to dark traits. The Malicious Envy scale showed higher correlations

Table 4. Descriptives, Cronbach's α, and validity zero-order and partial correlations of the Serbian adaptation of the BeMaS

	Benign envy	Malicious envy	Steiger's Z	M	SD	α
Benign envy	1			3.05	0.98	.84
Malicious envy	.33***	1	–	1.67	0.74	.83
Honesty-Humility	−.36*** (−.25***)	−.47*** (−.40***)	2.17*	3.40	0.65	.71
Emotionality	−.04 (−.01)	−.08 (−.07)	0.69	3.11	0.65	.75
Extraversion	.16*** (.21***)	−.10* (−.17***)	1.05	3.36	0.63	.79
Agreeableness	−.22*** (−.13**)	−.33*** (−.28***)	2.01*	3.09	0.57	.71
Conscientiousness	.09 (.17***)	−.21*** (−.25***)	5.24***	3.66	0.61	.78
Openness to experience	−.02 (.06)	−.22*** (−.23***)	3.51***	3.43	0.75	.80
Machiavellianism	.35*** (.25***)	.43*** (.36***)	−1.55	2.91	0.69	.80
Narcissism	.36*** (.27***)	.40*** (.32***)	−0.77	2.68	0.65	.73
Psychopathy	.32*** (.17***)	.58*** (.53***)	−5.33***	2.01	0.63	.74
Sadism	.12* (−.10*)	.59*** (.59***)	−9.18***	1.36	0.55	.86
Poor well-being	−.15** (−.19***)	.08 (.14**)	−4.00***	2.38	0.71	.69
Symptoms	−.02 (−.07)	.14** (.15**)	−2.78**	2.39	0.74	.90
Functioning	−.10* (−.20***)	.24*** (.30***)	−5.96***	2.12	0.56	.82
Risk	.04 (−.08)	.35*** (.36***)	−5.55***	1.26	0.49	.83

Note. Presented in the parentheses are partial correlations for BeMaS scales, after controlling for the other scale from the BeMaS. Steiger's Z was calculated on zero-order correlations. A part of the data was used in Dinić, Sadiković et al. (2020). ***$p < .001$; **$p < .01$; *$p < .05$.

with psychopathy and sadism, highlighting malevolent characteristics of malicious envy. This became more obvious in partial correlations between Benign Envy and sadism, which were negative. Benign Envy also showed malevolent characteristics, but not as prominently as Malicious Envy. Given that both envy forms positively correlate with Dark Triad traits, negative correlations with basic traits related to antagonism, Honesty-Humility, and Agreeableness were expected. The results showed that the Malicious Envy scale had somewhat higher negative correlations with these two HEXACO traits, compared to the Benign Envy scale, which further supports the malevolent nature of malicious envy.

Considering relations with psychological distress domains, it could be seen that the Malicious Envy scale was related to indicators of psychopathological symptoms, impaired functioning, and interpersonal problems as well as with aggressive behaviors toward others and self. Thus, Malicious Envy is associated with more distress and poorer functioning, in general. Partial correlations further support this conclusion. On the other hand, although the Benign Envy scale is associated with aversive traits, it was related to better well-being, which is in line with previous studies that investigated associations with well-being (e.g., Briki, 2019) as well as with studies showing positive relations between benign envy and positive emotional and motivational states (e.g., Lange & Crusius, 2015; Lange et al., 2016). However, it should be highlighted that from a functional standpoint, both aspects of envy represent reactions to threat that contain different self-defensive strategies and that both benign and malicious envy has a "dark" side

and could lead to maladaptive outcomes (see Crusius et al., 2020).

Interestingly, Emotionality from HEXACO did not significantly correlate with either envy form. This result indicates the conceptualization of Emotionality in the HEXACO model, which includes anxiety and fearfulness as the common indicators of Neuroticism, but not as anger-related indicators (e.g., Ashton & Lee, 2009). In fact, those indicators are placed in the Agreeableness domain of the HEXACO model. Previous research has also found no significant correlation between envy and HEXACO Emotionality (Wilkin & Connelly, 2015).

To sum up, the findings of Study 2 showed distinct correlates of the two forms of envy, with malicious envy being related to more malevolent characteristics, impulsivity-related behaviors, and more psychological distress. Although benign envy also showed malevolent characteristics, it was related to less psychological distress. The results add to cross-cultural validity of the BeMaS scale and support its usefulness in the local context.

General Discussion

The aim of this multi-study research was to explore the psychometric characteristics of the Serbian adaptation of the BeMaS and to provide further evidence of the scale's cross-cultural validity. Given the problem with "hidden" invalidity among psychological instruments, including failed measurement invariance (Hussey & Hughes, 2020), this research offers sophisticated and rigorous tests of the

cross-cultural validity of the BeMaS. The results showed that the Benign Envy scale, or more precisely, two items from this scale, seemed biased, with higher endorsement among the US participants. In addition, one of these two items (B3) also contributed to the somewhat lower model fit which suggested that it could be revised. This is the most difficult item in the Benign Envy scale and the only one which does not include an explicit, direct comparison between envied person and the person who envies (or his/her achievements). By contrast, the Malicious Envy scale was invariant across Serbian and US samples, which allowed for a comparison between these samples. The results showed higher Malicious Envy scores in the US sample, compared to the Serbian sample. A previous study showed significantly higher scores on both envy scales in US participants compared to German, Polish, and Russian participants (Kwiatkowska et al., 2020). In more individualistic cultures, competition and outperforming others is seen as a desirable aspect of social relations. Thus, individuals who live in such cultures derive pleasure from being envied and expect others to suffer more from not having what they desire (Mosquera et al., 2010).

The results across the two large sample studies showed that the Serbian adaptation of the BeMaS is a reliable and valid measure, with a clear distinction between the two envy forms. Similar to previous validations, the confirmatory factor analyses clearly favored the two-factor solution over the single-factor model (e.g., Kwiatkowska et al., 2020). Furthermore, across both studies, Malicious Envy and Benign Envy scales showed a partly differential pattern of relations with personality traits, as well as various indicators of mental health, which is in line with previous studies (Lange et al., 2016; Lange, Weidman, et al., 2018). Malicious Envy in specific was significantly more related to morality issues, a lack of control, rigid behavioral patterns, and malevolence toward others as well as an impaired self-esteem and psychological distress. On the other hand, even if related to dark traits, Benign Envy appears to mitigate some of the problematic characteristics of the malicious form: poor well-being and problems in general and social functioning. Thus, benign envy appears to be associated with less experienced distress in the domain of mental health. Social ties are less negatively affected by benign envy, which can also present a positive motivational influence on the person who experiences it. Since benign envy entails a higher sense of control (Briki, 2019) and hopes for success (Lange et al., 2016), the psychological pain instigated by this form of envy could be more tolerable. Further research is needed to more clearly establish the crucial ingredients that differentiate the experience of malicious and benign envy.

The present study has some limitations. As our study was cross-sectional, it did not allow for any conclusions about causal relations. In self-report questionnaires that measure aversive traits, social desirability is always a potential problem. Previous research about relations between the Dark Triad traits and social desirability has suggested that individuals scoring higher on more antagonistic traits are less concerned with social desirability (Kowalski et al., 2018). Thus, the same could be expected for those who scored higher on both BeMaS scales, but future studies should address this potential issue. Next, not all model fit indices were acceptable for the Serbian adaptation of the BeMaS. Hence, future studies should consider reformulating some items to suit the Serbian cultural context, especially items that showed significant DIF. Additionally, although we provided α and ω reliability coefficients, there is no test for other types of reliability such as test-retest reliability. Moreover, we investigated only some correlates of the two envy forms to establish the basic validity of the Serbian BeMaS. Future studies could expand the nomological network, in particular within the domain of interpersonal and social relations, which appears to be closely affected by the different experiences of envy.

Taken together, the results showed the expected factor structure, good internal consistency and information, as well as convergent, discriminant, and criterion validity of the scores of the Serbian adaptation of the BeMaS. Benign Envy and Malicious Envy scales are related to relatively distinct experiences and partly different personal and interpersonal outcomes. The results supported the dual conception of envy in Serbian culture and the Serbian language, which does not have a unique term for each of the two envy forms. Given the high prevalence of social comparison situations and the resulting envy in everyday life (Foster et al., 1972), the dual model of envy could afford a better understanding of cultural varieties of experiences and outcomes of envy.

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