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# PSYCHOMETRIC EVALUATION OF THE VIETNAMESE BENIGN AND MALICIOUS ENVY SCALE (V-BEMAS)

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The present paper aims to validate and examine the psychometric properties of the Vietnamese version of the Benign and Malicious Envy Scale (V-BeMaS; Lange & Crusius, 2015) that has already been used in different cultural groups. In Study 1, exploratory factor (EFA) and reliability analysis was used in a sample of Vietnamese students and adults ($N$ = 591). Study 2 ($N$ = 299) was designed to confirm the two-factor model through confirmatory factor analysis (CFA), and to test the validity of the construct by correlating it to the Domain-Specific Envy Scale (DSES; Rentzsch & Gross, 2015). In Study 3, we tested the measurement invariance through multigroup confirmatory factor analysis (MGCFA). The results supported the two-factor structure of the V-BeMaS and confirmed that the scale displayed configural, metric, and scalar invariance across genders, as well as age groups. The V-BeMaS seems to be a valid and reliable scale that can be used in future studies in Vietnam to measure benign and malicious envy. Moreover, our findings show that the V-BeMaS meets the requirements of measurement invariance for cross-cultural comparisons.

Keywords: Benign and malicious envy; V-BeMaS; Vietnam; Measurement invariance; Scale validation.

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Envy is classically defined as a complex reaction resulting from a social comparison when the individual lacks subjectively surpassing another person's qualities, possessions or achievements (Parrott & Smith, 1993). The definition emphasized the experience of unfavorable social comparisons and the hostile reaction of the envious person toward the envied person (Parrott & Smith, 1993; Smith & Kim, 2007). In previous studies, envy was differentiated from jealousy (Smith et al., 1988) and widely treated as an episodic construct (e.g., van de Ven et al., 2009, 2012). However, in the field of individual differences, envy is argued to arise at the dispositional level as well (Lange et al., 2018; Lange & Crusius, 2015; Smith et al., 1999). With regards to mental health outcomes, dispositional envy is positively associated with schadenfreude, depression, and anxiety (e.g., Cohen-Charash, 2009; Smith et al., 1994) and negatively associated with happiness, self-esteem, and life satisfaction (e.g., Milfont & Gouveia, 2009; Smith et al., 1999). However, there is another form of dispositional envy, known as "benign envy," that is not only linked to negative outcomes, but also to positive ones such as positive affect and life satisfaction (e.g., Lange & Crusius, 2015; van de Ven et al., 2009). The unitary approach to envy emphasizing the painful and hostile feelings

(Smith et al., 1999; Smith & Kim, 2007) was unable to provide support for the latter evidence without controlling for other variables such as strategies for reducing the pain or eliminating the gap with the envier (Crusius et al., 2020). Conversely, the dual approach of envy focuses on two different motivations which could potentially lead to different mental health outcomes. On the one hand, the envious person is motivated to level the envied person down; on the other to level him/herself up (van de Ven, 2016; van de Ven et al., 2009). According to Lange, Weidman, and Crusius (2018), malicious envy is a feeling of hostility and resentment toward the success of a superior person, which leads to harmful or unkind behaviors. In contrast, benign envy is a feeling of admiration toward the superior person, which motivates self-development (Lange & Crusius, 2015). While benign envy stimulates self-improvement, malicious envy is linked to divergent behaviors.

The two-dimensional notion of envy has been supported in lexical analyses in some countries (Falcon, 2015; van de Ven et al., 2009). In certain languages, different words identify the two distinct types of envy: benign and malicious. The dual conceptualization of envy is also supported in the psychometric evaluation of the Benign and Malicious Envy Scale (BeMaS; Lange & Crusius, 2015) studies. Research from countries that have either one (Serbia and the United States; Dinić & Branković, 2022) or two (Poland, Kwiatkowska et al., 2020; Germany, Lange & Crusius, 2015) words for envy in their language suggest two-factor solutions to envy. Nevertheless, the association between benign and malicious envy is often non-significant or weak-to-modest, hence indicating the weak distinction between these two forms (Lange & Crusius, 2015).

## Benign and Malicious Envy Scale

The Benign and Malicious Envy Scale (BeMaS; Lange & Crusius, 2015) is a 10-item measure. Exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) demonstrate the two-factor differentiation with highly reliable, internally consistent, good convergence, and discriminant validity in German and U.S. samples (Lange & Crusius, 2015). The scale has now been widely adapted and validated in several contexts, namely in Japan (Sawada & Fujii, 2016), Turkey (Çırpan & Özdoğru, 2017), and Serbia (Dinić & Branković, 2022). Notably, Kwiatkowska et al. (2020) examined and confirmed the scale measurement invariance across four countries: Poland, Germany, Russia, and the United States. Results of different studies showed that only the malicious envy scale was positively related to previous measurements of envy (for example, the Dispositional Envy Scale [DES]; Smith et al., 1999) while the benign envy was not (Lange & Crusius, 2015).

The present investigation aimed to validate a Vietnamese adaptation of the BeMaS. It was hypothesized that the structure of the Vietnamese adaptation of the BeMaS (henceforth, V-BeMaS) would be confirmed, and that the scale would be highly reliable and internally consistent in terms of convergent and discriminant validity.

## Study 1

Following the recommendations of Sechrest et al. (1972), bilingual individuals working in psychology as academics at universities used the back-translation procedure to create the V-BeMaS. The English version of the BeMaS was used as the basis for translation. Differences between the original English scale and the back-translated version were discussed, and mutual agreements were made on the most ap-

propriate translation. The final V-BeMaS received the authors' authorization (Lange & Crusius, 2015) and is available at: https://osf.io/pgr9u/. Some items are given as examples: "I feel ill will toward people I envy," "Seeing other people's achievements makes me resent them," "Envious feelings cause me to dislike the other person," where responses were given using a six-point Likert scale (1 = *strongly disagree* to 6 = *strongly agree*).

### Participants and Procedure

Participants were either invited in person from university classrooms or via an online survey distributed to the researchers' personal contacts on social networking sites. Those that responded positively were asked to complete the V-BeMaS and two demographic variables, namely, gender and age. Because the survey was relatively short, participants who did not respond to all of V-BeMaS scale items were excluded from all analyses. Nineteen participants were excluded from the study due to missing items in the BeMaS scale. The final sample comprised 591 people aged from 17 to 49 years (61.6 % female, $M_{age}$ = 23.81, *SD* = 6.23). Written informed consent was required before participants completed the survey. Ethical approval for the study was obtained from the University of Social Sciences and Humanities, Vietnam National University.

## Results

First, following Lange's & Crusius' (2015) procedure, we performed an EFA with the principal axis factoring extraction method and oblimin rotation to identify the factor structure of the V-BeMaS. Bartlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy (.84) indicated that the data collected was suitable for EFA. The performed analysis suggested that two components should be retained based on the Kaiser's criterion (eigenvalues above 1) and the amount of variance explained by the factor solution. The two-factor solution explained 61.16% of the total variance. These two factors resembled those reported by Lange & Crusius (2015): Factor 1 (36.22% of the variance) represents malicious envy, and Factor 2 (24.94% of the variance) represents benign envy. Table 1 presents the descriptive statistics for each item, as well as the EFA standardized factor loadings.

Cronbach's alpha and McDonald's omega were calculated to assess the internal consistency of the V-BeMaS. Results showed high internal consistency for both subscales of the V-BeMaS (malicious envy: Cronbach's alpha = .84 and McDonald's omega = 0.86; benign envy: Cronbach's alpha = .82 and McDonald's omega = 0.83), which suggests good reliability of the scale.

## STUDY 2

Study 2 used a similar sampling method and procedure to Study 1. Eleven participants were removed from the study due to missing items. The final sample consisted of 299 participants aged from 20 to 47 years (78.7% female; *M*age = 27.34, *SD* = 6.85).

TABLE 1
Descriptive statistics and EFA standardized factor loadings (Study 1), and CFA standardized loading coefficients (Study 2) for V-BeMas items

| # Item | *M* | *SD* | EFA results (Study 1) | | CFA results (Study 2) | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Factor 1 | Factor 2 | Malicious envy | | Benign envy | |
| | | | | | λ | θ | λ | θ |
| 6 | 2.35 | 1.49 | **.77** | .08 | 0.80 | 0.36 | | |
| 10 | 2.11 | 1.30 | **.76** | .16 | 0.64 | 0.42 | | |
| 2 | 2.33 | 1.39 | **.74** | .19 | 0.77 | 0.41 | | |
| 8 | 2.66 | 1.60 | **.69** | .10 | 0.72 | 0.48 | | |
| 5 | 2.20 | 1.43 | **.67** | .21 | 0.71 | 0.50 | | |
| 9 | 4.11 | 1.58 | .18 | **.74** | | | 0.74 | 0.46 |
| 4 | 3.89 | 1.71 | .27 | **.74** | | | 0.78 | 0.39 |
| 7 | 4.26 | 1.57 | .15 | **.69** | | | 0.65 | 0.58 |
| 3 | 4.85 | 1.34 | –.05 | **.66** | | | 0.63 | 0.61 |
| 1 | 4.01 | 1.70 | .19 | **.67** | | | 0.74 | 0.46 |

*Note*. Extraction method: principal axis factoring; Rotation method: Oblimin with Kaiser normalization. In bold there are factor loadings for items assigned to particular dimensions of the scale. All items are available here: https://osf.io/pgr9u/wiki/home/

## Measures

In addition to the V-BeMaS, another measurement of envy was included in the study. Participants were asked to complete the Domain-Specific Envy Scale (DSES; Rentzsch & Gross, 2015), which consists of 15 items measuring envy in general and three envy domain orientations. DSES items were intended to refer to a specific domain of social comparison. Each item described concrete circumstances that elicited envy and were introduced with the description of an intense, unpleasant feeling, such as "It bothers me" or "It disturbs me." DSES items were intended to be formulated only to measure subjective experiences of envy and not behavioral outcomes or related constructs. In this study, we used only general DSES envy scores (Cronbach's alpha in the current study = .91) to test its correlation with benign envy (Cronbach's alpha = .87) and malicious envy (Cronbach's alpha = .89) measured by the V-BeMaS.

## Results

*Confirmatory factor analysis.* We used the R environment (R Core Team, 2020) and the lavaan package (Rosseel, 2012) to perform CFA. Due to a recognized issue of socially desirable responding, which leads to nonnormal multivariate distributions of the BeMaS items (Kwiatkowska et al., 2020), we decided to use the maximum likelihood with robust standard errors (MLM) to evaluate the structure of the scale. Two models were tested in the present study: (1) the one-factor model indicating the unidimensional structure of the envy scale, and (2) the two-factor oblique model, as suggested by Lange and Crusius (2015). We relied on the comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA) to evaluate the models' goodness-of-fit: CFI and TLI > .90; RMSEA < .08; (Kline, 2016). The CFA results for the V-BeMaS revealed that the two-factor model had a substantially

better fit model: Chi-square = 93.73, $p < .01$, $df = 34$; CFI = .94, TLI = .92; RMSEA = .078, 90% CI [.060, .097] (for CFA standardized loading coefficients, see Table 1) than the one-factor model: Chi-square = 1541.79, $p < .01$, $df = 35$; CFI = .46; TLI = .30; RMSEA = .223, 90% CI [.214, .232], $\Delta\chi^2 = 1448.06$, $p < .01$ and $\Delta$CFI = .48. The correlation between the two factors for the finally accepted model was .19. The omega coefficient for the benign envy factor was .87, and for the malicious envy factor was .89.

### *Association with Domain-Specific Envy*

Scores were then calculated for each variable (average of responses to items included in individual scales). This action indicated that malicious envy ($M = 2.20$, $SD = 1.10$) is strongly correlated with overall domain-specific envy ($M = 2.71$, $SD = 1.10$; $r = .64$, $p < .01$). We found no significant relationship between benign envy ($M = 4.24$, $SD = 1.27$) and either malicious envy ($r = .11$, $p > .05$) or overall domain-specific envy ($r = .11$, $p > .05$).

## STUDY 3

In Study 3 we used combined data from Study 1 and 2 to establish the structural equivalence through multigroup confirmatory factor analysis (MGCFA).

*Measurement invariance*. Before proceeding to intergroup comparisons, we tested the V-BeMaS cross-gender and cross-age equivalence through MGCFA. This allowed us to examine the V-BeMaS measurement invariance across these groups. Usually, researchers estimate three levels of invariance, which are defined by parameters that are constrained to be equal across samples (e.g., Milfont & Fisher, 2010).

Configural invariance requires that a given set of indicators are predicted by the same latent variables with the same pattern of factor loadings; metric invariance requires that factor loadings are equal across the groups; and scalar invariance requires that factor loadings and all intercepts are equal across the groups. We first tested for configural invariance across gender and age samples by exploiting commonly used criteria to assess models' goodness of fit, that is, CFI >.90 and RMSEA < .08 (e.g., Kline, 2016). Next, to identify metric and scalar measurement invariance, we applied the cut-off criteria suggested by Chen (2007): $\Delta$CFI of.01 and $\Delta$RMSEA of.015. We employed R (R Core Team, 2020) and the lavaan package (Rosseel, 2012) to conduct measurement invariance analyses using maximum likelihood estimation with robust standard errors (MLM).

With regards to measurement invariance analyses, we divided the subjects into two groups: "younger" (from 16 to 21 years old) and "older" (from 22 to 50 years old). According to the classification proposed by Levinson (1978), the first group covers the period of late adolescence, while the second group covers the period of transition to adulthood and adulthood itself.

### Results

Table 2 shows the global fit coefficients for the three levels of measurement invariance (configural, metric, and scalar) for the V-BeMaS across gender and age samples. The V-BeMaS displayed configu-

ral, metric, and scalar invariance across the genders and age groups. Finally, based on the results, we observed that the V-BeMas meets the requirements of measurement invariance for group comparisons.

TABLE 2
Global fit measures in measurement invariance tests for the V-BeMaS

| Grouping variable | Level of invariance | $\chi^2$ | *df* | CFI | RMSEA | ΔCFI | ΔRMSEA |
|---|---|---|---|---|---|---|---|
| Gender ($N_{female}$ = 597, $N_{male}$ = 288) | Configural | 283.61 | 68 | .93 | .080 | - | - |
| | Metric | 317.62 | 76 | .92 | .081 | .01 | .001 |
| | Scalar | 347.92 | 84 | .91 | .085 | .01 | .004 |
| Age ($N_{younger}$ = 375, $N_{older}$ = 503) | Configural | 266.42 | 68 | .93 | .073 | – | – |
| | Metric | 281.22 | 76 | .93 | .080 | .00 | .007 |
| | Scalar | 341.17 | 84 | .92 | .085 | .01 | .005 |

*Note*. CFI = comparative fit index; RMSEA = root mean square error of approximation.

### *Comparing Envy Across Gender and Age Groups*

To show differences between benign and malicious envy among women and men in different age groups, we applied a two-factor ANOVA (2×2) design. The size of each group was as follows: younger female = 231, younger male = 136, older female = 346, older male = 140 (37 observations deleted due to missing items). Dependent variables were measured using standardized factor scores by fixing at 1 the variance of the the latent variables. Thus, in the total sample, the mean for both variables was 0 and the standard deviation was 1.

We found age differences in benign envy, $F(1, 849) = 9.49$, $p < .01$, the group of younger people (17 to 21) was found to have lower scores than the group of older people (22 to 47). We did not find a major effect of gender on benign envy, $F(1, 849) = .74$, $p = .39$. However, the interaction between these terms was significant, $F(1, 849) = 7.99$, $p < .01$. Figure 1 presents the means of factor scores for each group. Women displayed lower benign envy than men, but only in the younger group.

We found a statistically significant difference in average malicious envy by both genders, $F(1, 849) = 24.38$, $p < .001$, and age group, $F(1, 849) = 5.04$, $p < .05$; the interaction between these terms was also significant, $F(1, 849) = 7.20$, $p < .01$. Figure 2 presents the means of factor scores for each group. Men showed higher malicious envy, especially in the older group.

## GENERAL DISCUSSION AND FUTURE STUDIES

The present study examines the psychometric properties of the Vietnamese adaptation of the Benign and Malicious Envy Scale. In Study 1, the EFA result suggested the extraction of two components: the first referring to malicious envy, and the second referring to benign envy. The reliability of the scale was supported by high internal consistency in both subscales of the V-BeMaS.


FIGURE 1
A two-factor ANOVA (gender × age group) results in benign envy.

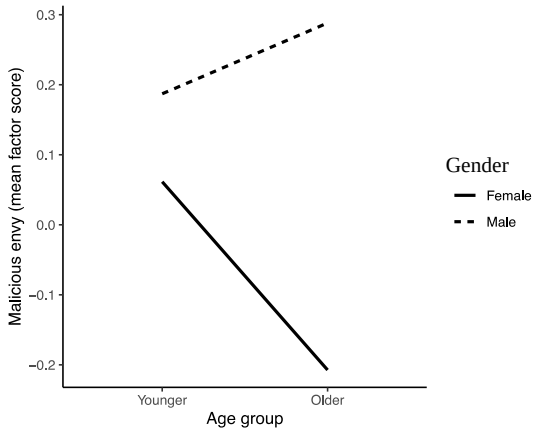


FIGURE 2
A two-factor ANOVA (gender × age group) results in malicious envy.

In Study 2, the CFA results confirmed the two-factor model in the Vietnamese culture. Correlation analysis indicated a positive relation between malicious envy and overall domain-specific envy as measured by the DSES. However, no significant relationship was found between benign envy and malicious envy, nor benign envy and overall domain-specific envy.

In Study 3, testing for measurement invariance through MGCFA confirmed that the V-BeMaS was reliable across age groups and genders. ANOVA analyses revealed that younger people tend to score lower on both the benign and malicious envy subscales. In terms of gender, men report higher malicious envy, especially in the older group. This outcome is consistent with other studies (DelPriore et al., 2012; Harris, & Henniger, 2013; Henniger, & Harris, 2015).

The present study confirmed that applying the V-BeMaS for measuring benign and malicious envy has good psychometric properties. Nevertheless, some limitations of this study should be addressed. First, the scale should be further investigated using a larger sample and a more diverse population. Second, the absence in the current study of additional measures to test for the convergent and discriminant validity of the V-BeMaS is a clear shortcoming. Previous studies have pointed out the relationship between dispositional envy and negative psychological outcomes such as schadenfreude (van de Ven et al., 2015), depression, stress, and anxiety (Fam et al., 2020), as well as behavioral factors (e.g., conspicuous consumption; Fam et al., 2020), and even negative personality traits (Lange, Paulhus, & Crusius, 2018). Moreover, it is uncertain whether the intensity of negative emotions would impact the experience of either benign or malicious envy in the context of Vietnam culture. It would also be interesting to assess how the perceived control over the situation and perceived deservingness of the envied person contributes to the experience of benign and malicious envy (van de Ven et al., 2009) in the Vietnamese culture. Given that most studies on envy were conducted in Western societies, such as the United States, Germany, Russia, and Poland (see Kwiatkowska et al., 2020, for a review), it is crucial for future studies to examine whether the concept of benign and malicious envy and its relationship with other psychological constructs behave the same way in Eastern countries such as Vietnam. Moreover, future studies should explore the relationship between envy and mental health outcomes to test if envy is harmful to psychological wellbeing in Vietnam (Mujcic & Oswald, 2017). Finally, the application of a longitudinal design would be beneficial in future studies to test the tool predictive validity.

In conclusion, the present study findings confirmed the psychometric properties of the Vietnamese adaptation of the BeMaS. The measurement of benign and malicious envy is considered an initial effort to gain insights into the research on envy in the context of a collectivist Eastern culture.

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