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Research Article

Vicarious Embarrassment Scale: More of Culture than Empathy

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Abstract

Traditionally, the vicarious embarrassment scale (VES) is developed by involving a protagonist with no relationship with the observer. This condition becomes problematic, especially in collectivistic contexts with interdependence in personal social relations. The protagonists of the original VES were modified from strangers to friends and family and were compared their psychometric properties and associations with empathy and self-construals. A total of 112 university students in Yogyakarta, Indonesia, filled out the online questionnaires voluntarily. Tests with Unrestricted Factor Analysis showed the retrieved eigenvalues of VES Other, VES Friend, and VES Family accounted for 61.54, 68.29, and 77.05, respectively. All VES were unidimensional, according to the parallel analysis with robust parallel using 500 random polychoric correlation matrices. Good internal consistency reliability was achieved, and fit criteria were met. This study supported previous findings of VES disassociation with empathy. The importance of cultural values reflected in self-construal showed interdependent self-construal relations with different protagonists with all VE scales. In contrast, independent self-construal was associated only with vicarious embarrassment with an unknown protagonist.

Keywords: vicarious embarrassment; self-construal; empathy; unrestricted factor analysis; collectivistic context.

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People's emotional experiences can arise not only because of their reactions to what they do but can also be experienced by them vicariously (Paulus et al., 2013b). Vicarious emotional experiences can arise because human affective experiences are rooted in social relationships or ties with the environment (Müller-Pinzler et al., 2016). For this reason, relationships with other people are essential for people's vicarious emotional experiences (Singer et al., 2006).

How individuals see themselves with others is explained by their self-construal orientation. Individuals who have collectivist values tend to have interdependent self-construal. On the other hand, individuals with independent self-construal tend to be affiliated with individualistic cultures (Markus & Kitayama, 1991). This view facilitates people's vicarious experiences, which may depend on their self-construal. This process can mainly be explained by how a person can perceive the negative experiences of others as his own. Vicarious embarrassment is one of the emotions explained in this mechanism.

When a person becomes embarrassed by the pratfall of another person (protagonist), vicarious embarrassment occurs (Mayer et al., 2021). Within collectivistic cultures, vicarious embarrassment may be characterized by interdependent self-construal. In the context of vicarious embarrassment in social relations characterized by interdependent self-construal, it is clear that someone feels devalued when the protagonist of embarrassing behavior has a relationship with that person. Although embarrassment can be experienced internally (one's negative evaluation of oneself) or interpersonally (Tangney & Dearing, 2002), the interpersonal aspect of embarrassment is culturally more prominent for Asians, given the emphasis on collectivism in Asian cultures (Wong & Tsai, 2007). However, vicarious embarrassment is an understudied psychological variable. The low number of studies on vicarious embarrassment impacts the number of its measurement (Uysal et al., 2014).

The most recent vicarious embarrassment scale (VES) was developed by Uysal et al. (2014). The VES was developed using the pronoun "other" as the protagonist. They revealed that the VES was unidimensional through exploratory factor analysis (EFA). Their second study tested confirmatory factor analysis by assuming the scale was unidimensional. Their CFA results showed a low fit model. This condition reflected the classic problem in testing the structure of psychological construct factors: when tested confirmatory with different samples, the initial structure found in exploratory analysis tends to be rejected.

In addition to the problems above, the difference in VES dimensionality was also found by Kuppelwieser et al. (2019). Their replication study showed the multidimensionality of the VES. Kuppelwieser et al. (2019) named the two independent dimensions on the scale as (1) empathy which consisted of items 1-4, and (2) perspective taking as many as four items, namely from items 5-8. However, as we understood, Uysal et al. (2014) never implicitly nor explicitly stated that their VES consisted of two dimensions. For this reason, it is necessary to conduct another study of the structure of the VES factor using a method that overcomes the differences in the findings of the exploratory and confirmatory studies.

Understanding the different findings of Uysal et al. (2014) and Kuppelwieser et al. (2019) about the same VES, we found that (1) replication study did not guarantee homogeneous results, (2) the classic problem of implementing EFA with a group of samples and then continuing with CFA on different samples had the undesired impact as CFA did not confirm the structure of the measurement factor as suggested in EFA stage, and (3) the development of the VES had ignored cultural aspects which were essential in the construction of vicarious embarrassment.

Uysal et al. (2014) only emphasized the variables of individual differences in empathy, perceptive-taking, fear of evaluation, and susceptibility to embarrassment as variables that correlated with vicarious embarrassment. In our view, Uysal et al. (2014) took no notice of different responses possibility when the protagonist of the norm violation was a person who had social relations with the observer, such as a friend or family member. In the context of collectivistic and individualistic cultures, individuals see how they relate to others differently. Concern for others in a collectivist society implies that members of society walk the same path, share the same fate, and influence one another. Thus, any violation of norms committed by an individual with collectivistic values impacts related people, especially those in groups such as family or friendship (Chen & West, 2008). It becomes crucial to consider and measure vicarious embarrassment with the protagonist of family members and friends.

Research has shown that people's emotions are influenced by their cultural values (Nezlek et al., 2008). Mesquita (2001) found that more collectivist culture members are more closely related to an individual's social values and interpersonal relationships than intrapersonal feelings, internal processes, and individual evaluations.

In particular, this study was conducted in Indonesia, which has a collectivistic tradition, especially regarding the importance of individual relationships with family and friends. Protecting parents' good names and protecting friends' feelings are collectivist values emphasized in Indonesia. One of these cultural values is described in Javanese culture (the most populated island in Indonesia) with "guyub" (togetherness and peace). Javanese individuals are taught "guyub" to live with family, friends, neighbors, and others in togetherness and peace. For this reason, embarrassing events committed by family members and friends can be felt because they cause disturbance to the "guyub" (Budiarto, 2016).

Based on the role of the cultural values in the embarrassment above, it was tried to fill in the gaps in the cultural aspect of VES, which was manifested in independent and interdependent self-construal. To do so, it was changed the word "other" in each item on the scale to "friends" and "family members." Thus three versions of the vicarious embarrassment scales with different protagonists were applied: (1) stranger (VES Other), (2) friend (VES Friend), and (3) family member (VES Family).

Structures obtained using Exploratory Factor Analysis (EFA) tended to be rejected when tested statistically using a Confirmatory Factor Analysis (CFA) model. It was a common problem in the structural analysis of items designed to measure psychological constructs. In a series of preliminary tests, an EFA solution that was obvious and reproducible was achieved. Then a CFA model based on this EFA solution was evaluated in a new sample, concluding that the model fits poorly. The fit might be poor when the CFA was fitted to the same sample where the EFA provided a decent solution (Lorenzo-Seva & Ferrando, 2000).

There was no obvious EFA-CFA distinction in most factor analysis applications; instead, they were on a continuum that runs from exploration to confirmation (Mulaik, 1972). The other problem was that the distinction between EFA and CFA was more conceptual than model-dependent. For example, a traditional FA study in which the number of factors and approximate structure were hypothesized in advance was more confirmatory than exploratory. At the same time, a study modifying a poorly fitting CFA was more exploratory than confirmatory (Bollen, 1989).

In the present study, instead of the more common Exploratory-Confirmatory solution, it was utilized the distinction Unrestricted-Restricted FA (UFA-RFA) to delimit the problem explicitly. According to Jöreskog (1969), an unrestricted solution did not limit the factor space. It might be produced by rotating an arbitrary orthogonal solution, and all unrestricted solutions would provide the exact fit for the same data. On the other hand, a restricted solution placed constraints over the whole factor space and could not be produced by rotating an unrestricted solution.

Based on the issues raised above, this study focused first on the psychometric evaluation of the vicarious embarrassment scale structures (Uysal et al., 2014) with a modification of the protagonist, referring to the reference group of Indonesian collective individuals, namely family, friends, and other people collectively. The Unrestricted Factor Analysis approach was chosen to overcome the differences in the results of the EFA and CFA factor structure tests.

Second, it was aimed to examine the relationship of vicarious embarrassment with empathy and self-construal. Traditionally, vicarious embarrassment research emphasizes empathy as a variable that can explain vicarious embarrassment. In this research, the cultural aspect of individual relatedness with others was also emphasized, reflected in interdependent self-construal and independent self-construal. Ferrando and Lorenzo-Seva (2021) developed the FACTOR program to fit the exploratory factor analysis model. FACTOR suggested an Unrestricted Factor Analysis model described as a CFA model equal to an EFA model for the same number of factors.

Method

Participants

After filling out the informed consent, one hundred and twelve students in Yogyakarta (25 males and 87 females, *N* = 112) with ages ranging from 17 to 23 years (*M* = 19.94; *SD* = 1.45) participated in the study. Participants filled out online questionnaires covering the empathy questionnaire, self-construal scale, and VES.

Instruments

Vicarious embarrassment research generally involves empathy variables that underlie the individual's vicarious process. In addition, it was considered that aspects of the independence-interdependence based on I/C are fundamental to study concerning vicarious embarrassment.

Empathy. Empathy was measured using the Toronto Empathy Questionnaire (Spreng et al., 2009). The items were rated by participants on a scale of 1 (strongly disagree) to 7 (strongly

agree), with higher scores suggesting higher empathy. Negative items were reversed (items 2, 4, 7, 10, 11, 12, 14, and 15) and then analyszed for reliability—the alpha reliability coefficient for empathy was.75.

Self-construal. It utilized the shorter version of the original self-construal scale to evaluate self-construal (Singelis, 1994). The interdependent self and the independent self were assessed using five different items (e.g., "My happiness depends on the happiness of those around me" and "I act the same way no matter who I am with"). Participants were given a 7-point scale to respond, with 1 indicating strong disagreement and 7 indicating strong agreement. Cronbach's alpha was .75 for independent self-construal and .68 for independent self-construal.

Vicarious embarrassment. Initially, Uysal et al. (2014) portrayed strangers as protagonists in their scale so that participants perceived the protagonist as a stranger (VES Other). Given that there would be different possibilities in the intensity of participants' vicarious embarrassment when the protagonist was someone in the participant's in-group, it was duplicated all eight items in VES Other. The protagonists were replaced with friends and family members.

Examples of items on the VES Other were: "I get embarrassed by people becoming an object of ridicule" and "I feel embarrassed if someone makes a mistake in front of a crowd."

Corresponding items from the VES Friend were: "I get embarrassed by my friend becoming an object of ridicule," I feel embarrassed if my friend makes a mistake in front of a crowd."

Examples of sample items from the VES Family scale were: "I get embarrassed by my family member becoming an object of ridicule" and "I feel embarrassed if my family member makes a mistake in front of a crowd". Participants responded to the items on a scale of 1 (strongly disagree) to 7 (strongly agree).

Analysis

The psychometric qualities of each scale were measured using the FACTOR program and involved the analysis of (1) goodness of fit, (2) reliability with internal consistency, (3) normed item-MSA indices, (4) dimensionality, (5) quality and effectiveness of factor score estimates, and (6) construct replicability were measured using the FACTOR program. In addition, the correlations among the vicarious embarrassment scale, empathy, and self-construal variables were tested.

An exploratory factor analysis was performed on the matrix of polychoric correlations in the sample. The number of factors to be retained was determined by the optimal implementation of parallel analysis (Timmerman & Lorenzo-Seva, 2011). The percentage of variance was explained, and the model fit indices were based on the GFI, CFI, NNFI, and WRMR values.

Unrestricted exploratory factor analysis (EFA) was a latent variable structural equation model. As a result, any EFA solution's model–data fit might be evaluated using SEM-specific methodologies (Ferrando & Lorenzo-Seva, 2018; Yuan et al., 2016). The model fit was deemed acceptable when the GFI was higher than .90, CFI higher than .95, NNFI higher than .95 (Kline, 2011), and the WRMR was less than 1.00. Unidimensional Congruence (UniCo), Explained Common Variance (ECV), and Mean of Item Residual Absolute Loadings (MIREAL) were also employed as indicators of proximity to unidimensionality. When UniCo >.95, ECV >.85, or MIREAL < .30, data might be regarded as basically one-dimensional (Ferrando & Lorenzo-Seva, 2018).

Results

The VES internal structure-based validity

An unrestricted EFA was performed on a sample of 112 individuals. The factorial structures of the scales were investigated in two analysis series. The first analysis on each vicarious embarrassment scale was carried out by letting the number of factors to zero using parallel analysis (Timmerman & Lorenzo-Seva, 2011). A 500 bootstrap sample (*CI* = 95%) with Robust Unweighted Least Squares (RULS) was employed for factor extraction. Robust promin (Lorenzo-Seva & Ferrando, 2019) was used as a rotation to achieve the simplicity factor.

The Kaiser-Meyer-Olkin index of VES Other, VES Family, and VES Friend were .74, .78, and .78, respectively, which meant fair. The Bartlett test was statistically significant for VES Other (704.0, *df* = 28; *p* = <.001), indicating that the data were sufficient for the analysis to be conducted. Because the data was discovered to have excessive kurtosis and skewness, a polychoric correlation matrix was utilized instead of a Pearson correlation matrix to improve analytical effectiveness (Holgado–Tello et al., 2010).

The unrotated factor loadings and item communalities suggested a one-factor solution for each model with 68.62% variance (VES Other), 78.26% (VES Family), and 73.73% (VES Friend). As a result, a fixed one-factor solution of the model was used in the second analysis.

The second analysis was done with a one-dimensional suggestion on each vicarious embarrassment scale. The unrotated factor loadings and communalities of the items are presented in Table 1. The factor loadings in the three scales were more than .30, which was satisfactory. All item factor loadings were greater than .30, which indicated a high model variance.

Table 1.
Rotated and unrotated factor loadings and item communalities

Vicarious Embarrassment Scale								
Family			Friend			Other		
Items	F1	Communality	Items	F1	Communality	Items	F1	Communality
Fam1	.85	.72	F1	.80	.64	O1	.79	.63
Fam2	.86	.75	F2	.79	.63	O2	.74	.55
Fam3	.85	.73	F3	.81	.67	O3	.77	.59
Fam4	.88	.78	F4	.82	.68	O4	.71	.51
Fam5	.93	.86	F5	.85	.73	O5	.78	.61
Fam6	.92	.85	F6	.83	.69	O6	.81	.66
Fam7	.85	.72	F7	.80	.64	O7	.74	.55
Fam8	.69	.48	F8	.63	.40	O8	.60	.37

Parallel analysis based on Robust Unweighted Least Squares (RULS) advised one dimension. The parallel analysis used 500 random polychoric correlation matrices. The findings of the optimized parallel analysis advised that the model retained a one-factor solution based on the 95 percentiles, as shown in Table 2.

The retrieved real data percent variance accounted for 66.04 % of the shared variance in VES Other, 77.61% for VES Friend, and 77.88% for VES Family, as shown in Table 2. This percent variance was read as the one-factor model explaining 66.04 %, 77.61%, and 77.88% of the common variance of the factor solution, which could support the model's goodness of fit for each measure.

Table 2.
Parallel Analysis based on Minimum Rank Factor Analysis

Scale	Variable	Real-data % of variance	Mean of random % of variance	95 percentile of random % of variance
VES Other	1	66.0477*	25.4643	29.8748
	2	11.4965	21.3151	24.3746
	3	9.7756	17.5445	20.1507
	4	6.0698	14.1105	16.3357
	5	4.5684	10.6159	13.0807
	6	1.2669	7.2102	9.8812
	7	0.7752	3.7394	6.6566
VES Friend	1	77.6183*	256.689	303.964
	2	120.693	213.765	245.319
	3	44.891	174.695	199.449
	4	37.732	139.830	160.903
	5	10.908	106.734	132.212
	6	0.9029	71.188	99.159
	7	0.0563	37.099	65.721
VES Family	1	77.8890*	255.758	300.021
	2	79.000	211.423	240.265
	3	66.615	175.248	199.150
	4	45.317	140.489	162.683
	5	17.015	106.460	129.183
	6	0.692	72.949	99.702
	7	0.623	37.674	64.650

* Advised number of dimensions: 1

The measure sampling adequacy (MSA) calculated the ratio of the sum of squared-original correlations to the sum of squared-original correlations plus the sum of squared partial correlations to determine how much lower the partial correlations were compared to the original correlations. As a result, values near 1.00 suggested lesser partial correlations and consequently greater EFA correlation adequacy. Every item in the pool had normed MSA values bigger than .5, which meant that every item measured the same domain as the remaining domain items (Tabachnik & Fidell, 2001).

The polychoric correlation matrices of the VES Family, VES Other, and VES Friend revealed that all items had positive correlation coefficients with all other items, indicating positive variance.

Table 3.
Standardized Variance / Covariance Matrix (Polychoric Correlation) of VES Family

Variable	1	2	3	4	5	6	7	8
Fam 1	1.00							
Fam 2	.94	1.00						
Fam 3	.68	.67	1.00					
Fam 4	.72	.69	.95	1.00				
Fam 5	.82	.85	.75	.79	1.00			
Fam 6	.71	.75	.79	.79	.84	1.00		
Fam 7	.63	.67	.73	.76	.74	.93	1.00	
Fam 8	.57	.59	.53	.58	.72	.65	.61	1.00

The standardized covariance of VES Other shows positive correlation coefficients among its items, as shown in Table 4.

Table 4.
Standardized Variance / Covariance Matrix (Polychoric Correlation) of VES Friend

Variable	1	2	3	4	5	6	7	8
Friend 1	1							
Friend 2	.97	1						
Friend 3	.68	.66	1					
Friend 4	.59	.55	.75	1				
Friend 5	.67	.67	.66	.73	1			
Friend 6	.59	.59	.62	.68	.76	1		
Friend 7	.52	.53	.71	.72	.68	.80	1	
Friend 8	.46	.45	.46	.57	.57	.61	.52	1

Positive correlation coefficients among items in VES Other are presented in Table 5.

Table 5.
Standardized Variance / Covariance Matrix (Polychoric Correlation) of VES Other Scale

Variable	1	2	3	4	5	6	7	8
V 1	1							
V 2	.88	1						
V 3	.67	.60	1					
V 4	.46	.38	0.61	1				
V 5	.59	.45	0.569	0.65	1			
V 6	.52	.56	0.559	0.591	0.749	1		
V 7	.48	.55	0.571	0.571	0.485	0.807	1	
V 8	.50	.40	0.421	0.519	0.576	0.423	0.414	1

The correlation range among items on the VE Family scale is from .53 to .95. Meanwhile, on the VE Friend and VE Other scales, the range of correlation values is .45 to .97 and .40 to .88, respectively.

Unidimensionality Assessment

As dimensionality could not be assessed on the only basis of the model-data fit quality, psychometricians started to offer alternative or supplementary techniques (Ferrando & Lorenzo-Seva, 2018). So, when the dimensionality was being assessed, the focus should not be (or not wholly be) on the goodness of fit and factor structure of the solution, but rather on the characteristics of the score estimates produced from this solution (Ferrando & Navarro-González, 2018).

The values of UNICO (Unidimensional Congruence > .95) = .97 (VES Other), .98 (VES Friend), and .99 (VES Family) confirmed the unidimensionality of all VESs. The ECV (Explained Common Variance > .80) =.85 (VES Other), .86 (VES Friend), and .91 (VES Family) and MIREAL (Mean of Item Residual Absolute Loadings < .30) = .278 (VES Other), .26 (VES Friend), and .24 (VES Family), all them reaffirming that all of the instruments' items were unidimensional.

Robust Goodness of Fit

The indices recommended by Hu & Bentler (1999) were adopted as follows: NNFI (Non-Normed Fit Index ≥ .95); CFI (Comparative Fit Index ≥ .95), GFI (Goodness Fit Index ≥ .95), AGFI (Adjusted Goodness Fit Index ≥ .95), and the cut-off value of WRMR (Weighted Root Mean Square Residual ≤ 1) based on Yu and Muthen (2002). The goodness of fit analysis results showed that the value of NNFI = .96 (VES Other), .96 (VES Friend), and .98 (VES Family) showed a good fit. The CFI = .97 (VES Other), .97 (VES Friend), and .98 (VES Family); GFI =.98 (VES Other), .99 (VES Friend), and .99 (VES Family); and WRMR = .13 (VES Other), .45 (VES Friend), and .10 (VES Family) met the criteria for the goodness of fit.

Construct Replicability

It was measured construct replicability as introduced by Rodriguez et al. (2016). The H index ranged from 0 to 1 and approached unity as the size of the factor loadings and/or the number of items increased. High H values (>.80) indicate a well-defined latent variable that is more likely to remain stable across studies. From Table 6, could be concluded that the continuous latent response variables that underpin the observed item scores might be used to quantify vicarious embarrassment, according to all H-latent indices.

Table 6.
Construct Replicability: Generalized H (G-H) Index

Measure	Factor	H-Latent	BC Bootstrap 95 % Confidence intervals	H-Observed	BC Bootstrap 95 % Confidence intervals
VES Family	F 1	.96	(.93 .97)	.82	(.73 .88)
VES Friend	F 1	.93	(.88 .95)	.87	(.82 .90)
VES Other	F 1	.91	(.85 .93)	.86	(.80 .90)

Correlation of Vicarious Embarrassment with Empathy and Self-Construal

A correlation was investigated between participants' scores on the vicarious embarrassment scales and their respective scores on empathy and self-construal. Table 7 shows the means, standard deviation, and correlations among each measurement of vicarious embarrassment, empathy, independent self-construal, and interdependent self-construal. VES Other was shown to have a positive relationship with VES Friends, VES Family, and independent self-construal. However, it did not correlate with empathy. In particular, this finding supported the findings of Uysal et al. (2014) as VES Other did not correlate with empathy.

The VES Friend and VES Family were associated with interdependent self-construal but not empathy. These findings confirm our expectations and provide preliminary evidence of the association of VES with cultural values that manifest in self-construal.

Table 7.
Vicarious Embarrassment Correlations

Variable	*M*	*SD*	1	2	3	4	5	6
1. Vicarious embarrassment (Other)	48.69	124.28	-					
2. Vicarious embarrassment (Friend)	49.54	137.92	.72**	-				
3. Vicarious embarrassment (Family)	55.79	138.48	.54**	.74**	-			
4. Interdependent SC	45.69	110.14	.22*	.20*	.26**	-		
5. Independent SC	46.10	111.59	.24**	.17	.16	.25**	-	
6. Empathy	38.56	.42	.03	.06	.06	.13	.05	-

*$p < .05$. **$p < .01$.

Reliability

Internal consistency techniques (Cronbach's alpha, McDonald's Omega) were used to evaluate reliability, computed using the polychoric correlation matrix, and used the data's ordinal features (Oliden & Zumbo, 2008). The McDonald's ordinal Omega of VES Other was .91, and the standardized Cronbach's alpha was .90. The VES Friend had the McDonald's ordinal Omega was .93, and the standardized Cronbach's alpha was .93. High-reliability values were also shown in the VES Family (McDonald's ordinal Omega = .95; Cronbach's Alpha = .95).

Discussion

The Unrestricted Factor Analysis (UFA) model is more suited to test items than the Restricted Factor Analysis (RFA) model. As a result, a UFA model that has the same number of elements as a CFA model and is equal to an EFA model was preferred. This model may be used as a baseline model to test for the number of common components suggested by Mulaik (Tepper & Hoyle, 1996) and provide a meaningful solution that eliminates the need for additional rotations.

The second argument of our research is that most of the vicarious embarrassment measurement scales developed have always used protagonists who are unknown or unrelated to the observer (e.g. Krach et al., 2011; Müller-Pinzler et al., 2016; Uysal et al., 2014). This fact is of great concern to researchers from societies with collective cultures because vicarious embarrassment is a distinctive emotional experience in collectivistic cultures (Stipek, 1998).

To solve the first problem, the application of UFA was carried out to examine the structure of other VES factors. The second issue relates to the relationship between the observer and the protagonist. In a collectivistic society, interactions were a crucial concern, mainly how individuals were sensitive to interdependence in their relationships. Chen and West (2008) emphasized the importance of collectivistic based on reference groups such as family members, friends, and others.

In a collectivistic society, a social relationship has interdependence characteristics which (a) consider the implications of one's decisions and actions on the others in the relationship, (b) share success, and (c) share failures with one another. Given that personal goals are often embedded in common goals and achieved through collective efforts, it is hoped that collectivists would share in the success of each other's accomplishments. In the same way, one person's failure can be

another's failure. The fear of embarrassing family or friends can be the greatest fear of individuals with collectivistic values (Chen & West, 2008).

Based on the explanation above the relations based on collectivistic principles measure vicarious embarrassment was ensured. For that, the VES developed by Uysal et al. (2014) by changing the protagonist (VES Other) into someone related to the observer, namely friends (VES Friend) and family members (VES Family) was modified. For that, three measurements of vicarious embarrassment with three different protagonists were applied: VES Other, VES Friend, and VES Family.

Replication by Kuppelwieser et al. (2019) resulted in different conclusions regarding the factor structure of the VES Other, namely that VES Other was a bifactor, not one factor. With the UFA approach, it was found that the VES Other factor structure was a single factor and supported the findings of Uysal et al. (2014).

The absolute fit indices derived from the obtained and implied covariance matrices and the ML minimization function were utilized to assess the goodness of fit. Various indices came under the category of absolute indices employed in this research, including the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), and the weighted root mean square residual (WRMR). Based on the cut-off values of Hu & Bentler (1999), VES Other, VES Friend, and VES Family showed the goodness of fit.

All VE scales' reliability, unidimensionality, and factor replicability were excellent. These qualities showed that the vicarious embarrassment scale with either protagonist known or unknown to the observer had a reliable psychometric quality.

One of the psychological variables traditionally believed to be associated with vicarious embarrassment is empathy (Hawk et al., 2011; Krach et al., 2011; Miller, 1987; Stocks et al., 2011). In particular, empathy becomes an essential variable in the process of vicarious embarrassment when the protagonist is a stranger/unknown/unrelated to the observer (Krach et al., 2011; Miller, 1987).

The findings of Uysal et al. (2014) regarding the disconnection of vicarious embarrassment and empathy are supported by the findings of this study. Empathy was not associated with vicarious embarrassment, even with the protagonist related to the observer. These findings showed that empathy was not an observer variable that facilitated vicarious embarrassment. This fact

strengthened the argument of Mayer et al. (2021) that vicarious embarrassment was a complex emotion and required many studies related to its varied conditions and antecedents.

Empathy is often associated with not physically real (visible) processes but psychologically real (Zaki & Ochsner, 2011). It can potentially cause "vicarious feelings," which are mimicked in the absence of this specific emotional state in the social target.

Even though the phrases "empathic emotions" (Batson et al., 1981; Decety & Lamm, 2006; Niedenthal & Brauer, 2012) have been used interchangeably, it is believed that the two ideas have unique qualities and effects. In many social contacts, perceivers feel vicariously uncomfortable in the absence of embarrassment or any other feeling in the social target (Hawk et al., 2011; Krach et al., 2011; Paulus et al., 2013a). As a result, the social target is ignorant of the continual dangers to their social integrity (Krach et al., 2011). As a result, unlike empathetic manifestations, vicarious embarrassment reflects an emotional state in the perceiver that differs from the social target's internal, psychologically actual condition. For this reason, empathy seems more relevant when associated with empathic embarrassment than vicarious embarrassment.

Adding a different protagonist by emphasizing the relationship between observer and protagonist in VES shows a self-construal function based on the Individualistic/Collectivistic cultural dimension. This is indicated by the correlation between independent/interdependent self-construals with VES Other, VES Family, and VES Friend. The relationships between interdependent self-construal and all VES measures show that vicarious embarrassment is substantial in a collectivistic culture. Vicarious embarrassment is more common in collective cultures than in individualistic cultures because it displays more sensitivity to social norms (Camras & Fatani, 2004).

Violation of social norms generally precedes embarrassment. When this happens in collectivistic societies, individuals are prone to it, so they can quickly share the embarrassment of the actions of those with whom they are related. A meta-analysis review by Krieg and Xu (2015) found that individuals with high interdependent self-construal were particularly prone to social anxiety and emphasized maintaining harmonious relationships with others. Individuals with high social anxiety tend to threaten their social self so that when someone related to them commits embarrassing acts, they also feel embarrassed (Edelmann, 1987).

In contrast, independent self-construal was not associated with VES Family and VES Friend but with VES Other. This finding shows that independent self-construal does not emphasize group references in family and friendship.

Limitations and Future Directions

This study has limitations because it only uses a representative sample of the academic scope. Of course, more varied sample characteristics are needed to see invariance in instrument validation.

The form of the instrument that was studied is non-vignette and is rarely developed to elicit vicarious embarrassment. For this reason, the instrument used here needs to be tested for concurrent validity with vicarious embarrassment vignettes. In addition, it is necessary to study the relationship between empathy and empathic embarrassment to ensure that empathy is more related to empathic embarrassment than vicarious embarrassment.

Conclusion

Vicarious embarrassment studies are still rare and impact a small number of measurements. This non-vignette vicarious embarrassment (VES) scale study showed that the VES was unidimensional and had good psychometric characteristics. The findings of VES developers (Uysal et al., 2014) were supported, particularly regarding the dissociation between VES and empathy.

This study on the instrument of vicarious embarrassment involved individuals from collective cultures. Given that vicarious embarrassment is substantial in the experience of individual emotions in a collective culture, the existing instruments have a weak protagonist context for the observer. In VES, substituting protagonists from strangers to characters in relationships with the observers (family and friends) exhibited good psychometric characteristics.

Interdependent self-construal was not correlated to the observer's vicarious embarrassment when the protagonist was not related to the observer. This finding indicates that the context of the relationship between observers and protagonists in vicarious embarrassment is a cultural issue of vicarious embarrassment measurement. The findings of the study confirm that vicarious embarrassment, when applied in the context of a collectivist society, is more cultural in nature. In

addition, factor analysis with the Unrestricted Factor Analysis approach supports the unidimensional structure factor of the vicarious embarrassment construct.

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