RESEARCH ARTICLE

Evidence of Validity and Factorial Invariance of a Brief Jealousy Scale in Peruvian University Students

Evidencias de validez e invarianza factorial de una Escala Breve de Celos en estudiantes universitarios Peruanos

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Summary

The study sought to analyze the evidences of validity, factorial invariance and reliability of the scores of the Jealousy Subscale of the Inventory of Emotional Communication in Romantic Relationships (Sánchez, 2012). To that effect, there was a sample of 1176 Peruvian university students who completed the 11 items of the original version. The confirmatory factor analysis verified a satisfactory adjustment of a final model of nine items in a single factor and correlated errors. It is concluded that the Jealousy scale is a measure that can be used in the professional and research activity, obtaining valid interpretations, reliable and invariant scores according to gender in Peruvian university students.

Keywords: Jealousy, couple relationships, university, instrumental study, validation, factor analysis, invariance.

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Resumen

El estudio buscó analizar las evidencias de validez, invarianza factorial y fiabilidad de las puntuaciones de la Subescala de Celos del Inventario de Comunicación Emocional en las Relaciones Románticas (Sánchez, 2012). Para ello se contó con una muestra de 1176 estudiantes universitarios peruanos que completaron los 11 ítems de la versión original. El análisis factorial confirmatorio verificó un ajuste satisfactorio de un modelo final de nueve ítems en un único factor y errores correlacionados. Se concluye que la escala de Celos constituye una medida breve que puede emplearse en la actividad profesional e investigativa, obteniendo interpretaciones válidas, puntuaciones fiables e invariantes de acuerdo con el sexo en estudiantes universitarios peruanos.

Palabras clave: Celos; Relaciones de pareja; Universitarios; Estudio instrumental; Validación; Análisis factorial; Invarianza.

Introduction

There is currently a large number of research works focused on jealousy (Elphinston, Feeney, & Noller, 2011). International figures indicate that in a situation described as "lack of love", jealousy and indifference are experienced by 70% of women and 58% of men (Cantera, Estébanez, & Vázquez, 2009). American marriage and family therapists also report that a third of their clients have jealousy problems (White, 2008), which are often approached under a cognitive (Cuesta, 2006) or cognitive-behavioral model (Martínez-León et al., 2016).

Different studies indicate that jealousy has different implications in the personal sphere and in the society in general (Kelley, Eastwick, Harmon-Jones, & Schmeichel, 2015). Thus, for example, jealousy decreases satisfaction within the couple relationship (Barelds & Barelds-Dijkstra, 2007; Bevan 2008; Parker, Low, Walker, & Gamm 2005) and in relationships with close others (Andersen, Eloy, Guerrero & Spitzberg, 1995). In addition, jealousy is a predictor of aggression for both men and women within a couple relationship, which can even lead to murder (Caldwell, Swan, Allen, Sullivan, & Snow, 2009; Canto, García, & Gómez, 2009; Fenton & Rathus, 2010; Finkel, 2007; Foran & O'Leary, 2008; Gage & Hutchinson, 2006; Guerrero, Hannawa, & Babin, 2011; Kar & O'Leary, 2013; O'Leary, Smith Slep, & O'Leary, 2007; Wright, 2017).

In Peru, a study conducted between 2011 and 2015 (National Institute of Statistics and Informatics [INEI, by its Spanish initials], 2015) indicates that jealousy is the second cause of femicide (39.3%); while police reports reveal that it is the first cause of this crime (46%) (Ministry of the Interior of Peru [MININTER], 2017). This leads to the consideration of jealousy as a risk factor for gender-based violence (Central America Regional Office of the United Nations High Commissioner for Human Rights [OHCHR], 2014). This situation occurs because of a passionate idea of love that involves showing jealousy and despair of the other person (Masters, Johnson

and Kolodny, 1987), which added to a hegemonic masculinity makes men have more controlling behavior towards women (Ramírez, 2000; Borraz, 2016). From a psychological perspective, this may be due to the accentuated prohibition against expressing anger in childhood (Singer & Singer, 1993; Hidalgo, 2010) and the erroneous interpretation of reality (Beck, 1990).

An important point for the identification and measurement of jealousy is its adequate conceptualization (Elphinston, et al., 2011). Although different definitions of jealousy can be found, it is generally considered as a human emotion typical of romantic relationships, which is universally experienced by individuals, regardless of their age, sexual orientation, social class, culture and type of relationship (Bernhard, 1986; De Silva, 2004; De Steno, Valdesolo, & Bartlett, 2006). Jealousy arises from the real or imaginary suspicion of threat or loss of affection within a relationship considered valuable (Canto-Ortiz, García-Leiva, & Gómez, 2009; Echeburúa & Fernández-Montalvo, 2001) and is composed of a set of emotions such as pain, anxiety and anger (Parrott & Smith, 1993). People who experience high levels of jealousy have a set of psychological characteristics such as low self-esteem, neuroticism, anxious attachment, and feelings of dependence and sense of possession of the partner (Pines, 1998).

According to some authors (Elphinston, et al., 2011; Guerrero, Spitzberg, & Yoshimura, 2004; Pfeiffer & Wong, 1989), jealousy can have cognitive, emotional, and behavioral expression. The cognitive expression of jealousy includes suspicions, thoughts, and concerns about the probable attraction of the partner towards another person (Echeburua, Amor & Corral, 2009; Monroy, et al., 2015; Pfeiffer & Wong 1989), as well as catastrophic anticipation and unattractive personal thoughts (Cuesta, 2006). For its part, emotional jealousy is a set of anticipated affective responses to threats, such as fear, sadness, anger, envy (Guerrero, Trost, & Yoshimura 2005) and emotional dependence (Cuesta, 2006), which affects the way to communicate and face jealousy (Guerrero & Andersen 1998). Behavioral jealousy includes the evident expression of jealousy (Pfeiffer & Wong 1989), which can be

perceived in behaviors to confirm the possible deception and inquisitive questions (Cuesta, 2006).

A review of the literature (White & Mullen, 1989) presents three types of jealousy as clinical problems. The first one is the normal jealousy that is common and is related to the presence of a real threat to the romantic relationship. The second one is the symptomatic jealousy where the perception of threat to the romantic relationship is associated with pathologies such as schizophrenia, paranoia, and alcohol and drug dependence. Finally, pathological jealousy involves exaggerated responses to a real threat, caused by temporary or chronic self-esteem problems, traumas from experiences of infidelity or personality disorders. Other classifications indicate the existence of delirious paranoid jealousy, sexual jealousy, justified and unjustified jealousy, reactive and suspicious jealousy, among others (Monroy, et al., 2015).

On the other hand, several studies suggest differences according to gender in jealousy between men and women (Bendixen, Kennair & Buss, 2015; Brase, Adair & Monk, 2014; Frederick & Fales, 2014; Zengel, Edlund & Sagarin, 2012). In this sense, in the Scandinavian context the presence of large differences between both genders with respect to the responses of jealousy is reported (Bendixen et al., 2015; Kennair, Nordeide, Andreassen, Strønen, & Pallesen, 2011). From an evolutionary point of view, men and women present differences in sexual and emotional jealousy (DeSteno, Bartlett & Salovey, 2002). Sexual jealousy results from the knowledge of or suspicion that the partner is having an affair with another person, while emotional jealousy is the result of the knowledge or suspicion of the partner's emotional attachment to another person (Demirtaş-Madran, 2008). Likewise, men experience greater sexual jealousy and women experience a greater amount of emotional jealousy (Edalati & Redzuan, 2010; Fussell, 2012; Varga, Gee, & Munro, 2011). Other research works, on the other hand, report that there are no gender differences in the expression of jealousy (Carpenter 2012; Demirtaş & Dönmez 2006).

Women tend to express jealousy accompanied by sadness or depression, while men by anger or aggression (Alario, 2002). From a social cognitive perspective (Harris 2003), differences in jealousy between men and women result from threats to self-concept, as well as the influence of cultural norms and sexual roles and the beliefs associated with these roles (Salovey & Rothman 1991; Ward & Voracek 2004). In this same sense, some studies prove that the different income levels among the members of the couple, the duration of the relationship and the previous experiences of infidelity in romantic relationships cause marked differences in jealousy (Frederick & Fales, 2014; Murphy, Vallacher, Shackelford, Bjorklund, & Yunger, 2006). On the other hand, marital status (single, married, among others) does not seem to have a moderating effect on gender differences related to jealousy (Zengel et al., 2012), although other studies show that single women are more jealous than married women. Likewise, the latter are more jealous than married men (Demirtaş, 2004). Finally, in relation to age, older women are more emotionally jealous than their husbands, while younger women are more sexually jealous than their partners (Shackelford, et al., 2004).

The measurement of jealousy is an emerging issue, and Pfeiffer and Wong's three-dimensional jealousy scale (1989) composed of 24 items, validated in Australia (Elphinston, Feeney, & Noller, 2011), Brazil (Lucas, Pereira, Esgalhado, 2012) and Italy (Tani & Ponti, 2016) is used worldwide, while a Multidimensional Inventory of Romantic Jealousy has recently been developed in Latin America, which is composed of 150 items, with five second-order and thirteen first-order scales (Palma, Fuentes, Medina, Escobar, & Vergara, 2016), although its high number of questions and factors makes it complex to replicate. On the other hand, there is the emotional jealousy scale of Kizildag and Yildirim (2017), which presents two methodological errors: (a) it estimates a total alpha ($\alpha = .95$) and (b) it does not check a bifactor model despite the high inter-factor correlation. Finally, there is the one-dimensional scale of jealousy provocation with 18 items (Cayanus & Booth-Butterfield, 2004). In Peru, there is only one recent study

about a six-dimensional scale of 31 items (Mendieta, 2018), a situation that is strange because jealousy is the first cause of femicide in Peru (MININTER, 2017). In this sense, it is necessary to validate the jealousy subscale of the Inventory of Emotional Communication in Romantic Relationships which has an interpersonal approach and measures the emotional experience in relation to the behaviors of the couple that spark the emotion of jealousy in the individual (Sánchez, 2012).

Therefore, the main objective of the study is to analyze the evidence of the validity of internal structure, content, and the invariance of measurement and reliability of a brief measure of Jealousy in Peruvian university students who are in a relationship. Having an instrument validated for the Peruvian context will help to obtain information to better understand jealousy. It will also make possible the analysis of the relationships of jealousy with other variables, the development of adaptations to the characteristics of different samples and the development of cross-cultural research works.

Method

Design

It is a study with instrumental design as it aims to review the psychometric properties of a self-reported measurement instrument (Ato, López, & Benavente, 2013).

Participants

This study had the participation of 1176 Peruvian university students, 879 were women and 297 were men, aged 16-54 (Median = 21.29; DE = 3.911). Likewise, an inclusion criterion was that people had a romantic relationship of at least one month in duration. Table 1 describes some socio-demographic characteristics of the participants. Likewise, in order to examine the measurement invariance, 297 women were randomly selected from the total number of women (using a computational method) and they were contrasted with the 297 men in the study. Thus, there were 594 participants.

Table 1

Socio-Demographic Characteristics of Participants.

Variables	Total (N = 1176)	
	f	%
Sex		
Woman	879	74,7
Man	297	25,3
Age (years old)		
16 to 19	279	32,2
20 to 21	366	31,1
22 to 54	431	36,6
Type of relationship		
Married	42	3,6
Living together	44	3,7
Dating	992	84,4
Engaged	98	8,3
Duration of relationship (months)		
1 to 6	294	25,0
7 to 33	582	49,5
34 to 288	300	25,5

Note: f = Frequency

Instrument

The Inventory of Emotional Communication in Romantic Relationships (Sánchez, 2012) is composed of eight factors that account for 49.3% of the variance of the model. They include: Love-Happiness (α = .97), Passion (α = .93), Jealousy (α = .88), Fear (α = .89), Sadness (α = .88), Anger (α = .86), Positive Surprise (α = .79), Negative Surprise (α = .70) that are supposed to be related [information on the inter-factor correlation is not provided]. Factorial loads were ≥.40. The Jealousy Subscale is composed of 11 items with Likert-type response alternatives from 1 to 5 with expressions: "Never",

"Sometimes", "Frequently", "Many times", "Always". According to the results of Sánchez (2012), conceptually, the scale measures behaviors that put the couple relationship at risk because of a third party and its reliability using the alpha coefficient can be considered good.

Procedure

Initially, the understanding of the items was verified through a pilot study with 10 people in a couple relationship. Based on this, the items were modified (see table 2). Then, the test was submitted to the scrutiny of three expert judges to verify its conceptual content, observing items 7 and 10 because they measured infidelity rather than jealousy. In this sense, it was decided to administer the scale with 11 items to observe the statistical behavior of items 7 and 10. Finally, the measurement instrument was applied in two modalities: (a) face-to-face (65%), surveying university students in the surrounding area of their university and in common areas of their university (student breakout areas, green areas, cafeteria, etc.); (b) virtual (35%), using an online form shared through social media.

With respect to ethical issues, an informed consent explaining the conditions of anonymity, voluntary participation and the objective of the study, as well as the use of possible results, was given prior to the completion of the questionnaire.

Table 2.

Item Wording Modifications.

Original Version	Adapted Version
4. When I feel that my partner trusts someone else more than me, I would feel...	*4. If I feel that my partner trusts **someone else** more than me, I would feel…
6. If my partner cheats on me, I would feel...	*6. If my partner cheats on me, I would feel…
7. When my partner turns his or her head to see another person in front of me, I would feel...	**7. If my partner turns his or her head to see another person in front of me, I would feel…
9. When my partner is very reserved and I don't know what he or she does and with whom, I would feel...	**9. If my partner is very reserved and I don't know what he or she does and with whom, I would feel…
10. If my partner confesses to me that he/she cheated on me, I would feel...	*10. If my partner confesses to me that he/she cheated on me, I would feel...

Note: * = Items observed by the judges; ** = Items modified after the pilot study for understanding.

Data Analysis

The statistical analyses were carried out using the R 3.1.2 software (R Development Core Team, 2007), specifically using the "lavaan" package (Rosseel et al., 2018). The analysis was carried out in stages: In a first stage, the items were analyzed descriptively: arithmetic mean, standard deviation, asymmetry and kurtosis (Hair, Anderson, Tatham & Black, 2005). For these last two coefficients, +/- 1.5 was considered as an indicator of high values (Forero, Maydeu-Olivares, & Gallardo-Pujol, 2009).

In a second stage, the Confirmatory Factor Analysis (CFA) was carried out. The multivariate normality assumption was confirmed using the Mardia's coefficient (1970), which, being higher than 70, can be considered non-normal (Rodríguez & Ruiz, 2008). The *weighted least squares with mean, variance adjusted and the Satterthwaite approximation* (WLSMVS) estimator was used due to the ordinal nature of the data and differences in variances (Brown, 2006; Rosseel et al., 2018). The goodness-of-fit measures were used to assess the models (Browne & Cudeck, 1993; Hu & Bentler, 1999; Mueller and Hancock, 2008): RMSEA ($\leq$ .08), SRMR ($\leq$ .06), CFI ($\geq$ .95) and $\geq$/g1 with values ranging from 2 (Tabachnick and Fidell, 2007) to 5 (Wheaton, Muthen, Alwin, & Summers, 1977).

In a third stage, the factorial invariance of the jealousy scale by gender was tested. In this sense, the invariance was assessed by levels (Byrne, 2008; Vandenberg & Lance, 2000): Configurational (M1), which suggests the factorial structure without restrictions, being considered as the baseline; Metric (M2), where factorial load equivalence restrictions are established; Strong (M3), load and intercept equivalence restrictions, and Strict (M4), load, intercept and residue equivalence restrictions. The measurement invariance and its levels were assessed following the recommendations given by Cheung & Rensvold (2002) ΔCFI $\leq$ .01 and ΔRMSEA $\leq$ .015.

Finally, the reliability of the scores was estimated using the Omega coefficient (ω) because a factorial model was used (McDonald, 1999), and

their respective confidence intervals were estimated using bootstrapping methods (Ventura-León, 2017).

Results

Preliminary Item Analysis

Table 3 presents the descriptive analysis of the items. Item 5 (M = 4.37; σ = .985) and item 1 (M = 3.33; σ = 1.132) have the highest and the lowest mean values, respectively. Likewise, items 5, 6 and 10 present high asymmetry and kurtosis, being higher +/- 1.5 as an indicator of high values (Forero, Maydeu-Olivares, & Gallardo-Pujol, 2009).

Table 3

Preliminary Analysis of Items of Jealousy Scale.

Items	M	σ	g1	g2
1. If my partner spends a lot more time with someone else, I would feel...	3.33	1.132	-.201	-.771
2. If my partner gives more attention to someone else other than me, I would feel...	3.72	1.113	-.616	-.441
3. If my partner lies to me and goes somewhere other than where he or she told me, I would feel...	3.86	1.159	-.872	-.056
4. If I feel that my partner trusts someone else more than me, I would feel…	3.60	1.172	-.537	-.573
5. If I find my partner openly flirting with someone else, I would feel...	4.37	.985	-1.728	2.528
6. If my partner cheats on me, I would feel…	4.32	1.239	-1.758	1.786
7. If my partner turns his or her head to see another person in front of me, I would feel…	3.35	1.317	-.319	-1.008
8. If my partner receives calls and gets nervous when I ask about it, I would feel...	3.81	1.167	-.758	-.282
9. If my partner is very reserved and I don't know what he or she does and with whom, I would feel…	3.45	1.242	-.451	-.733
10. If my partner confesses to me that he/she cheated on me, I would feel...	4.20	1.276	-1.487	.935
11. If I catch my partner talking to an ex, I would feel...	3.70	1.297	-.659	-.708

Note: M = Mean; σ = Standard Deviation; g1 = Asymmetry; g2 = Kurtosis

Confirmatory Facto Analysis.

Table 4 presents the CFA used to verify and compare internal structure models of the jealousy scale. The Mardia's coefficient was 124.369. Thus, the data follow a multivariate non-normal distribution (Rodríguez & Ruiz, 2008). Three factorial structures were modeled: (a) Model 1, with eleven items and a single factor; (b) Model 2, which is a re-specification of model 1 based on the visualization of the error variances of items 6 and 10, a situation that coincides with the observations of the judges who maintained that both items evaluated something other than jealousy; (c) Model 3, without items 6 and 10 and with three correlated measurement errors that were reported by the modification indexes, but following the consideration of theoretical rationality (Boomsma, 2000). In this sense, model 3 is a one-dimensional factorial structure with nine items and three correlated errors. The results indicate that this model has goodness of fit values considered good (García, 2011): (χ (18) = 172.188; p > .05; CFI = .973; SRMR = .028; RMSEA = .085, IC [.070, 102]).

Table 4

Statistical Fit Indexes of 3 models of the Jealousy Scale (N =1176).

	χ^2 (g1)*	χ^2/g1	SRMR	CFI	RMSEA [CI 90%]
Model 1 (one-dimensional)	1311.479 (21)	62.451	.098	.802	.229 [.218, .239]
Model 2 (Without items 6 and 10)	660.299 (18)	36.683	.055	.890	.174 [.160, .184]
Model 3 (Without items 6 and 10, and with correction of e1-e2; e7-e8; e8-e9)	171.911 (18)	9.551	.028	.973	.085 [.070, .102]

Note: χ^2 = Chi Square, g1 = Degrees of Freedom, SRMR = Standardized Root Mean Square Residual, RMSEA = Root Mean Square Error of Approximation, CFI = Comparative Fit Index, AIC = Akaike Information Criterion, CI = Confidence Intervals.

Factorial Invariance

Table 5 shows the invariance measures by gender. Initially, the general population exhibited good goodness of fit values (n=594) (García, 2011). This is also the case when dividing into subgroups (women and men). But, women have higher SRMR and CFI values as compared to those of men. Next, the configurational invariance (M1) was analyzed and exhibited good goodness of fit values $\chi^2_{(48)} = 60.058$, CFI =.972; SRMR =.037 and RMSEA = .097 (.073, .122). The M1 is the baseline used to contain the other models with M2, M3, M4 restrictions. Then, the metric invariance (M2), being understood as an M1 with factorial load restrictions, was analyzed and exhibited good goodness of fit indexes: CFI = .970 and RMSEA = .087 (.066, .109), which are similar to the M1 values as they show minimum differences ΔCFI $\leq$ .01 and ΔRMSEA $\leq$ .015. Thus, it can be concluded that the factorial loads are equivalent, and therefore, the co-variances can be compared. Subsequently, the threshold equivalence was assessed (strong invariance, M3), showing that the indexes are similar to the previous model: CFI = .978, SRMR = .033 and RMSEA = .059 (.040, .077). The differences with the M2 model are minimal (ΔCFI $\leq$ .01 and ΔRMSEA $\leq$ .015; Cheung & Rensvold, 2002), confirming the threshold invariance. In the next step, the strict invariance (M4) was examined and the residue invariance is added. The results indicate that the differences with the M3 model are minimal, confirming the residual invariance.

Once the measurement invariance was verified, the latent means were calculated due to evidence of presence of strong invariance (Dimitrov, 2010). Thus, the mean of the first group was set equal to zero and that of the second group was set free. The results reveal that the latent means of women (4,016) and men (3,922) are not statistically significant and their effect size is non-existent (d = 093; Cohen, 1992).

Table 5

Measurement Invariance of the Jealousy Scale by gender (n =594)

Model	x^2 (gl)	Δx^2 (Δgl)	RMSEA [CI 90%]	P	SRMR	CFI	(ΔCFI)	ΔRMSEA
All group	85.728 (18)	-	.080 [.057, .105]	.493	.027	.979	-	-
Women	38.983 (17)	-	.066 [.029, .103]	.557	.027	.985	-	-
Men	61.517 (17)	-	.094 [.060, .131]	.509	.032	.975	-	-
M1	53.053 (48)	-	.080 [.056, .106]	.286	.033	.981	-	-
M2	62.006 (56)	10.980 (8)	.072 [.050, .094]	.271	.033	.979	.001	.009
M3	83.625 (82)	32.870 (26)	.059 [.040, .077]	.429	.033	.978	.001	.013
M4	92.864 (91)	8.106 (9)	.052 [.034, .069]	.426	.037	.982	.004	.006

Note. M1: Configurational; M2: Metric; M3: Strong; M4: Strict.

Reliability

Table 6 presents the factorial loads and reliability estimation using the omega coefficient for both models. However, model 2 exhibits a corrected omega for correlated errors (Raykov, 2001; Komaroff, 1997). In this sense, it can be considered that the internal consistency between the items is good (Cicchetti, 1994).

Table 6

Saturations of Items in the Various Models of the Scale

Items	Model 1	Model 2	Model 3	e
1	.823	.835	.744	.552
2	.862	.877	.796	.385
3	.725	.734	.763	.323
4	.726	.742	.773	
5	.772	.741	.769	
6	.814	-	-	
7	.706	.715	.682	
8	.830	.840	.783	
9	.740	.748	.733	
10	.739	-	-	
11	.713	.718	.747	
ω	.905	.905	.881*	
CI ω	[.894, .914]	[.894, .914]	[.868, .894]	

Note: ω = Estimated Omega Coefficient; * Corrected Omega; e = Correlated Errors of Model 3; - = It denotes missing item.

Discussion

This instrumental-type study joins the research works that are addressing the issue of jealousy in couple relationships (Elphiston et al., 2011). Specifically, the evidence of validity based on internal structure and content was analyzed. In addition, the factorial invariance by gender was examined and the reliability of the scores of the Jealousy Subscale of the Inventory of Emotional Communication in Romantic Relationships was estimated (Sánchez, 2012).

The CFA reveals better goodness of fit values of Model 3 (Re-specified Model), a one-dimensional nine-item model, where items 6 and 10 were removed. Also, it exhibited correlated errors (e1-e2; e7-e8; e8-e9). It should be noted that items 6 and 10 caused distortion in the data because they are not coherent because (according to the expert opinion) they were measuring something other than jealousy. At the same time, from an empirical point of view (factor analysis), they exhibited an excessive error variance due to wording regarding infidelity. In this sense, there was sufficient evidence to

remove them from the subscale. On the other hand, the modification index suggested the presence of redundant items. In this sense, some error variances were correlated, resulting in free parameters ranging from .323 to .552.

This version of the Jealousy Subscale is easy to implement in the scientific field, and can be used, for example, in research on couple relationships. This can help to systematize information in the national context that can be discussed with what has been reported in other scenarios (e.g. White, 2008). It also opens the possibility of continuing to adapt the instrument to different samples, taking into account the cultural diversity of Peru and including, in addition to validity and reliability, equity as the measurement property of the functioning of the instrument (Ventura-León, Barboza-Palomino, & Caycho, 2017). Similarly, the instrument can be adapted in different countries of the region, making it possible to develop cross-cultural studies in the future.

Taking into account that jealousy is universally experienced and is present in romantic relationships (Bernhard, 1986; De Silva, 2004; De Steno et al., 2006), it is necessary to investigate how the variable is shown according to different socio-demographic and cultural characteristics. In this sense, as the scale measurement invariance has been exhibited, evidence on jealousy by gender can be generated, as done in previous studies (Bendixen et al., 2015; Brase et al., 2014; Carpenter, 2012; Demirtas & Dönmez, 2006; Edalati & Redzuan, 2010; Frederick & Fales, 2014; Fusell, 2012; Kennair et al., 2011; Varga et al., 2011; Zengel et al., 2012).

The validation of the jealousy scale will also make it possible to examine its relation with other variables. Thus, it is important to know the association with other constructs such as satisfaction with the couple relationship (Barelds & Barelds-Dijkstra, 2007; Bevan, 2008; Parker et al., 2005), depression, sadness, anger (Alario, 2002), infidelity (Murphy et al., 2006), self-concept and beliefs associated with the assigned roles (Ward & Voracek, 2004), among others in the Peruvian context.

Similarly, predictive studies can be developed to value the influence of jealousy on aggression exerted in couple relationships. This will make it possible to corroborate what has been reported in previous studies (Caldwell, Swan, Allen, Sullivan, & Snow, 2009; Canto, García, & Gómez, 2009; Fenton & Rathus, 2010; Finkel, 2007; Foran & O'Leary, 2008; Gage & Hutchinson, 2006; Guerrero, Hannawa, & Babin, 2011; Kar & O'Leary, 2013; O'Leary, Smith Slep, & O'Leary, 2007; Wright, 2017).

This is important because different institutions reveal (INEI, 2015; MININTER, 2017) that jealousy has emerged as a cause of gender violence and femicide. Having an adapted and valid instrument will make it possible to estimate statistical data with more accuracy, and to reveal the social impact of jealousy and systematize it through scientific studies on this variable that remain limited in the Peruvian context.

Although the findings in this study are interesting, there are limitations such as the selection of the sample that was not probabilistic, and that the analysis was limited to two sources of validity: based on the content and the internal structure. It is suggested to explore the functioning with other variables and to examine the reliability using other methods such as test-retest in order to observe the stability of the test over time.

In conclusion, the results make it possible to point out that the Jealousy scale is a brief measure that offers valid interpretations and reliable scores with respect to jealousy in Peruvian university students, in addition to showing invariant according to gender. Therefore, the jealousy scale is a useful tool for the professional practice and the development of new research works.

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