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Validation of the dating violence questionnaire (DVQ-R) for young Colombian and Mexican adult victims

Validación del Cuestionario de Violencia entre Novios (DVQ-R) para víctimas en jóvenes adultos colombianos y mexicanos

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Abstract

The dating violence is a problem of public health actuality, with consequences in the physical health and psychology the young, thus, it is important have instrument what allow rigours evaluation this problem. The present study aimed to evaluate the construct validity and reliability of the dating violence questionnaire (DVQ-R) in a sample of young Colombian and Mexican adults. This study was psychometric, the research included 4,237 Mexican and Colombian adolescents and young adults aged between 14 and 28 years (M=19,44 years; DS=2,6 years). The reliability was calculated whit coefficient Cronbach alpha, it got a total internal consistency of α= 0,827; When estimating construct validity via exploratory factor analysis, the 20 items were grouped according to five theoretically conceived factors which measured victimization behavior pertaining to physical violence, humiliation, sexual victimization, detachment and coercion, and explained 55,1% of variance. In the confirmatory factor analysis for general model of five factor, the fit indexs were adequate (CFI = 0937, NFI = 0931, IFI= ,937, RMSEA= .049). Moreover, additional models developed specifically for Colombian and Mexican populations are proposed. Outcomes indicate that DVQ-R is an appropriate tool for assessing victimization in dating relationships.

Keywords: Dating violence, validity, reliability, factorial structure.

Resumen

La violencia en el noviazgo es un problema de salud pública actual, con consecuencias en la salud física y mental de los jóvenes, por lo tanto, es importante contar con instrumentos que permita evaluar de forma rigurosa éste fenómeno. El objetivo de este trabajo fue evaluar la validez de constructo y la confiablidad del DVQ-R en jóvenes adultos colombianos y mexicanos. El estudio fue psicométrico, en el cual participaron 4237 jóvenes y adultos mexicanos y colombianos con edades comprendidas entre los 14 y 28 años (M=19,44 años; DS=2,6 años). La confiablidad se calculó mediante el coeficiente alfa de Cronbach, se obtuvo una consistencia interna total de α= 0,827; al calcular la validez de constructo mediante el Análisis Factorial Exploratorio, los 20 ítems se agruparon como se esperaba teóricamente en cinco factores, dirigidos a medir comportamiento de victimización de violencia física, humillación, sexual, desapego y coerción, explicando el 55,1% de la varianza total. En el Análisis Factorial Confirmatorio para el modelo general de cinco factores de medida mostro índices de bondad de ajuste adecuados (CFI = 0937, NFI = 0931, IFI= ,937, RMSEA= .049). Además, se propuso modelos adicionales específicos para población colombiana y mexicana. Los resultados indican que el DVQ-R es un instrumento adecuado para evaluar la victimización en las relaciones de noviazgo.

Palabras clave: Violencia noviazgo, validez, confiabilidad, Estructura factorial.

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Dating violence is a type of intimate partner violence that includes acts of psychological, physical and sexual violence within a romantic relationship in adolescents and young adults (Centers for Disease Control and Prevention, 2020; Toplu-Demirtaş, Öztemür & Fincham, 2020). This type of violence has an impact on physical and mental health (Hossain, Sultana, Fan, Ma, & Purohity, 2020) and has been linked to depression, anxiety, post-traumatic stress disorder, substance abuse, sexually transmitted diseases, and suicide in adolescents and young adults (An, et al., 2020; Bernard, Levendosky, Yalch, & Lannert, 2019; Demissie et al., 2018; Duval, Lanning, & Patterson, 2018; Johns et al., 2019; Kim, Yu, Cronley &Yang, 2019; Pampati, Lowry, & Steiner, 2019; Temple et al., 2016).

With regards to the prevalence of different types of dating violence, great variability has been reported, with figures of between 4% and 95.5% for psychological violence, between 20% and 57% for physical violence, and between 1% and 65% for sexual violence (Hautala, Sittner Hartshorn, Armenta, & Whitbeck, 2017; Rey-Anacona, 2013; Rubio-Garay et al., 2017; Wincentak, Connolly, & Card, 2017). Some authors argue that one of the reasons for variability in the prevalence of different types of dating violence is due to a lack of consensus over its definition, classification, and, consequently, its measurement (Borrego et al., 2015; Yanez-Peñuñuri, Hidalgo-Rasmussen, & Chávez-Flores, 2019). In this regard, Smith et al. (2015) point to the importance of developing specific dating violence questionnaires with adequate psychometric properties for adolescents and young adults. This is necessary given the way it differs in characteristics from marital violence with regards to duration, conflict resolution and commitment.

Existing literature includes five reviews which examine the dating violence questionnaires to have been used internationally (Borrego, Rodríguez-Franco, & Rodríguez-Díaz, 2015; Caselman, Dubriwny, Curzon, 2014; Exner-Cortens, Gill, & Eckenrode, 2016; Smith et al., 2015; Yanez-Peñuñuri, Hidalgo-Rasmussen, & Chávez-Flores, 2019). These reviews have found that more than 50 instruments have been used to assess victimization and/or perpetration following dating violence. The most commonly used questionnaires are the conflict tactics scale (CTS) (Straus, 1979) and the modified conflict tactics scale (M-CTS) (Straus, Hamby, Boney-McCoy & Sugarman, 1996), with both having been employed to measure intimate partner violence in married adults.

On the other hand, the following instruments were employed to measure dating violence among adolescents and young adults: The psychological abuse index (PAI) (Molidor, 1995), the safe dates psychological and physical abuse scale (Foshee, 1996), the conflict in adolescent dating relationships inventory (CADRI) (Wolfe et al., 2001), *Cuestionario de Violencia entre Novios* [the dating violence questionnaire] (CUVINO) (Rodríguez-Franco, et al., 2010) and *Violence faite aux Filles dans les Fréquentations l' Adolescence* (VIFFA) (Lavoie, Robitaille, & Hébert, 2000). In Colombia, the *Lista de Chequeo de Experiencias de Maltrato en la Pareja Forma B* [relationship abuse experiences checklist, form B] (Rey-Anacona, Mateus-Cubides, & Bayonne-Arévalo, 2010) and the *Cuestionario de auto informe sobre incidentes de violencia conyugal* [self-report questionnaire on incidents of marital violence] have both been used. Whereas in Mexico, the following instruments have been used to measure dating violence: the *Cuestionario de Maltrato en el noviazgo* [dating abuse questionnaire] (CMN) (Osorio-Guzmán, 2014), the violence in adolescents' dating relationships inventory (VADRI) (Aizpitarte et al., 2015), the conflict in adolescent dating relationships inventory (CADRI) (Hokoda et al., 2006), the modified conflict tactics scale (M-CTS) (Straus, 2004), the attitudes towards dating violence scale (AADS) (Hokoda et al., 2006) and the dating violence questionnaire-DVQ-R (Rodríguez-Franco, et al., 2010). This last tool examines threatening behaviors, relationship abuse, physical abuse, sexual abuse, and verbal and emotional abuse, and has been validated in Spain, Mexico, Argentina (Rodríguez-Franco et al., 2010), Italy (Presagy, Manca, Rodríguez-

Franco, & Curcio, 2015) and the United States (López-Cepero, Fabelo, Rodríguez-Franco, & Rodríguez-Diaz, 2016). Consequently, it has obtained adequate psychometric properties and is considered a reliable and valid instrument for use with adolescents and young adults. In addition, Rodriguez-Diaz, et al. (2017) validated the shortened version of the dating violence questionnaire DVQ-R in the Spanish population with the aim of having a reliable, valid and easy-to-implement instrument for the evaluation of dating violence in adolescents and young adults.

Given that this instrument has only been used in investigations in recent years, data has yet to be reported about the validation of the DVQ-R dating violence questionnaire within victims in Colombia and Mexico. In addition, violence is a variable that depends on cultural and social factors. Thus, analyses must be carried out to identify the test's sensitivity since its factor structure may vary, affecting its validity and reliability. Thus, the aim of the present study was to analyze the exploratory and confirmatory factor structure of the dating violence questionnaire (DVQ-R) in victims from within a sample of young Colombian and Mexican adults. Consequently, the present study endeavored to identify: (a) construct validity via confirmatory and exploratory factor analysis, and (b) internal consistency of the instrument overall and its individual scales according to Cronbach's alpha.

Method

Participants

The present research involved 4,237 Colombian and Mexican adolescents and young adults (42.4% male and 57.6% female) whose ages ranged from 14 to 28 years (M=19.44 years; SD=2.6 years). In the Mexican sample, a total of 937 adolescents and young adults (335 males = 35.8% and 602 females = 64.2%) aged between 17 and 28 years participated. The Colombian sample consisted of a total of 3,300 adolescents and young adults (1461 males = 44.3% and 1839 females = 55.7%) between the ages of 14 and 28 years. Participants were selected using non-probability convenience sampling.

Design

A psychometric study was carried out to assess the construct validity and reliability of the DVQ-R. Analysis of construct validity followed three steps taken from the study performed by Cassep-Borges and Pasquali (2012). First, the Kaiser's criterion (1974) was considered in which the maximum number of factors extracted must include eigen-values greater than 1. Second, in line with that described by Harman (1967), an explanation criterion of at least 3% variance per factor was required. Third, the existence of each factor (Pasquali, 2005) was justified as framed by the theoretical model of dating violence.

Instruments

Sociodemographic record. This instrument was specifically developed for the present research study. The following data were gathered from multiple-choice and closed questions: Sociodemographic information (gender, age, marital status, economic status and education level).

DVQ-R (Rodríguez-Díaz, Herrero-Olaizola, Rodríguez-Franco, Bringas-Molleda, Paíno-Quesada & Pérez-Sánchez, 2017). A shortened version of the CUVINO (Rodríguez-Franco, López-Cepero, Rodríguez, Bringas, Antuña, & Estrada, 2010). This tool was designed for adolescents who are currently in a romantic relationship or have been in a romantic relationship which lasted for at least one month during the past six months. The DVQ-R consists of 20 items which are measured on a 5-point Likert scale (0=Never, 4=Always). It can be administered in an individual or group setting and takes five to ten minutes to complete. The DVQ-R assesses five dimensions of dating violence, namely, (a) violence through coercion: Explicit behaviors aimed at pressuring the partner in order to force their will or behavior, comprising items 1, 9, 25 and 38; (b) Sexual violence: Sexist-sexual behaviors, such as non-consensual sexual games, as well as feelings of obligation to perform certain sexual acts or touching,

comprising items 2, 10, 26 and 39; (c) Physical violence: Hitting, pushing, injuring directly or indirectly by damaging objects that are emotionally significant to the victim, comprising items 5, 13, 20 and 21; (d) Violence through detachment: Behaviors related to attitudes of indifference and rudeness towards the partner and their feelings, comprising items 6, 14, 30 and 32; (e) Violence through humiliation: Behaviors of personal criticism which serve as an attack on the partner's self-esteem and personal pride, neglect, and denial of support, as well as behaviors aimed at diminishing an individual's self-esteem, comprising items 15, 23, 40 and 41.

Validation was conducted using a sample of 6,138 Spanish adolescents and young adults (between 15 and 26 years old). Internal consistency of the five scales using Cronbach's alpha ranged from 0.64 to 0.74. In order to estimate the instrument's validity, confirmatory factor analysis was used and results pertaining to the final model parameters were TLI = 0.94, CFI = 0.95, RMSEA = 0.018 and 95% CI = 0.016, 0.020.

Procedure

School directors were contacted to request approval to access and collectively administer questionnaires to participants in classrooms. Upon entering the classrooms, the following information was provided: (a) the research procedure and its potential drawbacks; (b) the voluntary nature of research and freedom to decide not to participate in the study or withdraw consent during the implementation of instruments, without suffering any repercussions; c) the anonymity and security of data. Next, those wanting to voluntarily participate in the research were asked to sign an informed consent form. In the case of underage participants, the authorization of a guardian was required and, consequently, the informed consent form had to be signed by both the parents and the minor.

Ethical Considerations

The present study was approved by the bioethics committees of Sonora University (Mexico), San Buenaventura University (Medellín, Colombia) and the Pedagogical and Technological University of Columbian (Colombia). The present study was carried out in fulfillment of the principles 008430 of 1993 (which establish scientific, technical and administrative standards for health research). The risk level of the study was minimal. As such, all participants and their guardians (in the case of minors) were asked to go through the process of providing written informed consent, which outlined the importance, aims and consequences of the study. Furthermore, the research was carried out responsibly, respectfully and after guaranteeing the confidentiality and anonymity of obtained information. The study sought to ensure proper use of outcomes in line with that laid out by Law 1090 established in 2006 and the ethical principles found in the ethical and bioethical manual of psychology.

Data Analysis

Means and standard deviations were calculated to describe DVQ-R outcomes in the entire sample and subsamples of Colombian and Mexican participants. Gender differences by country of origin were examined using the Pearson's chi-squared test.

Differences in the quantitative variables between groups were examined via Student *t*-tests and effect sizes were calculated using *Cohen's d.*

Cronbach α coefficients were calculated for the entire scale and each of the five factors with the purpose of examining internal consistency of the DVQ-R. Means and standard deviations were also calculated to describe DVQ-R items. Confirmatory factor analysis (CFA) was performed with AMOS-IBM software to test the structural validity of the five-factor DVQ-R model proposed by Rodríguez-Díaz et al. (2017) for the entire sample. The maximum likelihood estimation method was used with robust Satorra-Bentler corrections due to multivariate data kurtosis (Satorra & Bentler, 1994, 2001). Factors could share covariance because previous research indicated that DVQ-R scales were intercorrelated.

Model fit was evaluated using the Satorra-Bentler scaled chi-square test (S-B $\chi 2$). S-B $\chi 2$ significant values and S-B $\chi 2$ / df coefficients of lower than four are indicative of good fit (Moral, 2006). Relative adjustment was assessed according to two indices. Firstly, fit was evaluated using the comparative fit index (CFI). This generally ranges from 0 to 1 and values of 0.90 or more are deemed to represent good fit (Boomsma, 2000; McDonald & HO, 2002). Secondly, the root mean square error of approximation (RMSEA) was used to estimate fit, with values of 0.08 or lower indicating a model with good fit (Moral, 2006).

Following this procedure, fit of the five-factor model was examined for the general sample (n=4,237), (a) the total Colombian population sample (n=3,300), (b) the Colombian female sample (n=1,839), (c) the Colombian male sample (n=1,461), (d) the total Mexican population sample (n=937), (e) the Mexican female sample (n=602) and (f) the Mexican male sample (n=335). Finally, fit of the five-factor model was re-tested with a randomized sample of 40% of cases from the Colombian sample.

This procedure allowed us to compare goodness of fit between models assuming that all models had the same number of factors and described the same number of relationships. Pearson's correlation coefficients were used to analyze the association between scales of the DVQ-R for victim scales and of the GRAS questionnaire. This latter tool was developed by García-Cueto et al. (2015) and evaluates the attitudes towards gender roles which may promote violent behaviors in romantic relationships. It is made up of 20 items which enable the differentiation of sexist and transcendent attitudes based on family, social and work contexts.

Results

Exploratory Factor Analysis

Principal component analysis (PCA) with orthogonal rotation (varimax) was carried out on all 20 questionnaire items. Sampling adequacy was acceptable (Kaiser-Meyer-Olkin [KMO] test = 0.898) and individual KMO values for items included in the analysis were > 0.8 in all cases. Bartlett's sphericity test outcomes ($\chi^2_{(190)}$ = 23565,436; $p<0.001$) indicated that the correlation between variables was strong enough for PCA to be performed.

With regards to victimization, five factors had eigen-values greater than 1 and all factors combined explained 55.1% of overall variance. Table 1 presents factor loadings after rotation. The first factor, sexual violence, explained 11.9% of variance. The second factor, humiliation, explained 11.91% of variance. The third factor, physical violence, explained 11.3% of variance. The fourth factor, coercion, explained 10.9% of overall variance and the fifth factor explained 8.9%. Means, standard deviations, scale Cronbach α coefficients and DVQ-R items are shown in Table 1. Overall internal consistency calculated according to the Cronbach alpha coefficient was 0.827. Cronbach α coefficients ranged from 0.67 to 0.78 for the five factors that make up the instrument (see Table 1).

Table 1. Exploratory factor analysis of the dating violence questionnaire (DVQ-R) in a sample of Colombian and Mexican adolescents and young Adults (n=4237)

Items	Sexual victimization	Humiliation	Physical abuse	Coercion	Detachment	Mean (SD)
I feel forced into perform certain sexual acts (caresses, kisses, touching...)	.771	-	-	-	-	.189 (.558)
They insist on touching me in a way that I don't like or want	.746	-	-	-	-	.206 (.588)
I feel compelled to have sexual contact (caresses, touching) with my partner	.739	-	-	-	-	.174 (.542)
They make me undress when I don't want to	.609	-	-	-	-	.091 (.434)
They ridicule or insult me because of my ideas, beliefs, or social status	-	.748	-	-	-	.340 (.732)
They insult me or laugh off my beliefs, religion, or social status	-	.658	-	-	-	.497 (.849)
They criticize me, underestimate me, or humiliate me for being the way I am	-	.562	-	-	-	.104 (.425)
They laugh at the way I express myself	-	.549		-	-	.194 (.567)
They have thrown dangerous/blunt objects at me	-	-	.754	-	-	.069 (.357)
They have hurt me with an object	-	-	.737	-	-	.060 (.338)
They have hit me	-	-	.668	-		.138 (.457)
They have slapped my face, pushed, or shaken me	-	-	.568	-	-	.268 (.605)
They tell me about the relationships they think I have with other people	-	-	-	.659	-	.719 (1.00)
They test my love by setting traps to see if I am cheating on them, love them, or are being faithful	-	-	-	.645	-	.501 (.558)
They hold me back so I can't leave	-	-	-	.629	-	.914 (1.11)
They invade my space (listen to the radio very loudly when I am studying, interrupt me when I am alone...) or privacy (open letters addressed to me, listen to my phone conversations...)	-	-	-	.585	-	.425 (.859)
They stop talking to me or disappear for several days, without an explanation, to show that they are annoyed or angry	-	-	-	-	.672	.620 (.985)
They are reliable when it comes to school, work and friends but are late for my appointments, don't deliver on promises made to me and are irresponsible	-	-	-	-	.645	.825 (1.05)
They ignore my feelings	-	-	-	-	.591	.509 (.857)
They do not take responsibility for the relationship or for what happens to the both of us	-	-	-	-	.568	1.08 (1.27)
Variance explained by the factor	11.999	11.915	11.388	10.926	8.900	
Total instrument variance			55.1%			
Sub-scale alpha	.781	.681	.711	.670	.698	
Overall test alpha			.827			
Mean (SD)	0.69 (1.7)	0.97 (1.9)	0.55 (1.4)	2.6 (2.5)	3.4 (2.5)	

Differences seen between men and women in the scores given for the items describing the frequency of violent acts in romantic relationships (DVQ-R) were statistically significant for all five instrument factors, with men in the Colombian sample being more likely to be victims of all types of. In the Mexican sample, higher scores for physical violence were seen in men, whilst higher scores for sexual violence and violence through detachment were reported by women (table 2).

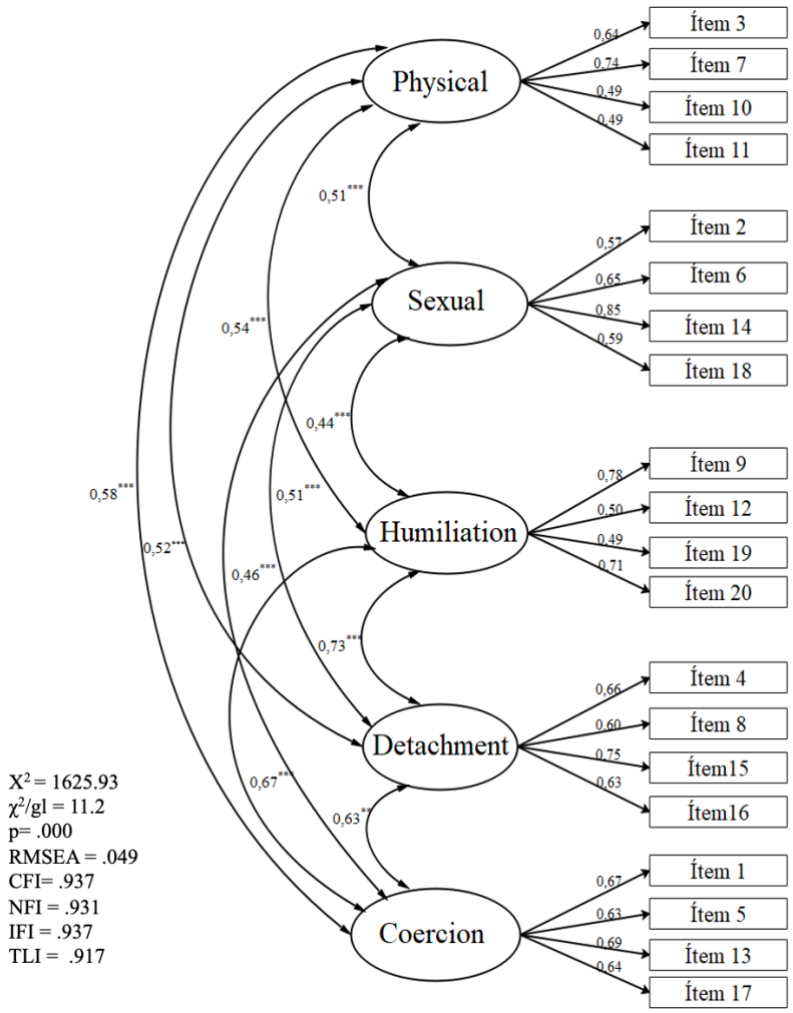
Table 2. Gender differences in the frequency of acts of dating violence (DVQ-R) in Colombian and Mexican adolescents and young adults (n=4237)

Comparison of violent acts between Colombian men and women (n=3300)							
Factor	Gender	*N*	*Mean*	*SD*	[a]*t*	*p*	*Cohen's d*
Physical violence	Male	1461	.7453	1.57	8.137	.000	0.37
	Female	1839	.3530	1.06			
Sexual violence	Male	1461	.7880	1.74	3.903	.000	0.15
	Female	1839	.5589	1.57			
Humiliation violence	Male	1461	1.2565	1.92	3.580	.000	0.13
	Female	1839	1.0182	1.86			
Detachment violence	Male	1461	3.3298	2.59	2.336	.020	0.08
	Female	1839	3.1124	2.72			
Coercion violence	Male	1461	3.0238	2.62	7.787	.000	0.28
	Female	1839	2.3240	2.48			
Comparison of violent acts between Mexican men and women (n=937)							
Factor	Gender	*N*	*Mean*	*SD*	[a]*t*	*p*	*Cohen's d*
Physical violence	Male	335	.7970	1.59	3.663	.000	0.35
	Female	602	.4435	1.01			
Sexual violence	Male	335	.4657	1.38	-2.708	.011	-0.16
	Female	602	.7425	1.68			
Humiliation violence	Male	335	1.203	1.76	.621	.535	0.04
	Female	602	1.122	1.96			
Detachment violence	Male	335	2.143	2.75	-1.993	.047	-0.13
	Female	602	2.536	3.12			
Coercion violence	Male	335	2.325	2.80	.461	.653	0.03
	Female	602	2.234	3.06			
Comparison of violent acts between Colombia and Mexico (n=4237)							
Factor	Country	*N*	*Mean*	*SD*	[a]*t*	*p*	*Cohen's d*
Physical violence	Colombia	3300	.5267	1.33	-.886	.376	-0.03
	Mexico	937	.5699	1.26			
Sexual violence	Colombia	3300	.6604	1.65	.276	.782	-0.38
	Mexico	937	.6435	1.58			
Humiliation violence	Colombia	3300	1.123	1.89	-.396	.692	-0.01
	Mexico	937	1.151	1.89			
Detachment violence	Colombia	3300	3.208	2.67	7.989	.000	0.43
	Mexico	937	2.395	3.00			
Coercion violence	Colombia	3300	2.395	3.00	3.719	.000	-0.09
	Mexico	937	2.633	2.57			

Confirmatory Factor Analysis

Figure 1 shows the results of the general measurement model. This was produced with a sample of 4,237 and applied CFA to the structure proposed by the authors of the DVQ-R for Colombian and Mexican young adults. The measurement model obtained consisted of five factors, which aimed at measuring victimizing acts of physical violence, humiliation, sexual violence, detachment and coercion. It was assumed that these five factors are correlated.

Figure 1. Five-factor structure of the dating violence questionnaire (DVQ-R) administered to Colombian and Mexican adolescents and young adults (n=4237).



Following analysis of the independence of participant gender distribution according to country of origin, it was concluded that such independence could not be assumed ($X^2(1)$ = 21,695; p<0.001) due to the fact that there was a higher-than-expected frequency of men in the Colombian population (44.3%) and a higher-than-expected frequency of women in the Mexican population (62.2%). Similarly, mean age also differed according to the country of origin of participants. Mexican participants were older on average (20.63±1.89) compared with Colombian participants (19.11±2.71) (t (2132.1) = -16.69; p<0.001).

Thus, measurement model invariance was analyzed according to nine different scenarios. In the first, the model was adjusted using data pertaining to the 4,237 Colombian and Mexican participants (42.4% male and 57.6% female). Table 3 presents goodness of fit indices. These reflect adequate model fit: S-B $\chi 2 = 1434.57$; $p < 0.001$; S-B $\chi 2$ / df = 9.89; CFI = 0.93; RMSEA = 0.05. Thus, there was no need to make modifications to the theoretical model proposed by the original authors. Factor loadings are shown in Figure 1. All items had factor loadings which were greater than or equal to 0.46 (see Table 3). As for the comparison of goodness of fit between the stratified samples, assuming the same number of factors in each, results obtained from the indices reflect adequate fit (see Table 3).

Table 3. Goodness-of-fit indices following confirmatory factor analysis of dating violence (DVQ-R) questionnaire outcomes provided by Colombian and Mexican adolescents and young adults

General model developed in Colombian and Mexican youth and adults (n=4237)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	1625.93	11.2	.000	.931	.910	.937	.917	.937	.049
General model developed in Colombian youth and adults (n=3300)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	1434.574	9.89	.000	.923	.941	.930	.965	930	052
Model developed in Colombian women (n= 1839)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	1252.0	8.635	.000	.917	.892	.926	.903	.926	.056
Model developed in Colombian men (n= 1461)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	837.9	5.77	.000	.911	.883	.925	.902	.925	.051
Model developed from data from 40% of the Colombian sample (n=1322; Men =588; Women =734)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	793.93	5.47	.000	.911	.883	.926	.902	.925	.058
General model developed in Mexican youth and adults (n=937)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	472.53	3.259	.000	.921	.897	.944	.926	.944	.049
General model developed in Mexican women (n=602)									
Five-factor model	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
	439.80	3.033	.000	.901	.868	.930	.907	.929	.058
General model developed in Mexican men (n=335)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Five-factor model	472.41	3.258	.000	.791	.726	.845	.792	.842	.082
Three-factor model developed in Mexican men (n=335)									
Fit indices	*X², df*	*X²*/df	Sig	NFI	RFI	IFI	TLI	CFI	RMESA
Three-factor model (Humiliation, detachment, coercion)	89.45	2.130	.000	.913	.863	.952	.922	.950	.058

With regards to absolute fit, a significance value lower than 0.05 was obtained for X^2 in all cases. However, the X^2/df ratio was higher than 3 in all cases except for in the adjusted three-factor model (humiliation, coercion and detachment) for Mexican men. It is important to point out that the most commonly used goodness-of-fit statistic is the chi-square statistic. This makes it possible to examine the hypothesis that the impact of model errors is null. However, both this statistic and the X^2/df ratio are highly sensitive to sample size (when larger than 100 or 200 cases), leading to erroneous rejection of the null hypothesis when model is fit (Cudeck, J.S.R.K., & Du Toit, 2001). It is important to highlight that these indices do not, by themselves, indicate good model fit. Thus, other indices (GFI, AGFI, RMSEA, CFI, TLI and IFI) were also calculated to analyze model fit because the large sample size may have affected the *p* value produced from chi-square analysis.

With regards to the CFI, values above 0.9 were obtained for all models except for the model pertaining to the sub-sample of Mexican men (CFI=0.842). Finally, RMSEA values were below 0.08 for all models except for that pertaining to the sub-sample of Mexican men (RMSEA=0.082) (see Table 3). Thus, analysis of a new three-factor structure (humiliation, coercion and detachment) was performed for the sub-sample of Mexican men (n=335). In this case, all indicators showed good fit (S-B $\chi2$ = 89.45, p <0.001; S-B $\chi2$ / df = 2,130; CFI = 0.95; RMSEA = 0.058. (see Figure 2).

Pearson coefficient correlations produced between the DVQ-R and the GRAS are shown in Table 4. The inverse relationship between humiliation and the transcendent attitudes aspect of family function was significant. Correlations were significant between all dating violence scales, except for detachment, and scales pertaining to employment, social and family function sexism. Detachment was significantly related to transcendent attitudes with both a family and a social function.

Figure 2. Three-factor structure of the dating violence questionnaire (DVQ-R) administered to young Mexican men (n=335).

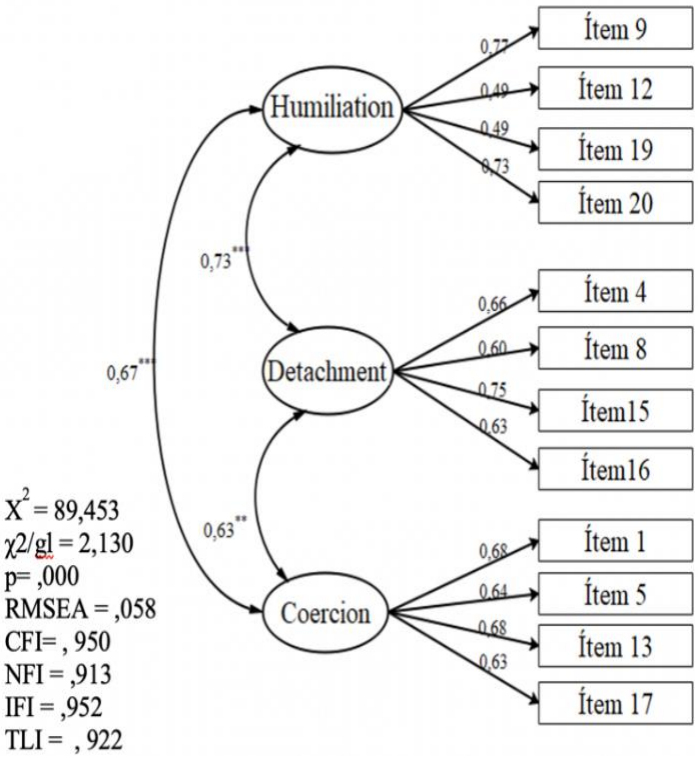


Table 4. Correlation between factors of the dating violence scale (DVQ-R) and the gender role attitudes scale (GRAS) following their administration in Colombian and Mexican young adults (n=4237).

		Dating violence				
		Physical	Sexual	Humiliation	Detachment	Coercion
Gender role attitudes	Social and family function transcendent attitudes	-.012	.007	-.016	**.082****	.026
	Family function transcendent attitudes	.010	-.013	**-.042****	**.124****	**.037***
	Family function sexism	**.127****	**.095****	**.067****	**.070****	**.107****
	Social function sexism	**.109****	**.056****	**.065****	.007	**.064****
	Employment function sexism	**.079****	**.035***	**.067****	.021	**.057***

** *Correlation is significant at the level 0.01 (2-tailed).*

Discussion

The aim of the present study was to identify construct validity of the DVQ-R in Colombian and Mexican young adults, through confirmatory and exploratory factor analysis. A further aim was to establish internal consistency of both the instrument overall and its individual scales according to various reliability measures.

With regards to construct validity, outcomes pertaining to the general model produced following factor analysis in Colombian and Mexican men and women showed adequate psychometric characteristics and were in line with the theoretical model of five victimization factors proposed by the authors of the original instrument, namely, physical acts, sexual acts, humiliation, detachment and coercion. In addition, this model was found to be invariant to gender, as was also the case with the Spanish version (Rodríguez-Díaz et al., 2017).

The present study also concluded that model outcomes were independent of gender distribution and country of origin, following gender invariance analysis of eight additional scenarios. As a result, adequate model fit indices and empirical evidence of construct validity in a number of relevant sub-groups were produced (Caycho-Rodríguez, 2017). Eight of the nine models were modified to include the five factors of the original scale, with the only exception pertaining to Mexican men. This sub-group was instead grouped into three dimensions (humiliation, detachment and coercion). It is possible that this finding is linked to outcomes reported in the validation paper of the CUVINO questionnaire in Mexico (Rodríguez-Franco et al., 2010). This validation found that the dating abuse profile of male participants was characterized by high weighted averages for the detachment and coercion factors and low mean values for physical and sexual violence. Similarly, when results produced in a Mexican sample were compared those produced in a Spanish sample, statistically significant differences were obtained. Some authors, therefore, suggest that these differences could be related to cultural variables which may influence the type of abuse suffered by young adults in different populations (Haglund et al., 2019; Terraces-Carrillo & Sabina, 2019; Sabina, Cuevas & Cotignola-Pickens, 2016).

As for internal consistency of the test overall and of each of the model dimensions in young Colombian and Mexican adults, appropriate were obtained which were highly similar to values obtained in the original validation of the DVQ-R (Rodríguez-Díaz et al., 2017).

Physical violence, sexual violence, humiliation and coercion were significantly related to the employment, social and family function sexism scales of the GRAS in young Colombian and Mexican adults. Similarly, detachment was significantly related to social

and family function transcendent attitudes. This is consistent with previous studies that have shown that dating violence is linked to sexism and transcendent attitudes of sexism (Arnoso, Ibabe, Arnoso & Elgorriaga, 2017; Dosil, Jaureguizar, Bernaras & Sbicigo, 2020; Fernández-Antelo, Cuadrado-Gordillo & Martín-Mora Parra, 2020).

Differences between men and women in victimization scores pertaining to dating violence were statistically significant in relation to the instrument's five factors. Colombian men reported greater victimization for all types of dating violence. These results are consistent with previous research on young Colombian men (Martínez-Gómez, Vargas & Novoa, 2016; Anacona, 2013). In contrast, the Mexican sample produced higher scores for physical violence in men, relative to higher scores for sexual violence and detachment in women. Previous studies in Mexico have consistently shown higher physical violence scores in men and higher sexual violence and detachment scores in women (Gómez & Rojas-Solís, 2020; Peña-Cárdenas et al., 2017; Rojas-Solís, Fuertes-Martin, & Orgaz-Baz, 2017).

A strength of the present study is that the DVQ-R was found to be a useful instrument with adequate psychometric properties for young Colombian and Mexican adults. In addition, it should be noted that the instrument is brief and easy-to-implement, having been developed specifically for young individuals in educational and community settings for dating violence research.

Nonetheless, one of the limitations of the present study is that convenience sampling was used, and, as such, findings cannot be generalized to other Mexican and Colombian regions. Moreover, participants were adolescents and young college students. It is, therefore, recommended for future research to reevaluate these psychometric properties in randomized samples of out-of-school young adults from different communities and regions of Colombia and Mexico. Further, test-re-test reliability should be evaluated.

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