

# Psychometric properties on a romantic love myths scale: The case of the myths, fallacies and erroneous beliefs about the ideal of romantic love scale

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#### Abstract

Understanding the construct of romantic love is an important task in societies all around the world. However, instruments designed to assess this construct are scarce and most of them were developed more than a decade ago. De la Peña, Ramos, Luzón, and Recio (2011) proposed the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale. In this current study we provide the psychometric properties of this scale in a representative sample of adolescents. The analytic strategy included both Exploratory Factor Analysis and Confirmatory Factor Analysis. We achieved a best-factor structure using a unidimensional model of romantic beliefs which also had an adequate estimated reliability. In agreement with descriptions in the existing academic literature, the resulting romantic beliefs factor was significantly related to hostile and benevolent sexism, although slightly less so in the latter case. Finally, differential validity was examined using 'gender' and 'having a partner' as independent variables; the differences in romantic beliefs according to these variables also agreed with previous reports in the literature. We provide a thorough discussion of our results and highlight the implications of our findings for clinical practice.

Keywords Adolescence · Romantic beliefs · Sexism · Gender issues

## Introduction

Love is a social construct that depends upon culture and time (Karandashev, 2019). Although several authors have tried to make theoretical approximations of the love construct, two dominant theories prevail in the academic literature. On the one hand, Lee (1973) proposed a theoretical model of love consisting of six archetypes. Three of these archetypes are considered main styles: Eros (passionate romantic love), Ludus (play love), and Storge (friendship-based love), while the other three are considered secondary styles: Pragma (practical love), Mania (possessive love), and Agape (altruistic love). On the other hand, the more recent Triangular Theory of Love (Sternberg, 1986, Sternberg, 1998) suggests that love comprises three basic components: intimacy, passion, and

José J. Navarro-Pérez J.Javier.Navarro@uv.es commitment. This author posits that different combinations of these three dimensions form different love experiences, such as non-love, liking, and infatuation, as well as empty, romantic, companionate, fatuous, and consummate love. Both theories agree that there is a romantic love style characterised as intimate, passionate, alluring, irrational, intensively felt, and with a physical attraction component, all of which are difficult to maintain over time (Lomas, 2018; Rule-Groenewald, 2013).

Occidental cultures present romantic love as monogamous and hetero-centred love which is also unconditional and eternal, based on the belief of an incomplete self that seeks plenitude in the other person (Tenorio, 2012). Hazan and Shaver (1987) conceptualised this type of love as an attachment process in which an individual attaches themselves to their romantic partner like a baby attaches itself to its primary caregiver. This way of understanding love represents the traditional model of heterosexual relationships in a patriarchal structure and reproduces the idea of full absolute commitment with a partner as a requirement for the success of the relationship (Yuste, Serrano, Girbés, & Arandia, 2014). Nava-Reyes, Rojas-Solís, Greathouse, and Morales-Quintero (2018) went a step further to claim that romantic love persists because of the acceptance and endurance of actions such as identity loss,

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partner idealisation, assuming sacrifices in the name of love, jealously, or perpetuating violence.

Cultural representations of romantic love are strongly endorsed by myths and false beliefs that are socially shared and accepted, and which also account for romantic ideology, including partner and romantic relationship idealisations (Sprecher & Metts, 1989; Yela, 2003). As recently stated by Trémolière and Djeriouat (2019), romantic beliefs refer to ideas of predestined love, love that can overcome any barrier or obstacle, first-sight love, or the conviction of exclusive and unique eternal love. Papp, Liss, Erchull, Godfrey, and Waaland-Kreutzer (2017) suggested that these beliefs might help to establish unhealthy affective dynamics built upon a patriarchal system which determines the behaviour and functioning of romantic couples and promotes traditional gender roles within these relationships (Driesmans, Vandenbosch, & Eggermont, 2016).

In particular, adolescents are educated about love by the cultural transmission of romanticism (Bachen & Illouz, 1996). Recent research has also drawn attention to gender socialisation and established beliefs about love which foster stereotyped gender schemes and values (Bisquert-Bover et al.; Bucx & Seiffge-Krenke, 2010) which determine adolescents' experiences and interpretations of love in their first affective relationship. Indeed, Caro and Monreal (2017), and Harrison and Shortall (2011), highlighted the importance of identifying false romantic beliefs at this age in order to avoid their future reproduction and to improve the quality of future relationships.

Several studies have analysed the influence of entertainment media (films, books, and television) and interactive technologies (social networks, mobile devices, and applications) on couples' relationships, especially those of adolescents and young adults (Reizer & Hetsroni, 2014). Lippman, Ward, and Seabrook (2014) showed a connection between romantic representations in media and the romantic beliefs sustained by adolescents. In a study by Vaterlaus, Tulane, Porter, and Beckert (2018), adolescents who were exposed to media's non-realistic romantic representations tended to for distorted expectations about their relationships. In addition, Hefner, Firchau, Norton, and Shevel (2017) and Driesmans et al. (2016) pointed out that the love model represented in films and television series exhibits seemingly happy and idealised love which might become problematic for teenagers. Osborn (2012) claims that exposition to these social representations on communication media is predictive of worse future relational satisfaction. During adolescence, these images and beliefs based upon the ideals of romantic love can generate unrealistic expectations of relationships. However, adolescents may assume these expectations are unquestionable and so, failure to fulfil them could promote antisocial behaviours between couples (Hartwell, Humphries, Erchull, & Liss, 2015; Stackert & Bursik, 2003).

These romantic beliefs have been related to different factors in the academic literature including sociodemographic variables such as gender, age, or having a partner. It has been repeatedly observed that men score higher than women in terms of distortions of romantic love, both in adolescents (Bisquert-Bover, Giménez-García, Gil-Juliá, Martínez-Gómez, & Gil-Llario, 2019; Carbonell & Mestre, 2018; Cerretti & Navarro, 2018; Marroquí & Cervera, 2014; Nava-Reyes et al., 2018; Rodríguez-Castro, Lameiras-Fernández, CarreraFernández, & Vallejo-Medina, 2013), and in older populations (Bonilla-Algovia & Rivas-Rivero, 2018; Bosch et al., 2007; García-Díaz et al., 2018). There is also some evidence that distorted romantic beliefs diminish with age and that having a partner has no effect on romantic belief scores (Bisquert-Bover et al., 2019).

Distortions of romantic love have also been related to ambivalent sexism (AS), a theory postulated by Glick and Fiske (1996) that states that sexism is represented by two different dimensions. Hostile sexism (HS) is related to traditional sexism and posits that women are inferior to men, while benevolent sexism (BS) is based upon false beliefs about men's protective roles regarding women caused by the erroneous assumption that women are weaker than men and should be specifically cared for. Previous evidence has repeatedly pointed towards a positive relationship between ambivalent sexism and romantic beliefs, specifically in relation to HS and BS, which was slightly stronger for HS in every case (Carrascosa, Cava, Buelga, & de Jesús, 2019; Nava-Reyes et al., 2018; Rodríguez-Castro et al., 2013).

Instruments designed to measure constructs about love and romantic beliefs began to emerge in the 1970s. Among these, the most notable were initially the Liking and Love Scale published by Rubin (1970). These were for assessing romantic love, understood as an interpersonal attitude that makes an individual more predisposed to think, feel, and behave in a certain way towards another individual (Rubin, 1970). This instrument covered three different dimensions of what was referred to at the time as the 'love construct': affiliative and dependent need, predisposition to help, and orientation of exclusiveness and absorption, which can all now easily be thought of as components of romantic beliefs. Almost two decades later, Sprecher and Metts developed an instrument that properly defined romantic beliefs, the Romantic Beliefs Scale (Sprecher & Metts, 1989), which defined four core beliefs: love finds a way, one and only, idealisation, and love at first sight.

Ten years later, Barrón, Martínez-Íñigo, de Paúl, and Yela (1999) developed a questionnaire for classifying romantic beliefs, which were considered distinct from contemporary love, into eight romantic myths or beliefs: (1) the equivalence myth in which love is understood as a passion equivalent to being in love; (2) better-half myth, the idea that there is one predestined person for each individual; (3) exclusiveness myth, the view that being in love with more than one person is impossible; (4) eternal passion myth, the feeling that love is only true if intense passion for the partner lasts forever; (5) omnipotence myth, the belief that any obstacle can be faced if one trusts real love; (6) fidelity myth of being sexually faithful to the partner no matter what; (7) marriage myth, the perception that loving someone will inevitably end in marrying that person; and (8) couple myth, the assumption that couple relationships are intrinsic to human nature. This classification of romantic beliefs has become widely extended (Bojarro, Gámez-Guadix, & Calvete, 2015; Ferrer, Bosch, Cavarro, Ramis, & García, 2008; Ferrer, Bosch, & Navarro, 2010; Martins et al., 2015; McAlister, Pachana, & Jackson, 2005; Sangrador & Yela, 2000).

Based on this classification of romantic beliefs, nearly another decade later, Bosch et al. (2007) developed a scale including one additional belief: compatibility of love and violence, although it did not cover the equivalence myth or the fidelity myth. This scale was validated for populations of Spanish adolescents by Rodríguez-Castro et al. (2013), who found that three items did not function properly and concluded that deleting these items improved the factor structure of the scale. Furthermore, Bonilla-Algovia and Rivas-Rivero (2018) recently examined the factor validity of the scale for Colombian adolescents and found the same results. Within the Latin-American context, Lara and Gómez-Urrutia (2019) have very recently presented a new scale aimed at measuring romantic love myths among Chilean youth, the Romantic Love Myths Questionnaire. This instrument measures two factors of love idealization and love-abuse.

A few years after Bosch et al.'s (2007) scale, some authors developed a scale specifically aimed at Spanish-speaking adolescents. This is the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale (De la Peña et al., 2011). The authors specified 18 pair of statements for which adolescents had to choose the statement they agreed with the most. These situations, or items, were classified into four different dimensions: Love conquers all, True love is predestined, Love is the most important thing in life and requires complete dedication, and Love implies possession and possessiveness. The initial study of scale development did neither test validity nor reliability of the scale, as this development was reduced to item content and theoretical classification of the items into different dimensions. Subsequent studies employing the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale have covered national (Bisquert-Bover et al., 2019; Carbonell & Mestre, 2018; Picado, Yurrebaso, Álvarez-Mateos, & Martín-Sánchez, 2019) as well as international (Galicia, Robles, Sánchez-Velasco, & Núñez, 2019) Spanish-speaking samples. Moreover, the scale has also been used for intervention assessment, some of which have been presented at conferences (Pedrero & Leiva, 2014; Ruiz-Palomino, Ballester-Arnal, Gil-Llario, García, & Clemente-Carbonell, 2015). All in all, even that the scale has been available for nearly a decade, it has recently started attracting more attention. This recent trend of scale use shows the need to undertake a study of its psychometric properties, given that evidence of reliability and validity of the scale is required in order to guarantee its rigor and qualities.

In summary, although there is a recently developed scale of romantic love myths aimed at Chilean young people (Lara & Gómez-Urrutia, 2019), an updated scale with sound psychometric properties for measuring adolescents' romantic beliefs is not available in the Spanish context. Adolescents are of special relevance because they will not have yet fully embraced the belief of the love construct and hence, these myths can still be corrected in this population. Relying onto the preexisting scale of De la Peña et al. (2011), which has already been used is several aforementioned studies, this research aimed at exploring its psychometric properties on an adolescent sample in order to assess its adequacy for intervention as well as research. Thus, the novelty of this study is mainly the study of validity and reliability of an instrument that has been already employed since its development but whose psychometric properties, and hence, its appropriateness for use, have never been assessed.

The present study has three specific objectives with regard to the *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale* (De la Peña et al., 2011): (1) identify which factor structure best fits data obtained with the scale; (2) report the psychometric properties of the scale, in particular its reliability and validity, especially in relation to ambivalent sexism (HS and BS); and (3) examine differences in romantic belief scores according to the factors of gender or having a partner. The specific hypotheses regarding specific objective three were: i) men will present higher scores of romantic love myths than women; and ii) scores of romantic love myths of adolescents who have a partner at present time and those who do not will not differ significantly.

#### Method

#### Sample and Procedure

The data used in this study was obtained from a survey used in a longitudinal, quasi-experimental study which had three time points. Sample was obtained following a two-stage stratified sampling procedure. First, sample was stratified by nature of educational institution (public, private or mixed); then, sample was stratified by location of the educational center (urban, metropolitan or rural). Participants form a representative sample of adolescents dwelling in the Valencian Community, a region on the east part of Spain. The sample used in this study corresponds to the first time point cohort which comprised 709 individuals enrolled during their last two years of secondary school; they were aged 15 to 21 years (mean = 16.79; SD = 0.75) and 51.5% were female and 48.5% were male. The location of their educational institution was classified as urban, metropolitan, or rural in 37.2%, 35%, and 27.8% of the cases, respectively. Two approximately equivalent subsamples were formed from the general sample for analyses purposes of our analyses: *Sample 1* comprised 353 participants and *Sample 2* consisted of the remaining 356 participants. Socio-demographical data of both samples is shown in Table 1.

#### Instruments

The information gathered as part of the surveys and used in this study were:

- The Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale for adolescents (De la Peña et al., 2011) was used as the starting point to start measuring romantic love myths. It was originally designed to search for distortions in the understanding of romantic love among adolescents and includes 18 pairs of statements, with each pair associated with one romantic love myth. Respondents are asked to choose the statement they agree with the most and the responses are coded dichotomously (0 = no distortion; 1 = distortion). The scale was originally developed in Spanish, but an English-translated version is available in Annex 1.
- The Ambivalent Sexism Inventory (Lemus, Castillo, Moya, Padilla, & Ryan, 2008), which was based on the theory of ambivalent sexism (Glick & Fiske, 1996). This instrument has two dimensions, BS and HS, each one containing 10 items measured on a 6-point Likert scale from 0 (strongly disagree) to 5 (strongly agree). The Cronbach alpha reliability estimates for these subscales were .87 for HS and .83 for BS.
- A dichotomously coded indicator which asked whether the participant had a partner at the time of the measurement (0 = No; 1 = Yes).

 Table 1
 Demographic descriptive statistics of Sample 1 and Sample 2

Sample 1 (353)

16.81 (0.77)

176 (49.9%)

147 (41.6%)

124 (35.1%)

82 (23.2%)

Mean±SD or n (%)

Sample 2 (356)

16.77 (0.72)

189 (53.1%)

117 (32.9%)

124 (34.8%)

115 (32.3%)

Gender (female)

Metropolitan

Age

Context:

Urban

Rural

#### **Statistical Analyses**

The psychometric properties from the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale (de la Peña et al., 2011) consisted of assessment of factorial, concurrent, and differential validity as well as to estimate the scale reliability. Factorial validity was assessed by employing a cross-validation procedure with Samples 1 and 2. Exploratory factor analyses were undertaken in Sample 1, the training sample, to examine the factorial structure of the scale. We tested factor solutions considering up to four factors, which was the hypothesized factor structure by de la Peña et al. (2011), using oblique GEOMIN rotation. Once we had established the factor solution of the scale in the training sample, the best factor solution(s) was then tested in the validation sample, Sample 2, in order to establish factorial validity of the scale. We removed any poorly performing items that remained. After the best-fitting model was retrained, we established the concurrent criterion validity by examining the relationship between romantic love myths and BS and HS using Pearson correlations. Differential validity analyses were completed using Student t-tests to assess whether romantic love myth scores varied as a function of gender or having a partner. Reliability was estimated by calculating the composite reliability index (CRI; Raykov, 2004) and Cronbach's alpha.

The estimation method employed in the analysis was Weighted Least Squares Mean and Variance-corrected (WLSMV), which was shown to outperform other estimation methods when treating ordinal data (Flora & Curran, 2004). As recommended by the literature (Kline, 2016), several indices were used to assess the goodness of fit of the models and thus, to decide which model to retain. These fit indices included the chi-square ( $\chi^2$ ) statistic, comparative fit index (CFI), and root-mean-square root of approximation (RMSEA). As established by Hu and Bentler (1999), the cut-off criteria for evaluating fit is a CFI of .90 or more together with a RMSEA of .08 or less. Most optimal fit is assumed with CFI of at least .95 and a RMSEA equal or lower than .05. For comparative purposes chi-square differences between the null and alternative models were computed, with a non-significant chi-square difference signalling no significant deterioration of model fit of the alternative model. Chi-square difference tests have received criticism for being affected by sample size. Some authors have suggested that CFI differences ( $\Delta$ CFI) could be also used as a measure of model fit deterioration, with difference not bigger than .01 showing no significant deterioration of model fit of the alternative model (Cheung & Rensvold, 2002). All our analyses were performed using MPlus 8.2 (Muthén & Muthén, 1998-2018) and SPSS 24 (IBM Corporation, Armonk, NY, USA).

#### Results

#### **Factorial Structure: Training Sample**

Results from the exploratory factor analysis of the *Myths*, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale can be consulted in Table 2 for the one, two, three and four factor solutions. The two-factor solution has been shown to be the most adequate for the data. Factor loadings are displayed in Table 3. Correlation between the two factors was .45 (p > .05). From this table, it can be seen that item 9 cross-loaded onto both factors while items 4, 12, 14, 15 and 16 did not significantly load onto any of the factors. Hence, this factor solution is the most parsimonious with no significant model fit deterioration but, however, it has some interpretation issues. Moreover, chi-square statistic tests are well-known for being too sensitive in the presence of big samples sizes (Lantz, 2012; Meade, Johnson, & Braddy, 2008). For this reason, the one-factor solution was finally selected as the one best representing the scale's structure, given that it is the most parsimonious structure and model fit deterioration is minimal and could be due to excess sensitivity of the test. Factor loadings for the one-factor solution are shown in Table 3. For the one-factor solution, all items' factor loadings except for the ones of item 4 and item 17 exceeded the .30 threshold. Item 17's factor loading was still statistically significant (p < .05).

As item 4 presented a low and statistically non-significant factor loading, EFA was re-estimated excluding this item. Results from this second EFA can be consulted in Table 2. As was the case for the full version of the scale, the two factor solution fitted the data best. However, as shown in Table 3, item 9 cross-loaded onto both factors and items 14, 15 and 16 did not significantly load onto any of the factors. The correlation between the factors was .50 (p < .05). The one-factor solution was better suiting. All items exceeded the .30

threshold, except for item 17, which still significantly loaded onto the factor. Item loadings for the one-factor solution are displayed in Table 3. Hence, the one-factor solution excluding item 4 was selected as the model best representing the scale's structure.

#### **Factorial Validity: Validation Sample**

Once a factor solution had been selected, we tested the adequacy of the one-factor model in *Sample 2*, the validation sample. This confirmatory model, Model 1, showed an adequate fit to the data:  $\chi^2(119) = 148.84$ , p < .05, CFI = .97, and RMSEA = .027 [.008–.039]. This model's fit to the data was also adequate and all items loaded onto the general factor of romantic love myths. Thus, Model 1 was retained as the bestfitting model. Factor loadings of Model 1 are displayed in Fig. 1.

#### **Internal Consistency**

Cronbach's alpha for the one factor solution of romantic love myths provided by Model 1 was .76. Additionally, composite reliability index yielded a reliability estimation of .99 for the general factor or romantic love myths.

## **Concurrent Validity**

The relationship between romantic love myths and benevolent sexism was statistically significant and positive (r = .55, p < .001). On its part, hostile sexism and romantic love correlated positively and this association was statistically significant (r = .45, p < .001).

 Table 2
 Chi-square difference tests and CFI differences between model 4 and all competing models

	$\chi^2$	df	р	CFI	RMSEA	90% CI RMSEA	$\chi^2_D$	$\Delta df$	р
Full scale									
One-factor solution	146.10	135	.243	.99	.015	.000031	_	_	_
Two-factor solution	115.35	118	.552	1	.000	.000025	28.98	17	.035
Three-factor solution	95.85	102	.653	1	.000	.000–.024	18.38	16	.302
Four-factor solution	78.02	87	.744	1	.000	.000–.022	16.77	15	.333
Item 4 excluded									
One-factor solution	130.46	119	.223	.98	.017	.000032	-	-	_
Two-factor solution	99.59	103	.577	1	.000	.000–.026	28.82	16	.025
Three-factor solution	79.75	88	.723	1	.000	.000023	18.34	15	.245
Four-factor solution	61.52	74	.849	1	.000	.000–.018	16.63	14	.276

 $\chi_D^2$  = Chi-square difference; df = degrees of freedom;  $\Delta$ df = df difference

 Table 3
 Factor loadings of the one- and two-factor solutions

	Full scale			Item 4 excluded			
	One-factor solution	Two-factor	solution	One-factor solution	Two-factor solution		
	Factor 1	Factor 1	Factor 2	Factor 1	Factor 1	Factor 2	
Item 1	.54*	.34*	.29	.54*	.29	.33*	
Item 2	.57*	.71*	06	.57*	06	.70*	
Item 3	.43*	02	.54*	.42*	.57*	06	
Item 4	06	13	.06	_	_	_	
Item 5	.50*	.38*	.20	.50*	.20	.37*	
Item 6	.54*	02	.69*	.54*	.75*	09	
Item 7	.51*	.60*	02	.51*	01	.58*	
Item 8	.51*	01	.63*	.52*	.60*	.01	
Item 9	.81*	.42*	.53*	.81*	.51*	.43*	
Item 10	.52*	.06	.57*	.52*	.58*	.03	
Item 11	.69*	.74*	.06	.69*	.02	.77*	
Item 12	.49*	.31	.28	.49*	.26	.30*	
Item 13	.33*	.46*	10	.33*	10	.46*	
Item 14	.46*	.27	.11	.46*	.26	.27	
Item 15	.34*	.27	.11	.33*	.11	.27	
Item 16	.67*	.41	.37	.66*	.37	.39	
Item 17	.27*	.04	.28*	.27*	.27*	.05	
Item 18	.61*	.37*	.35	.61*	.33	.37*	

\**p* < .05

## **Differential Validity**

For examining differences in boys' and girls' mean scores of romantic love myths, t-test analysis was computed using the correction for non-homogeneous variances, given that Levene test of variances' homogeneity was statistically significant (F = 6.50, p < .05). Results from the t-test were t (328.81) = 4.79, p < .001, which indicated a difference in mean scores of romantic love myths between boys and girls. Mean scores were 4.79 for boys and 3.25 for girls, hence pointing higher mean scores in romantic love myths for boys than for girls.

Regarding the effect of having a partner on romantic love myths' scores, results from the t test were t (350) = -1.28, p > .05, which indicated that mean scores of those who had a partner (n = 103) and those who did not (n = 249) were not statistically different.

#### Discussion

The present research took a rigorous psychometric approach to the *Myths, Fallacies and Erroneous Beliefs about the Ideal* 



Fig. 1 Factor loadings of the final retained model (Model 1)

of Romantic Love Scale published by De la Peña et al. (2011) to assess romantic beliefs in relation to our current understanding of the love construct. This scale had been previously used in research (Bisquert-Bover et al., 2019; Carbonell & Mestre, 2018; Picado et al., 2019) and practice (Pedrero & Leiva, 2014; Ruiz-Palomino et al., 2015), but no previous evidence of its validity and reliability had been reported. Hence, this study aimed at providing evidence of the scale's rigor and quality for either interpretation of previously published results and future use of the scale. Previous research groups had developed measures of love (Rubin, 1970) and romantic beliefs (Barrón et al., 1999; Bosch et al., 2007; Sprecher & Metts, 1989) which were similar in content, most likely because they were developed at different time points and such constructs are very sensitive to time (Karandashev, 2019).

The most recent measure of romantic beliefs, by Bosch et al. (2007), was established more than a decade ago. Some of the items of that scale did not to work properly in Spanish or Colombian adolescent samples (Bonilla-Algovia & Rivas-Rivero, 2018; Rodríguez-Castro et al., 2013). Given that this scale seems to be inadequate for adolescents, at which interventions are targeted, and that the concept of love (and thus, of romantic beliefs) may have evolved since it was developed, an updated measure of romantic beliefs for use in adolescents was required. Recently, Lara and Gómez-Urrutia (2019) have covered this issue in the Latin-American context by developing the Romantic Love Myths Questionnaire, but no scale has been established in Spanish adolescent samples.

Based upon previous work by De la Peña et al. (2011), who developed item content and the initial theoretical structure of the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale, this paper presents a psychometric study of a pre-existing scale which had been previously employed both in Spanish (Bisquert-Bover et al., 2019; Carbonell & Mestre, 2018; Pedrero & Leiva, 2014; Picado et al., 2019; Ruiz-Palomino et al., 2015) and Mexican (Galicia et al., 2019) samples. The factorial structure of the scale was best represented by the one-factor solution, in which all 18 items except for item 4, which showed a low and statistically non-significant (p > .05)factor loading, were collapsed onto a single factor of romantic beliefs, in contrast to the original authors' proposed four-factor structure. Thus, even if groups of romantic beliefs can be distinguished in theory, empirically, these groups of beliefs co-occur so frequently that they can be treated as one single factor of romantic beliefs. Indeed, following the parsimony principle, they should be treated as a single factor. From the exploration of the scale's structure, another plausible result would have been a twofactor solution. However, this structure presented with problems, both methodological and theoretical. From the methodological point of view, this solution excluded 5 out of the 18 items from the analysis. That is, to retain this factor solution would have implied to depurate the scale, which was not the aim of this study at any moment. Moreover, item 9 presented a cross-loading onto

both factors, which entails interpretation problems at this particular item level. For example, what does it mean to score 1 at this item for both factors? Does it have the same meaning? If so, both factors would be measuring the same thing. The co-occurrence of these issues, together with the aforementioned excess sensitivity of the chi-square difference test in the presence of large sample sizes (Lantz, 2012; Meade et al., 2008), provides methodological ground for dismissing the two-factor solution in favour of the one-factor solution. From the theoretical point of view, some authors had previously found a two-factor structure of romantic love myths using other instruments (Bosch et al., 2007 fact; Marcos, Gancedo, Castro, & Selava, 2020; Rodríguez-Castro et al., 2013). They hypothesized one factor of "love idealization" and a second factor of "links between love and maltreatment". However, these factors showed problems regarding internal consistency (Rodríguez-Castro et al., 2013) and subsequent studies employing those instruments have used items independently instead of grouping them into these suggested factors (Cava, Buelga, Carrascosa, & Ortega-Barón, 2020; Cerro & Vives, 2019; Ferrer et al., 2010). Finally, when looking into the item content from the "links between love and maltreatment" factor identified by Rodríguez-Castro et al. (2013), item wording was the same, only changing the order of the words within the sentences. Hence, the grouping of these items in the factor could be due to a wording method effect and not to a substantive differentiation between the "links between love and maltreatment" factor and the "love idealization" factor. Wording method effects are a phenomenon that has been widely reported in other scales measuring latent constructs such as general health (Aguado et al., 2012; Molina, Rodrigo, Losilla, & Vives, 2014; Rodrigo, Molina, Losilla, Vives, & Tomás, 2019; Smith, Oluboyede, West, & House, 2013), attitudes towards dating violence (Pastor, Pascual, Muñoz, & Bravo, 2020), or self-esteem (Marsh, Scalas, & Nagengast, 2010; Motl & DiStefano, 2002; Tomás & Oliver, 1999; Tomás, Oliver, Galiana, Sancho, & Lila, 2013), for example. Hence, literature on romantic love myths using other scales does not provide sound evidence of a twodimensional conceptualization of romantic love myths. Both methodologically and theoretically, we consider there is not enough evidence to support a two-factor solution of the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale.

We first explored the factor structure of the scale in the training sample and then replicated the best factor solution in the validation sample, therefore providing further evidence for the unidimensionality of the *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale.* These results contradict the theoretical four-factor structure suggested De la Peña et al. (2011), and rather indicate that a single factor is sufficient to account for distinct myths, fallacies and erroneous beliefs about the ideal of romantic love. Given that De la Peña et al. (2011) did not offer evidence supporting their theoretical structure, and that no previous

studies on the scale's factor validity have been performed, the one-factor solution presented in this study is the unique piece of evidence regarding factor structure of this scale. Hence, evidence from the present research suggests that respondents to the *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale* do not differentiate among different types of myths, fallacies and erroneous beliefs. This implies that people who show distortions of one type will also show distorted representations of other types of romantic love myths.

We estimated the reliability estimation of Model 1 using two different methods. First, Cronbach's alpha estimator indicated that the scale's reliability was adequate. Adding weight to this finding, this coefficient requires restrictive assumptions which often cannot be met, and so this test tends to underestimate reliability (McNeish, 2017). Secondly, the CRI (Raykov, 2004) was also used with a more satisfactory estimation of reliability.

Based on the relationships with key variables, evidence for concurrent validity was established by relating romantic beliefs to ambivalent sexism. There was a moderate but significant positive correlation between romantic beliefs and BS .55 (p < .001), which was slightly lower for HS (r = 45, p < .001). When studying these relationships, HS and BS were positively correlated with romantic myths or beliefs (as measured by different scales) in every previously reported case (Carrascosa et al., 2019; Nava-Reyes et al., 2018; Rodríguez-Castro et al., 2013, Rodríguez-Castro et al., 2013), with a moderately higher correlation reported for BS. Nava-Reves et al. (2018), operationalised romantic myths comprising different factors and found a positive but non-significant correlation between some of these factors and HS. Here, we replicated the same general pattern of differences in the relationship of romantic myths and different components of ambivalent sexism.

Finally, we provided evidence for differential validity by examining the differences in romantic beliefs' scores as a function of gender or having a partner. Our results support previous research showing that men tend to score higher for romantic beliefs than women among several populations, including adolescents, while having a partner has no effect on romantic beliefs (Bisquert-Bover et al., 2019; Bonilla-Algovia & Rivas-Rivero, 2018; Bosch et al., 2007; Carbonell & Mestre, 2018; Cerretti & Navarro, 2018; García-Díaz et al., 2018; Marroquí & Cervera, 2014; Nava-Reyes et al., 2018; Rodríguez-Castro et al., 2013).

#### **Implications for Practice**

These results imply that an intervention program should be designed which includes specific activities to bring about attitudinal changes towards relationships, especially among male adolescents. These strategies should aim to foster more equal relationships, reduce the risk of sexism-associated violence (Malhotra, Gonzalez-Guarda, & Mitchell, 2015), and facilitate effective adaptation to mature relationships. A limitation of the present study was its use of cross-sectional data that did not allow to follow the potentially changing attitudes of these participants over time. We suggest that the Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale be further reviewed at different time points in the future and across cultures, as this type of construct is very sensitive to time and societal contexts (Karandashev, 2019). Another limitation of the study is that item content was developed by De la Peña et al. (2011) almost a decade ago, and maybe some of the items' wording could have benefited from an update. Moreover, as no previous evidence of factor validity of the scale was available, we cannot know whether its unidimensional structure is due to construct sensitivity to time or has been like that all along. It could be that adolescents nowadays do not differentiate among different types of myths, fallacies and erroneous beliefs, or it could be that they never did. In conclusion, a reasonable amount of evidence is available to support the use of this scale for measuring myths, fallacies and erroneous beliefs about the ideal of romantic love.

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## **Compliance with Ethical Standards**

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval Statement** The study was given ethical approval by the regional government. The second author received a letter (code 2016/24954, 05ED01Z/2033/S) notifying that research met criteria to be developed given that informed consent from parents/legal guardians was also obtained.

This research involving human participants was in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Informed Consent** Written informed consent was obtained from all the parents/legal guardians of the individuals involved prior to the commencement of this work.

#### Annex

**Annex 1** English translated version of the *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale* (De la Peña et al., 2011)

*INSTRUCTIONS.* For each pair of statements, choose the one that you most agree with.

Item 1.

- A partner's shortcomings do not matter, if they truly love me they will change. (Distortion)
- No matter what they say, people do not change, not even for love. (No distortion)

Item 2.

- There is someone somewhere predestined for everyone, their other half. (Distortion)
- There being a perfect match for everyone is a fairytale you do not believe in. (*No distortion*)

#### Item 3.

- It is not true that the more couples argue, the more they love each other. (*No distortion*)
- The saying "the couple that fights together stays together" is true. (Distortion)

Item 4.

- If your partner tends to get jealous for no reason you are in trouble this jealously is not compatible with love. (*No distortion*)
- If your partner gets unjustifiably jealous, it is normal jealously is proof of love. (*Distortion*)

Item 5.

- Love has no secrets, loving each other means knowing everything about each other. (Distortion)
- You do not need to know and tell each other everything to truly love each other. (*No distortion*)

Item 6.

Loving your partner and hurting them are incompatible. (No distortion)

As is often said about relationships, "whoever really loves you will make you cry". (*Distortion*)

Item 7.

- When two people fall in love it is because they are made for each other. (Distortion)
- The fact that two people fall in love is no guarantee that they are made for each other. (*No distortion*)

Item 8.

- Love forgives all. (Distortion)
- It is not true that everything must be forgiven when you love someone. *(No distortion)*

Item 9.

Finding love means finding the person that will give meaning to your life. *(Distortion)* 

Romantic love is not what gives meaning to one's life. (*No distortion*) Item 10.

#### Annex 1 (continued)

There is no such thing as the one true love. (No distortion) You only truly love once in your life. (Distortion) Item 11. Getting married or living together forever is one goal of love. (Distortion) "Happy ever after" is a fairytale you do not believe in. (No distortion) Item 12 Truly loving each other is necessary but not enough for a relationship to work. (No distortion) True love conquers all, believing in it will overcome any obstacles. (Distortion) Item 13. In true love, the initial passion lasts forever. (Distortion) You can still be in love without feeling the same passion you did at the start. (No distortion) Item 14. For love I would be capable of giving everything without expecting anything in return. (Distortion) For love I would be capable of getting involved and giving myself completely, but not at any price. (No distortion) Item 15. I would rather give up the person I love than stop being myself. (No distortion) I would change something I like about myself to get the person I love. (Distortion) Item 16. Whoever finds true love has found the person that will make them happy in life. (Distortion) You find your own happiness. (No distortion) Item 17. It is true that in love "opposites attract" and get along better. (Distortion) The more things couples have in common, the better they get along. (No distortion) Item 18. "Romantic love" is not necessary for you to feel your life is complete. (No distortion)

"Romantic love" is very important because you need it to feel complete in life. (Distortion)

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