The Scale of Myths of Romantic Love: Psychometric Properties and Gender Differences in Spanish Adolescents

Abstract

Adolescence is characterized by the emergence of romantic interactions. This study aims to explore the psychometric properties of the *Scale of Myths of Romantic Love* (SMRL) and the gender differences in Spanish adolescents. The sample was representative and consisted of 1,840 third (52.8%) and fourth (47.2%) year students in compulsory secondary education in Castilla-La Mancha. In line with the original validation (Bonilla-Algovia & Rivas-Rivero, 2020), the results of the factor analyses show that the SMRL is a mainly uni-dimensional measure when applied to adolescents. The bi-factor analysis yields satisfactory fit indices (in terms of GFI, AGFI, CFI, RMSEA, SRMR; Medrano & Muñoz-Navarro, 2017) and indicates that the general factor is more solid than the specific factors (in terms of ECV, ω_h and H_h; Domínguez-Lara & Rodríguez, 2017). Correlations with the Myths Scale toward Love and the Gender Equality Attitudes Scale provide evidence in favor of convergent and discriminant validity. Boys scored significantly higher than girls on the SMRL. In conclusion, this is a suitable instrument to scientifically address romantic myths at the adolescent stage, but also to complement and guide educational interventions.

Keywords: validity, reliability, romantic myths, adolescence, gender differences

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One of the characteristics that distinguish adolescence from previous developmental stages is the emergence of romantic interactions and relationships, in which romantic attraction and sexuality manifest together for the first time (Connolly & McIsaac, 2009).

During adolescence, interpersonal relationships are influenced by physical, cognitive, emotional, and social maturation processes. Thus, biosocial, developmental, and interpersonal theoretical models recognize biological and interpersonal transformations that facilitate unique cognitive and emotional processes in relationships (i.e. expectations, attributions, and representations) and involvement (i.e. frequency and duration), among others (Jorgensen et al., 2021). Consequently, in relation to attachment, there is a shift from parental figures to friends or romantic partners that leads to the romantic exploration that characterizes this developmental stage (Collins et al., 2009). In fact, social bonds are primarily formed within collective settings like peer groups which often lead to the formation of romantic pairs. Engaging in a romantic relationship can significantly influence an individual's sense of belonging and status within their peer group (Carlson & Rose, 2007).

These types of relationships may vary in duration and involvement (Boisvert & Poulin, 2016; Lantagne & Furman, 2017). They are frequently informal, less intense (Feiring, 1996), and transient (Mirsu-Paun & Oliver, 2017), while their duration and frequency progressively increase until adulthood. However, far from being trivial, they represent the beginning of a learning process upon which adult romantic relationships are based (Connolly et al., 2014). Therefore, exploration of the beliefs about love which shape the collective imaginary of the adolescent population is highly relevant to the scientific examination of romantic ideology (Bisquert-Bover et al., 2019; Gómez & Viejo, 2020; Rodríguez-Castro et al., 2013).

Romantic love myths are "the set of socially shared beliefs about the supposed 'true nature' of love" (Yela, 2003, p. 264), in the sense that they are ideas that reflect the social, cultural, and ideological values that predominate in society (Bonilla-Algovia & Rivas-Rivero, 2021a). These distorted beliefs guide the construction of intimate relationships at all ages, but especially in adolescence (Ruiz-Palomino et al., 2021a). Romantic myths have been classified into five groups according to the elements they share (Bosch et al., 2013): 1) *myths about love as the only source of happiness*, based on the belief that a person's happiness is contingent on having a romantic relationship; 2) *myths about the denial of reality*, based on the assumption that amorous feelings are totally intimate, that there is a predestined ideal partner for each person, and that the initial passion of a relationship lasts forever; 3) *myths about omnipotent love*, based on the assumption that love, as long as it is true love, is enough to solve any problem; 4) *myths about exclusivity*, based on the assumption that one can only be in love with one person at a time; and 5) *myths about control*, based on the assumption that jealousy and controlling behaviors are signs of love.

The study of romantic or passionate love has a long history in the social sciences. However, unlike in other topics of study, measurement instruments and scales that would allow the assessment of this construct were not designed until the 1940s (Hatfield et al., 2012). Based on an understanding of love as a broad and multidimensional construct, these measurement tools analyze the different components (emotional, cognitive, and behavioral) and typologies of love (Hatfield et al., 2012). In this regard, among the various instruments that address love, three instruments designed in Spain are relevant for the study. Specifically developed to assess romantic love myths, they also consider both the language and the contextual features of Spain: Myths Scale toward Love [Escala de Mitos sobre el Amor] (Bosch et al., 2007), Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale [Escala de Mitos, Falacias y Creencias Erroneas acerca del Ideal de Amor

Romántico] (De la Peña et al., 2011), and Scale of Myths of Romantic Love [Escala de Mitos del Amor Romántico] (Bonilla-Algovia & Rivas-Rivero, 2020).

The psychometric properties of the *Myths Scale toward Love* (Bosch et al., 2007) have been analyzed in both the Spanish and Latin American contexts. The scale was designed in a study conducted in Spain with the participation of 692 women and 659 men from the general population (Bosch et al., 2007), which aimed to analyze beliefs related to the idealization of love and the link between love and abuse. The degree of participants' agreement with romantic myths is measured using a Likert-type scale. The instrument was subsequently validated in an adolescent population (421 girls and 387 boys), whereby an adequate fit was reported for a reduced version with fewer items (Rodríguez-Castro et al., 2013). The psychometric validity of the scale in its reduced version was also tested among university students from El Salvador (130 women and 81 men) (Bonilla-Algovia & Rivas-Rivero, 2021b) and Colombia (317 women and 126 men) (Bonilla & Rivas, 2018), and acceptable fit indices were obtained in both countries. The most recent validation was conducted among the general population in Seville, where the best fit quality was achieved using a shortened version of five items (Jiménez et al., 2023).

The *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale* was developed by De la Peña et al. (2011) and applied to a sample of 2,289 adolescents in Andalusia (Spain), although its validation in terms of factorial structure and reliability was performed by Fernández et al. (2021). The scale evaluates romantic beliefs based on the idea that love can do everything, is predestined, requires total surrender, is related to possession and exclusivity, and is the most important thing in a person's life. It is made up of pairs of statements, one of which represents acceptance of the myth and the other its rejection. Positioning is recorded dichotomously (with or without distortion). The validity study with adolescents was conducted in the Valencian Community (Spain), using a sample of 709

students in compulsory secondary education (Fernández et al., 2021). The results show that the psychometric properties of the scale are good for a unidimensional model.

The most recent tool is the *Scale of Myths of Romantic Love* (SMRL), which was validated with a sample of 1,168 university students (949 women and 219 men) from Madrid (Bonilla-Algovia & Rivas-Rivero, 2020). The scale assesses a set of myths that idealize intimate relationships based on romantic love (e.g., the idea of the "better half" and omnipotence) and that romanticize violent behaviors and practices in the couple (e.g., jealousy and self-sacrifice). It uses a Likert-type scale to record the degree of agreement with these romantic myths. With regard to psychometric validation, the authors used parallel analysis and confirmatory factor analysis to provide empirical evidence in favor of the validity and reliability of the SMRL (Bonilla-Algovia & Rivas-Rivero, 2020). However, being a relatively new measurement scale, its psychometric properties and its suitability for use with adolescents are still unknown.

The SMRL (Bonilla-Algovia & Rivas-Rivero, 2020) has some strengths that differentiate it from the previous two scales. First, unlike the adolescent version of the *Myths Scale toward Love* (Rodriguez-Castro et al., 2013), the SMRL addresses a greater number of romantic myths or distorted beliefs about love. For example, it enables an evaluation of the notion that self-sacrifice is an essential component of true love, and the idea that individuals in love must do everything in their power to avoid losing their partner. Second, in contrast to the *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale* (De la Peña et al., 2011; Fernández et al., 2021), the SMRL allows the degree of agreement with each myth to be evaluated, enabling comparisons of means not only across the overall scale, but also for the different myths individually. The Likert-type response format widens the possibilities for analysis, for example when studying the relationship between romantic myths and other constructs. Third, while all these three scales incorporate the myth that love and

abuse are compatible, the SMRL expands abuse to less explicit forms of it (such as shouting or insulting). Finally, the SMRL has been used with young people in seven Spanish-speaking countries, with good reliability indexes reported in all of them (Bonilla-Algovia & Rivas-Rivero, 2021a). Nevertheless, further validity testing is needed.

Adolescence is a particularly relevant stage in the scientific examination of romantic ideology because although romantic myths may already appear in the imagination of adolescents, they are not completely established and can still be redirected through educational intervention (Fernández et al., 2021). Thus, both nationally and internationally, several recent investigations have found that myths may be present in the ideology of the adolescent population (Bisquert-Bover et al., 2019; Carbonell & Mestre, 2018; Fernández et al., 2021; García & Olvera, 2020; Gómez & Viejo, 2020; Hernández et al., 2020; Marcos et al., 2020; Martín-Salvador et al., 2021; Nava-Reyes et al., 2018; Ruiz-Palomino et al., 2021a, 2021b). In this regard, much of the previous research has been focused on analyzing the differences between boys and girls (Bisquert-Bover et al., 2019; Carbonell & Mestre, 2018; Fernández et al., 2021; Gómez & Viejo, 2020; Martín-Salvador et al., 2021; Rodríguez-Castro et al., 2013; Ruiz-Palomino et al., 2021a, 2021b).

Gender inequality is reproduced through differential socialization, as boys and girls are often socialized into different values and roles, which fosters a gender-based separation of public and private spaces, respectively (Bisquert-Bover et al., 2019). Although the socialization of human beings is not a passive process, it has a significant impact on various areas of life, including love and romantic relationships (Bosch et al., 2013). The ideology of romantic love as reflected in its beliefs and myths seeks to establish a singular hegemonic way of love focused on heteronormativity, gender complementarity, unconditional surrender, marriage, and omnipotence (Bonilla-Algovia & Rivas-Rivero, 2020). Consequently, this

ideology entails dismissing any forms of love or romantic relationships that do not conform to these.

The model of idealization, distortion, and mythification that encompasses romantic love could result in toxic and abusive relationships within the context of gender-based violence (Jiménez-Picón et al., 2023). In this respect, Lelaurain et al. (2021) found that patriarchal ideologies, including sexism, are related to romantic love and serve as mediators between such love and the legitimization of gender-based violence, so that romantic love would be supported by beliefs that entrench inequality. Likewise, a systematic review conducted in Colombia shows that romantic love has been linked to gender roles and relational dynamics of abuse, suffering, and violence (Ariza et al., 2022). In Spain, several research studies with adolescents (Fernández et al., 2021; Marcos et al., 2020) show a clear association between romantic love myths and the internalization of sexist attitudes, which are contrary to gender equality. Therefore, it can be concluded that the culture of gender equality is contrary to the ideology of romantic love.

Studies provide contradictory results regarding the influence of gender socialization on the acceptance of romantic love ideology. Martín-Salvador et al. (2021), investigating 184 adolescents aged between 16 and 19, found that boys and girls present similar acceptance of the myths, although beliefs that love is compatible with abuse receive slightly less support from girls. In contrast, Fernandez et al. (2021) found that boys tend to be significantly more accepting of romantic ideology, while Marcos et al. (2020), studying 246 adolescents aged between 14 and 17, reported that boys are more in agreement with both myths idealizing romantic love and myths linking it with abuse in intimate relationships. Similarly, some studies indicate that at higher ages the acceptance of romantic myths is very similar between women and men (Bonilla-Algovia & Rivas-Rivero, 2021b), while other studies have shown

that male participants present significantly higher scores (Bonilla-Algovia & Rivas-Rivero, 2021a).

The objectives of the present research are, on the one hand, to analyze the psychometric properties of the *Scale of Myths of Romantic Love* (SMRL) in a representative sample of adolescents from Castilla-La Mancha, and on the other hand, to examine differences between boys and girls in the internalization of this type of beliefs. Based on these objectives, the following hypotheses are considered: 1) the SMRL has adequate psychometric properties to assess the adolescent population; 2) beliefs about romantic love vary according to gender.

Method

Participants and procedure

The sample consisted of 1,840 Spanish adolescents (49.94% boys and 50.06% girls), aged between 12 and 18 years. The mean age was 14.67 years (SD = 0.89), and the median age was 15 years. There were 91.03% whose nationality was Spanish and 8.97% whose nationality was a different one, such as Romanian, Moroccan or Latin American. This was a representative sample of students in the third and fourth years of compulsory secondary education in the Autonomous Community of Castilla-La Mancha; 52.77% were in third grade (M_{age} = 14.20 years; SD = 0.73), while 47.23% were in fourth grade (M_{age} = 15.18 years; SD = 0.76). Based on a confidence level of 95% and a margin of error of 2.2%, the sample was selected by stratified random sampling according to the provinces of the region and the sizes of the municipalities. Thus, 37.28% of the students were from Toledo, 28.04% from Ciudad Real, 17.17% from Guadalajara, 9.62% from Albacete and 7.88% from Cuenca. Regarding the size of the municipalities, 54.35% resided in an urban area (i.e., a municipality with more than 10,000 inhabitants), 40.22% in a semi-urban area (a municipality with between 2,000

and 9,999 inhabitants), and 5.43% in a rural area (a municipality with less than 2,000 inhabitants).

A random sampling of a population of approximately 40,000 students in the third and fourth years of compulsory secondary education in Castilla-La Mancha was conducted with a 95% confidence level and a margin of error of 2.2%. The selection of the primary sampling units (secondary schools) was made using the complex sample technique of the SPSS statistical program. Access to the educational centers was supported by both the Regional Department of Education and the Women's Institute of Castilla-La Mancha. The research team visited the different schools, where entire eligible classroom groups were selected. Participation was subject to the signing of an informed consent form by the participants' tutors. However, even if the informed consent had been obtained, only those participants who agreed to participate in the study answered the questionnaire. Participants received all available information about the research and completed the questionnaires anonymously and voluntarily during school hours. The questionnaire was completed in Spanish because it is the vehicular language of schools in Castilla-La Mancha. The Research Ethics Committee of the University of (blind text) approved the research.

Instruments

Socio-demographic data

Descriptive data was collected from the participants, covering information such as gender, age, school grade, nationality, province, municipality size, etc.

Scale of Myths of Romantic Love (SMRL, Bonilla-Algovia & Rivas-Rivero, 2020)

The SMRL consists of 11 direct items (e.g., "True love can overcome any difficulty or problem") and uses a Likert-type response pattern: 1, *completely disagree*; 2, *disagree*; 3, *neither agree nor disagree*; 4, *agree*; 5, *completely agree*. The original validation of the scale reported acceptable reliability (α = .80) and a robust overall factor in the bifactor model (ω_h

= .78; H_h = .82) (Bonilla-Algovia & Rivas-Rivero, 2020). Reliability with regard to the sample of adolescents from Castilla-La Mancha is analyzed in the results section below.

***Myths Scale toward Love (*Bosch et al., 2007)**

The validated version with adolescents was used (Rodríguez-Castro et al., 2013), which comprises seven items and uses a Likert-type response model: 1, *strongly disagree*; 2, *disagree*; 3, *neither agree nor disagree*; 4, *agree*; 5, *strongly agree*. The scale has two dimensions: the idealization of love (e.g., "somewhere there is someone predestined for each perso", "your better half") and love-abuse linkage (e.g., "you can abuse someone you love"). The construct reliability obtained for the Castilla-La Mancha sample, as tested by the *H* coefficient, was .70 for love-abuse attachment and .61 for love idealization.

***Gender Equality Attitudes Scale* (García et al., 2010)**

The scale consists of 30 indicators, some of them direct (e.g., "it is normal for a boy and a girl to play with the same things") and others indirect (e.g., "housework is better done by women"). The instrument is designed to measure students' attitudes towards gender equality. High scores indicate more egalitarian attitudes. It uses a Likert-type response pattern ranging from 1 (*completely disagree*) to 5 (*completely agree*). The construct reliability obtained for the Castilla-La Mancha sample, as tested by the *H* coefficient, was .93.

Analysis

To validate the SMRL in adolescents, the research group replicated Bonilla-Algovia & Rivas-Rivero (2020) original validation process, which followed some of the most common steps of instrument validation (Carretero-Dios & Pérez, 2005): (a) Justification for the research's underlying motivations; (b) Conceptualization of the construct of romantic love myths; (c) Elaboration and qualitative evaluation of the items; (d) Analysis of the psychometric properties of the items; (e) Analysis of the internal structure of the scale; (f) Study of reliability; (g) Supporting evidence of external validity. These steps were

supplemented with contemporary best practices for instrument validation in the Social and Behavioral Sciences (Boateng et al., 2018), which involve determining sample size, examining missing values, performing confirmatory factor analysis, utilizing bi-factor models, and conducting invariance analysis.

The SPSS statistical program (IBM SPSS Statistics 24) was used to impute missing values and to examine the descriptive statistics of the items that make up the SMRL. The study of the internal structure of the scale underwent two stages: first an Exploratory Factor Analysis (EFA) and then a Confirmatory Factor Analysis (CFA). The classical Kaiser-Guttman rule is not considered adequate at present, therefore the EFA was conducted through a Parallel Analysis, as it is one of the most accurate methods for factor retention (Matsunaga, 2010). The Parallel Analysis was implemented with the FACTOR ANALYSIS program (Ferrando & Lorenzo-Seva, 2007) and the CFA with the AMOS program (IBM AMOS 24). In addition to addressing theoretical and conceptual aspects, item retention was determined by the following empirical criteria (Carretero-Dios & Pérez, 2005; Montero, 2013; Muñiz & Fonseca-Pedrero, 2019): Factor weights should be equal to or greater than .30 and fit the model, corrected item-total correlation coefficients should be at least equal to .30, estimators should be statistically significant and, in addition, item deletion should not worsen the overall reliability of the scale.

The original validation of the SMRL examined three structural models (Bonilla-Algovia & Rivas-Rivero, 2020): A one-factor model (M1), a two-factor correlated model (M2), and a two-independent-factor model (M3). However, due to the high inter-factor correlation of the second model, the relationship between the factors was analyzed using a bifactor model (M4). M1 grouped all items into a single factor called *Romantic Myths*. The M2 was formed by two correlated factors (*Myths of Idealized Love* and *Myths of Distorted Love*). M3 was similar to M2, with the difference that the two factors were not correlated.

Finally, M4 was simultaneously formed by a general factor (*Romantic Myths*) and two specific factors (*Myths of Idealized Love* and *Myths of Distorted Love*). The four models which were tested in the original validation (Bonilla-Algovia & Rivas-Rivero, 2020) were also tested for this study.

In the EFA and the CFA, the quality of fit of the models was analyzed using the following indices and criteria for an acceptable fit: $\chi^2/gl \leq 3$, with a cutoff of 5 (Escobedo et al., 2016); GFI ≥ .90; AGFI ≥ .90; CFI ≥ .90; RMSEA ≤ .08; and SRMR ≤ .10 (Matsunaga, 2010; Medrano & Muñoz-Navarro, 2017). However, for optimal fit, stricter criteria are recommended (Boateng et al. 2018; Matsunaga, 2010; Medrano & Muñoz-Navarro, 2017): $\chi^2/gl \leq 3$, GFI ≥ .95, AGFI ≥ .95, CFI ≥ .95, RMSEA ≤ .06 and SRMR ≤ .08. The bi-factor model was among the models tested (M4); statistics for this model were analyzed using the statistical module Bifactor Indices (Domínguez-Lara & Rodríguez, 2017): hierarchical omega (ω_h), hierarchical omega of the specific factors (ω_{hs}), explained common variance (ECV), hierarchical H coefficient (H_h), and hierarchical H coefficient of the specific factors (H_{hs}).

To assess factorial invariance by gender, a Multigroup CFA was conducted comparing three increasingly restrictive models: configural invariance, metric invariance, and scalar invariance. Since χ^2 is sensitive to sample and model size, invariance tests were also based on changes in alternative fit indices, taking as criteria values of -.01 for ΔCFI and .01 for ΔRMSEA (Putnick & Bornstein, 2016). Reliability was studied by means of the *H*, omega, and alpha coefficients, the latter with confidence intervals (Domínguez-Lara & Merino-Soto, 2015), with values above .70 expected. The convergent and discriminant validities were examined using Pearson's correlations with the *Myths Scale toward Love* and the *Gender Equality Attitudes Scale*, respectively. Finally, a comparison of mean scores between boys and girls was performed using a Student's t-test for independent samples.

Results

Analysis of the psychometric properties and missing values

An exploratory analysis of the uni-variate statistics showed a high response rate for all SMRL indicators, with low missing value percentages ranging from 0.33% on item 9 to 1.09% on item 10; therefore, it was decided not to remove any items from the scale and to use missing data imputation techniques. In view of the fact that the missing value count was less than or equal to 20 for all indicators, missing data were replaced with the sample mean of the indicator, although two participants were eliminated for not having completed the SMRL, thus avoiding a possible bias in the results. Once this was done, the final sample comprised 1,838 adolescents (49.94% boys and 50.06% girls).

Descriptive statistics are shown in Table 1. The overall score on the SMRL was 2.62 (*SD* = 0.63). The lowest mean scores were for items 5 and 11, and the highest scores were for items 1, 2, and 3. Values for the standard deviation and standard error of the mean were close to 1 and 0.03, respectively. Items 5 and 6 did not meet the inclusion criteria and removing them resulted in an increase of the coefficient alpha from .74 (95% CI = .72 - .76) to .76 (95% CI = .74 - .77). Uni-variate normality tests (for skewness and kurtosis) yielded values ranging between -1 and 1 for most indicators. Based on this data distribution, factor analyses were performed using the Maximum Likelihood method.

[Insert Table 1 here]

Internal structure and reliability analysis

The sample size allowed the dimensionality of the SMRL to be analyzed sequentially (Lloret-Segura et al., 2014) that is, starting with the EFAs in the first subsample to explore the internal structure and ending with the CFAs in the second subsample to confirm the fit and invariance of the structure. In this sense, the sample of 1,838 was randomly divided into two subsamples, each representing exactly 50% of the participants.

Table 2 shows the results of the EFA conducted on the first subsample (n1 = 919; 49.27% boys and 50.73% girls). The Kaiser-Meyer-Olkin measure of sampling adequacy yielded a value of .82 and Bartlett's test of sphericity of 1,288.00 ($p < .001$). Based on the Exploratory Robust Maximum Likelihood method, the Parallel Analysis recommended a uni-dimensional structure, which presented acceptable fit indices (GFI = .98; AGFI = .98; CFI = .95; RMSEA = .05; RMSR = .05). However, in line with the descriptive analyses above, items 5 and 6 showed very low factor weights. Therefore, they were deleted in order to carry out a new Parallel Analysis. The Kaiser-Meyer-Olkin measure and Bartlett's test of sphericity were again adequate (KMO = .81; Barlett = 1,154.40, $p < .001$). The results showed that the nine-item structure had an acceptable quality of fit (GFI = .98; AGFI = .98; CFI = .96; RMSEA = .06; RMSR = .05) and, at the item level, all indicators offered factor loadings above .30.

[Insert Table 2 here]

To verify the EFA findings and evaluate the fit of the four possible factor structures in the adolescent population (M1, M2, M3 and M4), the models were analyzed by CFA in the second subsample (n2 = 919; 50.61% boys and 49.39% girls) using the Maximum Likelihood method. To test the adequacy of the removal of items 5 and 6, the CFA was first performed with the retention of all SMRL items. The Kaiser-Meyer-Olkin measure of sampling adequacy was .84 and Bartlett’s test of sphericity was 1,635.40 ($p < .001$). The results supported the elimination of the two items, as both had factor weights below .30 in all four models. Therefore, the final CFA was conducted with the retention of the remaining nine items.

The Kaiser-Meyer-Olkin measure of sampling adequacy was .84 and Bartlett’s test of sphericity was 1,520.00 ($p < .001$). The CFA allowed us to discard M3 as the fit indices were insufficient ($\chi^2_{(27)} = 485.04$; GFI = .91; AGFI = .85; CFI = .69; RMSEA = .14; SRMR = .18).

The fit was superior in M1 ($\chi^2_{(27)}$ = 172.47; GFI = .96; AGFI = .93; CFI = .90; RMSEA = .08; SRMR = .05) and M2 ($\chi^2_{(26)}$ = 139.86; GFI = .97; AGFI = .94; CFI = .92; RMSEA = .07; SRMR = .04), and improved after studying the modification indices and correlating the errors of items 1 and 2: M1 rescaled ($\chi^2_{(26)}$ = 127.10; GFI = .97; AGFI = .95; CFI = .93; RMSEA = .07; SRMR = .04) and M2 rescaled ($\chi^2_{(25)}$ = 104.52; GFI = .98; AGFI = .96; CFI = .95; RMSEA = .06; SRMR = .03). The factor loadings of the models were acceptable and significant (see Table 3). However, unlike the one-factor model (ω and H > .70), the two-factor model obtained insufficient reliability coefficients (ω and H < .70) and the inter-factor correlation was high (Φ > .84). Consequently, as was done in the original validation of the SMRL (Bonilla-Algovia & Rivas-Rivero, 2020), a bifactor analysis (M4) was implemented to study the relationship between the factors.

[Insert Table 3 here]

The M4 fit indices were an improvement on those of the previous models ($\chi^2_{(18)}$ = 43.69; GFI = .99; AGFI = .98; CFI = .98; RMSEA = .04; SRMR = .02), without the need for adjustments based on modification indices. The complementary statistics of the bi-factor analysis showed that the general factor was more robust (ECV = .71; ω = .81; ω_h = .72; H_h = .78) than the two specific factors (see Table 4). In this sense, in the presence of a general Romantic Myths factor none of the specific factors explained a significant percentage of the total variance (ω_{hs1} = .24; ω_{hs2} = .00), so the variability of the items was hardly influenced by these. Therefore, the findings indicate that the M4, comprising a general factor and two specific factors, is not only the most appropriate model but also that the general factor is stronger and that the SMRL is mainly unidimensional.

[Insert Table 4 here]

Equivalence of measurement between boys and girls

To test for measurement invariance by gender, the Multigroup CFA was conducted using the CFA bifactor model as a starting point (see Table 5). First, the fit indices were good for both boys ($\chi^2_{(18)}$ = 33.16; GFI = .99; AGFI = .96; CFI = .98; RMSEA = .04; SRMR = .03) and girls ($\chi^2_{(18)}$ = 29.15; GFI = .99; AGFI = .97; CFI = .98; RMSEA = .04; SRMR = .03). Second, the model configuration was adequate and equivalent between the two groups ($\chi^2_{(36)}$ = 62.31; GFI = .99; AGFI = .96; CFI = .98; RMSEA = .03; SRMR = .03), supporting configural invariance. Constraints were progressively added to the model with no significant deterioration in the fit for metric and scalar invariance. Changes in χ^2 were not significant and the ΔCFI and ΔRMSEA values were within the reference criteria.

[Insert Table 5 here]

Supporting evidence of external validity

In terms of the convergent and discriminant validity tests, the SMRL was positively and significantly associated with the *Myths Scale toward Love* (r = .63, p < .001), with the Myths of Idealization (r = .64, p < .001) and Love-Mistreatment Linkage (r = .15, p < .001). In contrast, correlations between the SMRL and the *Gender Equality Attitudes Scale* were negative and significant (r = -.36, p < .001).

Mean differences between boys and girls in the SMRL

Finally, once it was clear that the SMRL was a valid and invariant scale when applied to adolescents, the scores of boys and girls were compared using Student's t-test. Adolescent boys scored higher than adolescent girls on the SMRL overall (M_{boys} = 2.86, SD = 0.68; M_{girls} = 2.51, SD = 0.65; t = 11.04, p < .001) and tended to be more accepting of most of the romantic myths on the scale (see Table 6).

[Insert Table 6 here]

Discussion

The adolescent stage is characterized at the interpersonal level, among other things, by a link between romantic interactions and sexuality (Connolly & McIsaac, 2009), which is an important step for both relational learning and the proper functioning of the intimate relationships that take place in adulthood (Connolly et al., 2014). Thus, addressing the beliefs about love on which adolescent romantic relationships are based can be key to fostering adequate relational development, which leads to adults with healthy socio-affective relationships. In this context, the aim of this research was twofold: on the one hand, to examine the psychometric properties of the *Scale of Myths of Romantic Love* (SMRL) as applied to a sample of adolescents, and on the other hand, to explore the differences between adolescent boys and girls in the internalization of these myths.

In relation to the first hypothesis, factor analyses showed that item 5 (*it is only true love when the passion of the first months is maintained*) and item 6 (*you cannot love more than one person at the same time*) did not meet the inclusion criteria and worsened the overall reliability of the scale, so they were deleted. As a result, the alpha coefficient of the scale improved and the remaining nine items showed acceptable psychometric properties in terms of reliability, item-total correlation and saturation (Carretero-Dios & Pérez, 2005). The low factor loadings of items 5 and 6 could be due to the fact that they address two romantic myths (the myth of durability and the myth of exclusivity) that, at the adolescent stage, are not yet related to the rest of the myths that make up the ideology of romantic love. This would explain why, when working with an older sample, the relationship of the items with the Romantic Myths construct is higher (Bonilla-Algovia & Rivas-Rivero, 2020) – because expectations change between adolescence and adulthood, and romantic relationships become more lasting and intimate (Connolly et al., 2014; Lantagne & Furman, 2017).

The bi-factor model obtained a better fit than the other models tested, with optimal fit statistics (Boateng et al., 2018; Escobedo et al., 2016; Matsunaga, 2010; Medrano & Muñoz-Navarro, 2017) and a strong overall factor compared to the specific factors. The magnitude of the hierarchical omega ($\omega_h > .70$), the explained common variance (ECV > .70), and the hierarchical H coefficient ($H_h > .70$) indicated that the factor solution is mainly uni-dimensional (Domínguez-Lara & Rodríguez, 2017). The contribution of the specific factors above the general factor was not significant ($\omega_{hs} < .30$) and the H coefficient of the specific factors was low ($H_{hs} < .70$), meaning that the independent interpretation of these two dimensions would be forced (Domínguez-Lara & Rodríguez, 2017). In conclusion, the evidence points to the interpretation of a total SMRL score being sufficient to analyze romantic myths. Now, according to the original validation (Bonilla-Algovia & Rivas-Rivero, 2020), myths can also be assessed individually through the indicators.

Bosch et al. (2013) theoretically classified romantic love myths into five groups: myths about love as the only source of happiness, myths about the denial of reality, myths about omnipotent love, myths about exclusivity, and myths about control. However, at the empirical level, the scales for measuring romantic myths have been composed of a smaller number of dimensions: 1) the *Myths Scale toward Love* is composed of two dimensions (Bonilla & Rivas, 2018; Bonilla-Algovia & Rivas-Rivero, 2021b; Bosch et al., 2007; Jiménez et al., 2023; Rodríguez-Castro et al., 2013); 2) the *Myths, Fallacies and Erroneous Beliefs about the Ideal of Romantic Love Scale* is best represented by a one-dimensional solution (Fernández et al., 2021); and 3) the SMRL, although it includes items that were intended for two dimensions, is a mainly one-dimensional scale (Bonilla-Algovia & Rivas-Rivero, 2020), as it is also reflected in the present research. Therefore, while there may be theoretical differences among categories of romantic love myths, their coexistence and interrelation

results in the fact that, empirically, they are grouped into fewer dimensions (Bonilla-Algovia & Rivas-Rivero, 2020; Fernández et al., 2021).

The Pearson correlations between the SMRL and the *Myths Scale toward Love* (Rodriguez-Castro et al., 2013) were positive; that is, high scores on the former were associated with high scores on the latter, and vice versa. The constructs assessed by these scales are theoretically similar, so the empirical association between the two constructs accredits convergent validity and demonstrates that the SMRL also measures romantic love myths. The two scales share variance and theoretical content; however, the specificities of the SMRL -mainly the inclusion of less explicit indicators and the measurement of new romantic beliefs- make it an innovative resource that can provide relevant information for the detection of romantic ideology in adolescence.

Romantic love could influence the legitimization of gender-based violence to the extent that it reinforces patriarchal ideologies that favor inequality (Lelaurain et al., 2021). At the same time, the conception of love that emerges from romantic myths is related to dynamics of abuse and inequality in the couple environment (Ariza et al., 2022; Jiménez-Picón et al., 2023). Then, taking into account that romantic love myths could reinforce sexism and gender asymmetry in intimate relationships (Bisquert-Bover et al., 2019; Fernández et al., 2021; Marcos et al., 2020; Nava-Reyes et al., 2018; Rivas-Rivero & Bonilla-Algovia, 2021), the negative correlation between SMRL and pro-gender equality attitudes (García et al., 2010) indicates discriminant validity in adolescents, as participants with egalitarian values are more likely to reject romantic myths.

The analysis of the differences between boys and girls helps to understand the impact of differential gender socialization on the assumption of romantic love as an ideology (Bosch et al., 2013; Jiménez-Picón et al., 2023; Ruiz-Palomino et al., 2021a). In relation to the second hypothesis, although the results show that this ideology is present in adolescence,

mean comparisons indicated that boys are significantly more accepting of romantic myths than girls. These findings, which are in line with some previous research (Bisquert-Bover et al., 2019; Fernandez et al., 2021; Marcos et al., 2020; Ruiz-Palomino et al., 2021a, 2021b), point to adolescent girls' greater awareness of the dangers of such myths, while highlighting the usefulness of the SMRL as a way of examining gender differences. At the same time, these data seem to point to a greater vulnerability of boys to the threats posed by such beliefs to the development of healthy and fulfilling social-affective relationships. In this sense, educational interventions, as well as programs for the prevention of gender violence and psycho-social problems at this stage of development, should take into account the fact that romantic myths permeate the adolescent love imagery and are more present in boys than in girls.

Romantic love has been theorized to perpetuate patriarchal power dynamics and gender inequality within heterosexual relationships. Additionally, it has been associated with the rejection of relationships that do not align with romantic ideals (Bonilla-Algovia & Rivas-Rivero, 2020). However, the values of romantic love currently seem to coexist with the visibility of other love alternatives in terms of equality, gender, and sexual orientation, especially due to the influence of feminism and LGTBIQ+ approaches (Gallego-Granero & Fernández-Piedra, 2023). Thus, the SMRL could be used to analyze the implications of romantic myths in affective relationships, encompassing the diversity of sexual orientations, as well as to study the possible association between these myths and the rejection of other love alternatives. Menendez (2023), using the SMRL with young adults in Spain, explored the role of sexual orientation in the acceptance of romantic love, and the results showed that sexual orientation may play a moderating role between gender and myth acceptance. Consequently, although the approach to romantic love has focused more on heterosexual relationships, it can be extended to all types of relationships.

Implications and limitations

The use of the SMRL with the adolescent population is recommended for both empirical and theoretical reasons. Empirically, the scale has adequate psychometric properties and is shown to be gender invariant, so that the construct assessed has equivalent meaning among adolescent boys and girls (Boateng et al., 2018; Putnick & Bornstein, 2016). Alternatively, from a theoretical viewpoint, the SMRL addresses both myths that idealize romantic love and myths that justify control and abuse, focusing on subtle and actualized romantic expressions (Bonilla-Algovia & Rivas-Rivero, 2020).

This research has some limitations that may have affected the results. First, the responses may have been affected by social desirability; however, to control this effect, the participants were asked to answer honestly, with a written document assuring them of the anonymity and confidentiality of the data (León & Montero, 2020). Secondly, the research used a cross-sectional design, which did not allow us to analyze the internal structure of the scale at different points in time. Third, although the sample was representative of the adolescent population of Castilla-La Mancha, the factorial behavior of the scale in adolescents residing in other cultural contexts is unknown. Finally, it should be noted that the questionnaire did not collect information on the sexual orientation or gender identity of the participants, which prevented us from exploring its influence on the assumption of romantic myths. With regard to prospective research, it would be interesting to explore the validity of the structure of the SMRL, verifying that all items withstand analysis in other samples of adolescents. It is still to be analyzed the impact of romantic love myths on intimate relationships in adolescence by combining both quantitative and qualitative research techniques. These effects may vary according to sex, gender identity, sexual orientation, and other socio-demographic characteristics, so it is advisable to include a comprehensive gender perspective when drawing conclusions from the SMRL data.

Educational and socio-health institutions are key to preventing gender-based violence and providing comprehensive training to new generations. In this sense, as part of the integral development of the person, affective-sexual education (Goldfarb & Lieberman, 2021; Keogh et al., 2018; Leung et al., 2019) and education in equality (Aragonés-González et al., 2020; Gallardo & Gallardo, 2019; De la Peña et al., 2011) are two central axes in adolescence, since adolescence constitutes a stage at which changes occur at the cognitive, behavioral, and relational levels, among others. In recent years, especially since the approval in Spain of Organic Law 1/2004 on comprehensive protection measures against gender violence (28 December 2004), and Organic Law 3/2007 on the effective equality of women and men (22 March 2007), initiatives are emerging in the Spanish educational system that address romantic relationships and sexuality from an interdisciplinary perspective. The SMRL and the data provided here can serve as a basis for the provision of useful information to guide and complement educational and psycho-social interventions aimed at promoting healthy, full, and egalitarian relationships in the adolescent population and their subsequent adult lives.

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Tables

Table 1

Descriptive Statistics for the SMRL Items

	M	95% *CI*	*SD*	*SE*	*ITC*	α-item	Asymmetry	Kurtosis
Item 1. True love can overcome any difficulty or problem.	3.33	3.28 - 3.38	1.10	0.03	.35	.725	-0.24	-0.44
Item 2. All people will find their soul mate at some point in time.	3.32	3.26 - 3.37	1.16	0.03	.34	.727	-0.30	-0.64
Item 3. When you find the perfect partner, don’t let them go.	3.37	3.31 - 3.42	1.21	0.03	.50	.704	-0.26	-0.81
Item 4. A person will not be fully happy until he/she finds a partner who complements him/her.	2.05	1.99 - 2.11	1.22	0.03	.44	.714	0.99	-0.07
Item 5. It is only true love when the passion of the first months is maintained.	1.96	1.91 - 2.01	1.07	0.03	.21	.742	0.99	0.27
Item 6. You cannot love more than one person at the same time.	2.77	2.70 - 2.83	1.39	0.03	.21	.749	0.26	-1.13
Item 7. True love must end in marriage.	2.19	2.13 - 2.24	1.19	0.03	.47	.709	0.71	-0.39
Item 8. A person in love is more concerned about his or her partner's well-being than his or her own.	3.09	3.04 - 3.15	1.17	0.03	.41	.717	-0.12	-0.69
Item 9. To love someone is to do everything for that person, even if sometimes it means doing things you don't like.	2.62	2.56 - 2.68	1.28	0.03	.47	.708	0.25	-1.05

	M	95% *CI*	*SD*	*SE*	*ITC*	α-item	Asymmetry	Kurtosis
Item 10. Jealousy is a demonstration of love for one's partner.	2.20	2.15 - 2.26	1.21	0.03	.45	.712	0.66	-0.59
Item 11. Shouting and insults from a partner can be forgiven as long as there is true love.	1.94	1.89 - 1.99	1.15	0.03	.42	.716	1.04	0.14

Note: *M* = mean; *CI* = confidence interval; *SD* = standard deviation; *SE* = standard error; *ITC* = corrected item-total correlation; *α*-item = alpha if item is deleted.

Table 2

EFAs and Factor Loadings of the Items

	First Parallel Analysis	Second Parallel Analysis
	λ	λ
Ítem 1	.33	.33
Ítem 2	.35	.35
Ítem 3	.57	.58
Ítem 4	.48	.46
Ítem 5	.27	-
Ítem 6	.23	-
Ítem 7	.52	.50
Ítem 8	.47	.48
Ítem 9	.58	.58
Ítem 10	.53	.52
Ítem 11	.48	.48

Note: λ = factor loading.

Table 3

Factor Weights and Reliability (CFAs)

	M1	M1-R	M2		M2-R		M3	
	F	F	F1	F2	F1	F2	F1	F2
Item 1 (λ)	.47	.44	.49		.45		.52	
Item 2 (λ)	.44	.40	.48		.44		.55	
Item 3 (λ)	.60	.59	.63		.62		.62	
Item 4 (λ)	.53	.53	.54		.55		.51	
Item 7 (λ)	.55	.55	.55		.56		.51	
Item 8 (λ)	.53	.53		.55		.55		.53
Item 9 (λ)	.57	.58		.61		.61		.63
Item 10 (λ)	.53	.54		.55		.55		.53
Item 11 (λ)	.55	.56		.59		.59		.61
ω	.78	.77	.67	.66	.66	.66	.68	.66
H	.78	.78	.68	.67	.67	.66	.68	.67

Note: M1 = one-factor model, M1-R = one-factor model rescaled, M2 = two-factor correlated model, M2-R = two-factor correlated model rescaled; M3 = two-factor independent model, *ω* = omega, *H* = H coefficient, λ = factor loading.

Table 4

Factor Weights and Reliability of M4 (bi-factor analysis)

	General factor	Specific factor 1	Specific factor 2
Item 1 (λ)	.38	.39	
Item 2 (λ)	.31	.63	
Item 3 (λ)	.52	.29	
Item 4 (λ)	.49	.16	
Item 7 (λ)	.51	.16	
Item 8 (λ)	.59		.39
Item 9 (λ)	.60		.16
Item 10 (λ)	.57		-.26
Item 11 (λ)	.61		-.26
ω_h	.72	.24	.00
H_h	.78	.49	.26

Note: ω_h = hierarchical omega; H_h = hierarchical H coefficient.

Table 5

Measures of Factorial Invariance

	χ^2	*df*	χ^2/df	*CFI*	*RMSEA*	$\Delta\chi^2$	*p*	Δ*CFI*	Δ*RMSEA*
Configural invariance	62.31	36	1.73	.980	.029	-	-	-	-
Metric invariance	84.34	52	1.62	.976	.026	22.03	.142	.004	.003
Scalar invariance	86.62	54	1.60	.976	.026	2.23	.320	.000	.000

Note: Δ*CFI* = change in *CFI*; Δ*RMSEA* = change in *RMSEA*.

Table 6

Comparison Between Boys and Girls

	Boys		Girls		Student's t
	M	*DE*	*M*	*DE*	
Item 1. True love can overcome any difficulty or problem.	3.30	1.13	3.38	1.06	-1.41
Item 2. All people will find their soul mate at some point in time.	3.29	1.18	3.36	1.14	-1.27
Item 3. When you find the perfect partner, don’t let them go.	3.53	1.21	3.22	1.19	5.36*
Item 4. A person will not be fully happy until he/she finds a partner who complements him/her.	2.24	1.27	1.86	1.15	6.66*
Item 7. True love must end in marriage.	2.42	1.23	1.96	1.11	8.23*
Item 8. A person in love is more concerned about his or her partner's well-being than his or her own.	3.31	1.11	2.89	1.19	7.64*
Item 9. To love someone is to do everything for that person, even if sometimes it means doing things you don't like.	2.99	1.25	2.25	1.20	12.66*
Item 10. Jealousy is a demonstration of love for one's partner.	2.37	1.28	2.04	1.12	5.73*
Item 11. Shouting and insults from a partner can be forgiven as long as there is true love.	2.28	1.25	1.61	0.94	12.76*

Note: *N*= 1838; *$p \leq .001$.