

The European Portuguese version of the Revised Anticipated Sexual Jealousy Scale: Psychometric properties in a sample of individuals in dating relationships

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Abstract: The aim of this study was to examine the psychometric properties of the European Portuguese version of the Revised Anticipated Sexual Jealousy Scale (RASJS). The sample consisted of 578 heterosexual participants (68.3% female) in a dating relationship for an average of about 34 months. Participants completed the RASJS and self-reported measures assessing romantic attachment and relationship and sexual satisfaction. Confirmatory factor analysis corroborated the three-factor solution. The RASJS showed good reliability (Cronbach's alpha range: .77-.92; McDonald's omega range: .76-.92) as well as construct and criterion-related validity. Participants who did not report their own past history of infidelity showed higher values of reactive jealousy than those who reported these experiences; and individuals who reported a past history of a partner's infidelity presented significantly higher anxious jealousy. Sex differences in romantic jealousy were not significant. The RASJS is particularly suitable for the assessment of romantic jealousy, and its psychometric characteristics validate its use in Portugal.

Keywords: *Intimate relationships; Jealousy; Psychometric properties; Reliability; Validity.*

A substantial body of research has investigated jealousy in the context of romantic relationships (Elphinston et al., 2011; Martínez-León et al., 2017; Valentova et al., 2022). Romantic jealousy has been defined "as a complex set of thoughts, feelings and actions that follow a threat to self-esteem and/or threaten the existence or quality of the relationship" (White, 1981, p. 24). Jealousy may be experienced in response to a threat to or the actual loss of a valued relationship with another person due to an actual or imagined rival for a partner's attention (e.g., Buunk & Dijkstra, 2004; DeSteno & Salovey, 1996). Romantic jealousy has been associated with a multiplicity of negative relationship outcomes, such as domestic violence (Babcock et al., 2004) and relationship dissatisfaction (Barelds & Barelds-Dijkstra, 2007; Bevan, 2008), and it is commonly a focus of marital therapy (Buunk & Dijkstra, 2001). Moreover, jealousy has been associated with infidelity (e.g., Buunk & Fernandez, 2020; Richter et al., 2022), which may have a negative effect on relationships (Banfield & McCabe, 2001). However, from an evolutionary perspective, jealousy has been considered an adaptive behavior (Buss, 2000), with some authors suggesting that jealousy is a positive phenomenon that indicates partners' importance to each other and is related to higher commitment and relationship satisfaction (Barelds & Dijkstra, 2006; Rydell et al., 2004).

Jealousy has been conceptualized through various typologies, most of which are dichotomous (e.g., Parrott, 1991; Rydell & Bringle, 2007). For instance, sexual jealousy (distress about a partner's sexual infidelity) vs. emotional jealousy (distress about a partner's emotional infidelity) has been a topic of extensive research (Southard & Abel, 2010). Currently, however, most authors favor a multidimensional approach to better understand how jealousy is conceptualized and experienced (Attridge, 2013). A multidimensional approach to jealousy has been suggested by White (1981), White and Mullen (1989), and Pfeiffer and Wong (1989), who made a distinction between emotional, cognitive, and behavioral dimensions of jealousy. Building from this multidimensional approach, Pfeiffer and Wong (1989) developed the Multidimensional Jealousy Scale, which has demonstrated adequate psychometric properties across cultures (e.g., Diotaiuti et al., 2022; Elphinston et al., 2011).

Subsequently, Buunk (1997) and Buunk and Dijkstra (2006) distinguished three qualitatively different types of jealousy: reactive, anxious, and possessive (also referred to as preventive) jealousy. According to their definitions, reactive jealousy is the degree to which individuals experience negative

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emotions, such as anger and upset, when their partner is or has been emotionally and/or sexually unfaithful with someone else. Anxious jealousy refers to the process in which individuals worry about and cognitively generate images of a partner's infidelity and experience feelings of anxiety, suspicion and distrust. Possessive jealousy refers to the considerable effort that jealous individuals may make to prevent even innocent or superficial contact between their partner and a third party. As an extreme consequence, possessive jealous individuals may even resort to violence to limit their partner's autonomy.

This typology closely resembles previous approaches (e.g., Pfeiffer & Wong, 1989; White & Mullen, 1989), as reactive jealousy contains a strong emotional component; anxious jealousy contains a strong cognitive component; and possessive jealousy contains a strong behavioral component. Although reactive, anxious, and possessive jealousy differ, to some extent, they all include emotional, cognitive, and behavioral components (Barelds & Barelds-Dijkstra, 2007; Barelds & Dijkstra, 2006). Buunk's typology considers the possibility that jealousy may occur not only in response to an actual relationship threat (e.g., when one's partner is flirting with someone else) but also in the absence of such a threat. Finally, and essential to the typology proposed by Buunk (1997), is the assumption that types of jealousy differ regarding the extent to which they are potentially problematic (Barelds & Dijkstra, 2006). Because reactive jealousy constitutes a direct response to an actual relationship threat, it can be considered relatively healthy or rational. Both anxious and possessive jealousy may be triggered not only in response to a partner's actual infidelity but also in the absence of an actual rival (Buunk & Dijkstra, 2006), and therefore may become problematic or pathological in nature.

As mentioned, several typologies have been developed to understand and assess the concept of jealousy (e.g., Buunk, 1997; Pfeiffer & Wong, 1989; Rydell & Bringle, 2007), which has led to distinct results that are often difficult to compare. Moreover, as the experience of jealousy in intimate relationships may be complex, the existence of well-validated measures that assess it properly are particularly valuable. One widely used measure of romantic jealousy (that considers jealousy as a multidimensional construct) is the Revised Anticipated Sexual Jealousy Scale (RASJS; Buunk, 1997), which is an adapted version of the Anticipated Sexual Jealousy Scale developed by the same author that measured only reactive jealousy. Anxious and possessive subscales were newly constructed at the time of Buunk's (1997) study, because no appropriate measures for these types of jealousy were available. This scale has been used in several studies, specifically with samples of heterosexual and non-heterosexual adults in romantic relationships (married, cohabiting or in a relationship, without living together), and has shown good psychometric properties in general (e.g., Barelds & Barelds-Dijkstra, 2007; Barelds & Dijkstra, 2006; Barelds et al., 2017; Kolb & Owen, 2014; Tandler & Petersen, 2020). Additionally, previous research has underlined the importance of distinguishing between distinct types of jealousy, which seem to be differently associated with other constructs (e.g., satisfaction, relationship quality; Barelds & Barelds-Dijkstra, 2007). Therefore, Buunk's (1997) typology may be useful to better understand the complex role of jealousy in romantic relationships.

Despite the diversity of measures that have been used to assess romantic jealousy, most of them are unidimensional (e.g., the Relationship Jealousy Scale, White, 1981; Interpersonal Jealousy Scale, Mathes & Severa, 1981) or based on evoking scenarios (e.g., Infidelity Dilemmas, Buss et al., 1999; Buss et al., 1992; Jealousy Evoking Scenario, Dijkstra & Buunk, 2002). Few present the advantages of the RASJS (Buunk, 1997), such as its multidimensionality, easy administration and brevity. Therefore, the aim of this study was to assess the psychometric properties of the European Portuguese version of the RASJS in a sample of individuals from the general population in intimate dating relationships.

METHOD

Participants

Participants were eligible for inclusion in the study if they met the following criteria: a) 18 years or older; b) self-defined as heterosexual; c) involved in an exclusive dating relationship for at least three months at the time of participation (however, the involvement of both members of the couple was not required); d) the ability to read and understand the Portuguese language to complete the assessment protocol; and e) agreeing to participate in the study.

The sample of this study consisted of 578 participants (395 women and 183 men) with a mean age of 23.35 years ($SD = 3.56$; range: 18-43 years). The sample characteristics are detailed in Table 1. Overall, men had a lower level of education than women and were less likely to be students and to report espousing the Catholic faith. Male participants were in their current relationship for less time than female participants. Both men and women reported that their first sexual encounter was between the ages of 17 and 18 years. Regarding a prior history of infidelity, women were more likely than men to report a past history of a partner's infidelity.

Table 1. Sample characteristics

	Men (n = 183)		Women (n = 395)		χ^2	Cramer's V
	n	%	n	%		
Education					38.13***	.26
≤12 years	66	(36.1)	54	(13.7)		
>12 years	117	(63.9)	341	(86.3)		
Professional situation					17.56**	.17
Employed	66	(36.1)	87	(22.0)		
Unemployed	10	(5.5)	45	(11.4)		
Retired	1	(0.5)	0	(0.0)		
Student	106	(57.9)	263	(66.6)		
Residence					0.13	.02
Urban	134	(73.6)	283	(72.2)		
Rural	48	(26.4)	109	(27.8)		
Religion					6.00*	.10
None	71	(39.9)	111	(28.9)		
Catholic	110	(60.8)	273	(71.1)		
Own past history of infidelity					1.19	.05
No	126	(70.8)	290	(75.1)		
Yes	52	(29.2)	96	(24.9)		
Past history of partner's infidelity					5.49*	.10
No	125	(70.2)	234	(60.0)		
Yes	53	(29.8)	156	(40.0)		
	<i>M (SD)</i>		<i>M (SD)</i>		<i>t</i>	Cohen's <i>d</i>
Age (years)	23.71 (3.48)		23.19 (3.59)		-1.64	0.15
Relationship length (months)	29.40 (24.33)		36.15 (27.40)		2.85**	0.26

Note: The Ns of variables do not add up to 578 due to missing values. The number of missing responses ranged from 0 to 14.

* $p < .05$; ** $p < .01$; *** $p < .001$

Measures

Sociodemographic and relational information. Sociodemographic (e.g., age, gender, education, religion) and relational information (e.g., "Without considering your current relationship, have you ever been unfaithful to a partner?" and "Without considering your current relationship and to your knowledge, has a partner ever been unfaithful to you?" assessed the respondent's own past history of infidelity and the past history of a partner's infidelity, respectively) were obtained using a self-report questionnaire developed by the researchers.

Revised Anticipated Sexual Jealousy Scale (RASJS). The RASJS (Buunk, 1997) is a 15-item self-reported measure of jealousy that assesses reactive, anxious, and possessive jealousy, with five items for each type. The items of the reactive jealousy subscale, which are assessed on a 5-point response scale ranging from 1 (*Not at all upset*) to 5 (*Extremely upset*), ask participants how upset they would feel if their partner engaged in diverse intimate and sexual extradyadic behaviors, such as "discussing personal things with someone of the opposite sex" and "having sex with someone else." Anxious jealousy is also measured on a 5-point scale ranging from 1 (*Never*) to 5 (*All the time*) by items such as "I am concerned that my partner finds someone else more attractive than me" and "I am worried that my partner will leave me for someone else." Finally, possessive jealousy is assessed by items such as "I expect my partner not to look at other men/women" and "I am rather possessive with regard to my partner." For each item, possible answers range from 1 (*Not applicable*) to 5 (*Very much applicable*). The score for each subscale is obtained by the mean of the items, and higher scores denote higher levels of the respective type of jealousy. In the original study (Buunk, 1997), the three subscales were shown to have good reliability (Cronbach's alphas all above .76).

Experiences of Close Relationships – Short Form (ECR-SF). The ECR-SF (Wei et al., 2007) is a 12-item short form of the Experiences in Close Relationships Scale (ECR; Brennan et al., 1998) that assesses attachment orientations in close relationships on a 7-point response scale (1 = *Strongly disagree* to 7 = *Strongly agree*). This measure is divided into two subscales, each comprising six items, which correspond to the dimensions of anxiety (e.g., "I get frustrated if romantic partners are not available when I need them") and avoidance (e.g., "I try to avoid getting too close to my partner"). Higher scores on the anxiety and

avoidance subscales indicate higher levels of anxious and avoidant attachment, respectively. In the original study (Wei et al., 2007), and across the six studies, the subscales were shown to have good reliability (all Cronbach's alphas above .77). The reliabilities in the current study sample were .66 for anxiety and .74 for avoidance.

Investment Model Scale (IMS). The IMS (Rusbult et al., 1998) assesses the four constructs of the investment model: satisfaction level, quality of alternatives, investment size, and commitment level. The first three subscales (i.e., satisfaction level, quality of alternatives and investment size) are measured by two types of items, described as facet items and global items. Facet items are specific examples of the construct that are designed to prepare the participant to answer the global items, which provide a more general measure of the construct items (examples for the quality of alternatives subscale are "An alternative relationship could fulfill my needs for intimacy" [facet item] and "My alternatives to our relationship are close to ideal" [global item]). The commitment subscale uses only global items. Facet items are answered on a 4-point scale from 1 (*Completely disagree*) to 4 (*Completely agree*). The global items are answered on a 9-point response scale ranging from 0 (*Do not agree at all*) to 8 (*Completely agree*). Scores are obtained by adding the ratings for the global items, with higher scores representing higher levels of the respective concept. In the original validation study (Rusbult et al., 1998), and across the three studies, the Cronbach's alphas were all above .82. In this sample, the reliabilities ranged between .78 (investment) and .89 (commitment).

Global Measure of Sexual Satisfaction (GMSEX). The GMSEX (Lawrence & Byers, 1998) is a 5-item measure of overall sexual satisfaction that requires participants to respond to the question, "Overall, how would you rate your sexual relationship with your partner?" The items consist of five 7-point bipolar scales, Good-Bad; Pleasant-Unpleasant; Positive-Negative; Satisfying-Unsatisfying; and Valuable-Worthless, with 1 indicating dissatisfaction and 7 indicating satisfaction. The total score is calculated by summing all the items. Higher scores on the GMSEX indicate greater sexual satisfaction. In the original validation study (Lawrence & Byers, 1998), Cronbach's alpha was .90. Cronbach's alpha in this sample was .94.

Procedures

This study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra. First, the European Portuguese version of the RASJS scale was developed through a forward-backward translation procedure. After obtaining authorization from the authors of the original version to translate and validate the scale, two researchers independently translated the items. The two translated versions were compared, and after discussing and analyzing their similarities and differences, the first Portuguese version was obtained. This preliminary version was subsequently translated back into English by another individual who was fluent in English and was not familiar with the questionnaire. Finally, the original and the back-translated versions were compared, and translation difficulties were analyzed and resolved between translators to obtain a comprehensible instrument that was conceptually consistent with the original.

Participants were recruited through convenience sampling by two methods: 1) in a community context ($n = 178$) and 2) through an online survey ($n = 400$). Regarding the first method, participants were recruited in different outdoor areas of the faculties of the university. Information was provided about the objective and the general procedures of the study as well as the inclusion criteria and ethical considerations, particularly the confidentiality and anonymity of the responses. In the paper version, to guarantee the confidentiality of the participants, an envelope was provided with the assessment protocol with instructions to place the completed set of self-report questionnaires in the envelope. The participants could give the envelope to the researcher directly or leave it in a previously established place at their faculty (to be collected by the researcher). The envelopes were not opened until the data collection was completed. It was also explained to the participants that they should not complete the online survey if they had answered the paper version.

At the same time, data were collected through a web-based version of the set of questionnaires (Limesurvey ©) placed on the university's website. A web page was created on the social network Facebook where the study's aims, ethical considerations, inclusion criteria, and participants' and researchers' roles were described. A link to the online survey was provided on the same page that gave access to the research protocol. In both contexts, participants were informed that their participation in the study was voluntary and that no monetary or other compensation would be provided. Data collection was conducted between January 2012 and December 2014.

Data analyses

Data analyses were conducted using the Statistical Package for Social Sciences (IBM SPSS, version 29.0). In this study, only completed questionnaires in the measures of interest were retained for analyses (dropout rate: 39%); therefore, there were no missing cases in the main variables. Descriptive statistics were computed to analyze the sample's sociodemographic characteristics and the item's distributional characteristics (e.g., mean, standard deviation, skewness and kurtosis, floor and ceiling effects). Chi-square tests and Student's *t* tests were conducted to compare the two groups (men vs. women) on categorical and continuous variables, respectively. Item-level confirmatory factor analysis (CFA) and measurement invariance (by data collection method) was performed using the JASP software (version 0.19.3), with the Robust Maximum Likelihood (MLR) estimator, as evidence of multivariate normality was not found. Goodness of fit was verified by the following fit indices: the comparative fit index (CFI), Tucker–Lewis index (TLI), root mean square error of approximation (RMSEA; 90% confidence interval [CI]), and standardized root mean squared residual (SRMR). These models are considered to have an acceptable fit when CFI and TLI > .90, RMSEA < .08, and SRMR ≤ .08 (Byrne, 2010). We also examined the χ^2 statistic, which indicates whether the covariation pattern in the data can be explained by the postulated factor structure. We examined the $\chi^2/\text{degrees of freedom ratio}$ (χ^2/df), which decreases and approaches zero as the fit of the model improves (values between 2 and 5 indicate an acceptable fit; Byrne, 2010). In measurement invariance, we followed the criteria of the invariance test suggested by Chen (2007): $\Delta\text{CFI} \leq .01$, $\Delta\text{RMSEA} \leq .01$, and $\Delta\text{SRMR} \leq .025$. The presence of multicollinearity was assessed with a Variance Inflation Factor (VIF).

To explore the internal consistency of the RASJS, Cronbach's alphas were obtained for each subscale. Cronbach's alphas and McDonald's omega were calculated to analyze the internal consistency indices. For both indices, values above .70 were considered acceptable (Dunn et al., 2013). The average inter-item correlation (AIIC) was computed to assess item homogeneity, while the average item-rest correlation (AIRC) was used to examine the discriminating power of the RASJS items. Pearson correlations were computed to determine content and criterion-related validity. The average variance extracted (AVE) was computed to examine evidence regarding convergent validity (Fornell & Larcker, 1981). Finally, a multivariate analysis of variance (MANOVA) was conducted to examine differences in the three types of jealousy by gender and past infidelity experiences. Effect sizes were calculated for all statistical tests (small effects: Cohen's *d* ≥ 0.20, Partial eta-squared = .01, Cramer's *V* ≥ .01; medium effects: Cohen's *d* ≥ 0.50, Partial eta-squared = .06, Cramer's *V* ≥ .03; large effects: Cohen's *d* ≥ 0.80, Partial eta-squared = .14, Cramer's *V* ≥ .05; Cohen, 1988, 1992). All tests were two-tailed, and a *p* value < .05 was defined as the cut-off for statistical significance.

RESULTS

Descriptive analyses of the RASJS items

Descriptive statistics for the items are presented in Table 2. Floor and ceiling effects were detected for most items (i.e., more than 15% of respondents achieved the lowest or highest possible score, respectively; Terwee et al. 2007). The floor effect was detected in most items of anxious and possessive jealousy subscales, while the ceiling effects were detected for most items of reactive jealousy. Overall, no substantial deviations from normality were observed in the distribution of most items, considering a coefficient of absolute skewness > 2 and a coefficient of absolute kurtosis > 7 as reference values for samples with more than 300 participants (West et al. 1995), except for Items 3, 5 and 12, which displayed substantial skewness and kurtosis.

Confirmatory factor analysis

No multicollinearity was found (all items presented a VIF < 5). The CFA supported the original three-domain structure but had an unacceptable fit to the data, with $\chi^2 = 606.55$, $df = 87$, $p < .001$; CFI = .89; TLI = .86; RMSEA = .102 (90% CI .094–.109), SRMR = .083. Inspection of the modification indices suggested that Items 7 and 8 (MI = 229.31) might be correlated, which was added, as they were theoretically plausible. The modified model had an acceptable fit, with $\chi^2 = 425.09$, $df = 86$, $p < .001$; CFI = .926; TLI = .91; RMSEA = .083 (90% CI .075–.091), SRMR = .076. The standardized factor loadings of all items but one (Item 2) on their respective factors were above .50 (see Figure 1) and all were statistically significant with $p < .001$.

We also analyzed the measurement invariance of data collection method. Overall, the RASJS satisfied the metric invariance test ($\Delta\text{CFI} = .008$, $\Delta\text{RMSEA} = .001$, $\Delta\text{SRMR} = .009$), the scalar invariance test ($\Delta\text{CFI} = .001$, $\Delta\text{RMSEA} = .003$, $\Delta\text{SRMR} = .006$), but not the strict invariance test ($\Delta\text{CFI} = .046$, $\Delta\text{RMSEA} = .016$, $\Delta\text{SRMR} = .008$).

Table 2. Descriptive statistics of the RASJS items

Item [Portuguese translation]	Min-Max	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Floor (%)	Ceiling (%)
1. Flirt [<i>flirting</i> com outra pessoa]	1-5	4.38	0.91	-1.70	2.843	2.1	58.5
2. Private matters [assuntos pessoais]	1-5	3.25	1.15	-0.32	-0.64	9.3	13.8
3. Sexual contact [sexo com outra pessoa]	1-5	4.87	0.54	-5.31	30.95	1.0	92.6
4. Intimate dancing [dançar intimamente com alguém]	1-5	4.38	0.95	-1.79	3.00	2.6	60.2
5. Kiss on mouth [beijar na boca alguém ao cumprimentar ou a despedir-se]	1-5	4.70	0.77	-3.21	10.77	1.9	82.0
6. Find someone attractive [encontrar alguém atraente]	1-5	2.71	1.21	0.32	-0.83	16.6	9.3
7. Sexual relationship [relação sexual com outra pessoa]	1-5	2.30	1.28	0.74	-0.53	33.9	8.8
8. Sexual interest [interesse sexual noutra pessoa]	1-5	2.36	1.27	0.66	-0.62	31.3	8.5
9. Worry about contact with other sex [preocupação com o que pode acontecer quando se entra em contacto com pessoas do sexo oposto]	1-5	2.23	1.14	0.77	-0.17	31.1	5.4
10. Leave me [deixar-me]	1-5	2.51	1.29	0.55	-0.78	25.6	11.1
11. Contact with other sex [contacto com pessoas do sexo oposto]	1-5	2.12	1.21	0.84	-0.31	42.4	5.7
12. Friendship with other sex [amizades do sexo oposto]	1-5	1.41	0.88	2.51	6.11	76.3	2.4
13. Look at other sex [olhar para pessoas do sexo oposto]	1-5	2.18	1.19	0.72	-0.49	37.9	4.5
14. Claiming [ser bastante possessive]	1-5	2.08	1.19	0.87	-0.25	43.3	4.8
15. No freedom [não dar espaço suficiente]	1-5	1.73	0.97	1.34	1.39	54.0	2.1

Reliability

The reliability coefficients were very satisfactory for the three types of jealousy. The Cronbach alphas for the three types of jealousy were: .77 for reactive jealousy (.77 for women and .76 for men), .92 for anxious jealousy (.93 for women and .89 for men), and .81 for possessive jealousy (.80 for women and .84 for men). The McDonald's omega for the three types of jealousy were: .76 for reactive jealousy (.76 for women and .75 for men), .92 for anxious jealousy (.93 for women and .89 for men), and .83 for possessive jealousy (.82 for women and .85 for men). The average inter-item correlations (AIIC) were .45, .69 and .48 for reactive, anxious, and possessive jealousy, respectively. Apart from anxious jealousy, all AIIC were within the range proposed by Clark and Watson (1995; i.e., .15-.50), suggesting a reasonable item homogeneity (Piedmont, 2014). The average item-rest correlations (AIRC) were .57, .79 and .61 for reactive, anxious, and possessive jealousy, respectively, indicating that all items contribute to the score of the RASJS dimensions.

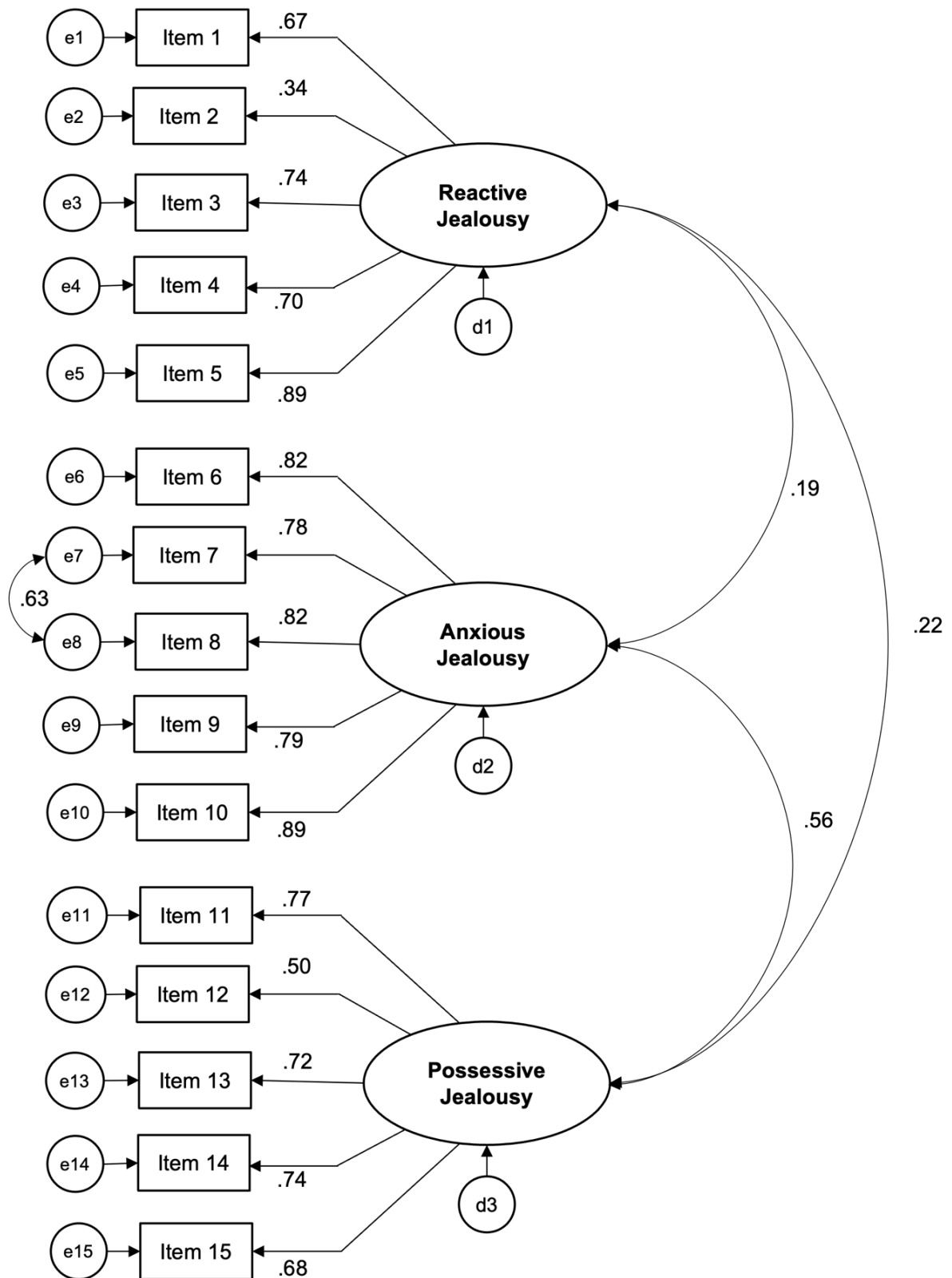


Figure 1. The three-factor CFA model of the RASJS

Correlations between RASJS subscales

The three factors of the scale were significantly associated with each other. In the total sample, the correlations between the different factors were positive and small to moderate, with a range between $r(456) = .22$ (between anxious jealousy and reactive jealousy) and $r(456) = .47$ (between anxious jealousy and possessive jealousy). The pattern of correlations was similar for men and women (see Table 3).

Evidence for convergent validity was generally supported by values slightly lower or above the threshold of .50 ($AVE_{\text{Reactive}} = .41$; $AVE_{\text{Anxious}} = .70$; $AVE_{\text{Possessive}} = .50$).

Table 3. Correlations between the three subscales of jealousy

	Reactive jealousy	Anxious jealousy	Possessive jealousy
Reactive jealousy	-	.22**	.29***
Anxious jealousy	.22***	-	.35***
Possessive jealousy	.26***	.52***	-

Note: The correlations between the three types of jealousy for women and men are respectively presented below and above the diagonal.

** $p < .01$; *** $p < .001$.

Criterion-related validity

The correlations between the three types of jealousy and the measures assessing romantic attachment orientations, the constructs of the investment model and sexual satisfaction are presented in Table 4. Reactive jealousy was significantly and positively associated with anxious attachment, investment, commitment, and sexual satisfaction and negatively associated with attachment-related avoidance and the quality of alternatives. Anxious jealousy was significantly and positively associated with anxious and avoidant attachment and negatively associated with satisfaction (with the relationship). Possessive jealousy was significantly and positively correlated with the anxious dimension of attachment, investment and satisfaction (with the relationship).

Table 4. Correlations between the three types of jealousy and the attachment dimensions, investment model dimensions and sexual satisfaction

	Reactive jealousy	Anxious jealousy	Possessive jealousy
ECR-SF			
Anxiety subscale	.15**	.49**	.34**
Avoidance subscale	-.09*	.14**	.06
IMS			
Quality of alternatives	-.21**	.04	-.01
Investment	.20**	.06	.14**
Satisfaction	.05	-.22**	.17**
Commitment	.22**	-.06	-.03
GMSS			
Sexual satisfaction	.12**	-.06	-.06

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

Known-groups validity: Differences in jealousy by sex and past infidelity experiences

The multivariate effect of sex was not significant, Wilks' $\Lambda = .99$, $F(3, 574) = 2.19$, $p = .088$. The multivariate effect of the respondent's own past history of infidelity was significant, Wilks' $\Lambda = .99$, $F(3, 560) = 2.86$, $p < .05$. Univariate tests indicated significant differences in reactive jealousy, with participants who did not report a past history of infidelity showing higher values of reactive jealousy than those who reported that experience. The multivariate effect of a past history of a partner's infidelity was significant, Wilks' $\Lambda = .99$, $F(3, 564) = 2.66$, $p < .05$. Participants who reported a past history of a partner's infidelity presented significantly higher anxious jealousy than those who did not report that experience (see Table 5).

Table 5. Comparison of the three types of jealousy by sex and past infidelity experiences

Variables		Reactive jealousy <i>M (SD)</i>	Anxious jealousy <i>M (SD)</i>	Possessive jealousy <i>M (SD)</i>
Sex				
Female		4.36 (0.62)	2.48 (1.11)	1.93 (0.93)
Male		4.23 (0.69)	2.31 (1.00)	1.85 (0.82)
	<i>F</i> (1, 576)	4.69*	3.28	1.19
	η^2	.008	.006	.001
Own past history of infidelity				
Yes		4.21 (0.74)	2.51 (1.17)	1.96 (0.91)
No		4.35 (0.60)	2.40 (1.04)	1.89 (0.80)
	<i>F</i> (1, 562)	4.99*	1.29	0.73
	η^2	.009	.002	.001
Past history of partner's infidelity				
Yes		4.29 (0.68)	2.55 (1.13)	1.89 (0.84)
No		4.33 (0.62)	2.36 (1.04)	1.92 (0.83)
	<i>F</i> (1, 566)	0.72	4.47*	0.11
	η^2	.001	.008	.0002

* $p < .05$.

DISCUSSION

In this study, which examined the psychometric properties of the European Portuguese version of the RASJS, our results demonstrated that this scale is a reliable and valid measure of romantic jealousy. Consistent with the original version, the three-factor structure was clearly reproduced in the confirmatory analyses, and the subscales assessing reactive, anxious, and possessive jealousy were found to represent empirically distinct types of jealousy. The three subscales were significantly associated with each other; however, these correlations were low to moderate. This pattern of correlations was consistent with evidence from previous studies (e.g., Barelds & Barelds-Dijkstra, 2007) and revealed that although reactive, anxious and possessive jealousy are part of romantic jealousy, they are relatively independent dimensions. The correlations between the different factors were generally similar for men and women. The reliability for the three types of jealousy was quite similar to the original scale, and all Cronbach's alphas were above the .70 threshold.

The descriptive statistics of the RASJS items show the presence of floor and ceiling effects. Floor effects were observed in items related to anxious and possessive jealousy, while ceiling effects were more noticeable for items related to reactive jealousy, particularly items 3 (92.6%) and 5 (82%), where participants responded in the highest category ("extremely upset"). Floor and ceiling effects are population-dependent (Hyland, 2003). Therefore, in the context of intimate relationships, these results are not surprising, as these items ask how the subject would feel if their partner were to have sexual contact with someone else or kiss someone else on the mouth. With respect to content, these items are expected to elicit a much higher level of reactive jealousy. Despite the highly skewed distribution, these items are important for discriminating between individuals in terms of their degree of jealousy. In contrast, when a romantic relationship is positively evaluated (in our sample, the mean Satisfaction score [IMS] was 6.34, range: 0-8), concerns about the partner's behavior toward others (i.e., items related to anxious and possessive jealousy) may be less dominant, which justifies the floor effects.

In the present study, after correlating the errors of Item 7 (I am worried that my partner has a sexual relationship with someone else) and Item 8 (I am afraid my partner is sexually interested in someone else), which are both part of the anxious jealousy dimension, the model fit improved. Although the procedure of correlating errors may compromise the model's parsimony, allowing these correlations may have theoretical value. Indeed, since these two items share similar concerns (sexual interest and sexual relationships), it is reasonable to assume that individuals who report concerns about one aspect (e.g., sexual infidelity) may also express anxiety about the other.

The correlations between the types of jealousy assessed by the RASJS and the measures assessing romantic attachment, the constructs of the investment model and sexual satisfaction adequately supported the criterion-related validity of this measure. Our findings indicated a significant association between both

attachment orientations and the three different types of jealousy. Specifically, anxious attachment was positively associated with all types of jealousy, with a higher association between anxious attachment and anxious jealousy. Avoidant attachment was negatively associated with reactive jealousy and positively associated with anxious jealousy. This is consistent with the previously documented association between these attachment orientations and insecure attachment styles (i.e., higher scores in attachment-related anxiety and/or avoidance) and romantic jealousy (e.g., Buunk, 1997; Richter et al., 2022). Because jealousy often arises from a distressing and threatening relationship situation, it likely activates the attachment system to manage the feelings and behaviors that stem from relationship threats (Simpson & Rholes, 1994). This may be particularly important for individuals who are high in attachment-related anxiety and who worry and ruminate about being rejected or abandoned by their partners (Mikulincer & Shaver, 2012; Wei et al., 2007). Conversely, as also noted by Richter et al. (2022), individuals high in attachment-related avoidance may feel uncomfortable with closeness and emotional intimacy and invest less in the relationship, revealing lower levels of jealousy. In fact, an earlier study by Buunk (1997) concluded that among people with an insecure style, anxious-ambivalent individuals were consistently more jealous than avoidant individuals.

In this study, overall, each of the three types of jealousy were associated with the relationship dimensions proposed by the investment model scale (Rusbult et al., 1998) as well as with sexual satisfaction. Our findings suggest that individuals who have substantially invested in their relationship, who are highly committed to their romantic relationship, who perceive few appealing alternatives in relation to their partner, and who are sexually satisfied present higher levels of reactive jealousy. To the best of our knowledge, no previous studies have analyzed the association between the constructs of the investment model and the three types of jealousy. However, Barelds and Dijkstra (2006) suggested that reactive jealousy may serve a positive function in terms of sexual satisfaction, stemming from the desire to protect a valued relationship. Furthermore, individuals in more committed relationships who perceive unattractive relationship alternatives should react more jealously when their relationship is threatened because their stake in the current relationship is especially large (Rydell et al., 2004). Surprisingly, in our study, satisfaction with the relationship was not significantly associated with reactive jealousy, contrary to the results found by Barelds and Barelds-Dijkstra (2007). On the other hand, and in line with this same study, satisfaction with the relationship showed a negative association with anxious jealousy. This seems to suggest that increased satisfaction with the romantic relationship seems to decrease feelings of anxiety, suspicion and distrust about a partner's fidelity. However, Bevan (2008) found that emotional jealousy (which partly resembles reactive jealousy because of the strong emotional component) presented a negative association with satisfaction. In fact, this finding agrees with the previous literature: these three qualitatively different types of jealousy, to some extent, all include emotional, cognitive, and behavioral components and may serve different functions within the intimate relationship (Barelds & Barelds-Dijkstra, 2007; Barelds & Dijkstra, 2006).

Individuals with higher levels of possessive jealousy revealed a higher investment in the relationship, as well as higher satisfaction with it. A possible explanation, as previously suggested, is that individuals may use positive mate retention tactics to prevent their romantic partner from becoming unfaithful, such as enhancing their appearance and displaying resources, which may increase satisfaction with the relationship (Buss & Shackelford, 1997). However, these findings conflict with previous studies (Barelds & Barelds-Dijkstra, 2007; Barelds & Dijkstra, 2006), which have suggested that possessive jealousy is a relatively neutral phenomenon with regard to satisfaction with the relationship. Future research to clarify these associations with relationship dimensions is of utmost importance.

In the present study, no sex differences in the three types of jealousy were found despite the higher levels of reactive jealousy among women (in the univariate tests), which is congruent with the original validation study (Buunk, 1997) and other studies that used the same measure (Barelds & Barelds-Dijkstra, 2007; Swami et al., 2012). Concerning previous infidelity experiences, the results indicated that individuals who did not report their own past history of infidelity showed higher values of reactive jealousy than those who reported this history. We may hypothesize that individuals who never engage in infidelity behaviors themselves may be more upset when they discover that their partner is or has been emotionally and/or sexually unfaithful. On the other hand, individuals who reported a past history of a partner's infidelity presented higher anxious jealousy than those who did not report this history. Although no previous hypothesis has been made regarding these differences, one study conceptualized anxious jealousy as similar to the fear of partner infidelity (Kolb & Owen, 2014), because it is expressed through anxiety, suspicion, worry, mistrust and rumination about a partner engaging in infidelity. It seems reasonable to suggest that previous partner infidelity may be associated with higher levels of rumination and suspicion about the future possibility of the partner being involved with someone else.

This study is not without limitations. A convenience sampling method was used, which limits the

generalizability of the results. It is also noteworthy that our sample was collected between 2012 and 2014. Since then, social and interpersonal dynamics, advances in technology (e.g., the dominance of social media), and relationship norms have evolved. These changes likely impact how jealousy is experienced and expressed in relationships; as such, our results may not fully capture contemporary experiences of jealousy. Additionally, because the present study was part of a larger research project, participants were required to self-define as heterosexual. Hence, inferences drawn from our data must be interpreted within the context of this particular sample and the timing of the data collection. Although combining online and offline methods in research can offer a broader range of data and more diversity, it also introduces challenges related to bias, particularly concerning sensitive issues such as romantic relationships. For example, in the online method, participants self-select into the study, which means they may be more willing to share their personal experiences in relationships; while in the offline method, they might be more prone to social desirability bias. Moreover, because the RASJS exhibits varying degrees of measurement invariance across data collection methods, future studies with more balanced samples examining measurement invariance across these different methods would be valuable. The cross-sectional design of this study does not allow the examination of the instrument's temporal stability, which is an important outcome of reliability. Given the sensitive nature of many of the survey questions (e.g., history of infidelity), it is possible that some participants provided socially acceptable responses. However, we believe that the predominance of data collection through a web-based survey may have allowed us to achieve more reliable results. Because previous infidelity experiences were measured with only one question, future studies should examine the nature of infidelity (sexual vs. emotional) through more complete questions or appropriate measures of extradyadic behaviors, such as the Extradyadic Behavior Inventory (Luo et al., 2010; Martins et al., 2016). This may allow for a more complete understanding of our results.

The results of this study provide evidence supporting both the reliability and the validity of the RASJS and attest to its use in the assessment of romantic jealousy in the Portuguese population. The psychometric characteristics of the scale are satisfactory, with demonstrated construct and criterion-related validity and internal consistency across the three factors. Moreover, this study underlines the importance of distinguishing between different types of jealousy when studying romantic jealousy, because the three types of jealousy relate differently to distinct relationship dimensions and attachment orientations in close relationships. Additional strengths of this study include a reasonable sample size in current dating relationships and the direct application of a theoretically derived measure to a sample from the general population. These results also provide further empirical evidence in favor of a multidimensional model of jealousy and offer an initial psychometric foundation for future studies to examine the RASJS in larger samples with diverse relational characteristics (e.g., marriage/cohabitation), genders and sexual orientations.

The RASJS may be particularly important for practice because it represents a time-efficient way to collect information about jealousy in romantic relationships. In this context, this scale has the potential to be an important tool for guiding the assessment and treatment of individuals and couples with relationship problems, by helping them understand the emotional responses within their relationship, as well as promoting more adaptive forms of interpersonal emotional regulation, enhancing communication, and building commitment and mutual understanding. Educating individuals about different types of jealousy, what they consist of, and how they are associated with relationship outcomes seems to be one of the first steps in treating couples who struggle with jealousy issues in their relationship (Barelds & Barelds-Dijkstra, 2007). Although further empirical evidence is needed, this study underlines the importance of delineating the relative contribution of different relationship dimensions given that some are more important than others for romantic jealousy (e.g., satisfaction with the relationship in anxious jealousy). Finally, mental health professionals should consider that past infidelity experiences (one's own or one's partner's experiences) may also cause different types of jealousy, which can be specifically addressed in therapy with individuals or couples who are coping with the consequences of infidelity.

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CRediT AUTHORSHIP CONTRIBUTION STATEMENT

Alexandra Martins: Conceptualization; Data Curation; Formal analysis; Investigation; Methodology; Writing - Original Draft; **Isabel Narciso:** Conceptualization; Supervision; Writing - Review & Editing. **Maria Cristina Canavarro:** Conceptualization; Supervision; Writing - Review & Editing; **Marco Pereira:** Conceptualization; Formal analysis; Investigation; Methodology; Project administration; Supervision; Writing - Review & Editing.

ACKNOWLEDGMENTS

This work was supported by Grants of the Portuguese Foundation for Science and Technology, FCT [SFRH/BD/100117/2014, SFRH/BPD/44435/2008].

Historial do artigo

Recebido	06/05/2024
Aceite	26/03/2025
Publicado online	-
Publicado	31/12/2025