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Validation of the Short-Facebook Jealousy Scale among Colombian Men and Women

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Abstract

Social networks, particularly Facebook, influence romantic relationships, as they can generate jealousy and conflict between members of the couple. The *Facebook Jealousy Scale* (FJS) is an instrument that assesses jealousy about using Facebook, but no similar instrument is available in Colombia. The main aim was to examine the psychometric properties of the FJS in a Colombian sample of 485 men and 727 women. Participants answered the socio-demographic questionnaire, the adaptation of the *Facebook Jealousy Scale*, *Romantic Partner Conflict Scale*, *Rosenberg Self-Esteem Scale* and *Romantic Jealousy Scale*. The final version of the FJS was made up of 15 items which were distributed across three dimensions: Partner's Activity, Partner's Surveillance, Partner's Romantic and Sexual relationship. Ordinal's alpha values from its three factors ranged between .90 and .95. Concurrent validity was also provided, as the measure was associated with dimensions from partner conflict, self-esteem, and romantic jealousy. An invariance test by gender was also performed, resulting in compliance with metric invariance. Therefore, the FJS is a useful tool for clinicians and researchers who work on issues related to romantic relationships. Research analyzing Facebook jealousy provides an interesting indicator of couple's monitoring and controlling behaviors, which are features of psychological abuse, a subtype of intimate partner violence.

Keywords: Facebook jealousy, scale, psychometric properties, conflicts, self-esteem.

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Validación de la Escala Abreviada de Celos de Facebook entre Hombres y Mujeres Colombianos

Resumen

Las redes sociales, particularmente Facebook, influyen en las relaciones sentimentales, ya que pueden generar celos y conflictos entre los miembros de la pareja. La *Escala de Celos de Facebook* (FJS) es un instrumento que evalúa los celos por el uso de Facebook, y no hay ningún instrumento similar disponible en Colombia. El objetivo principal fue examinar las propiedades psicométricas del FJS en una muestra colombiana de 485 hombres y 727 mujeres. Los participantes completaron un cuestionario sociodemográfico, la adaptación de la *Escala de Celos de Facebook*, la *Escala de Conflicto de Pareja Romántica*, la *Escala de Autoestima de Rosenberg* y la *Escala de Celos Románticos*. La versión final de la FJS estuvo conformada por 15 ítems que, a su vez, conformaron tres dimensiones: Actividad de la pareja, Vigilancia de la pareja, Relación romántica y sexual de la pareja. Los valores de alfa ordinal de los tres factores oscilaron entre .90 y .95. También se demostró validez concurrente con otras dimensiones relacionadas con conflicto en la pareja, autoestima y celos románticos. El análisis de invarianza según género resultó en un nivel de invarianza métrica. El FJS es una medida que puede ser útil para la práctica clínica y los investigadores que trabajan en temas relacionados con las relaciones románticas. La investigación que analice los celos asociados al Facebook ofrecerá un interesante indicador de la supervisión en el contexto de pareja y las conductas de control, elementos clave del abuso psicológico, un subtipo de la violencia de pareja.

Palabras clave: celos, Facebook, escala, propiedades psicométricas, conflictos, autoestima.

Romantic jealousy is a frequent complex feeling characterized by thoughts, emotions and actions that may threaten the stability or quality of a relationship (de Visser et al., 2020). The recent use of social platforms have developed new forms of jealousy, as these new technological phenomenon may play an important role in causing feelings of relational uncertainty and jealousy by seeking information which includes current romantic partners past posts, tagged photos, or any interactions (Van Ouytsel et al., 2019). Prolonged use of social networking sites like Facebook can increase the probability of monitoring of a romantic partners online profile to identify cues of infidelity (Darvell et al., 2011). Therefore, emerging Facebook-driven jealousy has recently been considered a unique online phenomenon that arises from the misinterpretation of ambiguous online information involving romantic partners (Muise et al., 2009).

Latin American countries such as Colombia could be a special case of Facebook-driven jealousy because it has shown high levels of both, the use of Facebook and couple's jealousy, which is in the root of a subtype of intimate partner violence. Regarding the first aspect, there are currently more than 32 million active Facebook profiles of its population. Therefore, Colombia is the third Latin American country with the greatest number of Facebook users, behind Brazil and Mexico (Statista, 2022). Secondly, according to the Instituto Nacional de Medicina Legal y Ciencias Forenses (2019) [National Institute of Legal Medicine and Forensic Sciences], more than 98500 cases of

intimate partner violence are evidenced nowadays, a trend that has increased since 2005 for the feeling of "jealousy, distrust and infidelity" in couples.

Following the World Health Organization's (WHO, 2021) definition of intimate partner violence, it can be observed how the use of Facebook could be employed as a strategy and/or indicator of a couple's psychological abuse, as this subtype of intimate partner violence includes the execution of certain behaviors such as controlling and monitoring someone's movements, which can be easily performed by social networks. Despite this worrying trend, to date, there have been no psychometric studies on a specific measure of romantic jealousy on Facebook in this population.

So far, there are a few measures available to assess jealousy in the particular context of Colombia, some of which briefly capture social network jealousy by including only one item. For example, the validation study of the CECLA, a measure to assess jealousy (Avendaño & Betancort, 2021) indicates that men report higher scores on trying to find out their partner's password. However, on their measure, this is the only item referring to social networks. Another study measuring jealousy in young Colombian women concluded that they, unlike men, feel more controlled by their partners through acts of jealousy (Padilla-Medina et al., 2023). Finally, the validation of the *Escala de Celos Interpersonales - ECI* [Interpersonal Jealousy Scale] (Martínez-León et al., 2018) in Colombia indicates some gender differences in some aspects of

jealousy. In particular, men scored higher on this item: “If I saw a picture of X and an old date, I would feel unhappy”.

To assess romantic relationships conflict through the use of social platforms sites, several instruments have been developed and validated. Clayton et al. (2013) developed a 16-question online survey to examine whether high levels of Facebook use predicted negative relationship outcomes, such as breakup/divorce, emotional cheating, and physical cheating (Cronbach’s alpha of .85). Similarly, González-Rivera and Hernández-Gato (2019) developed and validated in a Spanish-speaking population the *Escala de Conflictos en las Relaciones Románticas por el Uso de Facebook* [Conflicts in Romantic Relationships Over Facebook Use Scale], an instrument composed of 18 items distributed in three subscales (Cronbach’s alpha that ranged between .90 - .95): Partner Intrusion on Facebook, Conflict over Facebook use, and Jealousy over Facebook use.

Finally, as for jealousy associated with social networks, Muise et al. (2009) developed the Facebook Jealousy Scale (FJS), which compiled a list of 27 items showing the aspects of social network sites that have the potential to be a trigger for romantic jealousy. This scale was validated in different languages such as Turkish (Demirtaş-Madran, 2016) or Urdu (official language of Pakistan; Iqbal & Jami, 2017) but not in Spanish. Both the original version and adaptations show adequate psychometric properties (Cronbach’s alpha of .96 in the original version). However, there are some discrepancies in the scale’s factorial structure, unifactorial (Demirtaş-Madran, 2016; Muise et al., 2009) versus multifactorial with three factors: Insecurity, Inquisition, and Infidelity (Iqbal & Jami, 2017). With a 7-point Likert scale ranging from 1 (*very unlikely*) to 7 (*very likely*), this instrument examined a participant’s feelings or actions toward jealousy-evoking situations on Facebook. As Demirtaş-Madran (2016, 2018) pointed out, it provides the most extensively used self-reported measure on this topic among different countries and societies during the last years (Dainton & Stokes, 2015; Demirtaş-Madran, 2018; McAndrew & Shah, 2013; Muise et al., 2009; Utz et al., 2015).

Some sociodemographic variables such as gender, age, or frequency of use of Facebook have been differently associated to Facebook jealousy. Muise et al. (2009), and later, Hudson et al. (2015), found that women displayed more Facebook jealousy than men when measured

by quantitative responses. However, when a qualitative approach was applied, the results showed that males were more jealous when a winking emoticon was present, while females were more jealous when no emoticon was present (Hudson et al., 2015). Moreover, as these social networks are more commonly used by younger individuals, Facebook jealousy is also associated with this aspect, that is, younger people are more likely to experience and report Facebook jealousy (Demirtaş-Madran, 2018). In addition, previous results with this specific scale showed that jealousy on Facebook was positively correlated with the time spent on this online platform (Muise et al., 2009).

Furthermore, previous findings have evidenced that a higher level of Facebook jealousy is linked with low self-esteem, offline propensity to experience jealousy, surveillance behaviors in relationships (Moyano et al., 2017; Utz & Beukeboom, 2011), and intimate partner violence perpetration (Daspe et al., 2018). Similarly, recent results have highlighted that different strategies to cope with conflict are closely related to the level of experiencing Facebook jealousy, especially in Colombian participants compared to people from other Spanish-speaking countries (Moyano et al., 2017). Couples who employ more positive strategies to solve their conflicts feel less jealousy via Facebook than those who use more destructive strategies (Moyano et al., 2017). These initial results highlighted the need to increase our knowledge of this phenomenon about the related variables.

Therefore, the main objective of the present study was to translate and examine the psychometric properties of the FJS for men and women in a Colombian sample. The specific objectives were to: (a) validate the factorial structure of the scale; (b) evidence the reliability and validity of this construct throughout its association with variables like self-esteem, jealousy as a general trait (nonspecifically online) and coping behaviors in couples. Concerning this hypothesis, the following was predicted:

H.1. Being a man (Avendaño & Betancort, 2021; Padilla-Medina et al., 2023), being younger (Demirtaş-Madran, 2018), a shorter relationship duration (Clayton et al., 2013) and more frequent Facebook use (McAndrew & Shah, 2013) would be associated with higher FJS scores.

H. 2. Individuals who are more jealous in their romantic relationships would report more jealousy about Facebook use (Martínez-León et al., 2018; McAndrew & Shah, 2013).

H.3. Individuals with better conflict resolution strategies will show less jealousy about using Facebook (Moyano et al., 2017).

H.4. Individuals with higher self-esteem will report less jealousy about Facebook use (Moyano et al., 2017; Utz & Beukeboom, 2011).

Method

Study Type

This research is an instrumental study (Montero & León, 2007) because the main objective was to adapt and validate the Facebook Jealousy Scale in a Colombian sample.

Participants

The sample, incidental type, was made up of 1212 data (40% men, 60% women). Their age range was 15-54 years old ($M = 25.22$; $SD = 7.85$). Most participants indicated heterosexual orientation, their relationship duration was about 5 years, and their Facebook use was daily. The inclusion criteria were: a) being a Colombian citizenship;

b) being in a relationship; c) the participants and their partner should have a personal Facebook page. Therefore, data from those individuals who did not meet the inclusion criteria were discarded.

For the statistical analysis, the sample was randomly divided into two: a) Sample 1 ($n = 606$), in which it was performed: i) the descriptive statistics of the FJS items; ii) the exploratory factor analysis (EFA); b) Sample 2, initially composed of 606 participants; participants with missing values were eliminated, so that in the end, this sample was composed of 554 participants. Finally, both reliability and validity were analyzed with a total sample of 1212 participants (Table 1).

Measures

Socio-demographic questionnaire

Participants were asked about their gender, age (in years), nationality, sexual orientation, length of the relationship, whether they and their partner had a personal Facebook page, and frequency of Facebook use. The frequency of Facebook use was rated from 1 = *daily* to 4 = *never*, whereby a higher score indicates less use.

Table 1.
The sample's socio-demographic characteristics

	Global sample ($N = 1212$)		Sample 1 ($n = 606$)		Sample 2 ($n = 554$)	
	N	%	N	%	N	%
Gender						
Men	485	40	268	44.2	185	33.4
Women	727	60	338	55.8	369	66.6
Age						
Range	15-54		15-40		15-54	
$M(SD)$	25.22(7.85)		21.95(4.84)		28.62(9.07)	
Sexual orientation						
Heterosexual	1150	94.9	575	96.5	528	95.3
Same-sex orientation	25	2.1	11	1.8	14	2.5
Bisexual	12	1	7	1.2	4	0.7
Other	12	1	3	0.5	6	1.1
Relationship duration						
Years (months)	4.95 (5)		3.82(4.97)		5.07(5.21)	
Frequency of Facebook use						
Everyday	1041	85.9	525	86.6	471	85
Sometimes a week	129	10.6	60	9.9	66	11.9
Sometimes a month	37	3.1	18	3	15	2.7

Facebook Jealousy Scale (FJS; Muise et al., 2009)

The Spanish adaptation made in the present research was used. The scale consisted of 27 items to assess jealousy for the use of Facebook, with a Likert-type response scale of seven alternatives (1 = *very unlikely* to 7 = *very likely*). A higher score indicates greater jealousy of Facebook use. The original version of the scale showed adequate internal consistency reliability (Cronbach's alpha = .96) and predictive validity with trait jealousy (Muise et al., 2009).

Romantic Partner Conflict Scale (RPCS; Zacchilli et al., 2009)

This scale assesses daily conflict in couples. Its 39 items are answered on Likert-type scales with five response options from 1 = *Totally disagree* to 5 = *Totally agree*, and is divided into six dimensions: Compromise, Avoidance, Interactional Reactivity, Separation, Domination, Submission. Higher scores indicate a better way of resolving conflicts. The original version of the scale showed adequate internal consistency reliability (with Cronbach's alpha values between .95 for Compromise and .82 for Avoidance, Submission, and Interactional Reactivity) and predictive validity (Zacchilli et al., 2009). In this study, Cronbach's alpha values were .91 for Compromise, .80 for Avoidance, .80 for Interactional Reactivity, .82 for Separation, .84 for Domination and .86 for Submission.

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989)

The Spanish adaptation was used (Martín-Albo et al., 2007). This scale assesses self-esteem. Its 10 items are answered on Likert-type scales, including four response options ranging from 1 = *Totally agree* to 4 = *Totally disagree*. Although higher scores would indicate lower self-esteem, the scores were reversed to facilitate interpretation, so higher scores indicate higher self-esteem. The Spanish version of the scale showed adequate internal consistency reliability (Cronbach's alpha = .88) and predictive validity (Martín-Albo et al., 2007). In this study, Cronbach's alpha value was .87.

Romantic Jealousy Scale (RJS; White, 1976)

The Spanish version of the scale (Montes-Berges, 2008) was employed. It assesses feelings of jealousy presented by one partner. Its 6 items are answered on Likert-type scales using items 1, 2, 4, and 6 including seven response options (1 = *Not at all jealous* to 7 = *Very jealous*), and items 3 and 5 including five response options (1 = *Never* to 5 = *Often*).

Higher scores indicate a higher level of jealousy. The Spanish version showed adequate internal consistency reliability (Cronbach's alpha = .89) and predictive validity (Montes-Berges, 2008). In this study, Cronbach's alpha value was .87.

Procedure

First, permission to adapt and validate the scale was sought from the authors of the FJS. Then, a research team of bilingual psychologists and experts in psychometrics conducted the translation and adaptation of the scale from English into Spanish. Guidelines from previous research (Elosua et al., 2014; Muñiz et al., 2013), and the standards of the *American Educational Research Association (AERA)*, the *American Psychological Association (APA)* and the *National Council on Measurement in Education (NCME)* (2014) were followed. This initial translation was individually evaluated by a bilingual expert and one of the study's researchers with knowledge on the sexual domain. With the first draft in Spanish, a bilingual expert did a back translation.

This version was compared with the original and some modifications were made to some items, although the content was not changed. The changes were mainly made to avoid literal translations. A pilot study was then carried out involving 20 subjects with similar socio-demographic characteristics to those of the subjects in the validation study. They were asked to what extent they understood each item. If they found any term of expression ambiguous, they were asked to indicate which one and why. As all items achieved 85% agreement on their clarity, no changes were made.

The URL of the questionnaires was distributed using the news services of Colombian Universities and through social networks. The first page of the survey included the informed consent form. Participants then gave their consent and completed the survey. No personal information, code, or identification system was required from the participants, which guaranteed anonymity and confidentiality. The time to complete all questionnaires was about 25 - 35 minutes. All participants were volunteers and did not receive any compensation for taking part in the study. Participants were recruited from the general Colombian population using a non-random sampling procedure.

Ethical aspects

This research was approved by the *Universidad de la Costa, Barranquilla, Colombia*. The risk level of the present investigation was low or non-existing, as participants

only had to complete the questionnaires anonymously. Finally, it is relevant to note that this research adheres to the Declaration of Helsinki (World Medical Association, 2013), which establishes the fundamental ethical principles for research involving human beings.

Results

Descriptive statistics of items

Considering the response range which oscillated from 1 to 7, although some means came close to the scale's theoretical midpoint ($M = 4$), most were lower. The lowest mean value was found for item 24 ($M = 1.95$, $SD = 1.63$), while the highest mean ($M = 5.28$, $SD = 2.07$) was found for item 10. No skewness or kurtosis was observed as all skewness values were between -1 and +1 and kurtosis never exceeded a value of 2 (Table 2).

Exploratory Factor Analysis

The KMO test = .95 and Barlett's sphericity ($\chi^2 = 10,455.37$; $p < .001$) verified the adequacy of the data to follow the factorization process. The EFA was performed through a Generalized Least Squares (GLS) with Oblimin Rotation, considering that the factors will be related, the sample distribution is non-normal, and less than 30 items or variables are used. After carrying out the EFA, an initial 3 factor structure was obtained, explaining 58.39% of the total variance. Factor loadings ranged significantly from .50 for item 2 to .88 for item 25. When an item shared factor loadings on more than one factor, the one with the higher value was taken, as long as the difference between the two-factor loadings was more significant than .10 (Tabachnick & Fidell, 2014). This was the case for items 6 (Factor 1) and 19 (Factor 2). The first factor explained 47.65% of the variance, followed by 6.95% of Factor 2, and 3.78% for Factor 3.

Table 2.

Descriptive statistics of the FJS items

Items	M	SD	Skewness	Kurtosis
FJS1. Usted siente celos al ver que su pareja ha añadido en Facebook a alguien desconocido del sexo opuesto. Become jealous after seeing that your partner has added an unknown member of the opposite sex to Facebook.	3.34	2.04	.40	-1.11
FJS2. Se siente molesto si su pareja no publica en su estado de Facebook que mantiene una relación. Be upset if your partner does not post an accurate relationship status on Facebook.	2.57	1.92	1.03	-.13
FJS3. Se siente amenazado si su pareja añade en Facebook como amigo a una ex pareja sentimental o sexual. Feel threatened if your partner added a previous romantic or sexual partner to his or her Facebook friends.	4.11	2.20	-.03	-1.43
FJS4. Usted está pendiente a las actividades de su pareja en Facebook. Monitor your partner's activities on Facebook.	3.68	2.13	.21	-1.29
FJS5. Siente celos tras ver que su pareja ha publicado un mensaje en el muro de una persona del sexo opuesto. Become jealous after seeing that your partner has posted a message on the wall of someone of the opposite sex.	3.80	2.11	.20	-1.29
FJS6. Pregunta a su pareja acerca de sus amigos de Facebook. Question your partner about his or her Facebook friends.	3.20	2.03	.56	-.96
FJS7. Se siente incómodo cuando su pareja recibe un regalo personal de alguien del sexo opuesto en Facebook. Feel uneasy with your partner receiving a personal gift from someone of the opposite sex	3.84	2.11	.09	-1.36
FJS8. Usted siente celos si su pareja postea fotos en Facebook de sí mismo con un brazo echado sobre alguien del sexo opuesto. Experience jealousy if your partner posts pictures on Facebook of him or herself with an arm around a member of the opposite sex.	3.88	2.04	.09	-1.21

<i>Items</i>	<i>M</i>	<i>SD</i>	<i>Skewness</i>	<i>Kurtosis</i>
FJS9. Usted se molesta si su pareja le limita el acceso a su perfil de Facebook. Be upset if your partner limits your access to his or her profile.	4.31	2.16	-.22	-1.32
FJS10. Se siente celoso si su pareja publica fotos de sí mismo con parejas anteriores. Be jealous if your partner posts pictures of him or herself with a previous romantic or sexual partner.	5.28	2.07	-.95	-.50
FJS11. Siente desconfianza de los mensajes privados que su pareja envía a través de Facebook. Be suspicious about the private messages that your partner sends over Facebook.	3.43	2.05	.36	-1.13
FJS12. Le preocupa que su pareja se involucre en una relación sentimental con alguien en Facebook. Worry that your partner will become romantically involved with someone on Facebook.	3.74	2.25	.11	-1.46
FJS13. Siente celos cuando una persona del sexo opuesto ha escrito en el muro de su pareja. Become jealous after seeing that your partner has received a wall message from someone of the opposite sex.	3.75	2.03	.19	-1.15
FJS14. Siente celos si su pareja publica una foto de él o ella con alguien del sexo opuesto que usted no conoce. Become jealous if your partner posts pictures of him or herself with unknown members of the opposite sex.	3.97	1.98	.014	-1.16
FJS15. Sospecha que su pareja esté desarrollando de modo secreto una relación íntima con alguien en Facebook. Suspect that your partner is secretly developing an intimate relationship with someone on Facebook.	2.46	1.86	1.09	-.04
FJS16. Le preocupa que su pareja use Facebook para iniciar relaciones con personas del sexo opuesto. Worry that your partner is using Facebook to initiate relationships with members of the opposite sex.	2.90	2.01	.69	-.88
FJS17. Siente celos si su pareja publica fotos en las que él/ella se muestra de modo sexualmente provocativo. Feel jealous if your partner posts pictures of him or herself that are sexually provocative.	4.08	2.22	-.00	-1.41
FJS18. Le preocupa que alguien en Facebook se sienta atraído por su pareja. Be concerned that someone else on Facebook is attracted to your partner.	3.63	2.12	.24	-1.26
FJS19. Mira la página de Facebook de su pareja si sospecha o desconfía de sus actividades. Look at your partner's Facebook page if you are suspicious of their activities.	3.40	2.03	.34	-1.13
FJS20. Pelea con su pareja acerca de Facebook (Por ejemplo: publicaciones, <i>likes</i> , comentarios, etiquetas, etc.). Have a fight with your partner about Facebook. (e.g. posts, likes, comments, tags, etc.)	2.97	2.06	.65	-.93
FJS21. Revisa la página de Facebook de su pareja cada cierto tiempo. Check your partner's Facebook on a regular basis.	3.40	2.04	.33	-1.19
FJS22. Le preocupa que su pareja use Facebook para contactarse con ex parejas románticas o sexuales. Worry that your partner is using Facebook to reconnect with past romantic or sexual partners.	3.26	2.16	.48	-1.17
FJS23. Le pregunta a su pareja acerca de sus actividades de Facebook. Question your partner about his or her Facebook activities	2.79	1.88	.76	-.62
FJS24. En su Facebook usted añade a los amigos de su pareja para controlarlo/a. Add your partner's friends to your Facebook to keep tabs on your partner.	1.95	1.63	1.69	1.72
FJS25. Intenta usar Facebook para generar celos en su pareja. Attempt to use Facebook to evoke jealousy in your partner.	2.00	1.62	1.57	1.29
FJS26. Intenta acceder a la cuenta de Facebook de su pareja. Attempt to gain access to your partner's Facebook account	2.34	1.95	1.26	.20
FJS27. Siente celos por el uso de Facebook. Experience jealousy related to Facebook	2.29	1.77	1.19	.19

The factor structure consisted of Factor 1 (Partner activity), composed of items related to feeling jealous or annoyed by a partner’s Facebook behaviors and/or activities; Factor 2 (Partner vigilance), with items related to monitoring a partner’s activity; and Factor 3 (Partner romantic and sexual relationship) in which the content of the worry items was related to the likelihood of the partner developing a romantic or sexual relationship with other people on Facebook (Table 3).

The corrected item-total correlations for each factor were examined. For Factor 1 (items 1, 3, 4, 5, 6, 7, 8, 9, 10, 13 and 14), all the corrected item-total correlations were over .53 (item 10). For Factor 2 (items 2, 15, 19, 20, 21, 23, 24, 25, 26 and 27) all the corrected item-total correlations were above .66 (item 2), and for Factor 3 (items 11, 12, 16, 17, 18 and 22) the lowest corrected item-total correlation was .55 (item 17).

Table 3.
Factor loadings from the EFA

Items	Factor 1	Factor 2	Factor 3
FJS8	.816		
FJS5	.857	.572	
FJS1	.785	.560	
FJS14	.812		.605
FJS7	.774		
FJS13	.819	.590	.660
FJS3	.748		
FJS10	.609		
FJS9	.680		
FJS4	.691	.641	
FJS6	.682	.663	
FJS25		.787	
FJS27		.844	.621
FJS24		.784	
FJS23	.630	.799	
FJS2	.537	.717	
FJS26		.708	.531
FJS20	.655	.734	
FJS15		.724	.663
FJS21	.596	.699	.577
FJS19	.621	.669	.638
FJS12			.840
FJS22		.591	.793
FJS16		.699	.809
FJS17	.498		.663
FJS18	.625	.590	.749
FJS11	.583	.618	.723

Confirmatory Factor Analysis

Initially, two models were tested: Model 1: a one-factor model, originally proposed by its authors (Muise et al., 2009), which was compared with Model 2: the three-factor model that emerged from the EFA. The goodness-of-fit indices were: (i) the *Root Mean Square Error of Approximation* (RMSEA) index; (ii) the *Comparative Fit Index* (CFI); (iii) the *Tucker-Lewis Index* (TLI). RMSEA values below .06 indicate a good fit, and values below .10 are considered acceptable. Both CFI and TLI values were above .90 and can be interpreted as indicators of acceptable fit (Kline, 2011). The χ^2 values and their corresponding degrees of freedom were also reported, for which lower values indicated a better fit (Byrne, 2013). When comparing the three models presented: one-factor, three-factor and modified three-factor, the modified three-factor model (model 2b) was the most effective as can be seen in the parameter comparison in Table 4. The CFI and TLI values exceeded .90, the RMSEA parameters were acceptable (.09) and finally, the AIC index values, were the lowest of the three models, as were the χ^2 values.

Model 1 did not show a good fit. The goodness-of-fit indices were below the cut-off point, with TLI and CFI values equal to .71 and .73, respectively, which are below the minimum of .90. Subsequently, Model 2 was tested. Although this model performed better than Model 1, it did not obtain an optimal fit because its goodness-of-fit indices did not reach the previously defined minimums (Table 4).

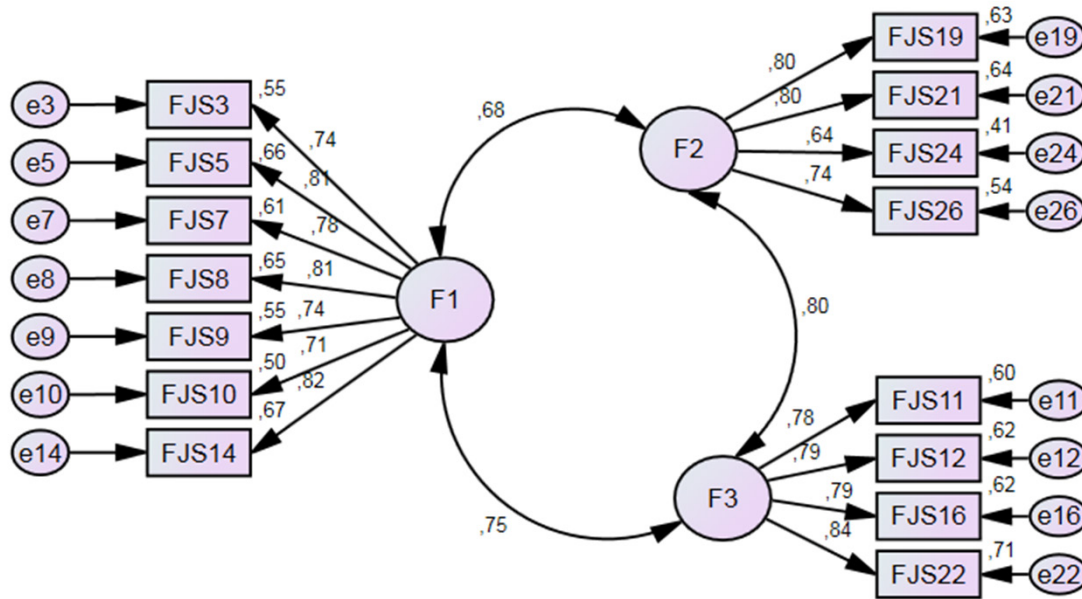
When examining the modification rates, it was noted that some items were weak. The modifications concerned the elimination of the following items: 1, 2, 4, 6, 13, 15, 18, 20, 22, 23, 25 and 27. Therefore, after eliminating these items, Model 2(b) reached optimal values with goodness- of- fit indices. The FJS comprised 15 items, of which the global Squared Multiple Correlations (SMC) index was .60, indicating that 60% of the variance was explained by the latent factors. The correlation between Factor 1 and Factor 2 was .66, it was .80 between Factor 2 and Factor 3, and was .75 between Factor 1 and Factor 3, indicating the relationship between the three factors (Figure 1). Standardized weights ranged from .64 (item 24) to .84 (item 22).

Table 4.
Goodness-of-fit indices for the CFA in the FJS items

	χ^2	df	RMSEA	TLI	CFI	AIC	BCC
Model 1: One-factor	3324.78	324	.13	.715	.737	3589.95	3589.95
Model 2: Three-factor	2350.77	321	.10	.806	.822	810.00	849.30
Model 2 (b): Three-factor (items 1, 2, 4, 6, 13, 15, 17, 18, 20, 23, 25 and 27 eliminated)	508.07	87	.09	.904	.920	623.75	626.36

Figure 1

Standardized loadings of the three-factor FJS structure. F1: Partner’s Activity. F2: Partner’s Surveillance. F3: Partner’s Romantic and Sexual Relationship.



Reliability

For Factor 1, Ordinal’s alpha was .94 and McDonald’s Omega was .93. Factor 2 reached an Ordinal alpha value of .95 and McDonald’s Omega was .92. And Factor 3 had a reliability value of .90 for Ordinal’s alpha and .88 for McDonald’s Omega.

Concurrent Validity

First, Pearson correlations were carried out between the FJS dimensions and socio-demographic variables. Gender was associated with FJS- Factor 2 (Partner vigilance), where women reported higher scores ($M = 11.09, SD = 6.15$) than men ($M = 9.94, SD = 5.94$). However, to address this issue rigorously, an invariance study was conducted, resulting in compliance with metric invariance with identical CFI

values (.92) for both the non-contrast model and the weighted model 1. In addition, the difference between model 1 weights and model 2 intercepts and constraints and model 3 structural covariance differed by values less than 0.05 (model 1 = .92; model 2 = .90 and model 3 = .90). Age correlated negatively with all three FJS factors, individuals involved in longer relationships reported lower FJS-Factor 1 scores (partner activity), while no significant correlations were shown between relationship duration and FJS Factors 2 and 3. Finally, more frequent Facebook use was related to a greater level of Facebook jealousy (Table 5).

Secondly, the associations between FJS dimensions and the dimensions of RPCS, self-esteem, and romantic jealousy were examined. The results obtained showed that both RPCS-Commitment and RPCS-Avoidance were

negatively associated with the three FJS factors. Finally, self-esteem and romantic jealousy correlated positively with the three FJS factors (Table 5). Furthermore, a linear regression analysis was conducted to better examine the predictive value of the three FJS factors on the RPCS total score, self-esteem, and romantic jealousy. As shown in Table 6, the RPCS total score was best predicted by Factor 2, i.e., partner vigilance, and self-esteem was best predicted by Factor 3, partner’s romantic and sexual relationship, while romantic jealousy was predicted by all three FJS factors.

Discussion

Facebook is the most widely used social network in Colombia (Statcounter, 2020), and as there are no questionnaires available to evaluate the jealousy of Facebook, the main goal of this study was to adapt and validate the FJS with a sample of Colombian men and women. Our findings demonstrated that the short version of the FJS in a Colombian sample is reliable and valid.

Regarding the factor structure, on the one hand, the structure of the scale was examined in an EFA. The results

Table 5.

Pearson correlations between FJS factors, socio-demographic variables, RPCS, self-esteem and romantic jealousy

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sex														
Age	-.02													
Relationship duration	.09**	.66***												
Frequency of Facebook use	-.07*	.08**	.12***											
FJS-1 Partner’s activity	.05	-.18***	-.17***	-.15**										
FJS-2 Partner’s surveillance	.09**	-.10***	-.04	-.13**	.59***									
FJS-3 Partner’s Romantic and Sexual Relationship	.04	-.13***	-.03	-.10**	.65***	.71***								
RPCS- Compromise	.04	.09**	.01	.05	-.18***	-.28***	-.26***							
RPCS- Avoidance	-.09**	.11***	.07*	-.02	-.12***	-.10***	-.08**	.39***						
RPCS- Interactional Reactivity	.11***	.05	.03	-.01	.32***	.45***	.42***	-.22***	-.15***					
RPCS- Separation	.03	.05	-.03	-.03	.10***	.24***	.17***	-.09**	.05*	.42**				
RPCS- Dominance	.05	.03	.03	.01	.30***	.41***	.33***	-.16***	-.02*	.57**	.41***			
RPCS- Submission	-.14***	.05	.017	-.02	.18***	.26***	.23***	-.14***	.09**	.41**	.33***	.45***		
Self-esteem	.03	.11***	.07*	.03	-.13***	-.16***	-.16***	.24***	.06*	-.13**	-.01	-.09**	-.14***	
Romantic jealousy	.12***	-.16***	-.16***	-.04	.49***	.50***	.49***	-.16***	-.16***	.38**	.16***	.29***	.10***	-.09**

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

Table 6.

Linear regression analysis of the FJS factors as predictors and RPCS, self-esteem and romantic jealousy as dependent variables

	RPCS				Self-esteem				Romantic jealousy			
	R ²	B	β	t	R ²	B	β	t	R ²	B	β	t
	.075				.032				.322			
FJS-1 Partner’s activity		.004	.003	.066		.014	.028	.717		.146	.247	7.61***
FJS-2 Partner’s surveillance		.662	.232	5.69***		.075	.078	1.87		.282	.245	7.03***
FJS-3 Partner’s Romantic and Sexual Relationship		.126	.052	1.21		.077	.095	2.14*		.151	.156	4.22***

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

revealed that its 27 items formed a three-factor structure (Partner Activity, Partner Vigilance, and Partner's Romantic and Sexual relationship) and that the alpha would not improve if any item was eliminated. However, these results did not coincide with previous studies, in which the structure was unifactorial (Demirtaş-Madran, 2016; Muise et al., 2009). However, in the Pakistani adaptation of the FJS, the factor structure consisted of three factors, named by the authors as follows: Insecurity, Inquisitiveness, and Infidelity (Iqbal & Jami, 2017). Moreover, by means of the CFA, the one-factor model proposed in the original version (Muise et al., 2009), which was ratified in the Turkish version (Demirtaş-Madran, 2016) was tested. However, goodness-of-fit tests did not show an adequate fit. Therefore, the multifactorial model obtained from the EFA was tested, but the model was not found to have adequate goodness of fit indices.

Finally, a model was tested in which 12 items were removed from the initial version and the goodness-of-fit indices were adequate. Some of the deleted items were also removed from the Pakistani adaptation (Iqbal & Jami, 2017), namely items 4, 6 and 13. In general, the 12 items were dropped from the final version because of their high cross-loadings on more than one factor. For example, some items (items 1, 2, 4, 6, 20, 23) had similar charges on Factors 1 and 2 (e.g. item 4: "Monitor your partner's activities on Facebook"). Other items (items 15, 27) had a load on Factors 2 and 3 (e.g. item 15 "Suspect that your partner is secretly developing an intimate relationship with someone on Facebook"), or on Factors 1 and 3, item 17 (e.g. "Feel jealous if your partner posts pictures of him or herself that are sexually provocative"). Other items (13 and 18) loaded on all three factors (item 13 "Become jealous after seeing that your partner has received a wall message from someone of the opposite sex"). Finally, item 25 ("Attempt to use Facebook to evoke jealousy in your partner") only loaded on Factor 2, although the indices showed that the reliability of the instrument increased if it was removed.

In summary, the Colombian adaptation of the FJS was composed of 15 items, instead of the initial 27 items, and these 15 items explained 60% of variance. The three factors (Partner Activity, Partner vigilance, and Partner romantic and sexual relationship) were also found to be related to each other. FJS multidimensionality can be explained by taking into account that jealousy has been considered a multidimensional construct (Guerrero & Andersen, 1998;

Iqbal & Jami, 2017) that differentiates the emotional or insecurity factor, which would coincide with the Partner's Activity factor; the behavioral factor or protective measures to avoid interactions with rivals, which would coincide with the Partner's Surveillance factor; the cognitive factor or negative thoughts of suspicion, which would coincide with the Partner's romantic and sexual relationship factor. In terms of internal consistency reliability, the values ranged from .81 and .90 which therefore, confirms that this is a measure with adequate reliability.

Regarding evidence for validity, it was found that being a woman was related to greater partner vigilance (Partner's Surveillance). Therefore, the posed hypothesis was only partially fulfilled as there was no relationship with Partner's Activity and Partner's Romantic and Sexual Relationship factors. Previous studies have concluded that women are more likely to feel jealous of Facebook use (McAndrew & Shah, 2013; Muise et al., 2009; Rus & Tiemensma, 2017). One of the most important theories to explain gender differences is that of White's (1980). This theory is based on the power perspective and highlights that women are more jealous as there is greater dependence on the male partner due to men's stronger economic power. This theory could explain this result as Colombia is a country with marked traditional gender roles and double sexual standards (Sánchez-Fuentes et al., 2020).

In terms of age, being younger was related to a higher level of jealousy about Facebook, which coincides with previous research (Demirtaş-Madran 2016; Demirtaş-Madran, 2018). Some explanations could account for the negative relation between age and jealousy. One stems from the evolutionary theory. According to this perspective, men's level of jealousy lowers as the perception of risk of being cheated by the partner is lower, and women's level of jealousy lowers because the probability of their partners having other children is lower, as is the risk of family finances (Shackelford et al., 2004).

For relationship duration, it was found that the participants with a shorter partner relationship were those who reported more jealousy, but this was found only for the Partner's Activity factor. Previous results about the association between relationship duration and jealousy about Facebook are inconsistent (Clayton et al., 2013; Drouin et al., 2014; Rus & Tiemensma, 2017). However, perhaps those individuals with a shorter relationship monitor more their

partner's activities on Facebook as an information search technique to know their partner better (Clayton et al., 2013). In addition, a shorter relationship duration is associated with less commitment and this, in turn, has been related to making and accepting friend requests on Facebook with romantic interests (Drouin et al., 2014).

Finally, as hypothesized in this study, more frequent Facebook use was negatively related to all three FJS factors, i.e. to a higher level of jealousy. Previous research has shown how more frequent Facebook use is associated with higher levels of jealousy (McAndrew & Shah, 2013; Muise et al., 2009). One dyad member is likely to perceive that his/her partner does not spend enough time with him/her or think that he/she spends more time on Facebook and, therefore, the opportunity to meet other people is greater.

Second, concerning the association between conflict resolution and FJS factors, only the Commitment and Avoidance dimensions were related to the three FJS factors. So, the hypothesis posed was only partially fulfilled. Some individuals adopt more positive strategies to solve conflicts with their partner, such as commitment. This commitment has been related to more trust and less jealousy in general (Perles et al., 2019; Pichon et al., 2020), and to less jealousy about Facebook (Moyano et al., 2017). When analyzing the predictive capacity of FJS to foresee the global capacity to resolve conflicts, the most relevant dimension is Facebook partner's surveillance. Previous studies indicate how Facebook threatens a couple's sense of autonomy and freedom, being surveillance a problem for dealing with the problems in the relationship (Fox et al., 2014).

Thirdly, it is hypothesized that higher self-esteem is related to a lower level of jealousy. Previous studies have concluded that individuals with low self-esteem are more likely to report Facebook jealousy, as well as surveillance behaviors in relationships (Demirtaş-Madran, 2016; Moyano et al., 2017; Utz & Beukeboom, 2011) as low self-esteem is related to insecurity (DiBello et al., 2015). In fact, jealousy and self-esteem are very close variables given some definitions of the jealousy concept which refer to self-esteem; romantic jealousy can be 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). The dimension of the FJS that is shown to predict self-esteem more strongly is Partner's romantic and sexual relationship. In line with this,

when asking individuals about the cause of their jealousy, the most relevant themes that emerge are, among others, infidelity, expectations of time and commitment, social media and self-esteem (Zandbergen & Brown, 2015), indicating a strong relationship between a low sense of self-esteem and a higher perception of being cheated on.

Lastly, in line with the proposed hypothesis, a relationship emerged between romantic jealousy and the three FJS dimensions insofar as those individuals who feel jealousy in their relationships also, as expected, experience jealousy about using Facebook. This result supports construct validity. In the same vein, previous research has shown a relationship between jealousy on Facebook and jealousy as a trait (Utz & Beukeboom, 2011).

The present study has its limitations. First, as a non-probabilistic procedure was used, the results cannot be generalized. Second, some instruments have not been adapted to and validated for the Colombian population, but the reliability of these instruments' internal consistency was adequate in the present study. Third, some limitations associated with online studies should be considered, such as lack of control of test environment or lack of incentive for completion. Future studies should examine the cross-cultural invariance of this scale in other Spanish-speaking countries.

The study of jealousy in general and/or jealousy associated with social networks (as an indicator of following a partner, especially among young people) may be useful for both research and clinical purposes. Some of these are outlined here. First, monitoring partner behavior may put the safety of women at risk, as sexism and traditional gender roles still persists and perpetuate a culture in which violence is justified, as previously shown in Colombia, demonstrating that men express great adherence to those beliefs (Ariza et al., 2022; Bonilla-Algovia & Rivas-Rivero, 2019; Buller et al., 2022). Second, the use of Facebook in the couple's context is associated with the couple's well-being. In particular, a recent study from Puerto Rico has indicated that Facebook intrusion has a negative indirect effect on relationship satisfaction (González-Rivera, Aquino-Serrano et al., 2022). Third, jealousy is linked to impairment of psychological well-being. Some studies using the Interpersonal Jealousy Scale (IJS) in Colombia have shown that half of the sample reported high levels of anger (Martínez-León et al., 2018). Further research should explore and compare how Facebook jealousy is also associated with all those

psychological impairments in both individual and dyadic contexts associated with sexual and psychological well-being.

The short version of the FJS in a sample of Colombian men and women has adequate psychometric properties and is useful for researchers who work on issues related to jealousy and couple relationships.

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