

## Validation of the Spanish version of the Wong Law Emotional Intelligence Scale (WLEIS-S)

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### Abstract

**Background:** The Wong and Law Emotional Intelligence Scale (WLEIS) is a self-report emotional intelligence scale based on the theoretical framework of Mayer & Salovey (1997). The aim of this study was to examine the psychometric properties of the Spanish version of the Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002) in a large sample of 1,460 adults (815 women and 645 men) ranging from 17 to 64 years old ( $M = 33.27$ ,  $SD = 11.60$ ). **Method:** The scale was back-translated and participants completed a battery of questionnaires including the Spanish WLEIS (WLEIS-S), perceived stress scale, subjective happiness scale, life satisfaction scale, and suicide behavioural questionnaire. **Results:** The results provided evidence of adequate internal consistency and criterion validity consistent with the original version. Confirmatory factor analysis showed a four-factor structure with good fit. Finally, gender differences were found in the overall Emotional Intelligence score and on the appraising the emotion of others dimension, with women scoring higher than men. **Conclusions:** Overall our results provide evidence that the WLEIS-S might be a promising tool for the assessment emotional intelligence in the Spanish context.

**Keywords:** Wong and Law Emotional Intelligence Scale, Spanish validation, measurement, factorial validity, criterion validity.

### Resumen

**Validación de la versión española de la escala de inteligencia emocional de Wong y Law (WLEIS-S).** **Antecedentes:** la escala de Inteligencia Emocional de Wong y Law (WLEIS; Wong & Law, 2002) es un instrumento de auto-informe de inteligencia emocional basado en el marco teórico de Mayer y Salovey (1997). El objetivo de este estudio es examinar las propiedades psicométricas de la versión española de la escala Wong y Law (WLEIS-S) en una amplia muestra de 1.460 adultos (815 mujeres y 645 hombres), con edades entre 17 y 64 años ( $M = 33.27$ ,  $DT = 11.60$ ). **Método:** tras su adaptación mediante traducción inversa, los participantes completaron una batería que incluía la WLEIS-S, una escala de estrés, una escala de felicidad y de satisfacción vital y un cuestionario de conductas suicidas. **Resultados:** los resultados mostraron una consistencia interna adecuada y una validez de criterio en línea con el instrumento original. El análisis factorial confirmatorio mostró una estructura de cuatro factores con buen ajuste. Finalmente, encontramos diferencias de género en la puntuación total y la dimensión de evaluación de las emociones de los demás, siendo las mujeres quienes puntuaban más alto que los hombres. **Conclusiones:** en general, nuestros resultados proporcionan evidencias de que la WLEIS-S podría ser una herramienta útil para la evaluación de la Inteligencia Emocional en población adulta española.

**Palabras clave:** escala de inteligencia emocional de Wong y Law, validación española, evaluación, validez factorial, validez de criterio.

Over the last three decades a large body of meta-analytical research has documented that emotional intelligence (EI) is an important theoretical and empirical construct linked to health and well-being (Martins, Ramalho, & Morin, 2010; Sánchez-Álvarez, Extremera, & Fernández-Berrocal, 2016). Similarly, a variety of methods have been developed with an emerging general consensus that there are three main categories of EI instruments (Miao, Humphrey, & Qian, 2017): (1) performance-based EI ability tests in which individual EI is assessed through the performance of various tasks and emotional problem-solving items for which there are correct versus incorrect answers using predetermined

experts or consensus criteria, (2) mixed self-report EI instruments in which individuals are presented with descriptive statements that combines a wide constellation of individual self-perceptions, social skills, traits, and dispositional behaviours related to emotions where they indicate the extent to which they agree or disagree with the items, and (3) self-report EI ability tests in which participants are presented with descriptive statements that are consistent with Mayer and Salovey's (1997) definition of EI in which they indicate the extent to which they agree or disagree with the items.

In Spain, according to these three categories, different EI measures have already been validated showing appropriate psychometric properties for using in Spanish settings. For example, in the ability EI measures category, the MSCEIT v.2.0 (Mayer-Salovey-Caruso Emotional Intelligence Test) is the most commonly used ability-based test which was specifically designed to measure the four branches of the EI model of Mayer and Salovey, and it has been validated in Spanish samples (Extremera, Fernández-Berrocal, & Salovey, 2006). Within the mixed self-report EI

instruments, the Emotional Quotient Inventory: short form (EQi:S) has already been validated both in adults (López-Zafra et al., 2012) and adolescent samples (Eснаоla, Sarasa, Fernández-Zabala, & Axpe, 2016). Finally, regarding self-report ability EI measures, there also exist EI scales that has been designed for measuring the core emotional abilities proposed by Mayer and Salovey's (1997) conceptualization of EI. Indeed, some of them has been typically used in Spanish population such as the Trait Meta-Mood Scale (Fernández-Berrocal, Extremera, & Ramos, 2004), the Work Group Emotional Intelligence Profile-Short version (López-Zafra, Pulido, Berrios, & Augusto-Landa, 2012) or the Shutte Self-Report Inventory (Ferrández et al., 2006).

One of the most commonly used instrument in this category is the Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002), which is a self-report ability EI scale based on the theoretical framework of Mayer & Salovey (1997). Previous studies have confirmed that WLEIS has a robust four-factor structure (Wong, 2015). There is also evidence of that the WLEIS has convergent validity with respect to related EI measures (Law, Wong, & Song, 2004), predictive validity controlling on life satisfaction, happiness or psychological well-being (Urquijo, Extremera, & Villa, 2016; Wong & Law, 2002) and criterion validity with respect to personal well-being (Urquijo et al., 2016; Wong & Law, 2002) and that scores are moderately negatively associated with psychological variables such as depression, loneliness and stress (Rey, Extremera, & Pena, 2016; Shi & Wang, 2007) and different organisational outcomes such as job satisfaction and work performance (Sy, Tram, & O'Hara, 2006).

The WLEIS was originally designed in East Asia and in last years has been translated into several languages, including Portuguese (Carvalho, Guerrero, Chambel, & González-Rico, 2016), Moroccan Arabic (El Ghoudani, Pulido-Martos, & López-Zafra, 2018), Italian (Iliceto & Fino, 2017), Chinese (Kong, 2017), Korean (Fukuda, Saklofske, Tamaoka, & Lim 2012) and Japanese (Fukuda et al., 2011). Thus, prior studies have confirmed the measurement equivalence of EI scores across the WLEIS in different ethnic and gender groups (Whitmann, Van Rooy, Viswesvaran, & Kraus, 2009). In sum, research on WLEIS has provided evidence that all versions share a four-factor structure and are robust predictors of personal and job-related well-being outcomes in different language versions. In Spain, the WLEIS has been validated in Spanish medical students (Carvalho et al., 2016) and used in samples of educational professionals (Rey et al., 2016), and graduates (Urquijo et al., 2016) but these earlier studies did not examine specific validity and reliability evidence in a large sample of the Spanish population.

In our opinion, there are some theoretical and empirical reasons for selecting the WLEIS to being validated in Spanish context. First, as considered above, across multiple samples and studies in different countries, research have demonstrated that WLEIS possesses adequate factor structure, good reliability and promising predictive and incremental validity (Law et al., 2004). Second, unlike the mixed self-report EI instruments, the WLEIS is based on the conception of EI as a set of basic emotional abilities (Wong & Law 2002). Third, although the ability-based EI measures are useful and reliable, some measures such as the MSCEIT consists of 141 items requiring approximately 45 minutes to complete. However, the WLEIS has only 16 short items and might be more practical when time is limited, research conditions require more control for practical constraints such as the limited patience or

attention span of research participants or even in professional settings when test length will be a critical requisite for selecting an EI measure for training, selection or counselling.

Despite the prolific research of EI measures in Spanish settings, no studies have examined the reliability, factor structure, and criterion validity of WLEIS in a Spanish adult sample. There are several reasons to support the validation of the WLEIS in Spanish contexts. First, a Spanish WLEIS might allow to examine the differences between EI construct measured by WLEIS and other relevant measures from the three streams of EI previously validated in Spanish context. Second, as prior meta-analytic studies have confirmed that the three streams differ considerably in their conceptualization of EI and they also might differ in their predictive validity regarding workplace and personal outcomes (Miao et al., 2017; Sánchez-Álvarez et al., 2016), a validated Spanish WLEIS in adults might provide researchers a measure for examining the potential peculiarities and implications of assessing specific aspects of EI on Spanish settings. Finally, in order to demonstrate its construct validity, a well-validated Spanish WLEIS might be a useful tool for future cross-cultural comparison and equivalence of EI in an international context. In sum, our study was designed to provide support for the reliability and validity of WLEIS in a relatively wide sample of Spanish adults, taking into consideration the lack of this evidence.

## Method

### Participants

The sample consisted of 1,460 adults' participants (815 females), composed by university students and community participants using non-probability and convenience sampling. The age of participants ranged from 17 to 64 years ( $M = 33.27$ ,  $SD = 11.60$ ). For university students' sample recruited from University of Málaga, participants completed the battery of questionnaires in class as part of a more extensive research project. All responses were anonymous and confidential. Community participants were recruited by undergraduate students using a student-recruited sampling method in the province of Málaga (Spain). They distributed the battery of questionnaires through their personal contacts. In this way, heterogeneity of the sample in relation to gender, age and educational levels was secured (Demerouti & Rispens, 2014). Undergraduates directly described the objectives of the research to participants, and gave them a package that included the battery and a letter, in which the goal of the study was introduced, and the confidentiality and anonymity of the answers were underlined. Each participant returned the battery directly to the undergraduate.

### Instruments

*Wong Law Emotional Intelligence Scale* (Wong & Law, 2002). This scale consists of 16 short statements measuring four aspects of EI: appraisal of one's own emotions (SEA), appraisal of others' emotions (OEA), use of emotion (UOE) and regulation of emotion (ROE) (Table 1). Responses are given using a seven-point Likert scale, ranging from 1 (totally disagree) to 7 (totally agree).

*Subjective Happiness Scale* (SHS; Lyubomirsky & Lepper, 1999). The SHS was used to evaluate general subjective happiness. The response scale ranges from 1 to 7, with lower values indicating a lower level of subjective happiness.

*Perceived Stress Scale* (Cohen, Kamarck, & Mermelstein, 1983). We used the short version that measures self-reported stress. Responses are given using a five-point Likert scale ranging from 0 to 4; high scores indicate a high perceived stress level.

*Suicidal Behaviours Questionnaire-Revised* (SBQ-R; Osman et al., 2001). The SBQ-R is a brief self-report instrument that evaluates four symptoms related to suicide. Total SBQ-R scores range from 3 to 18. Adequate internal consistency and reliability have been reported in earlier research (Osman et al., 2001).

*Satisfaction with Life Scale* (Diener, Emmons, Larsen, & Griffin, 1985). This scale consists of five self-referenced statements about global life satisfaction and has been shown to have discriminant validity and adequate internal consistency (Diener et al., 1985).

**Procedure**

The validation process of the Spanish WLEIS followed the defined guidelines for adapting tests (Hambleton, 2005; ITC, 2016). First, two authors of this study translated the original English WLEIS into Spanish. A bilingual independent translator performed the back translation. Discrepancies emerging between original and Spanish version were discussed, and local experts of University of Málaga adjusted the translation. The administration of the questionnaire was directed to the adult population, being one of the criteria used in the translation of the questionnaire. As for linguistic adaptation, there was great care in maintaining the meaning of each of the items, preserving the expression of content. After the data collection, statistical analyses are carried out to provide statistical evidence of the equivalence of the items and the original structure.

**Data analysis**

Associations between variables of interest were investigated using Pearson correlations. The internal consistency of the

WLEIS-S was analysed by means of Cronbach’s  $\alpha$ , and omega coefficient was used to examine its factorial reliability. To confirm the original factor structure of the WLEIS-S, we used a confirmatory factor analysis (CFA) with AMOS 22, using the maximum likelihood method. Model fit was assessed using  $\chi^2$ , the non-normed fit index (NNFI), the comparative fit index (CFI) and root mean square error of approximation (RMSEA), with the following criteria for good fit: NNFI >.90, CFI >.90 and RMSEA <.05. Next, a multi-group CFA (MCFA) configural invariance was conducted to measure differential item functioning of WLEIS using gender groups (Marsh, 1987).

**Results**

*Reliabilities and associations between WLEIS and related variables*

As can be seen in Table 2, Cronbach’s alpha for the full scale was excellent ( $\alpha = .91$ ) and the subscales also showed satisfactory internal consistency (Cronbach’s  $\alpha$  ranged from .79 to .84). As expected, the correlations between subscale scores and total WLEIS score were positive. Thus, as expected, EI was negatively associated with perceived stress ( $r = -.40$ ) and suicidal behaviours ( $r = -.21$ ) and positively associated with subjective happiness ( $r = .44$ ) and life satisfaction ( $r = .38$ ).

*Gender differences*

Females were found to score significantly higher than males on other’s emotion appraisal and total EI score (see Table 3). According to the criteria of Cohen (1977), the effect size of these differences was medium and small, respectively.

*Table 1*  
Wong Law Emotional Intelligence Scale Spanish version (WLEIS-S)

<p>Instrucciones: A continuación, encontrará algunas afirmaciones sobre sus emociones y sentimientos. Lea atentamente cada frase e indique por favor el grado de acuerdo o desacuerdo con respecto a las mismas [Instructions: Here you will find some statements about your emotions and feelings. Please read carefully each statement and indicate the extent to which you agree or disagree with that statement]</p> <p>Evaluación de las propias emociones [Self-Emotion Appraisal, SEA]</p> <ol style="list-style-type: none"> <li>1. La mayoría de las veces sé distinguir porqué tengo ciertos sentimientos [I have a good sense of why I have certain feelings most of the time]</li> <li>2. Tengo una buena comprensión de mis propias emociones [I have good understanding of my own emotions]</li> <li>3. Realmente comprendo lo que yo siento [I really understand what I feel]</li> <li>4. Siempre sé si estoy o no estoy feliz [I always know whether or not I am happy]</li> </ol> <p>Evaluación de las emociones de los demás [Other’s Emotion Appraisal, OEA]</p> <ol style="list-style-type: none"> <li>5. Conozco siempre las emociones de mis amigos a través de sus comportamientos [I always know my friends’ emotions from their behaviour]</li> <li>6. Soy un buen observador de las emociones de los demás [I am a good observer of others’ emotions]</li> <li>7. Soy sensible a los sentimientos y emociones de los demás [I am sensitive to the feelings and emotions of others]</li> <li>8. Tengo una buena comprensión de las emociones de las personas que me rodean [I have good understanding of the emotions of people around me]</li> </ol> <p>Uso de las emociones [Use of Emotion, UOE]</p> <ol style="list-style-type: none"> <li>9. Siempre me fijo metas y luego intento hacerlo lo mejor para alcanzarlas [I always set goals for myself and then try my best to achieve them]</li> <li>10. Siempre me digo a mi mismo que soy una persona competente [I always tell myself I am a competent person]</li> <li>11. Soy una persona auto-motivadora [I am a self-motivating person]</li> <li>12. Siempre me animo a mi mismo para hacerlo lo mejor que pueda [I would always encourage myself to try my best]</li> </ol> <p>Regulación de las emociones [Regulation of Emotion, ROE]</p> <ol style="list-style-type: none"> <li>13. Soy capaz de controlar mi temperamento y manejar las dificultades de manera racional [I am able to control my temper so that I can handle difficulties rationally]</li> <li>14. Soy capaz de controlar mis propias emociones [I am quite capable of controlling my own emotions]</li> <li>15. Me puedo calmar fácilmente cuando me siento enfadado [I can always calm down quickly when I am very angry]</li> <li>16. Tengo un buen control de mis propias emociones [I have good control of my own emotions]</li> </ol>
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Table 2  
Correlation analysis between the dimensions of the WLEIS

	1	2	3	4	5	6	7	8	Alpha	M (SD)
1. Self-Emotion Appraisal	–								.79	5.17 (1.10)
2. Other's Emotion Appraisal	.62	–							.81	5.16 (1.10)
3. Use of Emotion	.67	.56	–						.81	5.11 (1.16)
4. Regulation of Emotion	.62	.44	.62	–					.84	4.64 (1.24)
5. Global Emotional Intelligence	.87	.78	.86	.82	–				.91	5.02 (.96)
6. Subjective Happiness	.36	.27	.46	.37	.44	–			.76	4.89 (1.13)
7. Perceived Stress	-.34	-.22	-.40	-.37	-.40	-.56	–		.66	2.15 (.68)
8. Suicidal Behaviors	-.18	-.07	-.24	-.20	-.21	-.32	.26	–	.80	1.08 (.61)
9. Life Satisfaction	.33	.26	.41	.38	.41	.60	-.54	-.29	.83	4.28 (1.27)

Note: All correlations indexes were significant  $p < .001$

Table 3  
Comparative analyses for total, male and female sample

	Total sample N = 1460 M (SD)	Male sample N = 610 M (SD)	Female sample N = 710 M (SD)	T (p)	Effect Size (Cohen's d)
Self-Emotion Appraisal	5.17 (1.10)	5.11 (1.17)	5.22 (1.05)	-1.870 (.062)	–
Other's Emotion Appraisal	5.16 (1.10)	4.96 (1.18)	5.32 (1.00)	-6.172 (.001)	.32
Use of Emotion	5.11 (1.16)	5.06 (1.23)	5.15 (1.10)	-1.406 (.160)	–
Regulation of Emotion	4.64 (1.24)	4.71 (1.30)	4.59 (1.20)	1.817 (.069)	–
Total Emotional Intelligence	5.02 (.96)	4.96 (1.05)	5.07 (.88)	-2.181 (.029)	.11

### Confirmatory Factor Analysis

We carried out CFA to examine the fit of original four-factor model to our data. The four-factor structure showed a good model fit ( $\chi^2 = 610,303$ , NNFI = .947, CFI = .954, RMSEA = .068). Target factor loadings for the items ranged from .57 to .85 and all were statistically significant (see Figure 1). The omega coefficient reliability indicated high factorial reliability for total scale ( $\Omega = .94$ ).

### Multi-group Confirmatory Factor Analysis

The test results' invariance (Marsh, 1987) showed that differences between groups in the model by gender were significant ( $\chi^2 (12) = 26,902$ ;  $p = .008$ ). Therefore, these results suggest that factor loadings are different between gender groups. The model for women indicated a worse fit than that for men, and resulted in loss of fit ( $\Delta CFI = -0.011$ ). However, the models for each gender group typically showed a good fit (see Table 4).

### Discussion

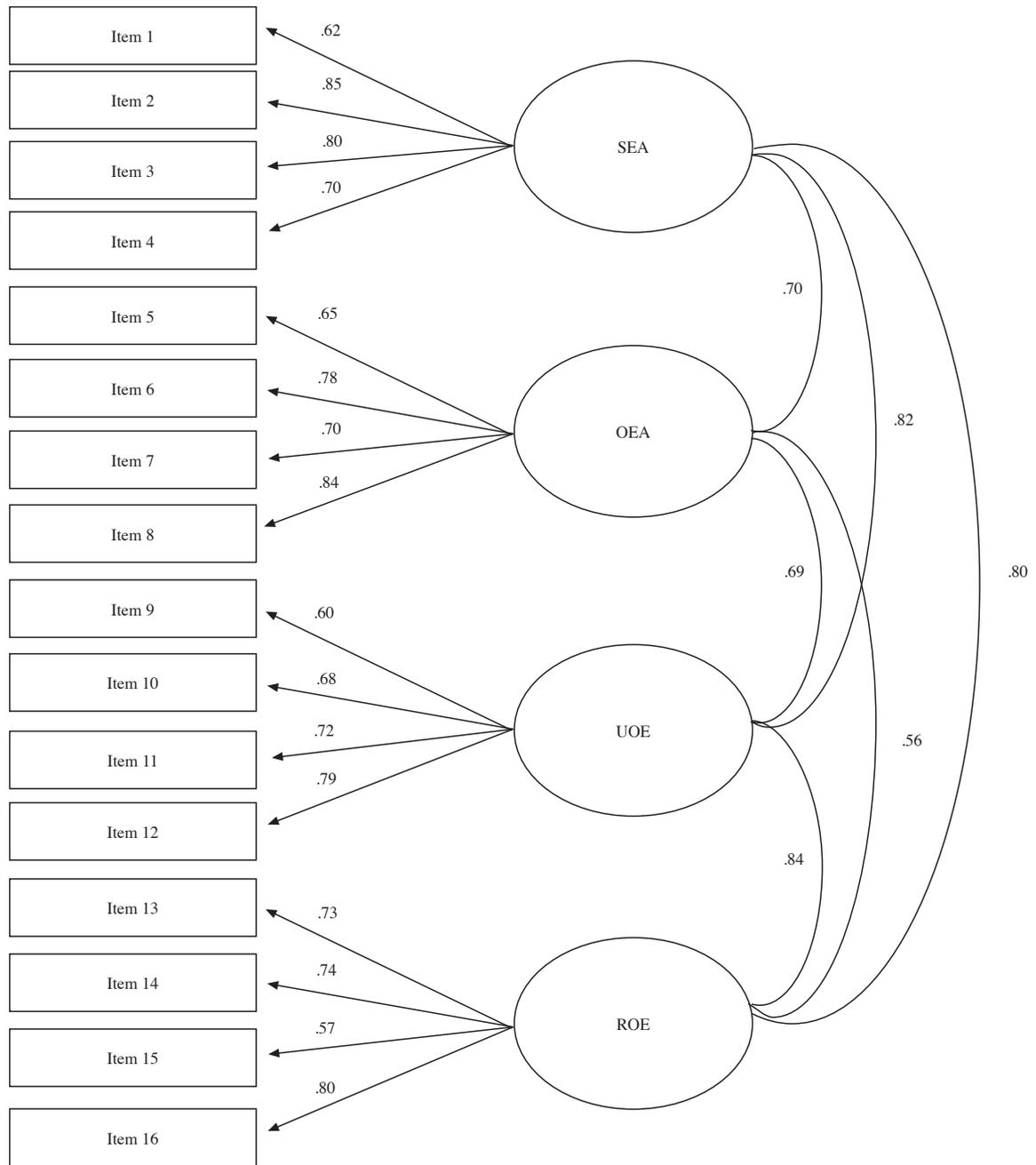
To the best of our knowledge this is the first study to examine validity and reliability evidence of the WLEIS-S in a large sample of Spanish adults. Our results showed that the WLEIS-S has similar psychometric properties to the original version (Wong & Law, 2002). Total WLEIS-S score and subscale scores also showed adequate internal consistency, which is consistent with research on other language versions (Carvalho et al., 2016; El Ghoudani et al., 2018; Fukuda et al., 2012; Fukuda et al., 2011; Kong, 2017). In addition, correlation analyses showed associations between total

EI and negative psychological indicators (i.e. suicidal ideation and perceived stress) and expected positive associations with life satisfaction and happiness, consistent with earlier research (Law et al., 2004; Shi & Wang, 2007; Urquijo et al., 2016).

The CFA provided evidence that the WLEIS-S shares the four-factor structure found in other versions (El Ghoudani et al., 2018; Fukuda et al., 2012; Fukuda et al., 2011; Iliceto & Fino, 2017; Shi & Wang, 2007; Wong & Law, 2002), and in prior Spanish version validated exclusively in medical students (Carvalho et al., 2016), demonstrating the psychometric robustness of the factor structure of this Spanish version and indicating that WLEIS-S factors represent an underlying multi-dimensional EI construct. Finally, the factors corresponding to the WLEIS-S dimensions were moderately related to each other, supporting the assumption that the WLEIS-S factors are correlated and measure different aspects of the same construct (Law et al., 2004).

Regarding gender differences, our results showed similar results to prior studies where females scores slightly higher in appraisal of others' emotions and total scores (Whitmann et al., 2009), suggesting that women are more interpersonally sensitive than men (Hall & Mast, 2008). Thus, test results' invariance indicated that factor loadings invariance existed between genders. That is, although pattern of loadings was different for males and females, the same structure was invariant across both groups. Further exploration should examine if these differences in loading pattern might be due to differential responses to items or potential differences in self-perceptions of emotional abilities between males and females.

Several limitations of our study warrant mention. First, our findings should be considered as preliminary, because of the used convenience sampling method for recruiting university students,



**Figure 1.** Factor loadings of CFA. Standard solution.

Note: All significant 0.001. SEA = Self-Emotion Appraisal; OEA = Other's Emotion Appraisal; UOE = Use of Emotion; ROE = Regulation of Emotion

*Table 4*  
Tests for invariance of WLEIS-S

	Configural invariance			Model fit							
	$\chi^2$	df	p	$\chi^2$	df	NNFI	CFI	RMSEA	$\Delta\chi^2$	$\Delta$ NNFI	$\Delta$ CFI
<b>Gender</b>	26,902	12	.008								
Men				320,714	78	.945	.957	.070	–	–	–
Woman				392,064	78	.934	.946	.070	71.35*	-0.011	-0.011

\* p < 0.01

requiring further consolidation by means of random sampling method. Besides, for recruiting community participants, we used a student-recruited sampling. Although this technique is a valuable and reliable tool increasingly used in research (Wheeler, Shanine, Leon, & Whitman, 2014) the use of student-recruited sampling in community research may be more biased toward the more cooperative participants who are willing to participate in the study, which limits the generalization of our results. Further research using traditional sampling procedures should be carried out to verify findings of the present study. Thus, since participants were recruited from a specific southern geographic area of Spain, a more heterogeneous sample selection in terms of geographic characteristics is required to determine whether the results will generalize to a broader sampling of Spanish community. These limitations should be taken into consideration in future application of the WLEIS-S.

Regarding implications, our finding offers some additional support for the robustness of the EI construct across language groups, in this case with a sample of Spanish adults. Besides, since WLEIS was originally developed in East Asia, our study also adds further evidence of the generalizability of the WLEIS in Western countries. Also, the WLEIS-S would allow to researchers developing further cross-cultural development work comparing EI levels across cultures and language groups, especially in different Spanish-speaking countries. Thus, our study provides Spanish researchers

an easy and relatively brief scale to administer which might be more practical for survey purposes when time is limited. Furthermore, as prior work has confirmed that self-report and ability EI might differ in their predictive validity regarding personal and workplace outcomes (Miao et al., 2017; Sánchez-Álvarez et al., 2016), this tool might be used for providing evidences supporting its usefulness in predicting important life outcomes compared with other Spanish validated EI measurement method. Finally, as our results provided evidence that WLEIS-S was significantly associated to well-being and psychological maladjustment outcomes, further studies should examine if EI intervention program targeting EI construct measured by WLEIS-S might increase Spanish adults' well-being or reduce their psychological maladjustment.

In sum, the present study provides promising evidences that the WLEIS-S is a reliable and valid instrument to be used in Spanish context to assess the EI. However, in line with prior work (Zych, Ortega-Ruiz, & Marín-López, 2017), further work examining applicability of EI instrument on other age-group samples such as young, adolescents or elderly might be informative to understand how EI levels contribute to well-being throughout the lifespan.

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