

## Validity evidence of the Organizational Justice Scale in Spain

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### Abstract

**Background:** Interest in measuring the perception of organizational justice has been growing in recent years due to its proven ability to produce significant organizational outcomes such as well-being and emotional exhaustion. In Spain, the Organizational Justice Scale (OJS) can be highlighted as an instrument which has shown good psychometric properties in previous research in the hotel industry. This study provides further evidence of the characteristics of the OJS using a large multi-sectorial sample. **Method:** Participants comprised 849 employees from different occupational sectors. The structure of the OJS was studied by means of an exploratory and confirmatory factor analysis splitting the sample up into two random subsamples. The reliability and validity of each dimension was also analyzed. **Results:** Results indicated a three-factorial structure: distributive, procedural, and interactional, offering adequate reliability and validity. As expected, positive correlations were found between perception of organizational justice and well-being, and negative correlations with respect to emotional exhaustion. **Conclusions:** OJS is an appropriate tool for use by researchers and practitioners in the study of the perception of organizational justice in Spain, additionally ensuring adequate validity and reliability.

**Keywords:** Organizational justice, exploratory factor analysis, confirmatory factor analysis, reliability, validity.

### Resumen

**Evidencias de validez de la Escala de Justicia Organizacional en España.**

**Antecedentes:** el interés por la medición de la percepción de justicia organizacional ha aumentado en los últimos años debido a su demostrada relación con resultados organizacionales significativos, como el bienestar y el agotamiento emocional. En España, se puede destacar la Escala de Justicia Organizacional (OJS) como un instrumento que ha mostrado buenas propiedades psicométricas en estudios previos en el sector hotelero. Este estudio complementa la evidencia de las características de la OJS utilizando una amplia muestra multisectorial. **Método:** los participantes fueron 849 empleados de diferentes sectores ocupacionales. La estructura de la OJS se estudió mediante análisis factorial exploratorio y confirmatorio dividiendo la muestra en dos submuestras aleatorias. Además, se analizó la fiabilidad y validez de cada dimensión. **Resultados:** los resultados indicaron que la escala está constituida por tres factores (distributiva, procedimental y en la interacción), con una fiabilidad y validez adecuadas. Por otra parte, como era de esperar, se encontraron correlaciones positivas entre la percepción de justicia organizacional y el bienestar, y negativas con el agotamiento emocional. **Conclusiones:** la OJS es una herramienta adecuada para su uso por parte de académicos y profesionales en el estudio de la percepción de justicia organizacional en España, garantizando una validez y fiabilidad adecuadas.

**Palabras clave:** justicia organizacional, análisis factorial exploratorio, análisis factorial confirmatorio, fiabilidad, validez.

Organizational justice has been found to influence organizational behaviour. According to Cropanzano and Ambrose (2015, p. 3), organizational justice: “involves what people receive (distributive justice), the allocation process (procedural justice), and the interpersonal treatment along the way (interactional justice)”. In this sense, organizational justice perceptions may lead to significant organizational outcomes, such as well-being, satisfaction, emotional exhaustion, and performance (e.g., Colquitt et al., 2013; Whitman, Caleo, Carpenter, Horner, & Bernerth, 2012), and consequently, organizations are becoming more

interested in its measurement. As a matter of fact, the study of organizational justice perceptions has gained interest over recent years, especially in the context of applicant reactions (Truxillo, Bauer, & McCarthy, 2015) and diversity management (Kulik & Li, 2015). Specifically, in Spain it is worth highlighting the research by García-Izquierdo, Moscoso, and Ramos-Villagrasa (2012), García-Izquierdo and Ramos-Villagrasa (2012), Osca and López-Araújo (2009), and Sora, Caballer, Peiró, Silla, and Gracia (2010).

In the Spanish context, two noteworthy organizational justice perception scales are available: the Colquitt’s Organizational Justice Scale (Colquitt, 2001, COJS), and the Organizational Justice Scale developed by Moliner (2004, OJS). Firstly, the COJS was developed on the basis of a four-dimensional structure (distributive, procedural, informational, and interpersonal justice), with a second-order latent justice variable being demonstrated (Colquitt & Shaw, 2005). With reference to the psychometric

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properties of its Spanish version, the four-dimensional structure was recently discovered in a sample of 460 services employees (Díaz-Gracia, Barbaranelli, & Moreno-Jiménez, 2014). Secondly, the OJS was developed drawing from an emphasis on a faceted conception of organizational justice that reflects the concepts of distributive, procedural, and interactional justice (e.g., Moorman, 1991; Schminke, Ambrose, & Cropanzano, 2000). Despite its psychometric properties already analyzed in a hotel employees' sample (Moliner, 2004; Moliner, Martínez-Tur, Peiró, & Ramos, 2005), this study aims to provide further evidence about OJS characteristics.

Taking the above-mentioned information into account, the main goal of the present study is to examine the structure and reliability of the OJS using a wider sample. Given that the OJS has been developed on the basis of three-dimensions, the first hypotheses are:

*H1. The OJS will comprise three organizational justice factors (distributive, procedural, and interactional).*

*H2. The three factors (distributive, procedural, and interactional) of the OJS will constitute a global organizational justice construct.*

In addition, several studies have revealed a positive relationship between organizational justice perception and well-being, whereas a negative relationship between organizational justice perception and emotional exhaustion has been found (e.g., Heponiemi, Kuusio, Sinervo, & Elovainio, 2011; Lawson, Noblet, & Rodwell, 2009; Liljegen & Ekberg, 2009). In this sense, the OJS could also be used to study the relationship between organizational justice perception and these significant organizational variables. Thus, the second objective is to discover the criterion-oriented validity of the OJS, and consequently the hypotheses proposed are:

*H3. The OJS will correlate in a significant and positive way with well-being.*

*H4. The OJS will correlate in a significant and negative way with emotional exhaustion.*

## Method

### Participants

Participants comprised 849 Spanish workers from different private (63.4%) and public (36.6%) organizations. Most of the public workers belonged to administrative and auxiliary services and security forces (33.5%), whereas most of the private workers belonged to the primary industry (42.8%). Table 1 shows a detailed breakdown in percentages of participants by sector.

Women represented 47.1% of the participants. The mean age was 38.82 years ( $SD = 12.432$ ), and the mean experience in the job position, 7.33 years. In terms of their occupational characteristics, 44.2% of participants held a low-ranking position, whereas 55.8% were employed in technical or managerial positions.

### Instruments

Participants completed a questionnaire composed of several items regarding sociodemographic data, as well as the instruments listed below:

*Table 1*  
Percentage of participants regarding their sector

Private sector	Percentage	Public sector	Percentage
Primary industry	42.8	Administrative services and security forces	33.5
Trade	8.7	Education	25
Hotel	8.4	Health and social services	17.9
Information and communication	8.1	Primary industry	8.8
Other services	7.9	Scientific and technical	7.6
Financial, insurances and real-estate sector	4.2	Transport	3.6
Transport and storage	3.9	Other services	3.6
Health services	3.6		
Education	3.4		
Administrative and auxiliary services	3.4		
Scientific and technical	3.4		
Household support	2.2		
<b>Total</b>	<b>100</b>	<b>Total</b>	<b>100</b>
<i>N</i> = 849			

*Organizational justice perception* was measured with the OJS (Moliner, 2004), composed by 12 items (Table 2). Response options were delivered on a scale ranging from 1 (to a small extent) to 5 (to a large extent).

*Emotional exhaustion* was measured with five items extracted from the Spanish adapted version of the Maslach Burnout Inventory General Survey by Salanova, Schaufeli, Llorens, Grau, and Peiró (2000). Response options were delivered on a 7-point scale from 0 (never) to 6 (always). A sample item is: "I feel used up at the end of a workday".

*Table 2*  
Translated items of the OJS (Moliner, 2004)

Dimension	Items
Distributive	D.1 The rewards I receive here are fair
	D.2 My retribution is correlated to the quality of the work I do
	D.3 I feel fairly rewarded in my work
	D.4 I have a fair retribution taking into account the hours I work here
Procedural	P.1 Procedures used in this organization to decide my retribution and other income (premiums, etc.) are fair
	P.2 Procedures used in this organization to evaluate my work are fair
	P.3 Procedures used in this organization to place me in a position and /or to promote me are fair
	P.4 The procedures for setting my work schedule and tasks are fair
Interactional	I.1 My supervisor is very sincere with me
	I.2 My supervisor treats me with respect and dignity
	I.3 My supervisor offers adequate justification for decisions made about my job
	I.4 My supervisor listens attentively when I ask him/her a question

*Well-being* was measured by means of 12 items of the Spanish version of the General Health Questionnaire by Goldberg and Williams (1996). Response options were delivered on a 4-point scale ranging from 0 (not at all) to 3 (more than usual). A sample item is: “*Felt constantly under strain*”.

### Procedure

Researchers trained several survey takers who approached different organizations located in Asturias (Spain) and asked them for to distribute an anonymous questionnaire among their employees following a non-probabilistic snowball sampling. Participants who were prone to participate were given a paper and pencil questionnaire which they had to return after completion.

### Data analysis

The dimensionality of the OJS was analyzed through exploratory (*EFA*), confirmatory (*CFA*) and second-order factor analyses splitting the sample up into two random subsamples ( $n_1 = 426$ ,  $n_2 = 423$ ). According to Friedman (1982), in order to obtain a statistical power of .90 ( $d = .30$ ,  $r = .15$ ) a sample of 459 is necessary. Thus, both subsamples were quite close to that value.

Mplus software (version 7, Muthén & Muthén, 2012) was used for the factor analyses. An oblique rotation was applied to interpret the obtained factors, and in order to analyzed the loadings of every item, .40 was taken as the recommended cut-off point (Lloret-Segura, Ferreres-Traver, Hernández-Baeza, & Tomás-Marco, 2014; Matsunaga, 2010).

Regarding the estimation method, on the one hand, maximum likelihood (*MLE*) has been traditionally pointed out as adequate. On the other hand, polychoric correlations are highlighted as adequate when dealing with Likert polytomous responses which reflect the elections participants make from a continuous conception of the measured construct (e.g., Díaz-Vilela, Díaz-Cabrera, Isla-Díaz, Hernández-Fernaud, & Rosales-Sánchez, 2012; Lloret-Segura, et al., 2014; Morata-Ramírez & Holgado-Tello, 2013). Based on the foregoing, it was decided to compare the more traditional *MLE* estimator using Pearson correlations with the robust unweighted least squares (*ULSMV*) estimator using polychoric correlations. The comparison was carried out presenting the factor analyses results obtained with both estimators in order to check if both of them reached the same conclusion (e.g., Freiberg, Stover, De la Iglesia, & Fernández, 2013; Holgado-Tello, Chacón-Moscoso, Barbero-García, & Vila-Abad, 2008).

In “order to analyzed the conditions for the factor analysis, the Kaiser Meyer Olkin index (*KMO*) and the sphericity Bartlett test were taken into account by means of the SPSS software version 24. Furthermore, the following comparative and adjustment indexes were used (Browne & Cudeck, 1993; Hoyle, 1995; Hu & Bentler, 1999; Tanaka, 1993): (i) comparative fit, and Tucker and Lewis indexes (*CFI*, and *TLI*), where values of .90 to .95 indicate acceptable fit and values above .95 indicate good fit; (ii) root mean square error of approximation (*RMSEA*), where values of .05 or lower indicate a well-fitting model, values of .05 to .08 a moderate fit and .10 or greater a poor fit; (iii) Akaike Information Criteria (*AIC*), and Bayesian Information Criteria (*BIC*) to compare models, where the lower values the better fit; and finally (iv) the  $\chi^2$ /degree of freedom ratio, where values between one and three indicate a great fit, with values below five being acceptable (Carmines & McIver, 1981; Jöreskog, 1970)”.

Scale reliability by means of the Cronbach’s alpha index and Pearson correlations of the OJS with well-being and emotional exhaustion were calculated using the SPSS software.

## Results

Table 3 shows the descriptive statistics. Asymmetry and kurtosis coefficients were below 1, and histograms and *p-p* plots graphics showed an adequate adjustment to the normal distribution. However, the Kolmogorov-Smirnov test using the Lilliefors correction resulted significant ( $p < .05$ ), so normality could not be assumed. Because *MLE* requires the assumption of normality, a robust *MLER* estimator was used instead. Regarding the Cronbach’s alpha indexes, all reliabilities were adequate being above .80. In relation to the properties of the OJS items, means ranged from 2.51 to 3.61, standard deviations ranged from 1 to 1.18, and in any case the reliability of the scale could be improved if one of the items were deleted.

### Exploratory Factor Analysis (*EFA*)

The conditions for the *EFA* were adequate in the first subsample ( $n_1 = 426$ ): *KMO* = .911 and Bartlett’s test:  $p < .001$ . As shown in Table 4, the *EFA* results indicated that the three-factorial structure was the one which presented the best adjustment for both estimators. For this three-factorial model distributive (F1), procedural (F2) and interactional (F3) factors were differentiated. Reliability coefficients for all the obtained factors proved adequate,

Table 3  
Reliability and descriptive statistics

Variable	$\alpha$	Range		M	SD	Asymmetry	Kurtosis
		Min.	Max.				
Distributive justice	.865	4	20	10.799	3.510	.451	-.267
Procedural justice	.929	4	20	10.383	3.913	.480	-.432
Interactional justice	.903	4	20	13.139	4.058	-.254	-.597
Organization justice total	.923	12	60	34.322	9.627	.276	-.188
Emotional exhaustion	.873	0	30	9.464	6.153	.888	.661
Well-being	.806	3	36	21.009	6.147	-.034	-.039

Note:  $N = 849$   
Standard error for the asymmetry and the kurtosis was .084 and .168 respectively for all the scales

with values above .80. Nonetheless, as shown in Table 5, item “D.1” loaded in F2, instead of in F1 as previously expected.

According to the Fisher *r*-to-*z* transformation (Lenhard & Lenhard, 2014), there was a significant correlation difference between factors F1 and F2 ( $p = .01$ ), revealing a higher correlation with the *ULSMV* estimator ( $r_{12} = .691$ ) than with the *MLER* estimator ( $r_{12} = .598$ ). However, there were non-significant differences for all the remaining correlations obtained with the *MLER* and the *ULSMV* estimators respectively:  $r_{13} = .495$  vs  $.536$ ,  $p = .21$ , and  $r_{23} = .346$  vs  $.350$ ,  $p = .47$ .

*Confirmatory Factor Analysis (CFA)*

Table 6 shows the results of the *CFA* performed with the second subsample ( $n_2 = 423$ ) in order to cross-validate the three-factorial model and specifications obtained in the *EFA*, as well as

*Table 4*  
Comparison of fit indexes between *MLER* and *ULSMV* estimators in the *EFA*

Fit indexes	<i>MLER</i>			<i>ULSMV</i>		
	1-factor	2-factors	3-factors	1-factor	2-factors	3-factors
<i>RMSEA</i>	.198	.101	.064	.267	.144	.083
<i>CFI</i>	.644	.926	.977	.693	.929	.982
<i>TLI</i>	.565	.886	.954	.625	.891	.963
$\chi^2$	951.967	229.719	90.604	1695.849	422.954	130.572
Degrees	54	43	33	54	43	33
$\chi^2/$ Degrees	17.629	5.342	2.746	31.405	9.836	3.957
<i>AIC</i> <sup>a</sup>	12789.918	11783.156	11596.686	–	–	–
<i>BIC</i> <sup>a</sup>	12935.877	11973.715	11827.789	–	–	–

Note:  $n_j = 426$   
<sup>a</sup>*BIC* and *AIC* are not available for *ULSMV*

*Table 5*  
Comparison of the three-factorial structure between *MLER* and *ULSMV* estimators in the *EFA*

Parameter/Item	<i>MLER</i>			<i>ULSMV</i>		
	1	2	3	1	2	3
D.1		.623			<i>.634</i>	
D.2	.693			.736		
D.3	.817			.985		
D.4	.511			.601		
P.1		.894			.915	
P.2		.876			.887	
P.3		.673			.697	
P.4		.769			.833	
I.1			.725			.746
I.2			.856			.895
I.3			.805			.834
I.4			.872			.900
$\alpha$	.845	.937	.895	.845	.937	.895

Note:  $n_j = 426$   
Loadings lower than .400 are omitted. Loadings in a different factor from expected are highlighted in italics

to compare its fit with that of the three-factorial model proposed by Moliner (2004). The adjustment with *MLER* for the three-factorial model following the item distribution by Moliner (2004) was worse than that for the three-factorial item distribution in which item “D.1” loads in the procedural factor. It is worthwhile highlighting that the *RMSEA* values were poorer for the *ULSMV* estimator, suggesting a mediocre adjustment of the model.

Moreover, a second-order factor analysis was performed with the three-factorial structure obtained in order to check an organizational justice perception construct. Results indicated that whereas adjustment of the model with *MLER* was acceptable, results for the *ULSMV* meant a mediocre adjustment.

*Multi-group validation*

In order to check if the loading factors depend on the sample’s characteristics, several *EFA* both with *MLER* and *ULSMV* were performed, splitting the sample up with regards to gender, the job position, and the type of organization (Table 7). In all cases, the *KMO* was well above .50, and the Bartlett’s test was significant. On the one hand, regarding the *MLER*, item “D.1” loaded in both distributive and procedural factors for women, technician and managerial, public and private groups; whereas for men and low-ranking groups, this item only loaded in the procedural factor. Moreover, in the women group, item “D.4” also loaded in both the distributive and interactional factors. On the other hand, regarding the *ULSMV*, similar results were found except for the men group, in which items “D.2” and “D.4” also loaded in both the distributive and the procedural factors. The latter suggests the possibility of a different interpretation of those items related to cultural and social differences.

*Criterion-oriented validity*

Regarding the criterion-oriented validity of the OJS, Table 8 shows the correlations between the three-factorial structure obtained in the *CFA* and the emotional exhaustion and well-being scales. In addition, these correlations were compared with those obtained according to the three-factorial structure initially proposed by Moliner (2004). Results indicated that all the coefficients were significant in the expected way, and according to the Fisher *r*-to-*z* transformation (Lenhard & Lenhard, 2014), there were no significant differences between the correlations found with both item distributions.

Discussion

In this study, the psychometric properties of the OJS (Moliner, 2004) have been analyzed. Regarding hypothesis H1, an adequate model adjustment and reliability indexes are revealed for the three-factorial structure of the OJS, rejecting the possibility of the one and two-factorial structure. This three-factorial structure has been found using both estimation methods, *MLER* and *ULSMV*, with the *RMSEA* value suggesting a worse adjustment of the model with the *ULSMV*, as well as a higher correlation between the distributive and the procedural factors for this estimator than for the *MLER*. Moreover, it must be remarked here that one of the items that was supposed to belong to the distributive factor (“D.1”) has been assigned to the procedural factor. Specifically, in the multi-group validation using *MLER*, it was found that item

*Table 6*  
Comparison of fit indexes between MLER and ULSMV estimators in the CFA

Fit indexes	MLER			ULSMV		
	Second-order <sup>a</sup>	3-factors <sup>b</sup>	3-factors <sup>c</sup>	Second-order <sup>a</sup>	3-factors <sup>b</sup>	3-factors <sup>c</sup>
<i>RMSEA</i>	.071	.100	.070	.104	.145	.098
$\chi^2$	160.842	265.484	152.706	285.132	502.172	251.071
Degrees	51	51	50	51	51	50
$\chi^2$ /Degrees	3.154	5.206	3.054	5.591	9.847	5.021
<i>TLI</i>	.947	.896	.949	.950	.904	.956
<i>CFI</i>	.959	.920	.962	.961	.925	.967
<i>AIC</i> <sup>d</sup>	11367.394	11512.921	11360.054	–	–	–
<i>BIC</i> <sup>d</sup>	11525.242	11670.769	11521.949	–	–	–

*Note:*  $n_2 = 423$   
<sup>a</sup>The organizational justice construct was tested following the item distribution found with the three factors in this study  
<sup>b</sup>Item distribution suggested by Moliner (2004)  
<sup>c</sup>Item *D.1* assigned to the procedural factor  
<sup>d</sup>*BIC* and *AIC* are not available for *ULSMV*

*Table 7*  
Pattern matrix comparison among gender, job position, and type of organization for the three-factorial structure

Item	Women n = 400			Men n = 449			Low-ranking n = 375			Technician and managerial n = 474			Public n = 311			Private n = 538		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
D.1	<i>.419</i>	<i>.523</i>			<i>.582</i>			<i>.662</i>		<i>.541</i>	<i>.420</i>		<i>.480</i>	<i>.480</i>		<i>.441</i>	<i>.536</i>	
D.2	<i>.742</i>			<i>.748</i>			<i>.685</i>			<i>.833</i>			<i>.770</i>			<i>.850</i>		
D.3	<i>.724</i>			<i>.781</i>			<i>.923</i>			<i>.841</i>			<i>.871</i>			<i>.855</i>		
D.4	<i>.488</i>		<i>.464</i>	<i>.473</i>			<i>.652</i>			<i>.516</i>			<i>.498</i>			<i>.594</i>		
P.1		<i>.929</i>			<i>.910</i>			<i>.888</i>			<i>.888</i>			<i>.887</i>				<i>.902</i>
P.2		<i>.900</i>			<i>.845</i>			<i>.810</i>			<i>.824</i>			<i>.849</i>				<i>.840</i>
P.3		<i>.657</i>			<i>.741</i>			<i>.784</i>			<i>.583</i>			<i>.617</i>				<i>.703</i>
P.4		<i>.800</i>			<i>.760</i>			<i>.925</i>			<i>.650</i>			<i>.780</i>				<i>.744</i>
I.1			<i>.810</i>			<i>.653</i>			<i>.632</i>			<i>.740</i>			<i>.831</i>			<i>.615</i>
I.2			<i>.844</i>			<i>.808</i>			<i>.780</i>			<i>.842</i>			<i>.844</i>			<i>.814</i>
I.3			<i>.843</i>			<i>.708</i>			<i>.737</i>			<i>.759</i>			<i>.826</i>			<i>.704</i>
I.4			<i>.928</i>			<i>.810</i>			<i>.854</i>			<i>.855</i>			<i>.920</i>			<i>.827</i>

*Note:* Loadings lower than .400 are omitted. Loadings in a different factor from expected are highlighted in italics  
*MLER* estimator was used for these results, and similar structures were found using the *ULSMV* estimator except for the men sample where items *D2* and *D4* loaded both in the distributive and the procedural factor

*Table 8*  
Criterion- validity: comparison of correlations obtained with the suggested three-factorial structure of the OJS and the three-factorial structure obtained in this study

Scale	Structure	Distributive	Procedural	Interactional	OJS Total
Emotional exhaustion	Suggested <sup>a</sup>	-.267**	-.192**		
	Obtained <sup>b</sup>	-.277**	-.196**	-.326**	-.313**
	Test differences	$p = .412, q = .011$	$p = .466, q = .004$		
Well-being	Suggested <sup>a</sup>	.200**	.132**		
	Obtained <sup>b</sup>	.212**	.134**	.274**	.242**
	Test differences	$p = .398, q = .013$	$p = .483, q = .002$		

*Note:*  $N = 849$   
<sup>a</sup>Item distribution suggested by Moliner (2004)  
<sup>b</sup>Item *D.1* assigned to the procedural factor  
\*\* significant at  $p < .01$



“D.1” also loaded in the procedural factor; whereas with regards to the *ULSMV*, the men group also revealed that items “D.2” and “D.4” loaded for both the distributive and the procedural factors. This may be due to the cultural and social understanding perceived for these items, suggesting the need for reconsidering their wording. Moreover, hypothesis H2 reveals the existence of a latent organizational justice perception construct. However, second-order factor analysis showed an acceptable adjustment using *MLER*, but a mediocre adjustment for the *ULSMV*, which could be related to the problems with understanding of some of the items as the results of the multi-group validation suggested.

Finally, regarding hypotheses H3 and H4, a positive correlation of the OJS with well-being was found as well as a negative correlation with emotional exhaustion, results already suggested by previous studies. These correlations are similar to those we obtained also following the three-factorial structure proposed by Moliner (2004). Thus, this suggests that no difference exists when an assignment of the item “D.1” is made to the procedural factor. Nevertheless, it must be noted that although the signs of the correlations are in the expected directions, the correlation values are low in general.

To conclude, the OJS presents adequate reliability and validity, and on the basis of the three-factorial structure of organizational justice, it can be used for the study of organizational justice perceptions in the Spanish context. However, item distribution was slightly different from the one suggested by Moliner (2004). Moreover, the second-order latent structure showed an acceptable fit for the *MLER*, whereas a mediocre fit existed for the *ULSMV*. The latter suggests the need for further studies to corroborate the plausibility of the second-order organizational justice latent variable regardless of the estimator used.

With respect to the limitations of the study, data collection has been carried out by means of self-reports, and this could exacerbate the common method variance given the mono-method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Nonetheless, as Spector (2006) has noted, there is a legend about the assumption of this method alone is sufficient to produce biases because the nature of shared bias depends on both, the construct of interest and how it is measured.

Regarding future lines of research, the multi-group validation results suggested the probability of the presence of differential item functioning which could give light for an in-depth study looking for potentially biased items with different item characteristics curves across groups.

Moreover, a factor invariance analysis could be of interest given some potential interpretations of those items because of cultural and social differences.

Finally, it would be also recommended a discriminant validity analysis of the OJS in order to complete the study of its psychometric properties.

#### Disclosure statement

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