Measuring the Influence of Environment on Behaviour: A Multimethod Multisample Validation of the Situational Strength at Work (SSW) Scale in Spanish-Speaking Samples

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ABSTRACT

Environment and personality interact determining the manner a subject behaves, but research on how to conceptualise and measure the environment is still scarce. This article addresses this issue presenting strong evidence on the reliability and validity of the Situational Strength at Work (SSW) Scale (Meyer et al., 2014) in Spanish-speaking work contexts. Through three studies, we found sound evidence for the four-factor structure of the situational strength's construct, comprising clarity, consistency, constraints, and consequences, with adequate reliability for each factor. Results of studies also found that the instrument is invariant according to sex, country (Spain, Ecuador, Mexico), and occupation (salespeople, teachers, office workers). Convergent and discriminant validity were successfully tested, and exploratory graphical network analysis depicted satisfactory results. Theoretical and practical implications are pointed out, and it is concluded that the SSW scale is a suitable instrument for investigating situational strength at work cross-nationally in Spanish-speaking contexts.

La medición de la influencia del entorno en el comportamiento: validación multimétodo y multimuestra de la Situational Strength at Work (SWW) Scale

RESUMEN

El entorno y la personalidad interactúan determinando la forma en que se comporta un sujeto, pero la investigación sobre cómo conceptualizar y medir el entorno es aún escasa. Este artículo aborda este tema presentando evidencia sólida sobre la confiabilidad y validez de la escala Situational Strength at Work (SSW) (Meyer et al., 2014) en contextos laborales de habla hispana. A través de tres estudios encontramos evidencia sólida para la estructura de cuatro factores del constructo de fuerza situacional, que comprende claridad, consistencia, restricciones y consecuencias, con una confiabilidad adecuada para cada factor. Los resultados de los estudios también encontraron que el instrumento es invariante según el sexo, el país (España, Ecuador y México) y la ocupación (vendedores, docentes y oficinistas). Se probaron con éxito la validez convergente y discriminante y el análisis exploratorio gráfico de redes dio resultados satisfactorios. Se señalan implicaciones teóricas y prácticas y se concluye que la escala SSW es un instrumento adecuado para investigar la fuerza situacional en el trabajo a nivel internacional en contextos hispanohablantes.

A broad consensus exists that environmental characteristics interact with personal characteristics determining how a subject behaves (Judge & Zapata, 2015; Smithikrai, 2008). Within the triad formed by the person, the environment, and the behaviour, each of these three elements must be predictable and explainable based on the other two (Funder, 2006). In studying the relationships between the elements of this triad, psychologists have advanced in the knowledge of personality traits and their measure, but there is considerable confusion about conceptualising and operationalising

the environment (Funder, 2006; Meyer et al., 2010), although some research has lately given more importance to the value of contextualizing measures by adding characteristics of the environment (Golubovich et al., 2020). The degree to which the circumstances of the environment can influence behaviour is known as situational strength (Judge & Zapata, 2015). When environmental characteristics establish the way an individual should behave, the situation is strong. On the contrary, if the environmental characteristics allow the subject freedom to decide and act, the situation is weak. The present

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study aims at shedding some light on how to measure the strength of situations.

In the workplace setting, the strength or weakness of a situation depends on an occupation's external characteristics. Accordingly, some studies (Meyer et al., 2009) used the Occupational Information Network (O*NET; Levine & Oswald, 2012), a database of occupational characteristics that collects numerical information on requirements, contexts, activities, or skills, among other elements, to identify a situation as strong or weak. Subsequently, Meyer et al. (2014) developed the Situational Strength at Work (SSW) scale, which has been used on several occasions (Dalal et al., 2020). We have not found any validation studies for this scale, even less in Spanish-speaking samples. Thus, the present article aimed to analyse this instrument's psychometric properties to examine the validity and reliability through three studies with samples from three countries (Spain, Ecuador, and Mexico), contributing to clarifying the operationalisation of the situational strength construct in organisational Spanish-speaking contexts. In doing this, the article is organised as follows. First, we describe the construct of situational strength at work, the dimensions it comprises, and the SSW scale by Meyer et al. (2014). Then, Study 1 (*N* = 1,032 adult subjects from three countries) analyses the descriptive characteristics, the factorial structure, the internal reliability, and the invariance concerning sex and country of the questionnaire translated into Spanish. Study 2 (*N* = 471 adult Spanish subjects) examines the situational strength network to uncover the latent variables through the possible relationships between the attributes reported in the SSW scale by using exploratory graph analysis techniques. Study 3 (*N* = 507 adult Ecuadorian subjects from three occupations) provides additional evidence on the factorial structure, reliability, the invariance about occupation and analyses the convergent and discriminant validity. Finally, the implications of the results of the three studies are discussed.

Situational Strength and its Dimensions

Situational strength is defined as the implicit or explicit cues provided by entities external to an individual regarding the suitability of certain behaviour patterns (Meyer et al., 2010). These signals are the characteristics of a situation that can influence (improve or restrict) a person's behaviour in a particular environment. For example, a red traffic light is a strength situation because, regardless of what the subject wants, they are more likely to stop due to the red light restriction. However, an orange traffic light is a weak situation because under this light the subject can decide whether to accelerate or stop (Meyer et al., 2014; Mischel, 1977). Accordingly, situational strength is understood as pressure from the environment on the individual that will influence their behaviour in an essential way beyond their personal characteristics.

At the organisational level, environmental characteristics, which can motivate or constrain behaviour, were first operationalised into two broad categories representing two logically consistent dimensions of how situational strength can affect behaviour. These categories are "limitations" and "consequences" (Meyer et al., 2009). Subsequently, these two categories developed into four main factors: clarity, consistency, constraints, and consequences (Meyer et al., 2010; Meyer et al., 2014). "Clarity" is defined as the extent to which directions related to job responsibilities and requirements are available and easy to understand. The greater the clarity of information about employees' expected behaviours, the smaller the differences in the behaviours of those performing them, therefore, the more predictable. "Consistency" refers to the degree to which the indications related to job requirements are compatible with each other and other indications, that is, in what extent the different sources of information offer consistent information or not on the

expected behaviours. The higher the consistency of indications, the greater the uniformity of behaviours. "Constraints" consist of the degree to which forces beyond individual control limit their freedom to decide or act. Constraints limit individuals' behaviour as to what actions to perform or when and how to perform them. Finally, "consequences" refer to the degree to which actions or decisions have important positive or negative implications for other people, organizations, or different situations. This factor influences behaviour since people tend to increase positive results and avoid or minimise negative ones. When these four factors are high, the situation is strong, prompting the individual to perform specific actions, which will be more predictable. On the contrary, when the situational strength is weak, the behaviour will be less predictable. The four factors are not redundant, and each provides different conceptual information such that the ultimate strength of a given situation is a function of the unique effects of each element (Meyer et al., 2010).

Along with this operationalisation in the four factors, other operationalisations are possible from the theoretical perspective. For example, a two-factor structure where external events can support autonomy or control behaviour (Deci & Ryan, 1987), and where clarity and consistency can be identified with autonomy and constraints and consequences can be identified with control (Meyer et al., 2014). Also, it is theoretically possible to group the clarity, consistency, and constraints into a single factor (Johns, 2006), representing the set of organisational stimuli that can motivate or restrict behaviour, and consequences into another factor, representing the effects the first factor has on the individuals and the organisation. Finally, a three-factor structure is also possible where clarity and consistency, associated with communication and information management, comprise a single factor, and limitations and consequences are the other two factors.

Empirically, the dimensions that have been most frequently used in situational strength studies are constraints, consequences, and clarity (Alaybek et al., 2017; Bowling et al., 2015; Dalal et al., 2020; García-Arroyo et al., 2021; Meyer et al. 2009). For example, Meyer et al. (2009) used constraints and consequences to analyse the moderating effect of situational strength on the relationship between conscientiousness and performance, finding that both constraints and consequences significantly moderated the conscientiousness-performance relationship being stronger in occupations low in constraints and consequences than in occupations high in constraints and consequences. Bowling et al. (2015) used constraints and consequences to analyse the moderating effect of situational strength between job satisfaction and performance. They found that the constraints dimension was negatively associated with the magnitude of the job satisfaction-job performance relationship, though the consequences dimension failed to produce a similar effect. Alaybek et al. (2017) used clarity and constraints to analyse the effect of different sources of situational strength, finding that that the effect of situational strength from co-workers and immediate supervisors on employees' perceptions of overall situational strength on the job was greater than the effect of situational strength from top management, and that the effect of situational strength from top management was mediated by the effects of situational strength from co-workers and immediate supervisors. Dalal et al. (2020) found that clarity and constraints moderated the relationship between personality factors and outcomes such as job performance, that is, personality predicts job performance more strongly in weak than in strong situations. However, this moderation role of situational strength may vary when actors such as counterproductive behaviours are included in the model. Finally, García-Arroyo et al. (2021) analysed the relationship between situational strength and burnout, concluding that situational strength is not only related to behaviour but also to occupational health.

The Scale of Situational Strength at Work

Drawing on previous work on situational strength (Mischel, 1977; Schneider & Hough, 1995; Snyder & Ickes, 1985; Tett & Burnett, 2003), Meyer et al. (2010) outlined a four-factor conceptual structure of the construct of situational strength, including clarity, consistency, constraints, and consequences. Subsequently, Meyer et al. (2014) designed and tested the SSW scale, an instrument that operationalised the four-factor structure, with adequate fit indices, acceptable reliabilities, and strong evidence of convergent and discriminant validity. In this instrument, each of the factors included seven items measured on a six-level response scale. The reliabilities of the factors (Cronbach's alpha) had scores higher than .85 in the two studies where they were validated (see studies 2 and 4 in Meyer et al., 2014). Likewise, the four-factor factorial structure turned out to have a better fit to the data than the one-, two-, or three-factor structures. For the convergent and discriminant validity analysis, Meyer et al. (2014) compared the magnitude of empirical relationships between constructs that should be more or less strongly related to situational strength from a theoretical or conceptual perspective. Specifically, as convergent and discriminating variables, respectively, they used the feedback and the meaning of the task for clarity, role conflict, and the meaning of the task for consistency, autonomy, and role ambiguity for constraints, and responsibility for results and autonomy for consequences. In summary, this questionnaire seems to have adequate psychometric properties to measure situational strength in the English-speaking samples where it has been used.

Adaptations of this instrument have been used to measure situational strength in samples from the USA. Alaybek et al. (2017) used an adaptation of the SSW to assess how situational strength in an organization is related to the situational strength of managers, supervisors, and co-workers. Specifically, they used the clarity and constraints dimensions, measured longitudinally in a sample of 363 English-speaking subjects, obtaining reliabilities greater than .90. In addition, the longitudinal measurement results of invariance were adequate. Collins et al. (2019) used three items from each of the four dimensions of Meyer et al.'s (2014) Situational Strength at Work (SSW) scale in an English-speaking sample of 140 matched subordinate-supervisor dyads. To test the moderation role of situational strength, they configured situational strength as a second-order factor with four dimensions: clarity, consistency, constraints, and consequences, with adequate reliability (α = .71). Finally, Dalal et al. (2020) used two dimensions, clarity and constraints, of an adapted version of Meyer et al.'s (2014) Situational Strength at Work (SSW) scale, with 7 items in each dimension and alpha reliabilities higher to .90. The sample was composed of 369 employees from the US and India. However, there is no evidence that it has been used in Spanish-speaking samples. Considering this background, the present article aims to analyse this instrument's psychometric properties to examine the validity and reliability through three studies with samples from Spain, Ecuador, and Mexico.

Study 1. Psychometric Properties and Factorial Structure of the Situational Strength at Work Scale: Analysis in Spanish-Speaking Samples from Three Countries

This study aims to validate the Spanish translation of the SSW scale (Meyer et al., 2014) in a sample of adult workers from several Spanish-speaking countries. The descriptive characteristics of each item, the factorial structure of the instrument, and the internal consistency of the dimensions of the situational strength are analysed. The invariance of the instrument is also examined according to sex and country.

Method

Participants and procedure. The sample was made up of 1,032 adult subjects from three countries; 30.6% were Spanish (*N* = 316), 49.1% were Ecuadorians (*N* = 507), and 20.3% were Mexican (*N* = 209); 49.03% were men. The average age was 38.72 years old (*SD* = 11.01, range from 18 to 65). Regarding the academic level, 9.8% had compulsory secondary education, 41.8% had high school studies, 34.8% had bachelor's degrees, and 13.6% had master's degrees.

Data collection was carried out through a questionnaire administered through the Internet. The selection of the sample was incidental. Participation in the study was voluntary. To participate in the study, we invited workers from companies from Guayaquil (Ecuador), Madrid (Spain), and Guanajuato (México). The response rate for the Spanish subsample was 39.5%, for the Ecuadorian subsample was 33.8%, and for the Mexican subsample was 41.8%.

The ethical principles for research in human beings contained in the Declaration of Helsinki (World Medical Association, 2000) have been taken into account, especially those related to the informed consent of subjects to participate in the study and those related to privacy, confidentiality, and ethical treatment of the information collected.

Measures

Situational strength. We used the SSW scale by Meyer et al. (2014). In the original version, this instrument consists of four factors that measure clarity, consistency, constraints, and consequences, each with seven items. Responses are evaluated on a 6-point Likert scale where 1 = *totally disagree*, and 6 = *totally agree*. For use in this study, the instrument was translated into Spanish using the reverse translation method. Following the criteria of Meyer et al. (2014), and avoiding inflating Cronbach's alpha index artificially, items similar to others of the same factor due to their content or phrasing were eliminated. Thus, for each factor, five out of the seven items of the original instrument were selected.

Data analysis. Descriptive statistics such as mean, standard deviation, skewness, and kurtosis of the SSW scale items were calculated. Cronbach's alpha coefficients and McDonald's omega coefficient were estimated to evaluate the internal consistency. Values of .70 or higher are considered adequate for internal consistency (George & Mallery, 2003).

In analysing the questionnaire's factorial structure, a confirmatory factor analysis (CFA) was performed using a weighted least squares estimate, since this technique is suitable for extracting the maximum information from small data sets (Hu & Bentler, 1999). Following the recommendations by Meyer et al. (2014), the fit indices for the 4-factor structure were compared with a more parsimonious proposal for a single-factor base model, a theoretically feasible two-factor model, where clarity and consistency load into one factor and constraints and consequences load on the second factor, and also a three-factor model, where clarity and consistency are loaded on a single factor and constraints and consequences each load on their own factor.

Several criteria were used to determine the fit of the models to the data and to be able to compare them. The chi-square statistic (χ^2) was used to evaluate the total fit of the model to the data. The Satorra-Bentler chi-square difference test (Satorra & Bentler, 2001) was used to compare the models, as well as the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardised root mean square residual (SRMR). Values of .90 or greater in CFI and TLI and values of .08 or less in SRMR and RMSEA indicate a good fit of the model to the data (Hu & Bentler, 1999).

Finally, the invariance analysis was performed according to sex and country of the sample. The measurement invariance by sex and country was tested through multi-group CFA estimation using the best fit model. First, configural invariance was tested where

the factorial structure is constrained to be the same for the groups (male and female; Spanish, Ecuadorian, and Mexican). In the next step, we tested metric invariance where the magnitude of all factor loadings was constrained to be the same for both sex and country groups. Later, the scalar invariance was calculated, constraining the intercepts of items to be the same across groups (by sex and by country), indicating if the groups similarly used the response scale. Finally, we calculated the strict invariance constraining the residuals to be the same across the items. We used the criteria of ΔCFI < .01 and ΔRMSEA < .015 (Chen, 2007; Cheung & Rensvold, 2002) for testing invariance. CFA and invariance analyses were performed with Lavaan (lavaan.org; Rosseel, 2012), an R package for performing structural equation modeling.

Results

Translation into Spanish of the SSW scale and descriptive characteristics. The translation into Spanish was carried out by the reverse translation method. First, the translation from English into Spanish was performed by two separate bilinguals. Discrepancies in translation were resolved by consensus. Later, two other bilingual people did the reverse translation from Spanish into English to check that it was consistent with the original questionnaire. Table 1 shows the original and translated items of the SSW scale. It also shows the descriptive statistics and the factor load of each item. All asymmetry and kurtosis values of the questionnaire items are within the acceptable range (-1, 1). Regarding reliability analysis, the four factors have

Table 1. Descriptive Statistics, Factor Loads, and Reliabilities (N = 1,032)

Items		M	SD	Asym.	Kurt.	Factor loads	SE
Clarity (*Claridad*) a = .902, ω = .904							
Cla1	On this job, specific information about work-related responsibilities is provided. (*En este trabajo se da información específica sobre las responsabilidades relacionadas con el trabajo*)	4.41	1.37	-0.82	0.13	.80	.05
Cla2	On this job, easy-to-understand information is provided about work requirements. (*En este trabajo se da información fácil de entender sobre los requerimientos del trabajo*)	4.46	1.25	-0.79	0.26	.83	.05
Cla3	On this job, straightforward information is provided about what an employee needs to do to succeed. (*En este trabajo se proporciona información clara acerca de lo que un empleado tiene que hacer para tener éxito*)	4.16	1.40	-0.58	-0.38	.85	.05
Cla4	On this job, precise information is provided about how to properly do one's job. (*En este trabajo se proporciona información precisa a cada uno acerca de cómo hacer correctamente el trabajo*)	4.16	1.39	-0.59	-0.39	.86	.05
Cla5	On this job, an employee is told exactly what is expected from him/ her. (*En este trabajo a cada empleado se le dice exactamente lo que se espera de él/ella*)	3.97	1.48	-0.44	-0.65	.79	.05
Consistency (*Consistencia*) a = .874, ω = .874							
Cons1	On this job, different sources of work information are always consistent with each other. (*En este trabajo las diferentes fuentes de información son siempre coherentes entre sí*)	3.84	1.39	-0.36	-0.68	.83	.04
Cons2	On this job, all requirements are highly compatible with each other. (*En este trabajo todos los requerimientos son siempre compatibles unos con otros*)	3.87	1.30	-0.38	-0.46	.85	.04
Cons3	On this job, supervisor instructions match the organisation's official policies. (*En este trabajo las instrucciones del supervisor se ajustan a las políticas oficiales de la empresa*)	4.19	1.41	-0.68	-0.27	.75	.05
Cons4	On this job, informal guidance typically matches official policies. (*En este trabajo las ayudas informales se ajustan con las políticas oficiales de la empresa*)	4.01	1.33	-0.50	-0.27	.63	.05
Cons5	On this job, information is generally the same, no matter who provides it. (*En este trabajo la información es generalmente la misma sin importar quien la proporcione*)	3.78	1.39	-0.39	-0.53	.58	.05
Constraints (*Restricciones*) a = .865, ω = .868							
Ctr1	On this job, an employee is prevented from making his/her own decisions. (*En este trabajo a los empleados se les impide que tomen sus propias decisiones*)	3.29	1.51	0.07	-0.93	.62	.06
Ctr2	On this job, constraints prevent an employee from doing things in his/her own way. (*En este trabajo las restricciones impiden que los empleados hagan cosas por su propia cuenta*)	3.54	1.51	-0.18	-0.93	.79	.06
Ctr3	On this job, an employee's freedom to make decisions is limited by other people. (*En este trabajo la libertad de los empleados para tomar decisiones es limitada por otras personas*)	3.49	1.51	-0.13	-0.91	.85	.06
Ctr4	On this job, procedures prevent an employee from working in his/ her own way. (*En este trabajo los procedimientos impiden que un empleado haga el trabajo a su modo*)	3.61	1.51	-0.22	-0.86	.71	.06
Ctr5	On this job, other people limit what an employee can do. (*En este trabajo otras personas limitan lo que un empleado puede hacer*)	3.48	1.51	-0.11	-0.92	.74	.06
Consequences (*Consecuencias*) a = .740, ω = .750							
Csq1	On this job, an employee's decisions have extremely important consequences for other people. (*En este trabajo las decisiones de cada empleado tienen consecuencias extremadamente importantes para los demás*)	4.14	1.41	-0.57	-0.32	.55	.07
Csq2	On this job, very serious consequences occur when an employee makes an error. (*En este trabajo ocurren graves consecuencias cuando un empleado comete un error*)	4.08	1.48	-0.45	-0.72	.71	.06
Csq3	On this job, other people are put at risk when an employee performs poorly. (*En este trabajo se pone en riesgo a otras personas cuando un empleado actúa mal*)	3.99	1.64	-0.49	-0.93	.75	.07
Csq4	On this job, tasks are more important than those in almost all other jobs. (*En este trabajo las tareas son más importantes que las de casi todos los otros puestos de trabajo*)	3.40	1.61	-0.03	-0.81	.31	.08
Csq5	On this job, there are consequences if an employee deviates from what is expected. (*En este trabajo hay consecuencias si un empleado se desvía de lo que se espera de él/ella*)	4.25	1.42	-0.64	-0.31	.58	.07

Note. M = mean; *SD* = standard deviation; Asym. = asymmetry; Kurt. = kurtosis; *SE* = standard error.

adequate Cronbach's alpha and McDonald's omega coefficients scoring above .70 as recommended (George & Mallery, 2003) (see Table 1).

Factorial structure. The scale's factorial structure had a good fit for the four-factor model, which concurs with the original scale by Meyer et al. (2014). Likewise, other viable alternatives were tested using one, two, and three-factor models. Although the three-factor model also had a good fit, the four-factor model was significantly better ($\Delta\chi^2$ = 380.55, df = 3, p < .001), despite the strong correlation between clarity and consistency (r = .75, p < .001). Table 2 shows the results of the fit indices of the four models tested. Table 3 shows the intercorrelations between the variables of situational strength.

Table 2. Study 1 Confirmatory Factor Analysis Results

Model	χ^2	df	p	CFI	TLI	SRMR	RMSEA
One-factor	4777.01	170	< .001	.575	.525	.162	.162
Two-factor	2015.52	169	< .001	.830	.808	.074	.103
Three-factor	1265.78	167	< .001	.899	.885	.045	.080
Four-factor	885.78	164	< .001	.933	.923	.040	.065

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardised root mean square residual; RMSEA = root mean square error of approximation.

Table 3. Intercorrelation between Situational Strength Factors

		1	2	3
1	Clarity	-		
2	Consistency	.75**	-	
3	Constraints	-.18*	-.19**	-
4	Consequences	-.03	-.01	.42**

*p < .05, **p < .01.

Invariance analysis. The scale's invariance was estimated according to sex and country. The results of the analyses (see Table 4) confirm the instrument's invariance regarding sex and country. The results offered by this questionnaire are not biased by sex or the country to which the sample belongs, since the criteria for the four types of invariance tested are satisfied.

Discussion

The SSW scale translated into Spanish has good psychometric properties in Spanish-speaking samples. The four-factor structure fits the data better than the other factor solution. Internal reliability values are acceptable, and the intercorrelation between the factors suggests that each factor measures a different dimension of situational strength. It is also strongly evidenced that the questionnaire is invariant (strict invariance) for sex and country.

Study 2. Estimating the Situational Strength Network through an Exploratory Graph Analysis

A network is a graphical representation in which the nodes show the analysed variables which are connected by edges indicating some kind of statistical relationship between them. The edges indicate how some nodes affect others. Edges differ in the strength of the connection, which is called edge's force (Epskamp et al., 2012). Connections between nodes may be strong (represented by a thick line) or weak (represented by a thin line), and also positive (green line) or negative (red line). The structure of the network reflects in detail the multivariate dependencies among the data.

There are different models to estimate the network. One of them is based on the extended Bayesian information criterion (EBIC) graphical least absolute shrinkage and selection operator (GLASSO) estimation (Epskamp & Fried, 2018), in which the edges indicate the total conditional association between two nodes after controlling for all the other nodes in the network. This means that when there is a relationship between two nodes on a network, that relationship cannot be explained by any other node on the network. No connection between two nodes means that these two nodes are independent given the other nodes.

Inference methods of graph theory can be applied to estimate the weight of the network. It is not only analysed which nodes are connected but also what is the strength of the relationship between each pair of nodes. The strength is measured by the weight of the edge between them. If the weight is zero, there is no edge and therefore there is no relationship. The sign of the edge's weight indicates the direction of the interaction (positive or negative), and the absolute value indicates the strength of the effect. Two strongly connected nodes influence each other more easily than two weakly connected nodes. Two strongly connected nodes are closer to each other. In this way, the length of the edge is inversely proportional to the connection force.

The importance of a node within the network can also be estimated by the centrality value, that indicates the position of a node in the network and the strength of its relationships with the other nodes. The strength of the node ("degree") analyses how strongly a node is directly connected with the others since it is equal to the sum of coefficients of partial correlations between a node and all the others.

The use of graphical analysis through networks has been used in psychology to uncover possible associations between attributes reported in psychological inventories (Epskamp et al., 2018). For example, Choi et al. (2017) used network analysis to examine depression, post-traumatic stress disorder, and sexual risk. Belvederi et al. (2020) analysed the relationship between demoralisation and depressive symptoms among patients from a general hospital. Fischer

Table 4. Fit Indices and Invariance Indicators for the Four-factorial Model

	χ^2/df	df	CFI	ΔCFI	RMSEA	ΔRMSEA	90% CI RMSEA	RMSR
Sex								
Configural invariance	3.649	328	.920	NA	.072	NA	.068, .077	.051
Metric invariance	3.512	348	.920	0	.070	-.002	.066, .075	.058
Scalar invariance	3.483	364	.917	-.003	.070	0	.066, .074	.056
Strict invariance	3.447	384	.914	-.003	.070	0	.065, .074	.057
Country								
Configural invariance	3.013	492	.909	NA	.077	NA	.073, .082	.056
Metric invariance	2.961	532	.904	-.005	.076	-.001	.072, .081	.073
Scalar invariance	3.093	564	.892	-.012	.079	.003	.075, .083	.073
Strict invariance	3.191	604	.879	-.013	.081	.002	.077, .085	.076

Note. SEX (men, women); COUNTRY (Spain, Ecuador, Mexico); χ^2/df = chi square per degree of freedom; df = degree of freedom; CFI = comparative fit index; ΔCFI = increase of comparative fit index; RMSEA = root mean square error of approximation; ΔRMSEA = increase of root mean square error of approximation; 90% CI RMSEA = 90% confidence interval for RMSEA; RMSR = root mean square residual.

et al. (2020) have studied the association of burnout with depression and anxiety in critical care clinicians in Brazil, and Peralta et al. (2020) analysed the network and dimensionality structure of affective psychoses.

Using this graphical technique, we examine the situational strength network to uncover the latent variables through the possible relationships between the attributes reported in the SSW scale. We hypothesise that the situational strength network will clearly show the grouping of items (nodes) in four clusters (clarity, consistency, restrictions, and consequences).

Method

Participants and procedure. The sample was made up of 471 adult Spanish subjects from different occupations; 44% were men. The average age was 37.81 (SD = 10.48, range from 20 to 68). Regarding the academic level, 6.4% had high school education, 27.4% had bachelor's degrees, and 66.2% had master's degrees.

The sample was collected during April and May 2020. All participants were telecommuting due to mobility and confinement restrictions related to the COVID-19 pandemic. These circumstances suggest that the conditions under which data were collected are characterised by high situational strength. Data collection was carried out through a questionnaire administered through the Internet. The selection of the sample was incidental. Participation in the study was voluntary. We sent questionnaires to contacts in the LinkedIn network, and we looked for subjects who were working at the time of receiving the survey. A total of 1,000 questionnaires were sent and the response rate was 47.1%. As in Study 1, the ethical principles for research in human beings contained in the Declaration of Helsinki (World Medical Association, 2000) were taken into account.

Instruments/measurements. We used Meyer et al.'s (2014) SSW scale translated into Spanish used in Study 1. Since the questionnaire used in this study is part of a larger research, we used three items from each sub-scale, for length reasons. Specifically, for clarity, we used Cla1, Cla2, and Cla4; for consistency, we used Cons1, Cons3, and Cons5; for constraints, we used Ctr1, Ctr2, Ctr4; and for consequences, we used Csq2, Csq3, and Csq5. Responses were evaluated on a 6-point Likert scale, where 1 = *totally disagree* and 6 = *totally agree*.

Data analysis. We used a network analysis approach, which is ideally suited to uncover possible associations between attributes reported in psychological inventories. (Epskamp et al., 2018).

To overcome problems with latent confounding, (Hallquist et al., 2019) we tested the distinctiveness of network clusters with bootstrapped exploratory graph analysis (EGA), using extended Bayesian information criterion (EBIC) graphical least absolute shrinkage and selection operator (GLASSO) estimation (Epskamp & Fried, 2018). GLASSO is a regression-based approach (Zou, 2006) that shrinks coefficients to obtain a network that faithfully represents the intercorrelations between nodes (variables) while also reducing near-zero correlations to exact zero (Epskamp et al., 2018). The EBIC GLASSO method has been shown to work particularly well in retrieving a true network structure (Foygel & Drton, 2010). Centrality measures of a network can be difficult to compare. To facilitate this, we ensure each centrality measure has a mean of zero and a variance of one. To overcome potential instabilities and accuracy problems in sample-specific solutions, we bootstrapped the exploratory graph analysis results using 1,000 samples. (Epskamp et al., 2018).

Table 5. Descriptive, Standardised Factor Loadings, and Network Centrality

Variable	Mean	SD	Standardised Factor Loadings	R^2	Network Degree Centrality, EBIC-GLASSO Estimation
Cla1	4.17	1.56	.92	.85	1.08
Cla2	4.16	1.47	.95	.89	0.84
Cla4	4.19	1.50	.92	.85	0.73
Cons1	4.17	1.38	.89	.79	-0.13
Cons3	4.35	1.36	.84	.70	-0.01
Cons5	4.25	1.37	.86	.74	0.74
Ctr1	3.03	1.50	.46	.21	-2.43
Ctr2	2.92	1.49	.75	.56	0.19
Ctr4	2.76	1.42	.80	.64	0.39
Csq2	2.40	1.38	.75	.56	0.38
Csq3	2.33	1.42	.69	.48	-0.56
Csq5	3.28	1.42	.67	.44	-1.21

Note. EBIC-GLASSO = extended Bayesian information criterion - graphical least absolute shrinkage and selection operator; R^2 = R-square.

Results

Descriptive, factorial structure, and reliabilities. Mean and standard deviation estimates for each item are reported in Table 5. Results of the confirmatory factor analysis for a four-factor solution had a good fit (χ^2 =145.35, df = 48, p < .001, CFI = .972, TLI = .961, RMSEA
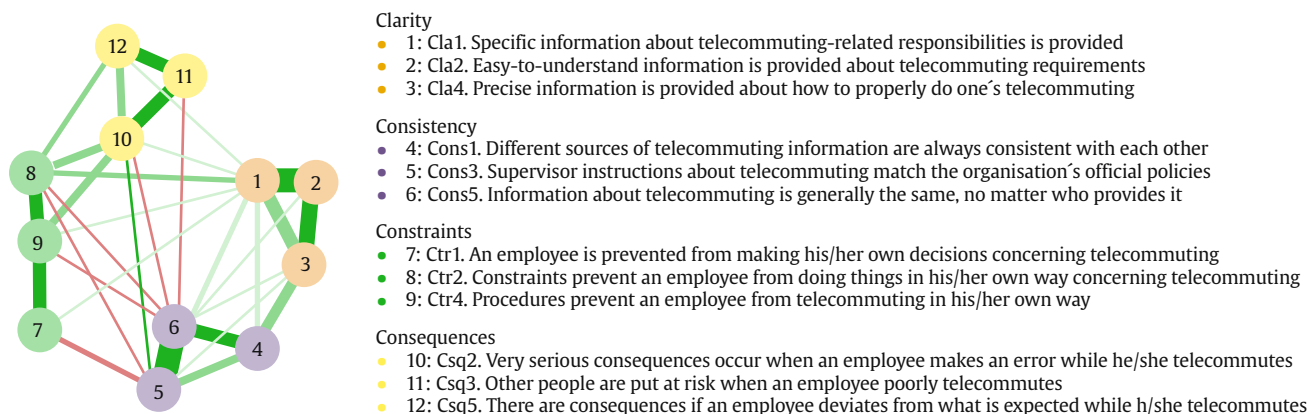

Clarity
- 1: Cla1. Specific information about telecommuting-related responsibilities is provided
- 2: Cla2. Easy-to-understand information is provided about telecommuting requirements
- 3: Cla4. Precise information is provided about how to properly do one´s telecommuting

Consistency
- 4: Cons1. Different sources of telecommuting information are always consistent with each other
- 5: Cons3. Supervisor instructions about telecommuting match the organisation´s official policies
- 6: Cons5. Information about telecommuting is generally the same, no matter who provides it

Constraints
- 7: Ctr1. An employee is prevented from making his/her own decisions concerning telecommuting
- 8: Ctr2. Constraints prevent an employee from doing things in his/her own way concerning telecommuting
- 9: Ctr4. Procedures prevent an employee from telecommuting in his/her own way

Consequences
- 10: Csq2. Very serious consequences occur when an employee makes an error while he/she telecommutes
- 11: Csq3. Other people are put at risk when an employee poorly telecommutes
- 12: Csq5. There are consequences if an employee deviates from what is expected while h/she telecommutes

Figure 1. Situational Strength Network Structure Estimated Using Exploratory Graph Analysis.
Note. Nodes with different colours indicate community membership; green lines, positive associations; pink lines, negative associations. The legend identifies variables associated with each community, including clarity, consistency, constraints, and consequences.

= .066, 95% CI [.054, .078], SRMR = 0.038). Standardised factor loading estimates are presented in Table 5. Factors had good reliability, being α = .950 for clarity, α = .895 for consistency, α = .742 for constraints, and α = .748 for consequences.

Exploratory graph analysis. The situational strength network (see Figure 1) shows four distinct clusters that correspond to clarity, consistency, constraints, and consequences. Bootstrapping analysis using 1,000 samples confirmed the four-cluster solution in 913 samples (91.3%), indicating elevated stability of the model.

Network centrality indicators (reported in Table 5) converge with the standardised factor loadings from the model. In our sample, the network centrality indicators correlated .89 with the R^2 values (showing the extent to which latent variables explain variability in the identification of the individual items) and .91 with the standardised factor loadings from the four-factor CFA model. Therefore, the analyses converge and confirm the construct validity of latent variables from the items assessed.

Discussion

This study analysed the validity and stability of the SSW scale through exploratory graphical analysis, examining the situational strength network. The EBIC-GLASSO estimator provided a situational strength network composed of four distinct clusters, as hypothesised. Bootstrapping tests suggest very high stability of the factorial structure and the centrality analyses converge with and confirm the construct validity of the four-factor model endorsed, with extraordinary fit indices, by the confirmatory factor analysis.

Study 3. Convergent and Discriminant Validity of the Spanish Version of the Situational Strength at Work Scale

This study complements the findings of Studies 1 and 2 by providing additional evidence on the validity of the Spanish version of the SSW scale. Specifically, it provides new evidence on the four-factor structure of the instrument, the internal consistency of each dimension of situational strength, and the invariance as a function of job occupation. In addition, it focuses on analysing convergent and discriminant validity by comparing the magnitude of the empirical relationship between constructs that should be more strongly related to situational strength with those that should be less related from a theoretical or conceptual point of view.

Method

Participants and procedure. The sample consisted of 507 adult subjects from Ecuador, where 44.8% were men. Mean age was 38.6 years *(SD* = 9.43, range 20 to 65). According to occupation, 26.8% were salespeople *(N* = 136), 33.1% were teachers *(N* = 168), and the remaining 40% were office workers *(N* = 203). The mean time of experience in the position was 7.66 years *(SD* = 7.19, range 1 to 38). Regarding the academic level, 21.9% had a high school degree, 24.3% had technical or professional training, 46.9% had a bachelor's degree, and 6.9% had a master's degree.

The selection of the sample was incidental. To select the sub-sample of salespeople and office workers, we look for sales and commercial representatives and office personnel from companies in the city of Guayaquil in Ecuador. We requested permission from different companies' managers to survey employees, making it clear that participation in the study was voluntary. For teachers' sub-sample, invitation letters to participate in the study were sent to 20 educational institutions. Data were collected in two public and four private high schools in Guayaquil, who agreed to participate. Participation in the study was voluntary. As in

Study 1 and Study 2, the ethical principles for research in human beings contained in the Declaration of Helsinki (World Medical Association, 2000) were taken into account. The questionnaire was individually administered at times that did not affect the teachers' working hours. A total of 500 questionnaires were sent for each sub-sample (totalling 1,500 questionnaires), and 532 questionnaires were collected, of which 25 were eliminated because they were incomplete, leaving 507 valid questionnaires (response rate 33.8%).

Measures

Situational strength. We applied the SSW scale by Meyer et al. (2014), translated into Spanish used in Study 1. The responses were assessed on a 6-point Likert scale where 1 = *totally disagree*, and 6 = *totally agree*.

Convergent and discriminant validity. To examine convergent and discriminant validity, researchers usually show that measures of the same construct are often more strongly related than measures of different constructs (Campbell & Fiske, 1955). Therefore, we compared the magnitude of the empirical relationship between constructs that should be more strongly related to situational strength with those that should be less related from a theoretical or conceptual point of view.

Thus, clarity was compared with role ambiguity, understood as the degree of unpredictability of specific results and/or particular behaviours' appropriateness (Rizzo et al., 1970), since this concept overlaps with that of (lack of) clarity. Conversely, it was compared to work overload, understood as the excess of workload as a function of the time to do it (Buunk et al., 1998). Although it is an environmental factor that influences behaviour, it is conceptually very far from the construct of clarity. Thus, it was expected that clarity would show a stronger negative correlation with role ambiguity than with overload.

Consistency was compared with role conflict, understood as the degree to which various job requirements are incompatible or incongruous with each other (Rizzo et al., 1970). This concept overlaps with that of (in)consistency. On the other hand, it was compared with work overload (defined above) since consistency refers to how the different sources offer consistent information about behaviours, while overload only refers to the amount of work regardless of whether instructions to do so are compatible with each other. Based on this, consistency was expected to correlate more strongly with role conflict than with overload negatively.

Constraints were compared with control, understood as the degree that the worker has to determine what tasks they perform, the work methods, and in general the decisions that affect their work (Karasek & Theorell, 1990). These two concepts overlap since they refer to the degree of autonomy that a worker has in her work. Constraints were also compared to role ambiguity (defined above), which is conceptually less related to constraints than control. In this way, the constraints were expected to be more strongly related to control than to role ambiguity.

Consequences were compared to achievement and development, understood as the degree to which work conditions allow for accomplishing the objectives and professional development (Cooper et al., 1988). This concept overlaps with that of consequences since both refer to the positive or negative implications that actions and work conditions can have. It was also compared with control (defined above), which is less related to the consequences since it refers to the freedom of action while the achievements and development refer to the results (consequences) of the action. Thus, the consequences were expected to be more strongly related to achievement and development than to control.

The Occupational Stress Indicator (OSI; Cooper et al., 1988) was used to measure the convergent and discriminant variables. Specifically, we used three items to assess role ambiguity (e.g., 'Receive incompatible requests from two or more people'; Cronbach's alpha = .88). Also, three items were used to measure role conflict (e.g., 'Receive tasks without the necessary resources to fulfil them';

Cronbach's alpha = .80). Five items were used to assess work overload (e.g., 'Having too much work to do'; Cronbach's alpha = .85). To measure control, we used five items (e.g., 'In my work there are factors that are not under my direct control'; Cronbach's alpha = .74). Likewise, to assess achievements and development, we used three items (e.g., 'Absence of any possibility of development in my career'; Cronbach's alpha = .69). These constructs were measured on a six-level response scale where 1 = *never*, and 6 = *always*.

Data analysis. The internal consistency of the scales was estimated using Cronbach's alpha coefficients. Values of .70 or higher are considered adequate for internal consistency (George & Mallery, 2003). In analysing the questionnaire's factorial structure, confirmatory factor analysis was performed using the same criteria as in Study 1. Furthermore, the structural invariance of the scale in terms of occupation was estimated.

Convergent and discriminant validity for each situational strength factor was assessed using the two-tailed difference test for dependent correlations by Meng et al. (1992). A statistically significant difference between the correlation of the objective factor with the convergent construct and the discriminant construct indicates that the examined construct converges with the first and discriminates with the second.

Table 6. Study 3 Confirmatory Factor Analysis Results

Model	χ^2	df	p	CFI	TLI	SRMR	RMSEA
One-factor	2299.25	170	< .001	.596	.594	.170	.157
Two-factor	1032.46	169	< .001	.837	.816	.094	.100
Three-factor	695.81	167	< .001	.900	.866	.058	.079
Four-factor	570.12	164	< .001	.923	.911	.055	.069

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardised root mean square residual; RMSEA = root mean square error of approximation.

Results

Factorial structure. The factorial structure of the scale had a good fit for the four-factor model, providing additional strong evidence to the results of Study 1. Likewise, other viable alternatives were tested using one-, two-, and three-factor models. Although the three-factor model also had a good fit, the four-factor model was significantly

better ($\Delta\chi^2$ = 125, df = 3, p < .001). The results of the fit indices of the four models tested are detailed in Table 6. Regarding the reliability analysis, the four factors have adequate Cronbach's alpha coefficients, being α = .914 for clarity, α = .853 for consistency, α = .858 for constraints, and α = .705 for consequences.

Invariance analysis. Since the characteristics that make a situation strong or weak are associated with occupations, as evidenced by studies that have used the Occupational Requirements section of the Occupational Information Network (O*NET) (see, for example, Bowling et al., 2015; Meyer et al., 2009), we performed the analysis of the invariance according to the occupation (salespeople, teachers, and office workers). The results (see Table 7) show that the invariance criteria are met for the values of RMSEA (< .015) and CFI (< .01) except for strict invariance (ΔCFI = -.039). Notwithstanding, it can be said that the instrument is invariant and that it measures the factors of situational strength without the threat of bias in terms of occupation.

Convergent and discriminant validity analysis. Table 8 shows the correlation between the situational strength variables and the convergent and discriminant variables. Notably, the strong correlation between clarity and consistency (r = .75, p < .001) could suggest that they form a single construct, although, as already indicated, the factorial analysis showed a better fit for the four-factor structure.

Regarding convergent and discriminant validity, the difference between the correlation of clarity with role ambiguity (r = -.20, p < .01) and the correlation of clarity with overload (r = -.07) was statistically significant (difference in r = -.34; 95% CI [-.44, -.25], z = -6.28, p < .001). Regarding consistency, the difference between the correlation of consistency and role conflict (r = -.14, p < .01) and the correlation between consistency and overload (r = -.03) was statistically significant (difference in r = -.35, 95% CI [-.44, -.25], z = -6.25, p < .001). Regarding constraints, the difference between the correlation of constraints and control (r = .17, p < .01) and the correlation between the constraints and role ambiguity (r = .09, p < .05) was statistically significant (difference in r = .12, 95% CI [.01, .23], z = 2.12, p < .05). Finally, regarding consequences, the difference between the correlation of consequences and achievements and development (r = .10, p < .05) and the correlation between consequences and control (r = -.06) was statistically significant (difference in r = .12, 95% CI [.01, .23], z = 2.03, p < .05).

Table 7. Fit Indices and Invariance Indicators for the Four-factorial Model

	χ^2/df	df	CFI	ΔCFI	RMSEA	ΔRMSEA	90% CI RMSEA	RMSR
Occupation								
Configural invariance	2.412	492	.878	NA	.093	NA	.087, .100	.074
Metric invariance	2.363	532	.872	-.006	.092	-.001	.085, .098	.091
Scalar invariance	2.406	564	.860	-.012	.093	.001	.087, .099	.090
Strict invariance	2.684	604	.821	-.039	.102	.009	.096, .108	.091

Note. Occupation (salespeople, teachers, office workers); χ^2/df = chi square per degree of freedom; df = degree of freedom; CFI = comparative fit index; ΔCFI = increase of comparative fit index; RMSEA = root mean square error of approximation; ΔRMSEA = increase of root mean square error of approximation; 90% CI RMSEA = 90% confidence interval for RMSEA; RMSR = root mean square residual.

Table 8. Correlation between Variables

		Mean	SD	1	2	3	4	5	6	7	8
1	Clarity	4.42	1.15	-							
2	Consistency	4.21	0.98	.75***	-						
3	Constraints	3.44	1.24	-.09*	-.07	-					
4	Consequences	4.13	1.08	.15**	.16**	.36**	-				
5	Role conflict	3.10	1.28	-.19**	-.14**	.13**	.06	-			
6	Role Amb.	3.11	1.39	.20**	-.16**	.09*	.08	.81**	-		
7	Workload	3.12	1.22	-.07	-.03	.23**	-.02	.41**	.37**	-	
8	Control	2.78	0.95	-.26**	-.21**	.17**	-.06	.24**	.20**	.22**	-
9	Achiev & devel.	2.67	0.85	-.04	-.02	.18**	.10*	.14**	.12**	.17**	.18**

*p < .05, **p < .01, ***p < .001.

These results confirm the convergent and discriminant validity of the four factors of situational strength.

Discussion

The results of this study provide evidence, in addition to that found in Study 1, that the factorial structure that best fits the data is the four-factor structure. Furthermore, the invariance analysis suggests that the questionnaire is not affected by differences in occupation. Likewise, the statistically significant difference between the correlation of the objective factor with the convergent construct and the discriminant construct indicated that situational strength measures are more strongly related to similar constructs than with theoretically different constructs, which provides strong evidence of validity.

General Discussion

This article aimed to analyse the psychometric properties of the SSW scale by Meyer et al. (2014) in Spanish-speaking samples to examine the validity, reliability, and invariance of this instrument, contributing to clarify the operationalisation of the situational strength construct in organisational contexts. The obtained psychometric properties evidenced that this instrument is valid and reliable to be applied in Spanish-speaking samples.

Some main characteristics of the instrument are highlighted below. First, the items included in each factor are adequate. The translation process suggested that two items of each factor from the original questionnaire should be removed to not artificially inflate Cronbach's alpha index due to their similar wording with other items of the same factor. This parsimonious solution of five items per factor, instead of seven included in the original questionnaire, did not affect the instrument's internal consistency. Further, each item loaded on the corresponding factor and showed adequate values of asymmetry and kurtosis. Moreover, the short version tested by multiple methods in Study 2, with three items per factor, also showed good fit indices.

Second, the instrument's factorial structure analysis showed that the four-factor model best fits the data than other factorial solution. This find was consistent in both Study 1 and Study 3. However, the three-factor model, where clarity and consistency make up a common factor, is also adequate. Clarity and consistency, as essential characteristics of organisational communication, can be evaluated as a single construct, which is different and complementary to constraints and consequences.

Third, the invariance analyses for sex and country (Study 1) and occupation (Study 3) suggest that this instrument is stable. Despite each country and occupation having their characteristics in terms of tasks carried out at work or culture and organisational climate (Meyer et al., 2010), these differences do not threaten the instrument's stability. The cross-national invariance of an instrument makes great sense from the emic-etic approach where the national culture plays an important role for validation. Some studies analysing the invariance of an instrument between regions and countries highlight cross-national invariance as a precondition to rule out measurement effects and to investigate mean differences across (regional) groups (Herde et al., 2019). Moreover, as the four factors of situational strength developed from the occupational characteristics described in the O*NET database (Levine & Oswald, 2012), it is consistent that they remain stable across occupations. Furthermore, the bootstrapped analysis performed in Study 2 to set the situational strength network suggests very high stability of the factorial structure and the centrality analyses converge with and confirm the construct validity of the four-factor model.

Fourth, the results showed strong evidence of convergent and discriminant validity. The statistically significant difference between the correlation of the objective factor with the convergent construct and the discriminant construct indicated that situational strength measures are more strongly related to similar constructs than to different constructs, which constitutes a validity test.

All these characteristics make the SSW scale, in this Spanish translation, a good instrument to be used by researchers in future investigations on situational strength in Spanish-speaking contexts. Thus, situational strength could be evaluated in a standardised form, which constitutes a significant advance for research (Meyer et al., 2014).

Theoretical and Practical Implications

From our results, we can point out some theoretical and practical implications of this paper. First, this paper adds to the existing situational strength theory by demonstrating that four dimensions can be used to operationalize this construct at the occupational level of analysis. These results not only reinforce the validity and importance of situational strength as a general concept but also help to clarify its nature (Meyer et al., 2009). Second, a validated instrument allows researchers and practitioners to accurately assess the strength of a situation in specific occupations, and it could be used to analyse the context within the job is embedded, providing locally collected situational strength scores. Third, given the cross-national nature of this validation, this article highlights the importance that cultural differences can have in understanding situational strength. It is also possible that cultural variation in situational strength is a useful mediator of other cultural differences in psychological processes (Gelfand & Lun, 2013).

Limitations and Strengths

This study has some limitations that should be noted. First, the questionnaire has been validated in Spanish-speaking samples from three countries, specifically Spain, Ecuador, and Mexico. However, the study would have to be replicated with samples from other Spanish-speaking countries to confirm the psychometric properties of this version in Spanish. Additionally, it would be important to consider each country's cultural characteristics since situational characteristics' strength may vary depending on the culture (Gelfand & Lun, 2013). Second, since temporal fluctuations can affect situational strength (Meyer et al., 2014), validation analysis at various time points is essential since the questionnaires must evaluate consistent constructs over time (Nielsen & Cleal, 2010). In our study, we have validated the questionnaire at a single point in time, but it would be interesting to perform a test-retest validation at various points in time to check stability.

In addition to the limitations, some strengths of the study can also be highlighted. First, we analysed samples from three countries and three occupations, which allowed us to examine the questionnaire's stability concerning country and occupation, with satisfactory outcomes, providing greater robustness to the results. Additionally, we use a variety of different techniques to perform the validation analysis with consistent results. Therefore, not only the variety of samples but also the methods used make the results highly robust.

Second, as far as we know, this is the first study carried out in Spanish-speaking contexts on the construct of situational strength. This aspect makes it a pioneer and opens a path for future research. Moreover, a valid and reliable instrument is provided that allows standardising the assessment of situational strength and advancing research from a theoretical and practical perspective.

Conclusion

Situational strength, along with personal characteristics, is a critical element in understanding behaviour in both organisational

and non-organisational contexts. The validation of an instrument that helps to properly operationalise the characteristics of the environment measured as a situational strength construct constitutes a significant advance in the research. This article provides strong evidence on the SSW scale's reliability, the four-factor structure, invariance according to sex, country, and occupation, and convergent and discriminant validity in the Spanish translation, making it recommendable for investigating this construct in Spanish-speaking work contexts.

Conflict of Interest

The authors of this article declare no conflict of interest.

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