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Brief Organisational Resilience Scale (BORS): Development and Validity in Spain and Austria

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ABSTRACT

There are many inconsistencies in the conceptualisation and measurement of organisational resilience. Existing measures often focus on either the ability or process perspective, limiting their comprehensiveness, and failing to capture the multifaceted nature of resilience. Furthermore, many of these measures and their psychometric properties have not been appropriately validated and they focused on specific organisations and countries, which limits its usability to other work contexts. This study aims to provide a measure that uses the main approaches in the literature and to validate this in a cross-cultural sample of 1435 employees from 138 organisations in two European countries (Spain and Austria). The data were randomly split in two independent subsamples (Sample 1: Explorative; Sample 2: Confirmative). The exploratory factor analysis had a bi-dimensional factorial structure consisting of the dimensions of ability and process. Confirmatory factor analysis replicated this bi-dimensional structure by presenting better goodness of fit indices than the alternative one-factor model. Reliabilities were acceptable for ability and process dimensions in both countries. Convergent validity was also adequate for the two dimensions in both countries with satisfactory AVE and CR. In addition, significant correlations were found in both countries between organisational resilience and organisational commitment and job satisfaction. Finally, discriminant validity was also appropriate. This study is relevant for researchers and practitioners because it provides a useful tool for advancing understanding of organisational resilience and for assessing how resilient organisations are.

Nowadays, organisations are exposed to ever-changing environments, characterised by critical and constant developments such as globalisation, new technologies and economic crisis (Hassall et al. 2014). Organisations must adopt measures to cope with these ever-changing environments, minimise their potential damage and guarantee their own survival and competitiveness. Organisations' success in this process of adaptation and coping is determined by a critical factor named organisational resilience (Kahn et al. 2018).

The association between organisational resilience and positive outcomes for organisations has been supported by extended empirical evidence. Some examples of these positive outcomes are survival (Iborra et al. 2020; Ortiz-de-Mandojana and Bansal 2016), organisational effectiveness (Bustinza et al. 2019), enhanced performance (Hamel and Valikangas 2004; Do et al. 2022; Suryaningtyas et al. 2019), sustainability and innovation in multi-sector organisations (Liu et al. 2021) and ethical climates (Rastegar et al. 2019). Although most of the literature on organisational resilience has focused on its positive outcomes for the organisation, incipient research also suggests that it has a significant effect on employees' individual outcomes. This literature is still in its early stages, but it has presented critical evidence. For example, Beuren et al. (2021) showed a significant and positive relationship between organisational resilience and job satisfaction (Beuren et al. 2021). Gonçalves

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et al. (2022) suggested that organisational resilience was an important adjustment variable in job satisfaction and perception of stress. Finally, Kim (2020) found that organisational resilience was positively and significantly associated with: employees' intentions for proficiency, adaptivity and proactivity of organisational members, thus contributing to organisational effectiveness after a crisis situation.

To explain this association between organisational resilience and its outcomes, different theoretical approaches have been used, such as the resource-based view (RBV), the dynamic capability perspective and the organisational ambidexterity theory (Duncan 1976; Tushman and O'Reilly 1996; Chakma et al. 2021; Su and Junge 2023). The resource-based view (RBV) suggests that organisations have different tangible and intangible resources, which they may deploy to provide an effective response and promote their long-term competitive advantages (Su and Junge 2023). The dynamic capability perspective states that organisations build dynamic capabilities (i.e., processes and routines) that allow them to use their resources to adapt to changing conditions and avoid negative consequences (Su and Junge 2023; Bustinza et al. 2019). The organisational ambidexterity approach suggests that organisations have the ability to simultaneously pursue incremental improvements and discontinuous innovation in the face of environmental change (O'Reilly and Tushman 2013), meaning that ambidextrous organisations are better at coping with major adversity (Iborra et al. 2020).

However, the concept of organisational resilience is not well clarified or understood (Hillmann and Guenther 2021). Indeed, what resilience is and how it occurs is a somewhat of an 'enigma,' which makes it difficult to recognise and therefore measure (Boin and Van Eeten 2013). Perhaps one of the reasons for this vagueness is the descriptive and results-oriented nature of the concept (Lengnick-Hall et al. 2011), where the type of phenomenon to cope with plays an important role in its definition (Koslowski et al. 2013; Martin-Breen and Anderies 2011). This is why it is possible to find different approaches and definitions of organisational resilience, which each seek to understand it alternately as a capability, capacity, characteristic, result, process, behaviour, strategy, approach, performance, or any combination of the above (Hillmann and Guenther 2021). All this diverse research on organisational resilience has been classified into two main groups. On one hand, some researchers consider resilience to be a capability or capacity (Duchek 2014; Williams et al. 2017). For example, Ruiz-Martin et al. (2018) defined organisational resilience as the capacity and ability to cope with changes, risks, or internal and external shocks. However, others criticise this view and believe that these two concepts should be distinguished from each other; that is, they assert, the fact that an organisation has the capacity for resilience does not mean that it has the capability for it (Lengnick-Hall et al. 2011). As Richtnér and Löfsten (2014, 138) explained, 'having a capability means having a capacity, and it is only when resilience capacity is translated into action in an organisation that resilience becomes an organisational capability.' In this regard, Acquaah et al. (2011) have understood organisational resilience as the ability to adjust production strategies with competitive strategies; and Ismail et al. (2011) have understood it as the ability to grow and capitalise on market trends while responding to current market demands. On the other hand, other authors have suggested that organisational resilience refers to the process of how organisations cope with stressful events, which can lead to resilient outcomes (Sutcliffe and Vogus 2003). In a recent review with 77 studies, Hillmann and Guenther (2021) tried to clarify this confusing conceptualisation of organisational resilience. They stated that organisational resilience could be conceptualised according to six different domains, each with several attributes, with the process of organisational resilience being identified as a common conceptual domain. This common domain involves change and uncertainty, and the way in which organisations manage these changes in adverse environments. In this respect, the definition of organisational resilience could be that: (1) the organisation can withstand pressure and maintain or improve performance despite difficulties and disruptions; and (2) the organisation can repair and return to its original state after facing an adverse event.

The act of measuring organisational resilience remains a challenge for both academics and professionals. This is most likely due to the complexity of the phenomenon, given that it must show the flexibility and ability of the organisation, as well as evidence of its progress. Thus, there is no general agreement about the best way to measure organisational resilience, meaning that a variety of measures can be found (Hillmann and Guenther 2021). This variety can be observed in Table 1, which also shows the variability in the dimensional structure of organisational resilience.

Some studies have developed a one-dimensional scale for measuring organisational resilience, while other studies have developed a two-dimensional scale. Furthermore, the content of these scales was not consistent between studies. Some of them emphasised the dimensions of stability and flexibility (DesJardine et al. 2019); whereas others highlighted planning and adaptive capacity (Lee et al. 2013). Furthermore, other studies have developed a multi-dimensional instrument for measuring organisational resilience. For example, Mallak (1998) proposed the following dimensions: solution-seeking, avoidance, critical understanding, role dependence, source reliance and resource access. Richtnér and Löfsten (2014) suggested emotional resources, cognitive resources and structural resources, whereas Mafabi et al. (2012) proposed organisational adaptation, organisational competitiveness and organisational value. Kantur (2015) emphasised robustness, agility, integrity; Ahmić (2022) stressed anticipation, coping, adaptation; Shirali et al. (2013) highlighted top management commitment, a culture of fairness, a learning culture, awareness and capacity, preparedness, flexibility; and Mallak and Yildiz (2016) pointed to goal-directedness, solution seeking, avoidance proposals, critical understanding, role dependence, source reliance, resource access. Thus, it is clear that there is no single common measure or dimensional structure for organisational resilience, but rather that most of these measures highlight aspects that indicate a certain organisational flexibility, as suggested by Hillmann and Guenther (2021). In fact, in this flexibility, it is possible to highlight the anticipation and adaptation capability (e.g. Lee et al. 2013; Whitman et al. 2013; Mafabi et al. 2012; Ahmić 2022).

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TABLE 1 | Summary of measures of organisational resilience.

Study	Dimensional structure	Items	Sample
Gittell et al. (2006)	▪ One-dimension: performance recovery	2-Items	Major US airlines
Ortiz-de-Mandojana and Bansal (2016)	Multi-dimensional: ▪ Financial volatility/sales growth/survival rates	4-Items	121 US-based matched-pairs (242 individual firms)
DesJardine et al. (2019)	Two-dimensions: ▪ Stability/flexibility	2-Items	963 US-based publicly listed firms in the aftermath of the 2008 global financial crisis
Mallak (1998)	Multi-dimensional: ▪ Goal-directed solution-seeking/avoidance/ critical/understanding/role dependence/ source reliance/resource access	24-Items	445 nursing managers from hospitals in Michigan
Richtnér and Löfsten (2014)	Multi-dimensional: ▪ Emotional resources/cognitive resources/ structural resources	14-Items	20 pharma co. employees: medium-sized (50–500 employees)
Lee et al. (2013)	Multi-dimensional: ▪ Planning/adaptive capacity	13-Items	1009 organisations from the Auckland region of New Zealand
Whitman et al. (2013)	Multi-dimensional: ▪ Planning/adaptive capacity	13-Items	Three datasets collected from organisations in New Zealand
Mafabi et al. (2012)	Multi-dimensional: ▪ Organisational adaptation/organisational competitiveness, and organisational value	20-Items	62 members of the senior management team in each parastatal organisation in Uganda.
Kantur (2015)	Multi-dimensional: ▪ Robustness/agility/integrity	12-Items	73 graduate school students of a private university in March 2013
Somers (2009)	One-dimension	4- Items	142 municipal public works departments United States of America-Arizona
Velu et al. (2019)	One-dimension	6 Items	252 of MDEC employees, Malaysia
Ahmić (2022)	Multi-dimensional: ▪ Anticipation/coping/adaptation	16-Items	124 companies of Bosnia and Herzegovina
Azadeh et al. (2014)	Multi-dimensional ▪ Teamwork-redundancy/tolerance of error	33-Items	115 workers at a petrochemical company in Iran
Shirali et al. (2013)	Multi-dimensional: ▪ Top management commitment/just culture/ learning culture/awareness and opacity/ preparedness/flexibility	61-Items	100, a large process industry in Iran
Mallak and Yildiz (2016)	Multi-dimensional ▪ Goal-directed solution seeking/avoidance proposes/critical understanding/role dependence/Source reliance/resource access	60-Items	141 key college administrators—USA

In conclusion, there are multiple organisational resilience measures, each underpinned by different theoretical perspectives and conceptualisations. Despite the variety of organisational resilience measures, a significant gap remains: most scales focus exclusively on either the ability (e.g., Lee et al. 2013; Whitman et al. 2013) or process (e.g., Ahmić 2022; Somers 2009) perspective, failing to capture the multifaceted nature of resilience. Scales emphasising ability highlight an organisation's capacity to withstand adversity, while process-oriented scales focus on adaptive responses to crises. This fragmentation limits the ability to assess organisational resilience holistically. Furthermore, many of these measures and their psychometric properties have not been appropriately validated, despite having been used in specific organisations in specific countries. Nevertheless, there seems to be a certain consensus that organisational resilience is multi-dimensional, and a significant number of studies agree that organisational resilience should be regarded as an ability (Lee et al. 2013; Whitman et al. 2013) and as a process with the dimensions of planned resilience and adaptive resilience (Ahmić 2022; Velu et al. 2019; Lee et al. 2013; Shirali et al. 2013).

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Taking into account this study, measuring organisational resilience is an important issue that should be considered. Further research seems to be needed to advance and clarify how organisational resilience should be measured. The current study addresses this gap by developing the Brief Organisational Resilience Scale (BORS), which is a simple and useful measure of organisational resilience that integrates both perspectives into a concise, psychometrically robust measure. By doing so, it provides a unified tool that advances the field, enabling researchers and practitioners to assess resilience comprehensively across diverse organisational contexts. In addition, we propose that this measure be supported by diverse empirical evidence; in other words, this measure must be validated in different organisations, in different labour sectors and in different cultural contexts and economies. Hence, we aim to examine the psychometric properties and validity of this measure in a sample of 110 different organisations from different labour sectors (construction, education, retail and health) in two European countries, namely Spain and Austria. More specifically, Spain and Austria were selected for this study due to their distinct cultural and labour market characteristics, which enhance the robustness of the cross-cultural validation of the Brief Organisational Resilience Scale (BORS). Spain exhibits a collectivist cultural orientation (Hofstede 2001) and a market characterised by economic volatility, whereas Austria is more individualistic with a more stable and highly regulated market (Sora et al. 2013). These differences provide a diverse context to test the applicability and generalisability of the BORS, ensuring its relevance across varied organisational environments.

1 | Brief Organisational Resilience Scale

Although some authors view resilience as a fixed, stable ability or capability, resilience is more usually regarded as a process in response to difficult experiences that is shaped by interactions between the environment and the individual's resources (e.g. Windle et al. 2011; Zahn et al. 2019) or the organisation's resources (Sutcliffe and Vogus 2003; Carmeli and Markman 2011). A unifying perspective can be found in Smith et al.'s resilience model (Smith et al. 2008; Smith et al. 2010). It proposes that the ability to recover homoeostasis after a stressful experience is a personal resource that is susceptible to change. This resource is a critical prerequisite for recovering quickly from stress. Therefore, resilience is developed when people who are sufficiently prepared with coping resources learn through experience, example, or encouragement that they can quickly restore their homoeostasis. Furthermore, Smith et al. (2008) coherently developed a short questionnaire to measure individual resilience, which they called the Brief Resilience Scale (BRS). This measure is a short scale with few items that aims to provide a unitary construct of individual resilience, understood as the ability to bounce back or recover from stress. BRS is a widely used questionnaire with appropriate psychometric characteristics and validated in different samples in different countries, for example, by Rodriguez et al. (2016) in Spain, da Silva-Sauer et al. (2021) and Martins Barroso (2021) in Brazil, Chmitorz et al. (2018) in Germany, Jacobs and Horsch (2019) in France, Lai and Yue (2014) in China and Konaszewski et al. (2020) in Poland.

Accordingly, Smith's proposal (at individual level) addressed the conceptualisations of resilience as an ability and provide extended empirical support on validity of its measure. Hence, we propose to adopt the Smith et al. (2008) model to understand organisational resilience. According to this approach, it reflects an organisation's ability to recover homoeostasis after adversity or a stressful event, and how this ability is susceptible to change. Despite its strengths, this proposal does overlook the process perspective. Hence, we have complemented Smith's proposal with that of Luthans et al. (2007) to develop a more integrative measure of organisational resilience. The Luthans et al. (2007) proposal adopted a process perspective that highlighted how organisations cope with stressful events. By combining these two approaches, our measure of organisational resilience, as Kantur and İşeri-Say (2012) recommend, is more comprehensive and can reflect an organisation's ability for resilience, its pre-event readiness for a disruptive event, its post-event response for appropriate and timely recovery, and its capacity for creative renewal through improvisation. In short, we have adopted an approach that analyses both process and ability when measuring for organisational resilience, and we have based our approach on previous solidly validated measures. The integration of ability and process perspectives in the Brief Organisational Resilience Scale (BORS) addresses a critical gap in organisational resilience measurement. The ability perspective, rooted in the Smith et al. (2008) model, emphasises an organisation's inherent capacity to withstand adversity through resources and preparedness, offering a stable foundation for resilience (Lengnick-Hall et al. 2011). Conversely, the process perspective, drawn from Luthans et al. (2007), focuses on dynamic adaptation and recovery mechanisms, capturing how organisations respond and innovate post-adversity (Sutcliffe and Vogus 2003). While the ability perspective ensures readiness, the process perspective enables flexibility, making their combination essential for a comprehensive assessment. Existing scales often prioritise one perspective, limiting their scope (Hillmann and Guenther 2021). By integrating both, the BORS provides a holistic, concise measure that enhances theoretical understanding and practical application, enabling organisations to assess both proactive and reactive resilience effectively.

Thus, the aim of the current study is to provide a valid and reliable short measure of organisational resilience based on the scales by Smith et al. (2008) and Luthans et al. (2007). In doing so, the organisational resilience scale was adapted and validated in two European countries to ensure that the psychometric characteristics of the instrument were in line with the corresponding methodological requirements. More specifically, we will validate this scale by examining the factorial structure (objective 1), internal consistency (objective 2), and convergent and discriminant validity (objective 3).

2 | Methods

2.1 | Sample and Procedure

Researchers contacted human resources managers at organisations and explained the purpose and implications of the research to obtain their collaboration. After obtaining the organisation's agreement to cooperate, the employees of these organisations were invited to participate. Questionnaires were distributed manually at the workplace among the employees who

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voluntarily wanted to participate in the research. Because we had to rely on voluntary participation, the sampling method could not be completely random, but it was the most convenient. Anonymous and confidential treatment of the data were also guaranteed. The research was carried out in accordance with the guidelines of the ethical committee of our university.

The total sample consisted of 1435 employees from 138 organisations in two European countries, namely Spain and Austria. The Spanish sample included 927 employees and 88 organisations and the Austrian sample was composed of 508 employees and 50 organisations. The characteristics of Spanish and Austrian samples are summarised in Table 2.

2.2 | Measures

The Brief Organisational Resilience Scale was developed using adapted items from the scale of individual resilience by Smith et al. (2008) and from the scale of individual resilience in the workplace by Luthans et al. (2007). Both measures are brief scales that use few items to create a unitary construct of individual resilience, but that of Smith et al. (2008) reflected a general approach, whereas that of Luthans et al. (2007) was applied to the workplace. To measure resilience as an organisation's ability rather than as an individual ability, each item was adapted to fit a referent-shift approach (Chan 1998), whereby the target of each item was the organisation rather than the individual. These adapted scales were reviewed by several researchers who identified the items that better reflected theoretically the construct of organisational resilience and presented high loadings in their original versions. Accordingly, three items from the Smith et al. (2008) scale and four items from the scale by Luthans et al. (2007) were selected. In addition, two additional items were developed to highlight this unified perspective of organisational resilience: 'Members of this organisation can handle any difficulty at their work' and 'Members of this organisation used to manage difficulties at work.' Consequently, we proposed a measure of organisational resilience composed of two dimensions, namely the organisation's ability and process. Following established scale development practices and according to the original scales, some items (e.g., items 7 and 8) were reverse-coded to minimise response bias, though reverse-coding all items was unnecessary, and so, the scale clarity and brevity was eased (DeVellis 2016). All responses for the organisational resilience scale were anchored on a 5-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree (see Table 3).

In addition, two correlates were also measured to examine the convergent validity of the BORS: organisational commitment and job satisfaction.

Organisational commitment was measured using a 4-item scale (Cook and Wall 1980). An example of an item is: 'I feel myself to be part of the organisation.' The response scale ranged from 1 (completely disagree) to 5 (completely agree). Cronbach's alpha for this scale was 0.79 in the Spanish sample and 0.73 in the Austrian sample.

Job satisfaction was assessed with a four-item scale (Price 1997) with items such as, 'I find enjoyment in my job,' and a response range from 1 (low) to 5 (high). Cronbach's alpha for this scale was 0.78 in the Spanish sample and 0.69 in the Austrian sample.

2.3 | Data Analysis

First, the Spanish and Austrian samples were randomly split into two subsamples, respectively. This method allowed us to

TABLE 2 | Characteristics of Spanish and Austrian samples.

	Spain		Austria	
Characteristics	***N***	**Percentage (%)**	***N***	**Percentage (%)**
Total employees	927		508	
Total organisations	88		50	
Sectors (employees/organisations)				
Construction	136/16	15%/18%	84/10	16%/20%
Retail	278/31	30%/35%	165/16	32%/32%
Healthcare	205/16	22%/18%	126/11	25%/22%
Education	308/25	33%/28%	133/13	26%/26%
Organisation type				
Public	18	21%	15	26%
Private	67	76%	30	52%
Gender				
Women	584	63%	315	62%
Men	317	34%	179	35%
	Mean	SD	Mean	SD
Age	39	10.1	37	11.5

Note: The data do not sum up to 100% due to the missing data.

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TABLE 3 | Items, means, standard deviation, exploratory and multi-group confirmatory factor analysis of the brief organisational resilience scale (BORS).

		Spanish sub-sample						Austrian sub-sample					
				Loadings EFA		Loadings CFA				Loadings EFA		Loadings CFA	
	Item	*M*	SD	1	2	1	2	*M*	SD	1	2	1	2
1	Members of this organisation used to manage difficulties at work	3.83	1.03	0.77		0.61		4.18	0.83	0.71		0.47	
2	Members of this organisation can handle any difficulty at their work	3.53	1.02	0.81		0.67		3.62	0.88	0.60		0.70	
3	Members of this organisation can handle many things at a time	3.77	0.98	0.81		0.70		3.69	0.82	0.61		0.65	
4	Members of this organisation usually take stressful things in stride	3.15	0.99	0.20	0.54	0.50		3.45	0.90	0.62		0.73	
5	In general, members of this organisation can come through difficult times at work with little trouble	3.28	1.00	0.61		0.54		3.53	0.88	0.51		0.58	
6	Members of this organisation have quite experience in coping with stressful events	3.69	1.00	0.74		0.72		4.04	0.84	0.70		0.57	
7	When there is a setback at work, it is hard for members of this organisation to recover and move on	3.75	1.02		0.76		0.47	3.64	0.89		0.86		0.45
8	When there is a setback at work, it is hard for members of this organisation to snap back	3.66	1.05		0.83		0.48	3.55	0.87		0.89		0.54
9	Members of this organisation tend to bounce back quickly after a setback at work	3.65	0.91	0.54	0.41		0.82	3.57	0.89		0.76		0.77

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examine the stability of the structural factors solution across the two halves (see Fabrigar et al. 1999). The first sub-sample contained 183 Spanish employees and 117 Austrian employees. The second sub-sample contained 743 Spanish employees and 391 Austrian employees.

In the first subsample, we carried out two exploratory factor analyses (EFA) to examine the factorial structure of the organisational resilience scale: one on the Spanish sub-sample and the other on the Austrian sub-sample. EFAs were computed using principal component analysis with varimax rotation. We used the Kaiser criterion (eigenvalue higher than 1) to extract the number of factors and we considered factor loadings equal to or higher than 0.40 to assign items to factors (Cliff and Hamburger 1967).

In the second subsample, we used the AMOS 24 program to compute two multi-group confirmatory factor analyses (CFA), namely a one-factor model (M1) and a two-factor model (M2). To assess global model fit (Marsh and Hau 1996), we used the following: Chi-squared index (χ^2), chi/df ratio (χ^2/df), Normed Fit Index (NFI), Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and Root Mean Square Residual (RMR). Additionally, we computed a measure of parsimony, Aikaike Information Criteria (AIC), that assess the efficiency of models' fit to a particular sample, and it is appropriate for model comparison (West et al. 2012). We also examined measurement invariance to test if there was a measurement equivalence in our cross-cultural sample (Byrne and Van de Vijver 2010). Hence, three models were tested using multigroup CFA, which progressively fixed the number of items and factors (configural invariance-proposed two-factor model), the factor loads (metric invariance) and the intercepts (scalar invariance). The tested model should not present differences in χ^2 ($\Delta\chi^2$), CFI (ΔCFI) < 0.01, McDonald's NCI (ΔMcDonald's NCI) < 0.02, RMSEA (ΔRMSEA) < 0.01 when compared to other models.

We then examined internal consistency in subsample 2. Cronbach's alphas were computed for the organisational resilience dimensions as well as the total scale (Nunnally 1978). The number of items also needs to be considered to appropriately examine the internal consistency of a scale (Cortina 1993). In this regard, Clark and Watson (1995) showed the value of computing inter-item and item-scale correlations to assess the internal consistency of a scale. The values should range from 0.15 to 0.50 for good reliability. We therefore computed the inter-item and item-scale correlations to assess the internal consistency of the scale.

Finally, we examined convergent and discriminant validity. Convergent validity is the degree of confidence about a factor being well measured by its indicators. It was assessed by the Average Variance Extracted (AVE) and Composite Reliability (CR). In addition, correlations between the studied construct and other theoretically related variables are commonly used to examine convergent validity. According to the previous literature mentioned above, correlations between organisational resilience and related outcomes, such as job satisfaction and organisational performance, were computed too. Finally, discriminant validity is the extent to which a construct is truly distinct from other constructs. Discriminant validity is examined by comparing the squared root of the AVE with the squared correlation for each of the constructs. The squared root of the AVE represents a measure of variance between a construct and its indicators (Fornell and Larcker 1981).

3 | Results

3.1 | Factorial Structure of the Brief Organisational Resilience Scale

Table 3 displays the results of exploratory factor analysis of organisational resilience. The results show a two-factor structure with an eigenvalue higher than 1 in the first Spanish and Austrian sub-samples. Factor 1 represented the ability dimension of organisational resilience, and factor 2 reflected the process dimension. In the Austrian subsample, all items appropriately loaded on their respective factor with values higher than 0.40 (Cliff and Hamburger 1967); in other words, items 1–6 loaded on the ability factor and items 7, 8 and 9 on the process factor. In the Spanish subsample, most items also loaded on their respective factors as expected with loadings higher than 0.40 (Cliff and Hamburger 1967), except for items 4 and 9. More specifically, item 4 loaded on the process factor with a loading of 0.54 because the loading on the ability factor was 0.20. Item 9 could represent both factors because it loaded on the ability factor with a value of 0.54 and on the process factor with a value of 0.41.

Two multi-group confirmatory factor analyses were computed in Subsample 2: a one-factor model (M1), and a multi-group two-factor model (M2). Table 4 displays the results of these multi-group CFAs. The results showed that the two-factor solution presented a better adjustment than the one-factor solution. More specifically, the Chi-Squared Goodness-of-Fit Index (χ^2) did not indicate a good fit between the observed covariance matrix and the two hypothesised models. However, this is probably due to the sensitiveness of this index to large sample sizes. In contrast, CFI and NFI surpassed the cutoff of 0.90 (Jöreskog and Sörbom 1993), and RMSEA and RMR were lower than 0.08 (Brown and Cudeck 1993). Therefore, these indices indicated a good fit for the proposed multifactor solution. The value of AIC was lower for the two-factor solution compared to the one-factor solution, indicating a better fit for the two-factor model (West et al. 2012). In addition, all items loaded appropriately on their respective factor with values higher than 0.40; in fact, the loadings ranging from 0.50 to 0.82 in the Spanish sub-sample and from 0.45 to 0.77 in the Austrian sub-sample. In summary, the results supported the double dimensionality of organisational resilience as predicted; that is, resilience in terms of both ability and process.

Finally, the invariance measurement was examined to clarify the measurement equivalence in the cross-cultural sample. The results showed non-differences for factor loadings between the countries when comparing configural invariance and the metric invariance models ($\Delta\chi^2 = 33.08$ (Δdf = 7; $p = 0.00$), ΔCFI = 0.00, ΔMc NCI = 0.01, and ΔRMSEA = 0.00). However, differences were found for item intercepts when the metric invariance and the scalar invariance models were compared: $\Delta\chi^2 = 145.08$ (Δdf = 7; $p = 0.00$),

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TABLE 4 | Confirmatory factor analysis of organisational resilience scale.

	χ^2	df	*p* value	χ^2/df	AGFI	NFI	CFI	RMR	RMSEA	AIC
M1-multi-group one-factor model	537.45	54	0.00	9.95	0.84	0.82	0.83	0.069	0.089	609.45
M2-multi-group two-factor model	212.38	50	0.00	4.24	0.93	0.93	0.94	0.040	0.054	292.38

TABLE 5 | Inter e intra-items correlations, Cronbach's alpha, composite reliability and average variance extracted.

Spain	1	2	3	4	5	6	7	8	9	Scale	α	CR	AVE
Ability dimension											0.79	0.86	0.51
Item 1	—									0.541			
Item 2	0.475	—								0.595			
Item 3	0.414	0.508	—							0.593			
Item 4	0.275	0.359	0.321	—						0.434			
Item 5	0.252	0.320	0.364	0.289	—					0.453			
Item 6	0.510	0.434	0.478	0.3430	0.422	—				0.626			
Process dimension											0.69	0.72	0.48
Item 7							—			0.528			
Item 8							0.487	—		0.531			
Item 9							0.390	0.397	—	0.457			
Austria	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Scale**	**α**	**CR**	**AVE**
Ability dimension											0.79	0.860	0.51
Item 1	—									0.440			
Item 2	0.411	—								0.612			
Item 3	0.306	0.409	—							0.573			
Item 4	0.325	0.542	0.482	—						0.616			
Item 5	0.146	0.449	0.352	0.414	—					0.465			
Item 6	0.424	0.326	0.484	0.386	0.321	—				0.544			
Process dimension											0.73	0.72	0.47
Item 7							—			0.594			
Item 8							0.661	—		0.668			
Item 9							0.337	0.427	—	0.419			

ΔCFI = 0.05, ΔMc NCI = 0.05, and ΔRMSEA = 0.01). These results indicate that the intercepts are likely to be partially invariant and that the partial scalar invariance should be examined (Byrne and Van de Vijver 2010). Partial scalar invariance was examined by releasing items 3, 4 and 5. Results presented non-differences in the comparison between metric invariance and the partial scalar invariance models for item intercepts: $\Delta\chi^2 = 33.02$ ($\Delta df = 4$; $p = 0.00$), ΔCFI = 0.01, ΔMc NCI = 0.01, and ΔRMSEA = 0.00). This suggests that partial scalar invariance has been achieved, allowing for a more refined understanding of the measurement invariance across countries and leading to the conclusion that measurement invariance was supported.

3.2 | Internal Consistency

Table 5 presents the results regarding the internal consistency of the Brief Organisational Resilience Scale, computed in subsample 2. Two techniques were used to examine the internal consistency of this measure: Cronbach's alpha and correlations between items within a scale. Cronbach's alphas were appropriate for the ability dimension in Spain ($\alpha = 0.79$) and Austria ($\alpha = 0.79$), because their values were above 0.70 (Bernstein and Nunnally 1994). The reliability for the process dimension was appropriate in the Austrian sample ($\alpha = 0.73$) and it could be considered appropriate in the Spanish sample because it was quite close to the cutoff of 0.70 ($\alpha = 0.69$). All inter-item and item-scale correlations were also appropriate because they surpassed the cutoff value of 0.20 (Streiner and Norman 1995). In fact, most of the indexes were higher than 0.30, except for items 4 and 5. To conclude, the internal consistency of the Brief Organisational resilience scale was appropriate.

To further assess item independence, covariances between items were computed. Covariances ranged from 0.02 to 0.34 for the ability dimension and 0.05–0.29 for the process dimension,

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TABLE 6 | Descriptive statistics (means and standard deviations) and correlations (95% confidence intervals in parentheses).

Spain	Mean	SD	1	2	3	4
1. Ability dimension	3.55	0.71	—			
2. Process dimension	3.59	0.78	0.56**[0.50, 0.60]	—		
3. Organisational commitment	4.05	0.77	0.37**[0.30, 0.43]	0.28**[0.20, 0.34]	—	
4. Job satisfaction	4.17	0.81	0.29**[0.21, 0.35]	0.26**[0.19, 0.33]	0.62**[0.57, 0.66]	—
Austria	**Mean**	**SD**	**1**	**2**	**3**	**4**
1. Ability dimension	3.67	0.60	—			
2. Process dimension	3.71	0.71	0.43**[0.34, 0.50]	—		
3. Organisational commitment	4.14	0.69	0.24**[0.14, 0.33]	0.14**[0.04, 0.23]	—	
4. Job satisfaction	4.17	0.76	0.21**[0.10, 0.30]	0.15**[0.04, 0.24]	0.56**[0.48, 0.62]	—

** $p < 0.01$, two-tailed.

indicating moderate relationships but sufficient distinctiveness, consistent with prior resilience scale validations (Lee et al. 2013; Kantur 2015).

3.3 | Convergent Validity

Convergent validity of the Brief Organisational resilience scale was examined through Average Variance Extracted (AVE), Composite Reliability (CR) and correlation with theoretically related outcomes. For the ability dimension in both Spanish and Austrian samples, the values obtained for AVE were above 0.50 and for Composite Reliability were larger than 0.70. The values of CR were also higher than 0.70 for process dimension in both countries, but AVE values were more limited, even though they were close to the cutoff criteria (Spain, AVE = 0.48; Austria, AVE = 0.47) (see Table 5) (Fornell and Larcker 1981). Finally, correlations between the ability and process dimensions of organisational resilience and other theoretically related outcomes (e.g., organisational commitment and job satisfaction) were examined (Table 6). The results show a significant and positive relationship between the organisational resilience dimensions and these outcomes at $p < 0.01$ in both the Spanish and Austrian samples. Therefore, organisations that are resilient for both the ability and process dimensions are associated with higher levels of employees' organisational commitment and job satisfaction. Overall, it seems that the factors were clearly defined and that the items measured just one construct. Thus, the convergent validity of the model may be considered satisfactory, even though the convergent validity of 'process dimension' was only just acceptable.

3.4 | Discriminant Validity

Table 7 presents the squared root of the AVE in the diagonal, and the off-diagonal figures show the squared correlations between dimensions of organisational resilience. The squared root of the AVE is a measure of variance between a construct and its indicators. The lowest AVE value was 0.69 in the Spanish sample and 0.68 in the Austrian sample. Both of them surpassed the largest squared correlation between the organisational resilience dimensions (0.31 in Spain; 0.18 in Austria).

TABLE 7 | Squared root of AVE (diagonal) and other squared correlations.

Spain	1	2
1. Ability dimension	**0.72**	
2. Process dimension	0.31	**0.69**
Austria	**1**	**2**
1. Ability dimension	**0.71**	
2. Process dimension	0.18	**0.68**

Note: Squared root of AVE are presented in bold in the diagonal.

Accordingly, shared variance between factors was lower than the AVE of the individual factors, which confirmed discriminant validity.

4 | Discussion

The objective of the present study was to develop a short and overall measure of organisational resilience based on the two main approaches of ability and process. This study built a measure of organisational resilience by adapting previous scales with solid scientific empirical support, these being individual resilience by Smith et al. (2008) and individual resilience in the workplace by Luthans et al. (2007). Furthermore, the present study validated the Brief Organisational Resilience Scale in two different European countries: Spain and Austria.

The research revealed that the items and the scale had adequate psychometric properties in both countries. A bidimensional factorial structure was supported with the dimensions of ability and process. In fact, the analysis of invariance measurement showed the stability of this scale across countries. Internal consistency was appropriate according to Cronbach's alpha and inter- and intra-correlations. The convergent validity was also adequate, as AVE and composite reliability showed. It should be mentioned that even though results showed good general convergent validity, the AVE values for process dimension were limited in both countries. However, correlational analysis provided convergent validity regarding the bidimensioinality of the

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Brief Organisational Resilience Scale. Both ability and process were significantly associated with employees' organisational commitment and job satisfaction. Thus, those employees who worked in more resilient organisations were more committed to their organisations and more satisfied with their jobs compared to those who worked in non-resilient organisations. These results are in line with previous research that stated the beneficial impact of organisational resilience on employees (e.g., Beuren et al. 2021; Gonçalves et al. 2022). Finally, the results also showed a satisfactory discriminant validity due to the squared root of the AVE.

In conclusion, the Brief Organisational Resilience Scale can be considered as a reliable and valid measure of organisational resilience. In fact, the validation of the Brief Organisational Resilience Scale (BORS) in Spain and Austria provides significant support for its robustness across diverse cultural and economic contexts. Spain's collectivist culture and volatile market contrast with Austria's individualistic culture and stable economy (Hofstede 2001; Sora et al. 2013). The scale's consistent psychometric properties, including factorial structure, reliability, and validity, across these countries suggest that it effectively captures organisational resilience regardless of cultural or economic differences. This cross-cultural applicability enhances the BORS's utility for global organisational research and practice, demonstrating its potential as a universal tool for assessing resilience in varied organisational settings.

Despite these interesting contributions, this study is not without its limitations. First, we examined the relationship between organisational resilience and two employee outcomes (organisational commitment and job satisfaction). The literature has also showed that organisational resilience was also associated with other important outcomes, such as organisational outcomes. Second, this study had a cross-sectional design, limiting our understanding of how resilience evolves over time. Third, this study validated the Brief Organisational Resilience Scale (BORS) in two European countries, potentially limiting generalisability to non-European or developing economies. Fourth, the AVE for the process dimension was slightly below the ideal threshold, suggesting potential for item refinement to strengthen convergent validity. In this respect, future research could refine items to further differentiate semantics to reduce perceived overlap and enhance respondent clarity. Finally, the reliance on self-reported employee data may introduce common method bias, potentially inflating correlations.

Future studies should address these limitations to better understand organisational resilience. First, future research could explore the relationship between organisational resilience and other organisational outcomes, such as organisational performance, market performance, or organisational safety, to provide a fuller picture of resilience impacts. Second, longitudinal studies are necessary to study the dynamics between organisational resilience and outcomes. Longitudinal designs could elucidate the dynamic nature of resilience, tracking changes before, during, and after crises. Third, additional research is needed to validate the scale in other multiple cultural contexts. Validation in diverse cultural contexts, such as Asia, Africa, or Latin America, would enhance the BORS's global applicability. The BORS is already available for researchers and practitioners in Spanish and German-speaking countries. Future research is needed to validate this short scale of organisational resilience in other languages and contexts, for example, in English. Additionally, refining the process dimension items to improve AVE could strengthen the scale's psychometric properties. Semantic edits to items, particularly to differentiate similar items (e.g., items 7 and 8), could reduce ambiguity and enhance clarity for respondents, especially in multilingual settings. Finally, incorporating objective measures or multi-source data could mitigate common method bias, ensuring robust findings.

4.1 | Practical Implications

This study presents several important practical implications. It provides a reliable and valid short scale for measuring organisational resilience: Brief Organisational Resilience Scale. This short scale could be especially useful for practitioners who want to assess the resilience of their organisations. The scale involves the main approaches to organisational resilience in the literature and presents a clearer and unifying measurement. Organisations will only be able to enhance their resilience if there is clarity on the concept and its measurement.

5 | Conclusions

This study advances organisational resilience research by introducing the Brief Organisational Resilience Scale (BORS), a concise, psychometrically validated measure that integrates ability and process perspectives. Validated in Spain and Austria, the BORS demonstrates robust factorial structure, reliability, and validity, offering a unified tool for assessing resilience across diverse cultural and labour market contexts. By addressing the fragmentation in existing measures, the BORS provides researchers and practitioners with a practical instrument to enhance organisational adaptability and recovery. Future refinements and validations in varied contexts will further solidify its role as a cornerstone in resilience research.

Ethics Statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the ethical commission of the University Rovira I Virgili. In addition, the study was conducted in accordance with the Declaration of Helsinki.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research, supporting data is not available.

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