

Development and validation of a scale to measure the resilience of schools: Perspectives of young people from vulnerable and challenging territories

Improving Schools

2022, Vol. 25(3) 260–275

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/1365480221991742

journals.sagepub.com/home/imp

Ana Milheiro Silva

University of Porto, Faculty of Psychology and Education Sciences, Portugal
Centre for Research and Intervention in Education, Portugal

Sofia Marques da Silva

University of Porto, Faculty of Psychology and Education Sciences, Portugal
Centre for Research and Intervention in Education, Portugal

Abstract

This article presents the development and validation of a scale for young people, which measures the resilience of schools in ensuring the educational pathways of students in vulnerable and challenging territories. This scale was developed within a national-level project, conducted in Portuguese border regions with Spain, which are peripheral contexts with economic, social, cultural, and educational disadvantages, but with locally-situated promising dynamics.

Resilient schools, from an ecological perspective, are sensitive and committed to their internal and external settings. These schools act as a whole to face problem solving and risk situations, while also needing to support youth educational pathways and fulfill their role. This is particularly important in contexts with territorial disparities and specificities, as is the case of border regions.

The Resilience Scale of Schools – Youth Version (RSS-Y) integrates dimensions related to schools' focus and priorities, as well as practices and resources. Its development took into consideration that schools in vulnerable territories deal with specific constraints and fewer opportunities. In addition, this scale seeks to study the characteristics of resilience that young people identify in their schools and how they perceive their schools' support.

This quantitative scale was developed following a multi-step approach and was applied to 3,968 young people (9th to 12th grade). It comprises 17 items, rated on a five-point Likert scale to assess agreement.

Statistical analysis ensure the internal consistency (Factor 1, $\alpha = .846$; Factor 2, $\alpha = .845$; Factor 3, $\alpha = .789$) and the validity of this scale, indicating adequate psychometric properties to measure students' perspectives on the resilience characteristics of schools. A Principal Component Analysis (PCA) proposes a three-factor structure that explains 57.393% of the total variance. A Confirmatory Factor Analysis (CFA) indicates that this model is a good fit with the data.

Corresponding author:

Sofia Marques da Silva, University of Porto, Faculty of Psychology and Education Sciences, Rua Alfredo Allen, 4200-135 Porto, Portugal.

Email: sofiamsilva@fpce.up.pt

The RSS-Y can provide an important contribution to educational research developed in more deprived territories, but also to school contexts, since it recognizes the importance of schools' differentiated approaches and highlights characteristics that promote the resilience and quality of schools.

Keywords

border regions, resilient schools, scale validation, young people

Introduction

School remains one of the most important socialization contexts. Although it reproduces social and cultural inequalities according to the educational system, school is a worldwide reference institution for training and educating individuals to become active and full citizens, contributing to the development of societies (Dewey, 1916). According to Young (2011), formal education also has the responsibility to provide all children and young people with the fundamental knowledge they would otherwise not have access to. In addition to the formal and socially expected role, schools in disadvantaged areas, such as border regions, play a fundamental role in valuing and integrating young people, as well as in fostering the vitality and dynamism of the communities in which they are located (Amiguiño, 2008; Heggen, 2000; Yndigegn, 2003). We argue that the role of schools, as primary microsystems (Bronfenbrenner, 1989), may be more complex in these regions, with additional tasks beyond the formal ones.

Our perspective on resilient schools is based on ecological approaches (Adger, 2000; Ungar, 2011, 2012). These approaches to resilient schools go beyond the individual level of analysis or the dependence on specific groups of school figures. They propose that schools are networking places and recommend a multidimensional approach. We are interested in the strategies and resources that schools mobilize when they solve problems and deal with specific challenges, whether internal or external, while pursuing the broader mission of training young people and boosting their communities (Phillips et al., 2014; Whitney, Maras and Schisler, 2012).

This paper is developed within a PhD program and a national-level project (GROW.UP, *Grow Up in Border Regions in Continental Portugal: Young people, Educational Pathways, and Agendas*). GROW.UP aims to understand the mutual influences of individual, contextual/institutional, and systemic factors in the biographies of young people from Portuguese border regions, and to analyze how schools and communities deal with inequalities while handling their particularities. The actions and quality of schools, especially in these environments, need to be territorialized, rather than guided simply by broad lines or results/outputs that tend to invalidate the specificities of schools, their contexts and communities.

The questions underlying the present study are: *Can resilient schools inform the quality of border schools in fulfilling their mission? How do young people think about the resilience characteristics of their schools?* These questions support us in proposing the scale presented.

Schools in vulnerable contexts and resilient schools: Why this concept?

The importance of studying resilience applied to school is consensual. There is little published literature on resilient schools and authors such as Whitney et al. (2012) and Phillips et al. (2014) highlight that educational research needs further investment in this concept. Among publications on resilient schools, both recent and older literature use this concept to study school in contexts of adversity (Campos, 2020; Patterson & Patterson, 2004). These contexts may be characterized by territorial dis-

parities or specific structural disadvantages, as well as by social and political changes, or other particular events that occur. It is within this framework that we adopted this concept for further expansion.

National and international border studies present these regions as peripheral and remote territories with social, economic, educational and cultural constraints, as well as fewer educational and work opportunities (Silva, 2014; Yndigegn, 2003). Specifically, in Portugal, these are mainly rural or semi-urban territories, with a low and ageing population, with a largely service-based economy supported by agriculture and, in some municipalities, by tourism (DG Regio, 2020; EU/ERDF, 2017). The direct accessibilities to Spain, the proximity to rivers, the climate or the topography are some of the particular characteristics that must also be considered (Trillo-Santamaría & Paül, 2014).

Regarding education, secondary data indicate that retention and dropout rates in primary and secondary education are higher in Portuguese border regions, compared to coastal areas (DGEEC, 2019). European reports also warn about high rates of early school leaving in these regions (EU/ERDF, 2017). Additionally, young people from border regions face difficulties in accessing secondary education, since 10 border municipalities do not offer this level of education, which is compulsory in Portugal. Most students have to leave their regions in order to enrol in Higher Education, as the schools are geographically dispersed, and the school transport network is still developing. Schools in Portuguese border regions must overcome specific educational challenges and inequalities, in order to promote the socio-educational pathways of their youth (Amiguiño, 2008; Silva, 2014; Silva & Silva, 2018). This is also supported by studies in Norway (Heggen, 2000) and Denmark (Yndigegn, 2003).

Despite the limitations and disadvantages of schools in border regions, their value for young people and communities is undeniable. Schools in peripheral areas are vital to their communities and for the participation and inclusion of their young people (Amiguiño, 2008; Heggen, 2000). Considering the importance of school at the local level, in peripheral territories (in this case border regions), and given the literature showing that schools cannot be understood outside their context and surrounding community (Boix-Tomás et al., 2015; Milstein & Henry, 2008), the concept of resilient schools becomes fundamental.

Schools must be understood within their environments, taking into consideration networking practices with the surrounding community. In fact, “[n]o part of schooling can entirely free itself from the territorial context in which the school action plan is included” (Boix-Tomás et al., 2015, p. 7). Despite this potential link with the territory, this relationship does not condemn the less privileged territories to fatalism. Naicker et al. (2016) support this idea with a conclusion from a case study of resilient schools: there are schools in more disadvantaged contexts that overcome adversity and achieve consistent success. Therefore, we propose to develop and validate a tool to measure the characteristics of resilience in schools, from the students’ perspective.

Resilient schools: Defining the concept

Following an ecological perspective, resilience involves the individual and his/her ecologies in the same process. There are negotiations and interrelationships between the individual and his/her environments, rather than a predominance of individual determinants (Adger, 2000; Ungar, 2011, 2012). Ecosystems can themselves be resilient, and this resilience is worthy of attention as a study object (Adger, 2000). It is not about the resilience of the individuals, but the resilience of ecologies, in this case, the school. The ecological framework provides the guidelines for our conceptualization of resilient schools.

The studies on resilient schools are mainly developed in contexts of adversity and risk. Thus, Whitney et al. (2012, p. 35) point out that “organisations and systems can also perform above

expectations in the face of high stress and/or risk environments and can be considered resilient.” This definition is consistent with the recent proposals of Pinskaya et al. (2018).

Resilient schools are defined by several features that help to understand their focus and characteristics (Campos, 2020; (Millstein and Henry, 2008) Motala, 2001; Naicker et al., 2016; Phillips et al., 2014; Pinskaya et al., 2018; Whitney et al., 2012). The first is problem solving. Schools focus on solving problems that may be new or current, internal or external, to school environments. As problem solvers, resilient schools are concerned with overcoming challenges and strengthening themselves. Resilient schools are action oriented to bounce back from, or to prevent, short and long-term adversity. These schools are also known for improving and strengthening themselves in continuous development, while facing adversities. These schools are sensitive to reform and change, by adapting or reinterpreting their priorities through systemic and ecological approaches. In this process, these schools combine different levels of factors and actors, building their strength collectively, inside and outside the school. Their strategy must be in line with the specificities and needs of the context, which are identified through their self-knowledge. The process of self-knowledge usually entails monitoring their internal and external specificities, weaknesses, but also strengths. The characteristics of resilient schools identified from the published literature follow the whole school approach, thinking collectively about the individual figures of schools, the curriculum, the teaching and learning processes, the dynamics and school *ethos*, as well as the policies (Goldberg et al., 2018).

To better understand resilient schools, we must take protective factors into account. These factors promote successful approaches to coping with adverse situations at various levels: individual (e.g. a head teacher with a solid and shared leadership), relational (e.g. professional cooperation and peer learning), organizational (e.g. open and clear communication), and external conditions (e.g. external support through partnerships with the surrounding community and companies) (Naicker et al., 2016; Whitney et al., 2012).

In terms of impact, the schools identified as resilient have a positive influence on school practices and performance, in general, and on individual resilience and academic success of students, in particular (Henderson, 2013; Milstein & Henry, 2008; Naicker et al., 2016; Patterson et al., 2002; Phillips et al., 2014; Pinskaya et al., 2018; Wallin, 2008; Whitney et al., 2012).

We propose resilient schools as an analytical tool to reflect on schools and their improvement, especially in more disadvantaged contexts, taking into account their specificities and potential toward the fulfillment of their mission with quality. The concept of resilient schools makes it possible to address the quality of schools from a territorialized perspective. Considering that “[q]uality in education should be consistent with the understanding of the educational process itself” (Elassy, 2015, p. 258), the concept of resilient schools provides insights about how schools can continuously adjust and improve, in specific challenging circumstances and contexts. In their pursuit of quality, schools must consider the needs and characteristics of contexts, and educate young people as citizens (Leite & Fernandes, 2014; Sobrinho, 2012). We understand quality beyond the rankings and measurements based on outputs alone, but rather considering a concerted action to support goals toward the quality of the educational action (Cheng & Tam, 1997; Huilla, 2020; Neves et al., 2012). In more disadvantaged regions, the goals also include fulfilling schools’ social function of promoting youth education pathways and local development, while managing specific territorial specificities and challenges.

Studies on the quality of resilient schools differ from those focusing on effectiveness, outputs, and results, because resilient schools are more focused on dealing with adverse situations, while simultaneously promoting the educational pathways of their students (Patterson et al., 2002; Stoll & Fink, 1996).

School resilience and young people's perspectives: Planning a scale to be applied in vulnerable and challenging territories

The literature suggests the importance of different instruments/measures and accountability systems to reflect on schools and their quality (Huilla, 2020; Motala, 2001). While promoting educational pathways, resilient schools are also involved in overcoming adverse situations and problem solving: “[s]chool resilience certainly embodies school effectiveness, but it also has a deeper and broader meaning” (Patterson et al., 2002, pp. 3–4).

The development and validation of the present scale take into account the importance of having a questionnaire that specifically assesses the multi-dimensionality of resilient schools, and that can be answered by young people. Methodologically, the questionnaire will allow us to collect data from a representative sample to ascertain trends and information about social and educational issues (Cohen et al., 2011; Punch, 2014). In addition, we recognize young people as social actors who have a sensitive and ethnomethodologically sound knowledge of their living environment. From an ethical point of view, we consider that young people are relevant gatekeepers for understanding schools' action. As Brown et al. (2020, p. 87) indicate, “[a] role for students in evaluation and decision-making referred in the literature as ‘student voice’ has become common in many jurisdictions and commonly involves consultation on internal school evaluation and planning activities.” Moreover, recent empirical studies suggest that teachers value student participation and perspectives in daily pedagogical practices (Niemi & Loukomies, 2020).

In the next section, we will report on the process of construction and validation of the questionnaire

Methodology

Instrument: Design and procedures

Most of the literature on resilient schools report studies based on qualitative methods and analysis of secondary data (Motala, 2001; Pinskaya et al., 2018). Furthermore, the questionnaires that examine aspects such as school resources mostly collect the perspectives of adults, namely school leaders, teachers, and other staff (Wallin, 2008).

The scale we have developed is intended for young people living in the border regions of Portugal. It is part of a larger questionnaire developed within the GROW.UP Project (School Population Survey: Young People, Education, and Border Regions; Silva & Silva, 2016) and has the ethical endorsement of the System of Monitoring Research in Education Environments from the Portuguese Directorate-General for Education. The full version of the questionnaire has nine groups of questions. This article mobilizes content from the demographic group and the scale about resilience characteristics of schools. The GROW.UP Project adopts a mixed approach and, for this article, we focus on the scale development component.

The process of scale construction followed authors as Cohen et al. (2011) as well as Ghiglione and Matalon (1993) to propose a valid, reliable, and useful instrument. In this way, this scale is based on intensive and comprehensive review of literature and on an ethnographic study with young people from Portuguese border regions conducted by one of the co-authors of this article (Silva, 2014). The items assess agreement through a five-point Likert scale (from low to high), reflecting our intention to capture the perceptions of young people similarly to studies of Aldridge and Ala'l (2013). All items were written with a youth-friendly vocabulary and reflect characteristics of resilience that young people recognize in their schools. There are items on “schools' focus/concerns” (“my school is concerned with my preparation for higher education”), “schools' practices” (example: “in addition to classes

Table 1. Characteristics of the sample ($n = 3,968$).

		<i>n</i>	%			<i>n</i>	%
Region	Northern	2,249	56.7				
	Center	467	11.8				
	Alentejo (South)	1,064	26.8				
	Algarve (South)	188	4.7				
	NR	0	0				
Sex	Female	2,141	54.0	Age	13–15	1,744	44.0
	Male	1,824	46.0		16–18	2,075	52.3
	NR	3	0.1		>18	144	3.6
					NR	5	0.1
School year	9th	1,315	33.1	Course attended ($n=2645$)	Scientific-humanistic	2428	91.87
	10th	1,107	27.9		VET	198	7.5
	11th	816	20.6		NR	19	.7
	12th	722	18.2				
	NR	8	0.2				
Mother's education	No schooling	9	0.2	Father's education	No schooling	15	0.4
	1–4 years	218	5.5		1–4 years	365	9.2
	5–6 years	397	10.0		5–6 years	652	16.4
	7–9 years	767	19.3		7–9 years	869	21.9
	10–12 years	1,317	33.2		10–12 years	938	23.6
	University	864	21.8		University	556	14.0
	NR	396	10.0		NR	573	14.4
		3,968				3,968	

Note. NR=no response; DA= does not apply.

[teaching], my school creates several opportunities for me to achieve educational success”), and “schools’ resources” (“my school has sufficient resources [computers; books]”).

Once constructed the first version of the scale, we developed an exploratory pre-test. We applied the scale to a group of participants with similar characteristics to the target audience of this questionnaire: students attending the 9th and 10th grades, from a public school located in the District of Porto. Forty-five young people participated in this exploratory study, 22 of whom were students attending the 9th grade and 23 were attending the 10th grade. Most were between 13 and 15 years of age (64.4%), and the proportion of boys and girls was similar (53.3% and 46.7%, respectively). Regarding the education of mothers and fathers, 26.7% completed the ninth grade, while the remainder were distributed along the different levels of education, but with lower percentages.

Regarding the exploratory pre-test, the descriptive results indicate that the item with lower agreement values was the item 18 (“my school organizes joint activities with Spain”; 66.7% of the participants indicated low agreement, positioning their answer in the values 1 and 2 of the five-point Likert scale). In turn, the item with higher agreement values was the item 20 (“my school has sufficient resources (computers; books); 57.8 of the participants indicated high agreement, positioning their answer in the values 4 and 5, and no participants selected values 1 or 2). These results are in line with the contents of the educational project of this school. Qualitatively, as we were applying the questionnaire in the classroom, the students had the opportunity to ask questions or solicit clarification. We did not collect any suggestions for changing the items.

After this process, we proposed a scale of 20 items, all rated on a five-point Likert scale.

This scale was administered in the presence of a researcher, without a time limit and ensuring the opportunity to clarify any doubts, between school years of 2016 to 2017 and 2017 to 2018. Informed consent was obtained from participants and parents, always respecting schools' procedures regarding the development of surveys in the school environment.

Participants: The sample and its characteristics

After the exploratory study, we proceeded to validate the scale. The sample included 3,968 young people, attending the 9th to 12th grades (Table 1), from all Portuguese municipalities bordering Spain (38 municipalities). Cohen et al. (2011, p. 158) stated that: “[o]ne central issue in considering the reliability and validity of questionnaire surveys is that of sampling.” School Clusters¹ from the border municipalities were listed and selected. The scale validation was developed in all municipalities of Continental Portugal that border Spain: one School Cluster from 38 municipalities along the border. In municipalities where there is only one School Cluster, the questionnaire was applied there (34 municipalities). It is important to notice that among these, 25 School Clusters are up to secondary education (12th grade) and 9 are up to basic education (9th grade). Regarding the four municipalities with more than one School Cluster with secondary education, we choose one randomly.

Once the 38 school clusters were selected, the research team contacted each school's Head teacher to introduce the study and to explore their interest and availability. Each school was responsible for the selection of students from 9th, 10th, 11th, and 12th grades to fill out the questionnaire.

In the sample, 56% of young people were from the northern region of Portugal, 11.8% from the center, and 44,8% from the southern regions. The northern region of Portugal integrates the largest number of schools, following the demographic distribution of the Portuguese population. The sample included 54% of girls and 46% of boys. The highest percentage of students (53.3%) has between 16 and 18 years old.

As for students' educational pathways, 33.1% attended the 9th grade, 27.9% attended the 10th grade, 20.6% attended the 11th grade, and 18.2% attended the 12th grade. Of the young people attending secondary school (10th, 11th and 12th grade), 91.87% attender general secondary education and 7.5% attended vocational secondary education. For the data analysis, we will not differentiate these groups of students, since the phenomenon under study is the same, regardless of the option students choose in terms of the educational offer.

Concerning the education of parents, 33.2% of mothers completed secondary education and 21.8% completed a higher education degree. On the other hand, 23.6% of fathers completed secondary education and 21.9% completed the 9th grade. The remaining percentages are distributed over the various levels of education (from primary education to university), but are lower than those previously reported.

Data analysis: Techniques and justification

The analysis was developed considering validity as “a demonstration that a particular instrument, in fact, measures what it purports to measure” (Cohen et al., 2011, p. 179). We used different statistical procedures, with the support of IBM SPSS Statistics 26 and IBM SPSS AMOS 26 Graphics, to ensure the psychometric properties of the RSS-Y.

Firstly, we used Cronbach's alpha to gather information about the scale's reliability, specifically internal consistency (Cohen et al., 2011; Field, 2013), and to understand whether the items or factors reflect the same construct we intend to measure.

Another measure mobilized was a Principal Component Analysis (PCA) to identify dimensions and the percentage of variance explained by these groups of items/factors. PCA also informed the construct validity through convergent techniques when exploring items with high correlations between them (Cohen et al., 2011; Field, 2013). The results from PCA were complemented with Pearson Correlations. Another measure mobilized was a Principal Component Analysis (PCA) to identify dimensions and the percentage of variance explained by these groups of items/factors. PCA also informed the construct validity through convergent techniques when exploring items with high correlations between them (Cohen et al., 2011; Field, 2013). The results from PCA were complemented with Pearson Correlations. In order to study the content validity, the statistically suggested factors will be framed by published literature on the subject (national and international databases such as EBSCOhost and Online Knowledge Library, Web of Science) in order to understand whether the items and factors are theoretically representative. We also will take into account the research already developed by one of the co-authors.

Additionally, to study the structure and the relations between observable and latent variables, we performed a Confirmatory Factor Analysis (CFA). Through measures of goodness of fit, it was possible to verify whether our model is adjusted, confirming the construct validity of the scale (Bentler, 1990; Hu & Bentler, 2009; Marsh et al., 2004; Schermelleh-Engel et al., 2003).

Results

Internal consistency and overall perception of the scale

The analysis of Cronbach's alpha indicates that this scale presents very good internal consistency ($\alpha=0.922$; Field, 2013). This indicator offers high levels of confidence in analysing the results of this scale.

The scale consisted of 20 items and we propose to eliminate items 18, 3, and 4. Item 18 ("my school organizes joint activities with Spain") has the least expressive correlations with the others. Regarding this item, it is worth mentioning that some Spanish border regions do not have cities, villages, or schools near the Portuguese borders, nor accessibilities to get there. In addition, there is strict legislation on border crossing for minors, which can make the connections more difficult. Therefore, the elimination of the item is justified by statistical criteria, as well as by geographic and legislative factors. Current Portuguese legislation, through the Territorial Cohesion Plan, seeks to bring the borders closer together and reduce the difficulties of movement, so this item may be relevant in the future, when there are structural conditions that make its operationalization possible.

We also considered eliminating items 3 ("my school cares about my well-being") and 4 ("my school is a reference in my region"), because they have a very similar factor weight, when studying their integration into factors. These items evaluate constructs that are more abstract, while the majority of items reflect the concrete actions or resources of schools.

As such, the remaining 17 items compose the final version of the scale. The Kaiser-Meyer-Olkin and Bartlett's Sphericity tests were statistically significant, meeting the statistical requirements to proceed with the analysis ($KMO=0.934$; $\chi^2(136)=27,824.476$, $p=0$).

Validation of the scale and its dimensionality

The statistical analysis was developed with SPSS IBM Statistics 26 and missing data were handled by list wise deletion (Jackson et al., 2009).

The statistical analysis, through *principal component analysis* (Table 2), indicates that the scale can be organized into three factors, explaining 57.393% of the total variance. The eigenvalues are

Table 2. Principal Component Analysis, RSS-Y scale.

Item	Factors			Communalities
	1	2	3	
1. My school has an environment that motivates me to study and to invest in my education.	0.442		0.546*	0.572
2. There is an environment of trust and security in my school.	0.427		0.558*	0.561
5. My teachers feel that my success also depends on them.	0.766*			0.606
6. I feel that my teachers are concerned about my school results.	0.796*			0.670
7. My school organizes initiatives for families to get involved in the school life.	0.409	0.522*		0.445
8. My school is concerned with my preparation for higher education.	0.717*			0.674
9. My school is concerned with my preparation for the labor market.	0.667*			0.637
10. At my school, people believe in my ability to solve problems.	0.603*			0.524
11. In addition to classes, my school creates several opportunities for me to achieve educational success.	0.483	0.573*		0.600
12. My school gives us the opportunity to make suggestions.	0.400	0.587*		0.565
13. My school promotes debates on current issues.		0.704*		0.574
14. We discussed in the classroom different points of view on the same topic.		0.549*		0.455
15. My school is concerned with violence and bullying.		0.597*		0.486
16. In my school, there is no discrimination against people of different cultures or ethnicities.		0.529*		0.331
17. My school promotes activities to include people from different cultures and ethnicities.		0.760*		0.599
19. My school has good facilities.			0.845*	0.753
20. My school has sufficient resources (computers; books).			0.803*	0.707
% Variance	43.140	7.603	6.650	57.393 (% cumulative)
% Variance after rotation	22.058	21.035	14.300	57.393 (% cumulative)
Eigenvalue	7.334	1.292	1.130	
Cronbach's alpha reliability	0.846	0.845	0.789	

greater than 1, indicating that all factors represent an adequate measure of the internal structure of this scale. The *Pearson correlation coefficients* among all factors indicate statistical significance ($p=0$) and the correlation values vary between 0.569 and 0.675, which means large effect relationships between the three factors (Field, 2013). Factor loadings smaller than 0.30 have been omitted as well as the item 3, 4 and 18 because of their elimination for the final version of RSS-Y scale as above mentioned.

Table 3. Goodness-of-fit indicators of CFA Model, three factors.

CFI	GFI	RMSEA [IC]	SRMR	χ^2	gl	p	χ^2/gl
0.901	0.914	0.080 [0.077_0.082]	0.0455	3,034.425	116	0	13.689

Following the PCA, items 5, 6, 8, 9 and 10 composed *factor 1*, related to young people's perspectives on adult school figures. This factor reflects the concerns, engagement, commitment, and awareness of school figures toward young people's educational pathways and future. *Factor 1* has good internal consistency ($\alpha=0.846$) and its items present large effect correlations between them (r inter-item=0.523). It explains the bigger proportion of the scale's variance (43.140% total variance explained before rotation; 22.058% total variance explained after rotation). This factor includes aspects that are perceived as the social engagement of schools and teachers with students, "developing supportive and encouraging relationships" (Jennings & Greenberg, 2009, p. 492). These are indicators of the provision of support for students' needs and have impact on students' school engagement (Cook-Sather, 2007, p. 348), students' motivation, academic and social outcomes as well as students' perceptions about teacher caring (Ramberg et al., 2019).

Factor 2 is composed of items 7, 11, 12, 13, 14, 15, 16, and 17 (eight items) and explains 21.035% of total variance after rotation (7.603% of the total variance before rotation). Its items are about young people's perspectives on school practices to promote inclusion and participation, expression of opinions, and development of critical thinking. This factor has good internal consistency ($\alpha=0.845$) and the relationships between the items present moderately large effects (r inter-item=0.405). Recognizing that deprived contexts face educational inequalities, resilient schools must be attentive to fundamental educational priorities, such as inclusion and inclusive values, participation, as well as social and civic awareness. As expressed by Miles and Singal (2010, p. 11), "[e]ducation is, however, a much broader concept than the acquisition of skills." Thus, equity should be fostered in the access to, and experience of, education, as well as in final success.

Factor 3 includes items 1, 2, 19, and 20 (four items) and represents young people's perceptions regarding school resources, infrastructures, and safety provision. This factor explains 14.300% of the total variance after rotation (6.650% of the total variance before rotation). It has good internal consistency ($\alpha=0.789$) and moderately large effect relationships between the items (r inter-item=0.482). Studies suggest that schools' technical conditions may have an impact on students' success and sense of belonging (Costa et al., 2015; Whitney et al., 2012). Moreover, Whitney et al. (2012, p. 48) consider it important to take into account the "student's impression of the safety and security levels of the individual school," as an enhancer of resilient schools.

Cross-validation of the scale

To proceed with the analysis, we conducted a *confirmatory factor analysis* (Figure 1), which confirmed the construct validity of the scale.

Following published literature on the values of fit indexes, we consider: (i) CFI and GFI equal or above to 0.90 indicate acceptable model adjustment; (ii) RMSEA equal or below to 0.08 indicates acceptable model adjustment; and (iii) SRMR below 0.05 indicates good model adjustment (Bentler, 1990; Bryne, 2010; Hu & Bentler, 2009; Marsh et al., 2004; Schermelleh-Engel et al., 2003).

In this way, this model presents a good fit to the data (Table 3). The GFI (goodness of fit index) and CFI (comparative fit index) were, respectively, 0.914 e 0.901, both higher than 0.90. The RMSEA (root mean square error of approximation) index is acceptable (0.080) and SRMR

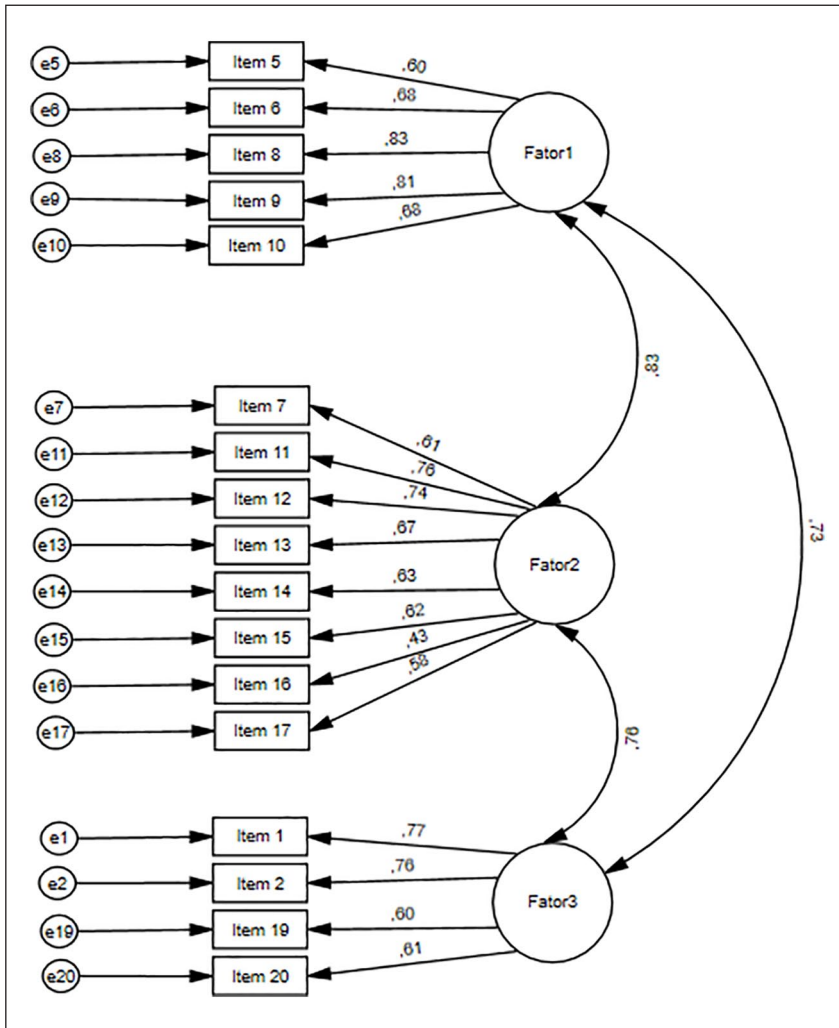


Figure 1. First-order CFA model.

(standardized root mean square residual) is good (0.0455). The values of standardized regression weights are significant and vary from 0.43 to 0.83. The values of the correlation between the three factors are also positive and statistically significant.

Conclusion

Schools in border regions inspired the development of this scale to assess the aspects, easily identified by young people, which may be essential for the development of school resilience.

The article focuses on the development and validation of a tool to measure resilient schools, reflecting the ecological perspective (Adger, 2000; Ungar, 2012), and to be filled out by students. This scale was developed taking into consideration theoretical definitions of the concept of

resilient schools, as well as previous fieldwork in border regions (Silva, 2014), and includes a set of dimensions or characteristics which schools should/can present, and which favor their resilient action and quality.

This scale is not about better schools, but about identifying the existence of characteristics of resilience that support the action of schools in general, recognizing their potential. It is important to note that, because they are sensitive to their internal and external conditions, and reactive to an identified problem or risk situation, resilient schools can act differently and develop different practices. Although there is no formula applicable to all schools, we must highlight that schools can share a culture of resilience that encompasses the group of characteristics presented in this article and considered fundamental in order to face challenges and stay stronger. According to Whitney et al., “[h]igh-performing, at-risk schools are not all equal in the challenges they face and the resources available” (p. 36). In general, this scale is applicable to various contexts, although always considering the importance of contextualising educational practices and policies.

Statistical results indicate this scale meets the criteria of validity and internal consistency. The PCA, CFA, and other supplementary statistical analyses demonstrated evidence to support a three-factor model. The associated theory supports the adequacy of the scale to measure resilient schools in vulnerable territories. This scale is valid and presents good internal consistency. Additionally, this process demonstrated that the scale is appropriate for young people.

The identified factors suggest important dimensions of resilient schools that can be measured by young people: (i) concerns, engagement, commitment, and awareness of the school and its figures toward young people’s educational pathways and future; (ii) school practices promoting inclusion and participation (considering school figures and surrounding community); and (iii) sufficient educational resources and adequate facilities.

This scale may be an analytical tool to examine the quality and differentiated approaches of schools. These approaches are better understood when considering their interaction with the community in which they are integrated, as well as the guidelines of structural determinants, such as European and National level educational policies. We recommend that measuring school resilience should include aspects used to discuss school resilience, such as those related to local, territorial, social, and intercultural dimensions and opportunities.

Although this scale intends to measure the resilience of schools in vulnerable contexts and at risk situations, being aligned with most of the published literature on this matter (Motala, 2001; Pinskaya et al., 2018), some literature considers that resilient schools may not be only at-risk schools. Authors as Milstein and Henry (2008, p. 75) consider that developing resilience is fundamental and transversal to different schools, from several contexts, as an answer to demands, contextual or periodic, from the educational sector: “[T]his stance [to take a “business” as usual] will not suffice now or for the foreseeable future because challenge and change are the dominant reality.” Each school may be able to identify its problems and risks, whether structural or not (such as the most recent Pandemic COVID-19), and act systemically in a resilient way.

Limitations of the scale

A limitation of this scale may be that the sample consists mostly of young people from regular courses and includes few vocational students. It should be noted that, in Portuguese schools, overall, there is a smaller percentage of vocational students.

Recommendations and future research

In the future, it would be important to develop qualitative research (for example, case studies) in order to better understand aspects such as the perspective of school figures on resilient strategies and their influence on school improvement.

Acknowledging that networks and partnerships with the community may have a relevant impact on the development of resilient schools (Whitney et al. 2012), we recommend that items related to networking, partnerships and interactions should be included more evidently. As a recommendation for future research, we also propose the development of other versions of the RSS scale to be applied to the different actors of the educational community, namely head teachers, teachers, staff, and families. Regarding head teachers, it would be important to include items regarding self-evaluation and monitoring, as well as internal and external communication. According to Milstein and Henry (2008, p. 89), “[s]tudents, educators, and community members have concerns, ideas, and energies that are relevant and can contribute to the school’s success.” Furthermore, it would be interesting to study similarities and differences in the application of this scale to regular and VET students.

Regarding its practical application, we consider that the RSS-Y can be used not only for scientific research in other countries, but also by the schools in their monitoring and evaluations, as an orientation of characteristics that strengthen the schools.

This article highlights the importance of taking into account different dimensions when thinking about schools, not only global aspects, but also more specific, local, social, and educational demands. Tools that think the school as a whole and value characteristics that make it resilient are relevant for all schools, namely those at risk, so they can improve in terms of conditions and resources that benefit their action in the present and future.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Research funding – PhD Scholarship: This work was supported by the Portuguese Foundation for Science and Technology (FCT) and by the European Social Fund, under the Human Capital Operational Programme (POCH) from Portugal 2020 Programme, specifically under the FCT PhD Programmes (grant number PD/BD/128118/2016, from the Doctoral Programme in Education of the University of Porto DPE-UP); and by the Portuguese Government, through the FCT, under the CIEE’s strategic funding (grant number UID/CED/00167/2013).

Research funding – Research Project: GROW.UP, *Grow Up in Border Regions in Continental Portugal: Young People, Educational Pathways, and Agendas*. Funded by the European Regional Development Fund (ERDF), through the Northern Regional Operational Programme (NORTH 2020) of Portugal 2020, and Science and Technology Foundation, IP (FCT) (reference: PTDC/CED-EDG/29943/2017).

Note

1. “School Clusters are organisational units that can encompass several schools and learning cycles, from kindergarten to upper secondary education” (European Commission/EACEA/Eurydice, 2020, p. 26).

References

- Adger, W. N. (2000). Social and ecological resilience: Are they related? *Progress in Human Geography*, 2(3), 347–64. <https://doi.org/10.1191/030913200701540465>
- Aldridge, J., & Ala’l, K. (2013). Assessing students’ views of school climate: Developing and validating the What’s Happening In This School? (WHITS) questionnaire. *Improving Schools*, 16(1), 47–66. <https://doi.org/10.1177/1365480212473680>
- Amiguiño, A. (2008). *A escola e o futuro do mundo rural*. Fundação Calouste Gulbenkian.

- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2), 238–246. <https://doi.org/10.1037/0033-2909.107.2.238>
- Boix-Tomás, R. B., Champollion, P., & Duarte, A. M. (2015). Territorial specificities of teaching and learning [Introduction of special issue]. *Sisyphus – Journal of Education*, 3(2), 7–1. <https://doi.org/10.25749/sis.7880>
- Bronfenbrenner, U. (1989). Ecological systems theory. In R. Vasta (Ed.), *Annals of child development* (vol. 6, pp.187–249). Greenwich, CT: JAI Press.
- Brown, M., McNamara, G., O'Brien, S., Skerritt, C., O'Hara, J., Faddar, J., Cinqir, S., Vanhoof, J., Figueiredo, M., & Kurum, G. (2020). Parent and student voice in evaluation and planning in schools. *Improving Schools*, 23(1), 85–102. <https://doi.org/10.1177/1365480219895167>
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). Routledge.
- Campos, P. (2020). Resilience, education and architecture: the proactive and 'educational' dimensions of the spaces of formation. *International Journal of Disaster Risk Reduction*, 43, 1–11. <https://doi.org/10.1016/j.ijdr.2019.101391>
- Cheng, Y. C., & Tam, W. M. (1997). Multi-models of quality in education. *Quality Assurance in Education*, 5(1), 22–31.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). Routledge/Falmer.
- Cook-Sather, A. (2007). What would happen if we treated students as those with opinions that matter? The benefits to principals and teachers of supporting youth engagement in school. *NASSP Bulletin*, 91(4), 343–362. <https://doi.org/10.1177/0192636507309872>
- Costa, A. R., Silva, S. M., & Fernandes, F. B. (2015). O envolvimento de jovens no ambiente construído da escola: Do espaço físico ao espaço educativo. *Educação, Sociedade & Culturas*, 44, 67–85.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. Macmillan.
- Direção-Geral de Estatísticas da Educação e Ciência [DGEEC]. (2019). *Perfil do Aluno 2017/2018*. DGEEC.
- Direção-Geral da Política Regional e Urbana da Comissão Europeia [DG Regio]. (2020). Border Orientation Papel: Spain-Portugal. Retirado de https://www.poctep.eu/sites/default/files/border_paper_es_pt.pdf
- Elassy, N. (2015). The concepts of quality, quality assurance and quality enhancement. *Quality Assurance in Education*, 23(3), 250–261. <https://doi.org/10.1108/QAE-11-2012-0046>
- European Commission/EACEA/Eurydice. (2020). *The structure of the European education systems 2020/21: Schematic diagrams. Eurydice facts and figures*. Publications Office of the European Union.
- European Union/European Regional Development Fund [EU/ERDF] (2017). Versão reformulada: INTERREG V-A Espanha-Portugal (POCTEP). Retirado de https://www.poctep.eu/sites/default/files/documentos/1420/pt_poctep_reprogramacion_v7_05_06_18_limpio.pdf
- Field, A. (2013). *Discovering statistics using IBM SPSS* (4th ed.). Sage.
- Ghiglione, R., & Matalon, B. (1993). *O inquérito: teoria e prática* (trad. Conceição Lemos Pires) (4a ed.). Celta Editora.
- Goldberg, J. M., Sklad, M., Elfrink, T. R., Schreurs, K. M. G., Bohlmeijer, E. T., & Clarke, A. M. (2018). Effectiveness of interventions adopting a whole school approach to enhancing social and emotional development: A meta-analysis. *European Journal of Psychology of Education*, 34, 755–782. <https://doi.org/10.1007/s10212-018-0406-9>
- Heggen, K. (2000). Marginalisation: On the fringe of the periphery: Youth as a risky life stage? *Young*, 8(2), 45–62. <https://doi.org/10.1177/110330880000800203>
- Henderson, N. (2013). Havens of resilience. *Resilience and Learning*, 71(1), 22–27.
- Huilla, H. (2020). A circle of research on disadvantaged schools, improvement, and test-based accountability. *Improving Schools*, 23(1), 68–84. <https://doi.org/10.1177/1365480219884474>
- Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research*, 79(1) 491–525. <https://doi.org/10.3102/0034654308325693>
- Jackson, D. L., Gillaspay, J. A., & Purc-Stephenson, R. (2009). Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods*, 14(1), 6–23. <https://doi.org/10.1037/a0014694>

- Hu, L.-t., & Bentler, P. M. (2009). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Leite, C., & Fernandes, P. (2014). “Avaliação, qualidade e equidade”, *Avaliação*, 19(2), 421–438.
- Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler’s (1999) findings. *Structural Equation Modeling: A Multidisciplinary Journal*, 11(3), 320–341. https://doi.org/10.1207/s15328007sem1103_2
- Miles, S., & Singal, N. (2010). The education for all and inclusive education debate: Conflict, contradiction or opportunity? *International Journal of Inclusive Education*, 14(1), 1–15. <https://doi.org/10.1080/13603110802265125>
- Millstein, M. M., & Henry, D. A. (2008). *Leadership for resilient schools and communities* (2nd ed.). Corwin Press.
- Motala, S. (2001). Quality and indicators of quality in South African education: A critical appraisal. *International Journal of Educational Development*, 21(1), 61–78. [https://doi.org/10.1016/S0738-0593\(00\)00014-6](https://doi.org/10.1016/S0738-0593(00)00014-6)
- Naicker, I., Grant, C., & Pillay, S. (2016). Schools performing against the odds: Enablements and constraints to school leadership practice. *South African Journal of Education*, 36(4), 1–10. <https://doi.org/10.15700/saje.v36n4a1321>
- Niemi, R., & Loukomies, A. (2020). ‘Should we ask the students’ opinions first?’ Practice architectures of student participation from the perspective of teachers. *Improving Schools*, 1–17. <https://doi.org/10.1177/1365480220974225>
- Neves, T., Pereira, M. J., & Nata, G. (2012). One dimensional school rankings: A non-neutral device that conceals and naturalizes inequalities. *International Journal of School Disaffection*, 9(1), 7–22. <https://doi.org/10.18546/IJSD.09.1.02>
- Patterson, J., & Patterson, J. (2004). Sharing the lead. *Educational Leadership*, 61(7), 74–78.
- Patterson, J., Patterson, J., & Collins, L. (2002). *Bouncing back! How your school can succeed in the face of adversity*. Eye on Education.
- Phillips, M. D., Turner, M. F., & Holt, T. J. (2014). Exploring resiliency within schools: An investigation of the effects of protective factors. *Youth & Society*, 46(1), 89–111. <https://doi.org/10.1177/0044118X1425644>
- Pinskaya, M., Khavenson, T., Kosaretsky, S., Zvyaginцев, R., Mikhailova, A., & Chirkina, T. (2018). Above barriers: A survey of resilient schools. *Educational Studies Moscow*, 2, 198–227.
- Punch, K. F. (2014). *Introduction to social research: Quantitative & qualitative approaches* (3rd ed.). Sage Publications.
- Ramberg, J., Låftman, S. B., Almquist, Y. B., & Modin, B. (2019). School effectiveness and students’ perceptions of teacher caring: A multilevel study. *Improving Schools*, 22(1), 55–71. <https://doi.org/10.1177/1365480218764693>
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research*, 8(2), 23–74.
- Silva, S. M. (2014). Growing up in a Portuguese borderland. In S. Spyrou, & M. Christou (Eds.), *Children and borders* (pp. 62–77). Palgrave Macmillan.
- Silva, S. M., & Silva, A. M. (2016). *School population survey: Young people, education and border regions*. Questionnaire approved by the Portuguese Directorate-General for Education, through the System of Monitoring Research in Education Environments (MIME 0566300001).
- Silva, A. M., & Silva, S. M. (2018). Relação escola-comunidade em regiões de fronteira. *Educação, Sociedade & Culturas*, 52, 29–46.
- Sobrinho, J. D. (2012). “Políticas y conceptos de calidad: dilemas y retos”, *Avaliação (Campinas)*, 17(3), 601–618. <https://doi.org/10.1590/S1414-40772012000300003>
- Stoll, L., & Fink, D. (1996). *Changing our schools: Linking school effectiveness and school improvement*. Open University Press.

- Trillo-Santamaría, J.-M., & Paül, V. (2014). The oldest boundary in Europe? A critical approach to Spanish-Portuguese Border: the Raia between Galicia and Portugal. *Geopolitics, 19*(1), 161–181. <https://doi.org/10.1080/14650045.2013.803191>
- Ungar, M. (2011). The social ecology of resilience: Addressing contextual and cultural ambiguity of a nascent construct. *American Journal of Orthopsychiatry, 81*(1), 1–17. <https://doi.org/10.1111/j.1939-0025.2010.01067.x>
- Ungar, M. (2012). Social ecologies and their contribution to resilience. In M. Ungar (Ed.), *The social ecology of resilience: A handbook of theory and practice* (pp. 13–31). Springer. https://doi.org/10.1007/978-1-4614-0586-3_2
- Wallin, D. (2008). A comparative analysis of the educational priorities and capacity of rural school districts. *Educational Management Administration & Leadership, 36*(4), 566–587. <https://doi.org/10.1177/1741143208095794>
- Whitney, S. D., Maras, M. A., & Schisler, L. J. (2012). Resilient schools: Connections between districts and schools. *Middle Grades Research Journal, 7*(3), 35–50.
- Yndigeñ, C. (2003). Life planning in the periphery: life chances and life perspectives for young people in the Danish-German border region. *Young, 11*(3), 235–251. <https://doi.org/10.1177/11033088030113003>
- Young, M. (2011). What are schools for?. *Educação, Sociedade & Culturas, 32*, 145–155.