

# CROSS-CULTURAL VALIDATION OF THE RESILIENCE SCALE FOR ADULTS IN THE QUEBEC UNIVERSITY POPULATION

**Karolane Côté, & Nathalie Parent**

*Departement des fondements et pratiques en éducation, Université Laval (Canada)*

## Abstract

In recent years, the concept of resilience has received attention from many researchers, particularly in light of the pandemic (Kontogiannis, 2021; Vindegaard & Benros, 2020). Several studies have sought to map the situation in various countries and compare how nations are coping with this adversity. Resilience is therefore a timely topic and concerns about the methodological aspects associated with cultural comparisons are justified. In this context, the main objective of this dissertation is to contribute to the cross-cultural validation of a widely recognized instrument for measuring resilience; the Resilience Scale for Adults (RSA; Hjemdal et al., 2001) with a sample of 405 Quebec and French speaking students. For comparison purposes, the statistical analyses carried out were based on two measurement models: the classical test theory and the item response theory. Analyses of the factor structure of the instrument show that the six-factor model obtained using exploratory structural equations (ESEM) fits the data collected from the Quebec sample well. The alpha coefficients of the dimensions vary from very good (0.84) to excellent (0.95). These results are comparable to those obtained with other cultural groups by several researchers. The analysis of classic items and that based on Samejima's (1969) graded model show that the majority of the RSA items are effective and useful for evaluating resilience in Quebecers, especially in those with a very low to moderate level of resilience. Five items present less satisfactory indices: three in the Social Competence dimension and two in the Social Resources dimension. All in all, the RSA has satisfactory metric qualities and is an instrument that can be used to assess resilience in the Quebec context. Studies involving direct comparisons between cultures are still needed to support these results.

**Keywords:** *Resilience, scale, cross-cultural validation, item response theory, factor analysis.*

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## 1. Introduction

The pandemic has fueled the scientific community's interest in the concept of resilience (Kontogiannis, 2021). Resilience can be defined as an individual's ability to adapt or maintain normative functioning despite exposure to adversity (Bonanno, 2008). In a context of common adversity, it is relevant to compare how different populations adapt and to ensure the quality of studies involving cross-cultural comparisons, there is a need to ensure that valid measurement instruments are used in target populations (Davidov et al., 2014). Cross-cultural validation studies are generally conducted in the light of Classical Test Theory (CTT) and involve confirmatory factor analyses, reliability analyses and criterion validity estimates. Few of them imply Item Response Theory analyses (IRT).

The Resilience Scale for Adults (Hjemdal et al., 2001) has been identified as one of the best resilience measures with various populations (Windle et al., 2011). It contains 33 semantic differentiator items with seven anchor points and assesses six dimensions of resilience: Self Perception, Planned Future, Social Competence, Structured Style, Family Cohesion and Social Resources. Cronbach's alphas vary from 0.68 to 0.84 between dimensions (total alpha = 0.89).

Several cross-cultural validation studies show that the factorial structure of RSA is stable with various populations, but none of them report statistical analyses within the framework of IRT and highlight the complementarity of these analyses with CTT analyses.

## 2. Objectives

This study pursues two objectives: 1) contribute to the cross-cultural validation of the Resilience Scale for Adults (RSA; Hjemdal et al., 2001) by assessing the psychometric qualities of this scale with a French-speaking university sample in Quebec (Canada) and 2) study the complementarity of statistical

analyses conducted in the light of Classical Test Theory (CTT) and Item Response Theory (IRT) regarding psychometric properties of the RSA.

### 3. Methods

The student community of a university in Quebec (Canada) was contacted by email to participate in a study on young adult resilience and to complete an online survey (Parent, et al., 2012). In this context, 405 participants (81.5% women) between the ages of 18 and 54 ( $M = 25.94$ ,  $SD = 6.98$ ) completed the RSA and other measures to assess adversity, adjustment, and resilience. It should be noted that half of the participants (49.5%) had experienced more than three traumatic events according to the Early Traumatic Experiences (Bremner, 2004).

### 4. Data analysis

TCT analyses: The factorial structure of the RSA was tested using different models of confirmatory factor analyses (AFC) and exploratory structural equations (ESEM) modelling analyses. The internal consistency of each SAR dimension was also studied.

IRT analyses: The Samejima graduated model (1969) estimated the metric characteristics of items (Bertrand & Blais, 2004). Indices of discrimination ( $\alpha$ ) indicate the extent to which an item can differentiate individuals according to their level of latent trait. Baker (2001) proposes the following classification to interpret this index: a) very low: 0.34 or less, (b) low: 0.35-0.64, (c) moderate: 0.65-1.34, (d) good: 1.35-1.69, and (e) excellent: 1.70 or more. Difficulty Indexes ( $\beta$ ) are location indexes and identify at what level of the measurement scale the item works best (Baker & Kim, 2017). In general, it is expected that the response options have some dispersion (moderate) and that as the response options increase, the index is higher (i.e., implies a higher level of resilience).

### 5. Results

The six-factor ESEM model is the one that best fits the data in a Quebec context ( $TLI = 0,932$ ;  $CFI = 0,956$  ;  $RMSEA = 0,038$  ;  $SRMR = 0,027$ ). However, item SR23 does not charge on its original factor (Social resources;  $\lambda = 0.057$ ), but under another factor (Family cohesion;  $\lambda = 0.652$ ).

Table 1 reports indices of internal consistency (Chronbach's alpha) and offers a resume of discrimination and difficulty indices for each of the RSA dimensions.

Table 1. Internal consistency and IRT analysis.

Dimensions	Cronbach's alphas	Discrimination parameter ( $\alpha$ )	Difficulty parameter ( $\beta$ )	Problematic items
Perception of Self	.914	Moderate (1.028) to excellent (1.994)	All items are satisfactory*	
Planned Future	.933	Good (1.648) to excellent (3.027)	All items are satisfactory*	
Social Competence	.939	Moderate (.714) to excellent (5.010)	Three items are unsatisfactory**	SC3, SC9, SC26
Family Cohesion	.951	Excellent (1.751 to 3.181)	All items are satisfactory*	
Social Resources	.949	Moderate (.860) to excellent (5.816)	Two items are unsatisfactory**	SR17, SR23
Structured style	.837	Moderate (1.118) to excellent (2.070)	All items are satisfactory*	

Note. \*Satisfactory: Show a moderate increase in difficulty parameter for higher levels of resilience; \*\*Unsatisfactory: they have some response categories that do not particularly target a certain level of resilience and a predominance of a limited number of response categories.

As shown, Cronbach's alphas range from very good (0.84) to excellent (0.95) for RSA dimensions. Cronbach's alpha for the global scale is also excellent (0.95).

The discriminating power ( $\alpha$ ) of items ranges from moderate (0.71) to excellent (5.82). No item is problematic regarding discrimination. Ten items of the RSA (30.3%) have moderate indicators of discrimination, four (12.1%) are considered good and nineteen (57.6%) are considered excellent.

Overall, there is a moderate increase in the difficulty index for higher levels of resilience. This is consistent with what the IRR considers appropriate (Pini 2012). Five items show less satisfactory signs of difficulty, that is, they have certain response categories that do not specifically target a certain level of resilience.

## 6. Discussion

Results of this study highlight the good psychometric properties of RSA among Quebec university students. The six-factor factor structure is confirmed although it is an ESEM model that appears to be the most appropriate and one item is problematic (SR23). The internal consistency indices are excellent.

Most of RSA items are effective and useful in assessing the resilience of Quebecers, especially those with very low to moderate resilience. Five items have less satisfactory indices: three come from the Social Competence dimension and two from Social Resources. Revision of these items would improve the psychometric properties of the RSA. Also, it would be good to reformulate these items to be more effective in distinguishing individuals with high levels of resilience, under-represented in the current RSA format.

However, the sample of participants is a limitation of this study. It only includes university students that are more educated than average population and mostly women. A study involving a more representative sample of participants would be useful. Further IRT analyses would also allow to study the differential functioning of items across cultures.

## 7. Conclusion

Overall, results support the use of the RSA to assess resilience of Quebecers, mostly with university women showing very low to moderate factors of resilience. This research also highlights the relevance of IRT as a technique for studying item biases and the use of measurement scales. IRT analyses provide additional information to those obtained using CTT analyses. The simultaneous use of CTT and IRT analyses is recommended.

## References

- Baker, F.B. (2001). *The basics of item response theory*. Washington, DC : ERIC Clearinghouse on Assessment and Evaluation
- Baker, F. B., & Kim, S. H. (2017). *The basics of item response theory*. New York : Springer International.
- Bertrand, R., & Blais, J. G. (2004). *Modèles de mesure: l'apport de la théorie des réponses aux items*. Sillery : Presses de l'Université du Québec.
- Bonanno, G. A. (2008). Loss, trauma and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *Psychological Trauma: Theory, Research, Practice, and Policy*, *S(1)*, 101–113. doi: 10.1037/1942-9681.S.1.10
- Bremner, J. D., Bolus, R., & Mayer, E. A. (2007). Psychometric properties of the Early Trauma Inventory-Self Report. *The Journal of nervous and mental disease*, *195(3)*, 211–218. <https://doi.org/10.1097/01.nmd.0000243824.84651.6c>
- Davidov, E., Meuleman, B., Cieciuch, J., Schmidt, P., & Billiet, J. (2014). Measurement equivalence in cross-national research. *Annual Review of Sociology*, *40*, 55-75. <https://doi.org/10.1146/annurev-soc-071913-043137>
- Hjemdal, O., Friborg, O., Martinussen, M., & Rosenvinge, J. (2001). Preliminary results from the development and validation of a Norwegian scale for measuring adult resilience. *Journal of the Norwegian Psychological Association*, *38*, 310–317.
- Kontogiannis, T. (2021). A qualitative model of patterns of resilience and vulnerability in responding to a pandemic outbreak with system dynamics. *Safety Science*, *134*(September), 105077. <https://doi.org/10.1016/j.ssci.2020.105077>
- Parent, N., Hjemdal, O., & Hébert, M. (2012). *Resilience Scale for Adults : Validation with a French-speaking Canadian sample*. Paper presented at the meeting of International Psychological Applications Conference and Trends (INPACT), Lisbon, Portugal.
- Pini, G. (2012). À propos de la théorie des réponses aux items : II Le cas d'items polytomiques. *Éducatrice : Qualité de la mesure en éducation*.
- Samejima, F., (1969). Estimation of latent ability using a response pattern of graded scores. *Psychometrika Monograph Supplement*, *34*(4, Pt.2), 100.
- Vindegaard, N., & Benros, M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*, *89*(May), 531-542. <https://doi.org/10.1016/j.bbi.2020.05.048>
- Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measures. *Health and quality of life outcomes*, *9(1)*, 2-18. <http://www.hqlo.com/content/9/1/8>