

# Psychometric properties of the Creole Haitian version of the Resilience Scale amongst child and adolescent survivors of the 2010 earthquake

Jude Mary Cénat\*, Daniel Derivois

*Center of Research in Psychopathology and Clinical Psychology (CRPPC), Psychology Institute, University Lumière Lyon 2, France*

## Abstract

Resilience is defined as the capacity of human beings to deal with and adapt to adversity, suffering, tragedy or other traumatic event. This study aims to investigate psychometric properties and the underlying structure of the Creole version of the RS among children and adolescents survivors to the 2010 Haitian earthquake. A total of 872 children and adolescents exposed to the earthquake with an average age of 14.91 (SD = 1.94) completed the Creole version of RS, the Impact Event Scale-Revised, the Children Depression Inventory and the Social Support Questionnaire-6. The current validity of RS and the internal consistency were investigated; sex, age, religion and others socio-demographic variables differences were also analysed. Cronbach's alpha coefficient for the RS was .77; the split-half coefficient was .72. The goodness-of-fit for the 5-factor model presents the best adjusted indices. The total resilience score was correlated positively with social support ( $r = .42, p < .01$ ). Mean score of the RS was 131.46 (SD = 21.01). No significant differences were observed about sex, age and residential municipality. The results showed that the Haitian Creole version of RS is a valid and reliable measure in assessing resilience for the children and adolescent survivors to the 2010's earthquake.

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## 1. Introduction

At 16:52 local time on January 12th, 2010, a violent seism of 7.0 magnitude on the Richter scale hit the towns of Port-au-Prince, Jacmel and Léogâne in Haiti, the largest since its Independence after the one of May 7th, 1842. Following the earthquake, the American Geological Institute recorded 52 aftershocks of a magnitude equal to, or greater than 4.5. The earthquake affected about half of the Haitian population (5 million people), made more than 600,000 people move and shortly after the seism at least 1.3 million people lived on makeshift camps [1]. Losses are estimated at 7804 billion American dollars, the equivalent to just over the Haitian national GDP in 2009. Over 105,000 private and public buildings have been completely destroyed, and more than 208,000 houses have suffered important damage. The 2010 report of the United Nations Development Programme (UNDP) [2] confirmed more than 222,000 died, over

300,000 were wounded and there was between 4000 and 7000 amputees.

This earthquake not only caused the deaths of around 2.5% of the national population, but also engendered major changes in the lives of the country's inhabitants — raising levels of poverty and instability. Numerous children and adolescents were injured, others are now disabled; many have lost one or both of their parents; some of them witnessed the death of their parents; large numbers have been living in camps since 12 January 2010; many of them no longer go to school. Moreover, they are now exposed to the constant acts of violence which are rife in these camps.

This is the grim picture of the problems that these children and adolescents are facing. The harsh realities which they must overcome and from which they must find the necessary psychological strength to bounce back, in a socially and physically hostile environment, are dramatic. Numerous studies on children who have suffered traumatic events and survived in extremely difficult conditions have shown that a good number of them were able to develop well and live positive adult lives [3,4]. However, as stated by Rutter, when several adversities and stresses coexist, the risk of mental health problems in these children increases, even if some of them prove resilient.

\* Corresponding author. Center of Research in Psychopathology and Clinical Psychology (CRPPC), Psychology institute, University of Lyon 2, France. Tel.: +33 787 69 84 17.

E-mail addresses: [jude-mary.cenat@univ-lyon2.fr](mailto:jude-mary.cenat@univ-lyon2.fr) (J.M. Cénat), [daniel.derivois@univ-lyon2.fr](mailto:daniel.derivois@univ-lyon2.fr) (D. Derivois).

Resilience is defined by Newman [5] as being the capacity of human beings to deal with and adapt to adversity, suffering, tragedy, all manner of trauma and other stress factors in their daily lives. Various studies on resilience [6–8] stress that this goes beyond dealing with and adapting to traumatic experiences, in the sense of being able to absorb or resist them; but that it is, above all, the capacity to bounce back and develop in a positive way in the face of adverse conditions. Rutter [4,9,10] having carried out longitudinal studies on children who have suffered abuse during childhood, defines resilience as an interactive, dynamic process between the risk factors and the factors of internal and external protection of the individual that enable him/her to deal with stressful life events. This reflects work that we have previously undertaken, in which we define resilience as a psycho-socio-environmental process, *i.e.*, an interaction between the risk and protective factors stemming from the psychological reality and the personality of the individual and the domestic, social and environmental factors of the subject's development [11].

Wagnild & Young [12] define the five principle components of resilience as: a balanced perspective on life and previous experiences (equanimity); the capacity to carry on regardless of events and adverse conditions (perseverance); the awareness of our own strengths and weaknesses, (self-belief or self-reliance); having a goal in life (meaningfulness); recognition of our individuality; *i.e.* a sense of uniqueness and acceptance of life (existential aloneness).

Numerous instruments are used to measure the various characteristics of resilience using children, adolescents, adults and as a group. Békaert, Masclet & Caron [13] list the following: the Resilience Scale for Adolescents (READ); the Connor-Davidson Resilience Scale (CD-RISC); the Adolescent Resilient Scale (ARS); the Resiliency Scale and the Resilience Scale (RS) as instruments for evaluating resilience in adolescents who have experienced traumatic events.

### 1.1. Resilience Scale (RS)

The Resilience Scale has been translated into more languages than any other resilience evaluation instrument [13]: German, Swedish, Russian, Spanish, Dutch, Italian, Japanese, French and others languages — and many studies have evaluated the psychometric properties of this scale [14–20].

The Resilience Scale was developed by Wagnild & Young [21]. It was based on work carried out with 24 women who had experienced traumatic events and who had managed, over time, to overcome these adversities. Although the five components of resilience (given above) were included in the construction of this instrument, the exploratory factor analysis gave rise to two factors (Personal competence, 17 items and Acceptance of self and life, 8 items). In studies carried out prior to this, the numbers of identified factors vary from 2 to 5 depending on the sample.

Studies carried out on the internal consistency of the Resilience Scale have shown a Cronbach alpha ( $\alpha$ ) ranging from .76 to .94 [16,20]. Very few studies have evaluated the test–retest reliability. The Nygren and collaborators [14] study in Sweden showed a reliability coefficient of .78 whereas that of Lei and collaborators [20], amongst student survivors of the Wenchuan earthquake in China in 2008, showed a test–retest reliability coefficient of .82.

The Haitian Creole version was produced using the WHO (World Health Organization) standard process, supplied by the Scale's authors. A first translation was submitted for review by a panel of five experts from the Haitian State University where Creole is the mother-tongue, this was then subject to a back-translation by an independent expert, of English mother-tongue, who had no knowledge of the RS. Finally, pre-testing (with 24 participants), cognitive interviewing (with 8 participants) and discussion with the 12 investigators through which we found significant change two words of two different items in order to make easier the understanding of the subjects. The steps described above have been carried out with our Haitian partners to produce the final creole version of the RS used in this research carried two and a half years after the 2010 earthquake in Haiti.

This study is part of the Lyon 2 University project ANR-10-HAIT-002 RECREAHVI, led by D. Derivois. It follows on from research work carried out on traumatic events, post-traumatic stress disorder, resilience and the creative processes of Haitian child and adolescent victims of natural disasters, and in particular, of the earthquake on 12 January 2010.

The aim of this paper is to evaluate the psychometric properties of the Resilience Scale among the Haitian child and adolescent survivors of the earthquake on 12 January 2010, and to clarify the underlying structure of the Creole version of the Resilience Scale. This will enable us to provide an instrument specifically designed for Haitian professionals working in the field of mental health — who currently use those validated by other countries. It will also enable us to evaluate levels of resilience by age, gender and the link between resilience and the range of social support available to the children and adolescents who survived the 2010 quake in Haiti, and who have experienced multiple traumatic events.

## 2. Method

### 2.1. Participants

The participants of this study conducted two years and a half after the earthquake of 2010 are 872 children and adolescents; including 491 are girls (56.30%) with an average age of 14.91 (SD = 1.94). They were chosen from 12 schools scattered in all Port-au-Prince. The study includes also street children who do not attend school (6.42%). The inclusion criteria in the group were as follows: (i) they were aged between 7 and 17; (ii) they were present in one of the

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