



**An examination of the factor structure and reliability of the Resilience Scale in adolescents**  
**Richardson, C. G., Russell, L. R., Ratner, P. A.**  
**University of British Columbia**

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## INTRODUCTION

Resilience has been defined as the ability to adapt to and overcome adversity (Braverman, 1991; Luther, Cicchetti, and Becker, 2000; Sameroff, 2006; Wagnild and Young, 1993). A popular measure of resilience is the Resilience Scale (RS, Wagnild & Young, 1993), a 25-item scale which has been called “the most widely used scale for measuring dispositional resilience in the world” (Pinqhart, 2009, p. 55). Although the RS was developed from data provided by women aged 67 to 92 years, the measure was intended for use with a wide age range and both genders (Wagnild & Young, 1993).

Wagnild and Young (1993) explored the factor structure of the 25-item RS in a sample of 810 older adults using a Principal Components Analysis. They settled on a 2-factor solution, with one factor representing Personal Competence (PC) and the second factor representing Acceptance of Self and Life (ASL). More recently, a 14-item short form of the RS was developed based on a sample of 690 middle-aged and older adults (Wagnild, 2009). Fourteen items with inter-item correlations above .40 were retained for the short version (see table 1 for the 14 items, identified by an \*). A Principal Components Analysis of the scores from the 14 items revealed a single factor solution that accounted for 53% of the total variance. The correlation between the full RS and the 14-item version was .97. The alpha coefficient for the 14-item scale was .93.

## THE RESILIENCE SCALE AND ADOLESCENTS

Despite having been called one of the best instruments for measuring resilience in adolescents (Anhern et al., 2006), the use of the RS with adolescent samples has not been frequently reported in the literature. Both a review of published studies involving the RS (Wagnild, 2009) and a review of instruments for measuring resilience in adolescents (Ahern et al., 2006) uncovered only 3 studies that used the RS with adolescents. A fourth study employed the RS with a sample of German high school students (Pinqhart, 2009). Alpha coefficients for the RS in these studies ranged from 0.72 to 0.91. To the best of our knowledge, the factor structure of the scale was not investigated, and none of these studies employed the recently proposed 14-item short form version of the RS. The 14-item version holds particular promise for use with adolescents as it is likely to be more compatible with younger

respondents' shorter attention spans and would reduce respondent burden in large population-based surveys.

The purpose of the present study was to use confirmatory factor analysis to examine the fit of the following 3 measurement models of the RS items in a sample of adolescents: a 1-factor and a 2-factor model of all 25-items in the RS and the recently proposed 14-item single factor model of the RS.

## METHODS

### Sample

Participants in this study were 652 grade 8 students taking part in the BC Adolescent Substance Use Survey (BASUS), a prospective cohort study of substance use that is administered online. The 25-item RS was one of the measures administered as part of this study. The median age of participants was 13 years (mean age =13.03 years, SD=0.21), 48% were male, and the ethnic composition of the sample was as follows: 63.6% Caucasian, 10.4% Aboriginal, 15.1% Asian, 1.8% of African descent, and 7.8% Other.

### Measures

*Resilience Scale* (Wagnild & Young, 1993): Responses to the 25-item RS are provided on a 7-point scale ranging from 1 (disagree) to 7 (agree) and can range from 25 to 175 (see table 1 for items). Scores below 125 reflect low resilience, scores between 126 and 145 indicate moderately low to moderate levels of resilience, and scores of 146 and higher indicate high resilience (Wagnild, 2009).

### Analyses

Confirmatory Factor Analyses were conducted using Maximum Likelihood Robust estimation in MPlus (version 5.2) to compare the following 3 models for the RS:

1. A 1-factor model of the full 25 items
2. A 2-factor model of the full 25 items (based on Wagnild and Young, 1993) with the two factors representing Acceptance of Self and Life and Personal Competence
3. A 1-factor model of the 14-item RS

## RESULTS AND DISCUSSION

The standardized factor loadings, Cronbach's alphas, and model fit statistics for each model are presented in table 1. The PC and ASL factors for the 2-factor model correlated at  $r=0.98$ .

Although the Chi-square tests for each model were significant (indicating a lack of exact fit between the specified models and the data), the  $\chi^2$  statistic is almost always significant with samples above 200 (<http://davidakenny.net/cm/fit.htm>). This has led many researchers to also examine measures of approximate fit. Hu and Bentler (1999) recommend a comparative fit index (CFI)  $\geq 0.95$ , a standardized root mean residual (SRMR)  $\leq 0.08$  and a root mean square error of approximation (RMSEA)  $\leq 0.06$  as

criteria for establishing relatively good model fit. Bayesian Information Criterion (BIC) scores were also examined, with lower scores indicating better fit. Based on these criteria, the 14-item version of the RS provided the best fit to the data, with the highest CFI (approaching 0.95), lowest BIC and a SRMR and RMSEA at or below the cut-off value for good fit. In addition, despite containing fewer items than the full-length version of the RS, the internal reliability 14-item version approached that of the full version. Overall, the 1-factor model of the 14-item short form version of the RS fit the data well and provided a better fit than both the 1-factor and 2-factor models containing all 25 items. The results of this study support the use of the 14-item RS with adolescents.

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Table 1: RS Items, standardized factor loadings, and model fit indices

RS Item Wording	1 Factor Model, 25 items	2 Factor Model, 25 items	1 Factor Model, 14 items
1. When I make plans I follow through with them	0.66	0.67 (PC)	
2. I usually manage one way or another*	0.71	0.71 (PC)	0.68
3. I am able to depend on myself more than anyone else	0.56	0.56 (PC)	
4. Keeping interested in things is important to me	0.70	0.70 (PC)	
5. I can be on my own if I have to	0.49	0.49 (PC)	
6. I feel proud that I have accomplished things in life*	0.72	0.72 (PC)	0.73
7. I usually take things in stride*	0.65	0.66 (ASL)	0.63
8. I am friends with myself*	0.68	0.70 (ASL)	0.70
9. I feel that I can handle many things at a time*	0.71	0.71 (PC)	0.71
10. I am determined*	0.80	0.80 (PC)	0.82
11. I seldom wonder what the point of it all is	0.25	0.25 (ASL)	
12. I take things one day at a time	0.47	0.48 (ASL)	
13. I can get through difficult times because I've experienced difficulty before*	0.58	0.58 (PC)	0.55
14. I have self-discipline*	0.73	0.73 (PC)	0.73
15. I keep interested in things*	0.80	0.80 (PC)	0.80
16. I can usually find something to laugh about*	0.64	0.65 (ASL)	0.64
17. My belief in myself gets me through hard times*	0.70	0.70 (PC)	0.70
18. In an emergency, I'm someone people can generally rely on*	0.72	0.72 (PC)	0.70
19. I can usually look at a situation in a number of ways	0.72	0.72 (PC)	
20. Sometimes I make myself do things whether I want to or not	0.42	0.42 (PC)	
21. My life has meaning*	0.67	0.68 (ASL)	0.69
22. I do not dwell on things that I can't do anything about	0.49	0.50 (ASL)	
23. When I'm in a difficult situation, I can usually find	0.74	0.74 (PC)	0.69

RS Item Wording	1 Factor Model, 25 items	2 Factor Model, 25 items	1 Factor Model, 14 items
my way out of it*			
24. I have enough energy to do what I have to do	0.71	0.71 (PC)	
25. It's okay if there are people who don't like me	0.55	0.56 (ASL)	
Cronbach's alpha	0.94	0.94	0.93
Model Fit Indices			
Chi-square	1036.58** (df=275)	1033.12** (df=274)	253.33** (df=77)
Comparative Fit Index	0.86	0.86	0.93
Root Mean Square Error of Approximation	0.065	0.065	0.059
Standardized Root Mean Square Residual	0.052	0.051	0.039
Bayesian Information Criterion	51456.15	51456.62	28059.36

\*\* p<.001. Note: PC=Personal Competence. ASL=Acceptance of Self and Life