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Methodological Articles

Psychometric Properties of the Finnish Version of the Resilience Scale and its Short Version

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Abstract

Aim: To investigate the psychometric properties of the Finnish version of the Resilience Scale (RS) and its short version (RS-14), as well as the relationship of resilience with demographic variables and self-perceived health. **Method:** A standard procedure was used for translation of the scale, and 243 participants (75% women, mean age = 41.0; *SD* = 17.8) were evaluated with the RS, the RS-14, and the EuroQol 5D. **Results:** The mean level of resilience was found to be moderate. Both the RS and the RS-14 showed good internal consistency reliability, .90 and .87, respectively. No clear factor structure was found. Both assessments correlated with age but there was no statistically significant association with education or gender. However, a relatively weak but statistically significant correlation between the RS and the RS-14 with self-reported health was found in women. **Conclusion:** The Finnish versions of the RS and RS-14 can be recommended to be used in clinical and scientific settings. Gender is suggested to be taken into account in further research of resilience.

Keywords: Resilience Scale, psychometric properties, reliability

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Introduction

Resilience has been defined as an ability to recover from adversity (Wagnild, 2009a) and as a positive personality characteristic that enhances individual adaptation and moderates the negative effects of stress (Wagnild & Young, 1993). Resilient persons tend to manifest adaptive behaviours, especially in the areas of social functioning, morale and somatic health (Wagnild & Young, 1993), and to experience positive emotions even amidst stress (Tugade & Fredrickson, 2004). Consequently, it has been argued that resilience and the resiliency theory may help to promote healing at deeper, softer but yet more efficacious level (Richardson, 2002). Previous studies have shown that people who are optimistic, hopeful and engaged in a cause have higher immune levels than those who perceive themselves as helpless, hopeless and depressed (Richardson, 2002). The relationship between resilience and well-being has been proposed to be mediated by positive view of the self, the world and the future (Mak, Ng, & Wong, 2011).

The concept of resilience stems from the early psychiatric literature that examined children who appeared to be invulnerable to adverse situations, and originally resilience was referred to as a personality trait (Earvolino-Ramirez, 2007). However, resilience has recently also been defined as an ordinary characteristic of normal development (Masten, 2001) and the term resilience has been used to refer to a dynamic developmental process (Luthar, Cicchetti, & Becker, 2000). Furthermore, it has also been argued that resilience could be thought of as an innate characteristic each person possesses to some degree, but which can also be enhanced or diminished depending on life circumstances (Wagnild, 2003).

An understanding and knowledge of resilient characteristics and the processes can be used for intervention purposes in several ways, and to enable health professionals to promote such behaviours during life transitions and periods of adversity (Ahern, Kiehl, Sole, & Byers 2006; Cui, Teng, Li, & Oei, 2010). The emergence of positive psychology has created a trend toward building competence instead of correcting weaknesses in treatment (Cui et al., 2010). Resilience has been considered as a major construct in positive psychology and believed to play an important role in fostering one´s well-being (Mak et al., 2011). The clinical relevance of resilience has received considerable attention recently (Nishi, Uehara, Kondo, & Matsuoka, 2010), and reliable and valid instruments to assess it are needed.

The Resilience Scale (RS), developed by Wagnild and Young (1993), is a 25-item self-report questionnaire to identify the degree of individual resilience. The RS has performed as a reliable and valid tool to measure resilience. It has been used with a wide range of study populations and has been regarded as the best assessment method to evaluate resilience in the adolescent population, due to good psychometric properties and applications in a variety of age groups (for reviews see Ahern et al., 2006; Wagnild, 2009b). The items of the RS were drawn from interviews with persons who characterized the generally accepted definitions of resilience. Thus, the RS has been argued to have a priori content validity (Wagnild & Young, 1993). According to previous studies, resilience measured by the RS has a positive correlation with life satisfaction, self-esteem, self-rated health, self-actualization, stress management and social support, and a negative correlation with depressive symptoms and anxiety (Abiola & Udofia, 2011; Heilemann, Lee, & Kury, 2003; Humphreys, 2003; Nishi et al., 2010; Wagnild, 2009a; Wagnild & Young, 1993).

According to the original authors (Wagnild & Young, 1993), the relationships between RS and age, education, income, and gender were not significant. However, resilience has more recently been shown to increase with age (Lundman, Strandberg, Eisemann, Gustafson, & Brulin, 2007). The few reported findings on the relation between RS score and gender have not been consistent. In the Nigerian sample, resilience was found to be significantly higher in men than in women (Abiola & Udofia, 2011), but in a Swedish sample no relation between gender and resilience was found (Lundman et al., 2007). According to the review by Wagnild (2009b), in most studies of the scale, there were no gender-related differences or they were not reported and, therefore, further studies about gender differences are needed. Previously resilience has been found to have significant correlations with perceived mental health only among women but not among men in an aged (85 years of age or older) population (Nygren et al., 2005).

The factor structure of the RS has not been consistent in previous studies. According to Wagnild and Young (1993), the items of RS were selected to reflect five interrelated components of resilience: 1) *equanimity* (a balanced perspective of one's life and experiences); 2) *perseverance* (the act of persistence despite adversity or discouragement); 3) *self-reliance* (a belief in oneself and one's abilities); 4) *meaningfulness* (the realization that life has

a purpose); and 5) *existential aloneness* (the realization that each person's life path is unique). Consequently, one might expect to observe a five-factor structure of RS. However, the expected five factors have only been found in one study (Lundman et al., 2007). The original authors (Wagnild & Young, 1993) found a two-factor solution, which explained a total 44.0% of the variance. This two-factor solution was supported by the Spanish (with a modified 23-item version; Heilemann et al., 2003), but not by the Russian data (Aroian, Schappler-Morris, Neary, Spitzer, & Tran, 1997). In a Japanese study, six factors emerged but they contained secondary loadings and difficulties in interpretation. In the Japanese data two-, three-, four-, and five-factor solutions were also ambiguous and the one-factor solution accounted for only 31.5% of the total variance (Nishi et al., 2010).

The internal consistency of the RS (α = .91; Wagnild & Young, 1993; and α = .93; Wagnild, 2010) has been reported to be excellent. The RS has been translated into various languages and the internal consistency of the Russian (Aroian et al., 1997), Spanish (Heilemann et al., 2003), Swedish (Nygren et al., 2005), Japanese (Nishi et al., 2010) and Nigerian (Abiola & Udofia, 2011) versions has also been reported acceptable (α between .83 and .93). The stability of the RS over time (test-retest correlations ranging from .67 to .84) has been reported (Wagnild & Young, 1993), and the test-retest coefficient of the Swedish version (after one month) was .78, but further research about stability is needed (Lundman et al., 2007).

A short version of the RS (RS-14) was developed (Wagnild, 2009a) to provide clinicians and researchers a shorter instrument to reduce participant's burden. The RS-14 consists of 14 items selected from the original RS. The internal consistency of the RS-14 has been reported to be excellent (α = .93) and it correlates strongly (r = .97) with the original RS (Wagnild, 2009a). The factor analysis of the RS-14 resulted in one strong factor solution (Wagnild, 2009a) which was also found in a later study (Nishi et al., 2010). The RS-14 has shown similar negative correlations with depression and anxiety (Abiola & Udofia, 2011), and positive correlations with self-actualization and stress management (Wagnild, 2009a) as the original RS.

The Finnish versions of the RS or the RS-14 have not been previously available. The aim of this study was to investigate the psychometric properties of the Finnish version of the RS and the RS-14 and the relation of resilience with demographic variables and self-perceived health.

Method

Participants

The data for this study was based on a convenience sample collected by researchers and psychology students mainly from the departments of their workplaces and universities, where the questionnaire was administered. The data collection was conducted anonymously to protect confidentiality of the participants. The study group consisted of 243 participants (182 [75%] women and 61 [25%] men). There was no criterion for age of the participants, and it varied from 17 to 92 years (M = 41.0; SD = 17.8). There was no significant difference in age between men and women (M = 39.0; SD = 16.5 *vs*. M = 41.7; SD = 18.2, respectively; p = .31). The sample was relatively highly educated, with 45% having 17 years of education (range from 8 to 17 years; M = 14.8; SD = 2.7). Informed consent was obtained from participants and the study design did not contain any aspects needing ethical evaluation.

Procedure and Measures

All participants completed a questionnaire on resilience (Resilience Scale - RS; Wagnild & Young, 1993), demographic variables (age, gender and education) and self-reported health (which was evaluated by asking participant to rate their health on a visual scale from 1 to 100, as done in EQ-5D; EuroQol Group, 1990).

The RS comprises of 25 items. The respondents are asked to state the degree to which they agree or disagree with each item on a 7-point Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). All items are positively scored. The possible total scores thus range from 25 to 175 with higher scores reflecting higher resilience. Wagnild (2009a) has presented the following scoring for the total score: 25-100 = Very low, 101-115 = Low, 116-130 = On the low end, 131-145 = Moderate, 146-160 = Moderately high, and 161-175 = High.

The RS-14 is a shortened version of RS, comprising of the following 14 items, selected from the original RS: 2, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 21 and 23 (bolded in Table 1). The possible total scores of the RS-14 range from 14 to 98 and have been scored (Wagnild, 2009a) as follows: 14-56 = Very low, 57-64 = Low, 65-73 = On the low end, 74-81 = Moderate, 82-90 = Moderately high and 91-98 = High.

Table 1

Mean, Standard Deviation (SD), Minimum (Min) and Maximum (Max) of Single Items of the Resilience Scale for the Total Group (N = 243)

	Items	Mean (*SD*)	Min	Max
1.	When I make plans I follow through with them/ Kun olen suunnitellut jotain, myös toteutan suunnitelmani	5.38 (1.21)	1	7
2.[a]	I usually manage one way or another/ Yleensä kyllä selviydyn tavalla tai toisella	6.22 (.87)	1	7
3.	I am able to manage myself more than anyone else/ Luotan itseeni enemmän kuin kehenkään muuhun	5.36 (1.32)	1	7
4.	Keeping interested in things is important to me/ Minulle on tärkeää olla kiinnostunut erilaisista asioista	5.86 (1.11)	2	7
5.	I can be on my own if I have to/ Voin olla yksin, jos on pakko	6.23 (1.23)	1	7
6.[a]	I feel proud that I have accomplished things in my life/ Olen ylpeä siitä, että olen saanut jotain aikaan elämässäni	5.84 (1.38)	1	7
7.[a]	I usually take things in stride/ En tavallisesti hermostu tai järkyty vastoinkäymisistä tai yllätyksistä	4.48 (1.49)	1	7
8.[a]	I am friends with myself/ Olen sinut itseni kanssa	5.38 (1.30)	1	7
9.[a]	I feel that I can handle many things at a time/ Mielestäni pystyn käsittelemään monta asiaa yhtä aikaa	5.51 (1.17)	2	7
10.[a]	I am determined/ Olen määrätietoinen	5.41 (1.20)	2	7
11.	I seldom wonder what the point of it all is/ Mietin harvoin, mitä järkeä tässä kaikessa on	4.27 (1.69)	1	7
12.	I take things one day at a time/ Elän elämääni päivä kerrallaan	4.37 (1.59)	1	7

	Items	Mean (*SD*)	Min	Max
13.[a]	I can get through difficult times because I´ve experienced difficulties before/ Kestän vaikeat ajat, koska olen kokenut niitä aikaisemminkin	5.26 (1.27)	1	7
14.[a]	I have self-discipline/ Minulla on itsekuria	4.97 (1.38)	2	7
15.[a]	I keep interested in things/ Pidän yllä kiinnostusta asioihin	5.59 (1.11)	2	7
16.[a]	I can usually find something to laugh about/ Minun on yleensä helppo keksiä naurun aihetta	5.48 (1.31)	2	7
17.[a]	My belief in myself gets me through hard times/ Selviydyn vaikeista ajoista, koska uskon itseeni	5.53 (1.16)	1	7
18.[a]	In an emergency, I´m someone people generally can rely on/ Hätätilanteissa minä olen yleensä se, johon ihmiset voivat luottaa	5.21 (1.16)	1	7
19.	I can usually look at a situation in a number of ways/ Yleensä pystyn tarkastelemaan tilanteita monelta kannalta	5.71 (.92)	2	7
20.	Sometimes I make myself do things whether I want to or not/ Joskus pakotan itseni tekemään jotain riippumatta siitä, haluanko vai en	5.52 (1.23)	1	7
21.[a]	My life has meaning/ Elämälläni on jokin tarkoitus	5.81 (1.39)	1	7
22.	I do not dwell on things that I can´t do anything about/ En jää hautomaan asioita, joille en mahda mitään	4.45 (1.55)	1	7
23.[a]	When I´m in a difficult situation, I can usually find my way out of it/ Jos joudun kiperään tilanteeseen, keksin yleensä jonkin ulospääsytien	5.59 (1.03)	2	7
24.	I have enough energy to do what I have to do/ Minulla on riittävästi energiaa siihen, mitä minun pitää tehdä	5.13 (1.29)	1	7
25.	It´s okay if there are people who don´t like me/ Ei haittaa, vaikka jotkut eivät pidäkään minusta	5.28 (1.48)	2	7

Note. The items are given in English and Finnish.
[a]Item belongs to the Shortened Version (RS-14).

The translation of the RS from English into Finnish was accomplished by a professional translator. The aim of the translation was not to achieve literal or syntactic equivalence, but to maintain the original denotation and connotation of items, as was done by Lundman et al. (2007). The back-translated version was approved by the original authors. The items of the RS and RS-14 are presented in English and Finnish in Table 1.

Data Analysis

The statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) for Windows, version 18.0. For statistical analysis, p-values lower than .05 were considered statistically significant. The normality of the total scores of RS and RS-14 were evaluated by using the Kolmogorov-Smirnov test of normality, and the single items with Mardia tests of multivariate skewness and kurtosis. The group comparisons were computed using Student's t-tests. Reliability and internal consistency (item-total item correlation) for RS and RS-14 was assessed using Cronbach's alpha coefficient. The correlations between RS and self-reported health, RS and RS-14, and RS/RS-14 and education, were calculated using Spearman's correlation analysis, and between RS and

age using Pearson's correlation analysis. Partial correlations were calculated to control for age and gender for the correlations between the RS and the RS14 with self-rated health.

To evaluate the factor structures found in previous studies, a confirmatory factor analysis was done with LISREL for Windows. The Goodness-of-Fit Index (GFI), the Adjusted Goodness-of-Fit Index (AGFI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) were used to evaluate the fit of the models using the following criteria: GFI > .90, AGFI > .90, CFI > .95 and RMSEA < .06 (Kline, 2005).

Results

Psychometric Properties of the RS

The RS total score varied from 67 to 175 (M = 133.8; SD = 17.4). The descriptive statistics of single items of the scale are presented in Table 1. The single items of RS were not normally distributed (Mardia skewness = 5364.48, p < .001, and kurtosis = 24.35, p < .001) but the distribution of RS total score was relatively normal (Skewness = -.68, Kurtosis = 1.25). Cronbach's alpha coefficient for the total scale was .90. No problematic items were found since removing any of the items did not significantly improve the alpha coefficient.

Confirmatory factor analysis was conducted to determine how well the RS data from Finnish population fit the previously presented factor models. The results of the confirmatory factor analysis are presented in Table 2. Neither the original two-factor solution of RS, presented by Wagnild and Young (1993), or the five-factor solution reflecting the five dimensions of resilience (presented by Lundman et al., 2007), were supported by the Finnish data. The range of factor loadings for the five factor solution were as follows: factor 1 from .57 to .94, factor 2 from .47 to 1.04, factor 3 from .62 to .88, factor 4 from .55 to .60 and factor 5 from .34 to .79. For the two-factor solution, the range of factor loadings for factor 1 was from .32 to .89 and for factor 2 from .45 to 1.01. The internal consistency for the five separate factors ranged from .45 to .79 and was for the two factors .76 and .88.

Table 2

Summary of Test Statistics for Confirmatory Factor Analysis for RS and RS-14.

Structure	*GFI*	*AGFI*	*CFI*	*RMSEA*
RS: 2 factors	.78	.74	.92	.094
RS: 5 factors	.79	.74	.92	.092
RS-14: 1 factor	.86	.82	.94	.101

Note. RS = Resilience Scale; RS-14 = Short version of Resilience Scale; *GFI* = Goodness-of-Fit Index; *AGFI* = Adjusted Goodness-of-Fit Index; *CFI* = Comparative Fit Index; *RMSEA* = Root Mean Square Error of Approximation.

Psychometric Properties of the RS-14

The RS-14 total score varied from 35 to 98 (M = 76.3, SD = 10.7). The single items of RS-14 were not normally distributed (Mardia skewness = 1500.23, p < .001, and kurtosis = 22.81, p < .001) but the distribution of RS-14 total score was relatively normal (Skewness = -.85, Kurtosis = 1.35). Cronbach's alpha coefficient for the RS-14 was .87 and removing any of the items did not significantly improve the alpha coefficient. The RS-14 total scores strongly correlated (r = .95) with the RS total scores.

The results of the factor analysis are presented in Table 2. The one-factor solution for RS-14, found in previous studies (Nishi et al., 2010; Wagnild, 2009a), was not supported by the Finnish data. However, a total 39% of the common variance in RS-14 was explained by this one factor solution and all factor loadings were found to be .40 or higher (ranging from .44 to .81).

The Relation Between Resilience and Demographic Factors

There was no difference in the mean total score of RS between women and men (M = 133.7; SD = 18.2 *vs*. M = 134.2; SD 14.9, respectively, p = .86). Education did not significantly correlate with RS (r = -.09, p = .15). A weak but statistically significant correlation was found between RS and age (r = .16, p = .015). The resilience was found to be higher among older people.

Similar relationships to demographic factors were found with RS-14. The total score of RS-14 had no significant correlation with education (r = -.06, p = .33) and did not differ between women and men (M = 76.2; SD = 11.1 *vs*. M = 76.5; SD = 9.6, respectively, p = .86). A trend to statistically significant correlation (r = .12, p = .06) with age was found for the RS-14.

The health ratings of the participants ranged from 30 to 100 (M = 82.0; SD = 12.3). Both the RS and the RS-14 correlated relatively weakly with self-rated health (r = .22, p < .001; r = .23, p < .001, respectively). The correlations between the RS and the RS-14 with self-rated health were stronger when age was taken into account in partial correlation (r = .30, p < .001; r = .31, p < .001, respectively). The self-rated health between men and women did not differ significantly (M = 83.7; SD = 11.0 *vs*. M = 81.5; SD = 12.7, respectively, p = .22). There was a significant correlation between the RS and the RS-14 with self-rated health only in women (r = .27, p < .001; r = .26, p < .001, respectively) but not in men (r = -.05, p = .72; r = .01, p = .95, respectively). When controlled for age, the gender difference was even more prominent: for women the correlation between the RS and the RS-14 with self-rated health still strengthened (r = .38, p < .001; r = .39, p < .001, respectively) but remained not significant for men (r = -.01, p = .91; r = .03, p = .84, respectively).

Discussion

This was the first study to examine the Finnish version of RS. The aim of the study was to investigate the psychometric properties of the Finnish version of the scale and its short version (RS-14), as well as the relation of resilience with demographic variables and self-rated health. The internal consistency reliability was found to be high for both the Finnish version of RS and RS-14, which has been also documented in several previous studies from different language versions of RS (Aroian et al., 1997; Heilemann et al., 2003; Lundman et al., 2007; Nishi et al., 2010; Wagnild & Young, 1993).

No clear factor structure of the RS was found. Neither the original two-factor solution of RS (Wagnild & Young, 1993) or the five-factor solution reflecting the five dimensions of resilience were supported by the Finnish data. The non-normality of the single items can weaken the reliability of the factor analysis. However, the factor structure of RS has been also inconsistent in previous studies (Aroian et al., 1997; Nishi et al., 2010). The five dimensions of resilience described by the original authors (Wagnild & Young, 1993) have only been supported by the five-factor solution found in the Swedish population (Lundman et al., 2007), which might be related to their significantly larger study sample.

Our results suggest that also the Finnish version of the RS-14 can be used reliably to examine resilience. For RS-14, it was found that 39% of the common variance was explained by the previously proposed one factor solution (Nishi et al., 2010; Wagnild, 2009a) in which all factor loadings were found to be .40 or higher. For this reason, it can be argued that the RS-14 fits the previously proposed one-factor model acceptably. RS-14 also correlated highly with RS and its alpha coefficient was almost as high as the one of RS.

The mean RS total score for the Finnish population was 133.8 and for the RS-14 total score 76.3, which is compatible with "moderate resilience", according to the original author (Wagnild, 2009a). We found a positive correlation between RS and age. This is in accordance with previous findings (Lundman et al., 2007) and supports the view of resilience being a dynamic modifiable process.

The relation between gender and resilience has not been widely reported. In our study there was no significant difference in resilience between genders, which concurs with previous findings and makes the scale more useful (Lundman et al., 2007). However, a significant difference between genders has been reported (Abiola & Udofia, 2011). Similarly to Nygren et al. (2005), we found a significant correlation between the RS and self-rated health only in women. This gender difference was not explained by age and no difference in self-rated health between men and women was found. Further studies are called for to verify and clarify these preliminary findings about gender differences.

There are some limitations in our study. The sample was not randomly selected and possibly, for that reason, it was relatively highly educated, with 45% having at least 17 years of education. However, according to the findings of the present and previous studies (Wagnild & Young, 1993), education seems not to be significantly associated with RS or RS-14. Additionally, regarding age, our sample can be considered representative. The stability of the RS over time has been supported (Wagnild & Young, 1993), but the knowledge about the test-retest reliability of RS is still limited and needs to be further examined with the Finnish version as well.

Besides examining the correlation of RS and self-rated health, we did not further examine the validity of the scale, but this has been done on numerous studies by finding significant correlations with psychological outcomes (Aroian & Norris, 2000; Heilemann et al., 2003; Humphreys, 2003; Nishi et al., 2010). However, one study (Aroian & Norris, 2000) has also suggested that resilience does not modify or mediate the relationship between the demands of immigration and depression. Thus, further knowledge about the resilience and the processes by which it is connected with quality of life are needed.

In conclusion, the Finnish version of RS and its short version (RS-14) showed good internal consistency and reliability, and both scales can be recommended to be used in clinical and scientific settings. Different association of resilience with self-perceived health between genders suggests gender to be taken into account in further research of resilience.

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