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CONNOR-DAVIDSON RESILIENCE SCALE (CD-RISC-25) ADAPTATION IN LATVIAN SAMPLE

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Abstract. *The aim of the research was to adapt the full version of Connor-Davidson Resilience scale (CD-RISC-25) in Latvia to gain qualitative and valid psychological measure of assessing resilience. Studying the scientific literature has shown multidimensional nature of resilience construct as well as broaden the knowledge about resilience as complicated psychological construct which can be affected by different factors rising from one's individual experience and the environment where he comes from. Sample (N=186) in age range 18 to 69 years old (M=37.65; SD=12.07), 75.8% females. Participants filled demographic data questionnaires and Connor-Davidson Resilience Scale (Connor & Davidson, 2003). Scale of 25 items, each rated in 5-point Likert's scale (0-4), with higher scores reflecting greater resilience. Cronbach's Alpha for all items varies from .88 to .90 and for scale total α= .89, which proves good internal consistency. Test-retest reliability demonstrated a high level of agreement, with an intraclass correlation coefficient of .93. The Connor-Davidson Resiliency Scale in Latvian sample showed high internal consistency α = .89 and good psychometric properties, same as noted in other studies (Connor & Davidson, 2003). This proves CD-RISC-25 as qualitative and a valid measure for further studies of resilience in Latvian population.*
Keywords: *Latvian version, psychometric validation, resilience.*

Introduction

Over the past 20 years, there has been a significant increase in interest within science and societies in psychological concept of resilience, which is human capacity to overcome major life difficulties (Luthar, Crossman, & Small, 2015; Masten & Narayan, 2012; Infurna & Luthar, 2018). This interest could be based on lack of explanations of causes of illnesses and psychopathologies (Windle, 2011), as well as potential impact of resilience on health, well-being, quality of life and one's response to many challenges related to aging is being studied. Therefore, resilience might be the key factor to explain resistance to different threats in lifetime and capability to bounce back after different adverse events within lifetime (Windle, Bennett, & Noyes, 2011). Initially authors apply construct of resilience to dynamic process which includes positive adaptation skills facing major adverse events. This process includes two significant and

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critical conditions: (1) exposure to strong threat or adverse event and (2) regardless of the threat, capacity for positive adaptation within the process of development (Luthar, Cicchetti, & Becker, 2000).

Theoretical basis of the problem

Resilience is studied within individual developmental processes and reflects one's capability to overcome significant adverse events (Luthar et al., 2015; Masten & Narayan, 2012; Infurna & Luthar, 2018).

There have been wide criticism and discussion due to main terminology and definition of resilience. The attention is pointing out many risk situations, which have experienced individuals and what skills they have developed regarding their resilience. Other questions rise about resilience phenomena resistance in time, and the meaning of the theoretical construct of resilience (Luthar et al., 2000).

There are concerns to define and measure construct of the resilience, which might not seem complicated in the beginning. The questions rise whether resilience is seen as a process, individual quality, dynamic process of development or all together. In some authors view, the best definition for resilience is as successful result of adaptation overcoming major adverse event (Reich, Zautra, & Hall, 2010). The research about maltreated children's resilience and their different capability skills of adaptation shows that regardless of their bad experience these children had, the resilience, between these children was different. The main factors related to children's resilience where individual characteristics (such as self-regulatory processes), family aspects (caring parents), and gained experience in social environment (e.g., close relationship with friends) (Haskett, Nears, Ward, & McPherson, 2006).

Creating Connor-Davidson resilience scale (CD-RISC-25) authors based their research on characteristics of resilient people which have been described in previous studies. Some authors, e.g., Kobasa (1979), apply construct of hardiness to resilient individual, which is described as control, commitment and seeing changes in their life as a challenge. Other authors to resilient individual apply meaningful action, clear goal or aim, strong self-esteem/ confidence, adaptability when coping with change, humour approach overcoming stressful events, close and emotionally stable relationship etc. (Connor & Davidson, 2003). The patience and capability to cope with stress in long term is also added to description of resilient individual (Connor & Davidson, 2003). Another aspect of resilience is spirituality, which is borrowed from British Arctic explorer Shackleton, who had described in stories of his experience the importance of believes and reliance on faith to survive in expeditions (Connor & Davidson, 2003).

The Connor-Davidson Resilience Scale is translated in more than 75 languages and adaptation of scale is done in different samples and cultures showing high internal consistency Cronbah's alpha. US general sample n = 577,

α = .89 (Connor & Davidson, 2003), sample in China α = .89 (Yu, Lau, Mak, Zhang, & Lui, 2011), later study in sample of Airforce solders in US α = .91 (Bezdjian, Schneider, Burchett, Baker, & Garb, 2017). The scale is an appropriate measure to assess resilience in patients with chronic illnesses and conditions, e.g., patients with pulmonary hypertension in US (Hudler et al., 2020), cancer patients (Tan, Beatty, Kemp, & Koczwara, 2019; Ristevska-Dimitrovska, 2015), patients with cardiovascular diseases (Doustdar Tousi, 2014; Saban et al., 2018). Thus Connor-Davidson Resilience Scale has proved its validation in many different samples and cultures with good and high psychometric properties therefore the aim of this quantitative cross-sectional study was to adapt Connor-Davidson Resilience Scale (CD-RISC-25) in Latvia and to assess psychometric properties in Latvian sample.

Materials and Methods

Translation of the Connor-Davidson Resilience Scale (CD-RISC-25) was made by three independent translators with good knowledge of English and Latvian languages. At the first, two translations from English to Latvian were compared and edited. A second, edited scale was given to a third translator who translated it back from Latvian to English language. The translated items were compared to ones in original version and assessed as appropriate. The translation was sent to the author of the scale Jonathan Davidson for confirmation, who also is responsible for copyrights of the scale. After receiving positive confirmation, the translators' names were added to the copyright confirmation.

The sample of this study was 186 economically active citizens of Latvia in age from 18 to 69 years old, 76 % women, 24 % man (M=37.65; SD=12.07). For test-retest assessment there were 44 participants from the same sample (N=186) in age from 20 to 68 years old, 52 % women, 48 % man, (M=37.73; SD=11.66). There was no statistical significance between sample and test-retest sample in age or gender ($p > .05$).

The data was collected electronically using survey platform www.visidati.lv in a period from January 2021 to February 2021. Test-retest data was collected after one month from March 2021 to April 2021. The link to the questionnaire was shared and forwarded using snowball approach. Participants were introduced to informed consent; they were informed that data is collected for scientific research. Data was gained keeping participants anonymous and processed with high level of confidentiality.

There were used two measures in the research: 1) Demographic data questionnaire (age, gender, education). 2) Connor-Davidson Resilience Scale (CD-RISC-25) – 25 item self-assessment measure using Likert scale from 0 to 4, where 0 - not true at all, 1- rarely true, 2 – sometimes true, 3 – often true, 4 – true nearly all the time. The total result of resilience could vary from 0 to 100, higher

scores reflecting higher resilience. The results are assessed in quartiles (Q) describing four groups with the first quartile (Q) describing the score range for the lowest group (lowest 25 % of the population), i.e., the least resilient, the second (Q2) and third (Q3) the intermediate scores, and the fourth (Q4) describing the highest or most resilient, i.e., above 75 % of the population. The scale includes five factors: (1) personal competency, high standards, tenacity (eight items), (2) tolerance of negative affect, trust in one's instincts, strengthening effect of stress (seven items), (3) positive acceptance of change, and secure relationships (five items), (4) control (three items), (5) spiritual influences (two items). However, authors do not approve scoring within the subscales defined by factors – the result of resilience is the total result of the scale.

Data analysis

The data was analysed in IBM SPSS 27.0 and MS Office Excel programs. At the first, the internal consistency was evaluated by using Cronbach's alpha α. At second, the analysis of items of the scale was done in determining items difficulty and discrimination indexes. Test-retest reliability was evaluated using intraclass correlation coefficient (ICC). Results of resilience were assessed in quartiles showing mean (M) and standard deviation (SD) values.

Results

Internal consistency Cronbach's alpha for the scale total was α=.89. In analysis of items, item difficulty index should be between .8 and 3.2 which shows mean value of item, and item discrimination index shows how well item differ respondents by measure (.2 – .8), (Kline, 2000). The first item exceeds item difficulty index margin being 3.37, what means that most of respondents in this sample chose high value (3 – often true, 4 – true nearly all the time) for this item. All other items fit in difficulty and discrimination index margins (see Table 1).

The test-retest reliability was assessed in sample of 44 respondents using data collected repeatedly after one month within the same sample. The interclass correlation coefficient (ICC) comparing first, and second measure shoved high test-retest reliability .93 (p = 0). The mean result of resilience in first measure was M=72.17 (SD=12.07), and in second measure M=71.68 (SD=9.45).

Table 1 ***Connor-Davidson Resilience Scale Item description*** *(created by the authors)*

Item	*Item difficulty index*	*Item discrimination index*	*Cronbach's Alpha if item deleted*
1	3.37	.41	.89
2	3.24	.37	.89
3	2.01	.20	.90
4	3.21	.57	.89
5	3.20	.61	.89
6	2.45	.44	.89
7	2.77	.48	.89
8	3.01	.44	.89
9	3.11	.30	.89
10	2.95	.47	.89
11	3.15	.64	.89
12	2.87	.64	.89
13	2.97	.50	.89
14	2.87	.53	.89
15	2.85	.45	.89
16	2.95	.60	.89
17	3.03	.66	.88
18	2.33	.53	.89
19	2.96	.58	.89
20	2.70	.28	.89
21	2.79	.54	.89
22	2.73	.48	.89
23	2.55	.37	.89
24	3.04	.49	.89
25	3.09	.45	.89

In the first time of measure the distribution of results of resilience in Latvian sample are as follows: first quartile (Q1) 0-65, second quartile (Q2) 66-72, third quartile (Q3) 73-79, and fourth quartile (Q4) 80-100. In second time of measure the distribution of results of resilience are - first quartile (Q1) 0-65, second quartile (Q2) 66-71, third quartile (Q3) 72-79, and fourth quartile (Q4) 80-100. The mean result of resilience in Latvian sample in both first (72,17) and second (71.68) time belong to second quartile (Q2), (see Table 2).

Table 2 ***Distribution of mean results of resilience in first (N=186) and second (n=44) time of measure*** *(created by the authors)*

Time 1	Q1	Q2	Q3	Q4
	0-65	66-73	74-79	80-100
		M=72.17 (*SD*=12.07)		
Time 2	0-65	66-71	72-79	80-100
		M=71.68 (*SD*=9.45)		

Discussion

In fields of psychology and health research in Latvia in recent years have grown interest of individual capability to bounce back after traumatic events, everyday stressful experience, and challenges. This capability is described as resilience and for research and assessing resilience the qualitative measure is needed. Many previous studies in different general and clinical samples have proved Connor-Davidson Resilience Scale (CD-RISC-25) as valid and reliable assessing resilience. Therefore, the aim of this study was to adapt Connor-Davidson Resilience Scale in Latvia, to assess psychometric properties including internal consistency, item analysis (difficulty and discrimination index), and test-retest reliability.

The scale within this research showed high internal consistency Cronbach's alpha α=.89, like scale development study as well as other studies in different samples. In item difficulty index analysis, only first item exceeded margin, which means that respondents in this sample gave high score assessing their ability to adapt to change.

The test-retest reliability in sample of 44 respondents from main sample showed high interclass correlation coefficient (ICC), what means the scale is resistant and reliable in time. There is less than one point difference between first (M=72.17) and second (M=71.68) measure in mean total scores of resilience.

The mean result of resilience in Latvian sample is 72.17 which belongs to second quartile Q2. To compare, in sample in US (n = 577) mean result of resilience was 82 (Q2), distributing quartile values accordingly Q1 = 0-73; Q2 = 74-82, Q3 = 83-90, Q4 = 91 – 100 (Conor & Davidson, 2003). The mean result of resilience in general population sample in Hong Kong (n = 10 997) was 62 (Q2), (Ni et al., 2016). More like Latvian sample results of mean resilience showed in study in Australia, where resilience scores varied from 71.5 to 73.5 in different age groups (Liu et al., 2015), and Portugal – M=73.4 (Anjos, Dos Santos, Ribeiro, & Moreira, 2019).

Regardless many studies, it is still a question which are the most effecting factors contributing to variation of resilience levels between different populations in general samples. Contradictory results are gained studying age differences –

there were weak negative correlation between age and resilience in adolescents and older adults (Jorgensen & Seedat, 2008; Lamond et al., 2008; Yu et al., 2011; Wu, Tan, & Liu, 2017). While large representative samples with wide age range do not show age corelation with resilience (Connor & Davidson, 2003; Gucciardi, Jackson, Coulter, & Mallett, 2011; Derakhshanrad, Piven, Rassafiani, Hosseini, & Mohammadi Shahboulaghi, 2014; Bozikas et al., 2016). Statistically significance to ethnicity showed only comparing SouthAfrican and US samples (Jorgensen & Seedat, 2008; Marwitz et al., 2018), while ethnicity plays no significant role in other samples (Connor & Davidson, 2003; Campbell-Sills, Forde, & Stein, 2009). In general, as mentioned earlier, mean results in Asia, Australia, Portugal, and Latvia is notably lower than in US. Therefore, rising interest in research how resilience is related to individual culture, social economic stability and autonomy, and religion. Cultural environment includes moral values, social norms, and politics, what contributes to one's resilience, good health and well-being (Panter-Brick, 2015). However, in Lithuania, neighbouring country of Latvia, in research of resilience effect in different social economic groups of people, shows statistically significant differences depending on individual income and different social economic status, showing huge differences in capability of these groups facing and overcoming major adverse events (Diržytė, Rakauskienė, & Servetkienė, 2017). There is much evidence in literature and practice about relationship between religion and resilience, and its contribution to psychological and physical health (Lassi & Mugnaini, 2015). Further, study of resilience in Latvia should be in larger representative sample, researching relationship between resilience, social economic factors and religious believes.

Conclusions

CD-RISC-25 shows good psychometric properties of internal consistency α=.89, and item analysis. Measures are reliable in time (ICC = .93) showing that scale is valid measure for further research of resilience in Latvia.

Limitations

As a limitation of this research could be small sample size, it is necessary to measure resilience in a larger general population sample and different clinical samples as well. In this study social economic factors and religious believes are not considered, which also could contribute to the results. Another limitation is self-assessment measure what could lead to more socially desirable answers.

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