

DOI: 10.21767/1791-809X.1000464

Validation and Psychometric Properties of the Resilience Scale-5 (RS-5) Results of a Representative Survey of the German General Population

**Bjarne Schmalbach¹,
Markus Zenger^{2,3},
Bernhard Strauß⁴,
Andreas Hinz⁵,
Ileana Steffens-Guerra²,
Oliver Decker⁵,
Elmar Brähler^{5,6}**

Abstract

Objective: The aim of the present study was the validation of the Resilience Scale 5 (RS-5) developed by Von Eisenhart Rothe and colleagues [1] in the general population, specifically younger population groups, as well as the establishment of norm values. That included the analysis of psychometric properties such as item and scale characteristics, factor structure, validity towards related psychological constructs, measurement invariance as well as comparison of means based on sociodemographic variables.

Methods: The study sample (n = 4,972) can be considered representative of the general population and was acquired utilizing a sampling procedure that ensured random selection. A confirmatory factor analysis (CFA) was employed to confirm the uni-factorial structure of the questionnaire. Measurement invariance was tested using multigroup analysis. Pearson product-moment correlations were used to determine convergent validity towards related constructs.

Results: The RS-5 showed satisfactory model fit. Item and scale characteristics, including reliability, were excellent. Measurement invariance for age, gender, and education groups was shown. Resilience mean comparisons showed significant differences for several sociodemographic groups, that should be further analyzed in future research. Norm values are reported.

Conclusion: To sum up, the RS-5 is a reliable and valid measure of resilience for older and younger populations alike. It displays a good model fit and can be recommended for usage in research and clinical applications.

Keywords: Resilience, health, mental health, mental disorders, clinical psychology, questionnaire, short scale, screening tool

Received: July 25, 2016, **Accepted:** September 19, 2016, **Published:** September 29, 2016

Introduction

Resilience is the ability to adequately deal with stress and adapt in a functional manner [1,2]. This includes physical stress – such as injuries or illnesses - as well as psychological stress, which can stem from any major or minor life event, e.g. the loss of a loved one, unemployment, a family crisis or similar [3]. Therefore, a resilient individual can cope with adverse circumstances in healthier ways than someone with low resilience, because of their more positive and optimistic self-concept and outlook on life. In this light, resilience is also a very influential protective

1. Department of Psychology, University of Münster, Münster, Germany
2. Faculty of Applied Human Studies, University of Applied Sciences Magdeburg-Stendal, Stendal, Germany
3. Integrated Research and Treatment Center (IFB) AdiposityDiseases - Behavioral Medicine, Medical Psychology and Medical Sociology, University of Leipzig Medical Center, Leipzig, Germany
4. University Hospital, Institute of Psychosocial Medicine and Psychotherapy, Jena, Germany
5. Department of Medical Psychology and Medical Sociology, University of Leipzig, Leipzig, Germany
6. Department of Psychosomatic Medicine and Psychotherapy, University of Mainz, Mainz, Germany

Correspondence: Dr. Markus Zenger

✉ markus.zenger@hs-magdeburg.de

Faculty of Applied Human Studies,
University of Applied Sciences Magdeburg
and Stendal, Osterburger Str. 25, 39576
Stendal, Germany.

Tel: +49 3931 2187 3828

Fax: +49 3931 2187 4870

Citation: Schmalbach B, Zenger M, Strauß B, et al. Validation and Psychometric Properties of the Resilience Scale-5 (RS-5) Results of a Representative Survey of the German General Population. Health Sci J. 2016, 10:5.

factor against mental disorders [4] and a common goal in their treatment [5]. Resilience is associated with self-esteem and self-efficacy [6,7]. Furthermore, life satisfaction is a closely-related construct [8-10]. As mentioned above, resilience can protect individuals against mental disorders and is thus associated with well-being and measures of mental health [11-13]. This means, assessment, practice, as well as maintenance of resilience can be important topics in the treatment of mental disorders [14].

The Resilience Scale (RS) was developed by Wagnild and Young [15]. It is generally considered to be the most reliable and valid instrument for measuring an individual's resilience [16-18]. Namely, it is valid towards psychological constructs such as hopelessness, social connectedness, life satisfaction, anxiety, depression, stress, and health promoting activities [16,19,20]. Von Eisenhart Rothe and colleagues [1] developed the Resilience Scale-5 (RS-5) for application in settings, that do not allow for long questionnaires, such as large cohort studies and specifically older populations. They found a uni-factorial model consisting of the RS-11 items 3, 6, 7, 8, and 9 (or C, F, G, H, and I) to display the best fit, explaining 57% of total variance.

The main objective of the present study was to validate the RS-5 in a representative sample of the general population. This includes the analysis of item characteristics, validity, reliability, and factor structure, as well as an analysis of measurement invariance, especially across different age groups. Furthermore, differences in resilience based on sociodemographic variables were investigated. Finally, norm values were to be established.

Methods

Sample

The study sample was acquired with the assistance of a demographic research institute (USUMA, Berlin), abiding by the German law of data protection (§30a BDSG, German law of protection of data privacy). Furthermore, the study conformed to the guidelines outlined in the Declaration of Helsinki [21]. The sampling procedure first targeted random sample point areas, then a random household within those areas, and finally chose a person within these households. Of the 8,106 potential participants, which had been randomly selected, 3,070 (37.9%) either did not respond or refused to take part in the study. All participants gave their informed consent before participating in the study. Where applicable, a caretaker or legal guardian gave consent instead of the participant. The total sample consisted of $n = 5,036$ participants, who were at least 14 years of age and living in Germany in 2006. Detailed sample characteristics are displayed in **Table 1**. The sample can be considered representative of the German population by the criteria of age, sex, and educational level based on official statistics [22]. Sixty-four participants (1.3%) did not complete all items relevant to the RS-5. Those participants differed significantly from the main sample in terms of their age distribution ($U = 129010.5$, $n_1 = 4,972$, $n_2 = 64$, $p = .009$) and were excluded from any further analysis leading to a final sample size of $n = 4,972$. Participants answered the questionnaires listed below among others.

Measures

The Resilience Scale-11 (RS-11; [21-24]) was used to measure resilience. Answer options range from 1 ("strongly disagree") to 7 ("strongly agree"), and a scale score can be obtained by calculating the sum of the items in question. Von Eisenhart Rothe and colleagues [1] found a Cronbach's α of .80 for the shorter RS-5 scale.

To measure symptoms of depression, the Patient Health Questionnaire-2 (PHQ-2; [25,26]) was employed. The two items of the scale, which range from 0 ("not at all") to 3 ("nearly every day"), are added up to obtain the scale score. Retest-reliability is reported as $r = .83$.

The General Anxiety Disorder Scale-7 (GAD-7; [27,28]) was utilized to assess the anxiousness of participants. It consists of seven items, which are answered on a 4-point Likert scale, ranging from 0 ("Not at all") to 3 ("Almost every day"). The sum score can therefore range from zero to 21. Participants with a score above or equal to 10 are generally classified as anxious according to Kroenke, Spitzer, Williams, Monahan, and Löwe [29]. Cronbach's α is reported as .89 [30].

Self-esteem was measured utilizing the Rosenberg Self-Esteem Scale (RSES; [31-33]), which consists of ten items, half of which are to be inverted before calculating a scale sum score. Participants indicate the extent to which they agree with presented statements on a 4-point scale, ranging from 0 ("do not agree at all") to 3 ("completely agree"). Internal consistency is reported as $\alpha = .84$.

For the measurement of life satisfaction, the Questionnaire for Life Satisfaction-M (QLS-M; [34]), consisting of 16 items was used. Participants first indicate on a 7-point scale how important a given topic is to them, and then specify how satisfied they are with their lives in terms of this topic. A weighted score is obtained by multiplying subjective importance and satisfaction. The sum of all 8 products represents the scale score. Cronbach's α is reported as .83 by Daig and colleagues [34].

The screening version of the Recalled Parental Rearing Behavior Questionnaire [35] was utilized to assess the upbringing of participants. It consists of six items for two scales, asking for memories of the participant's father and mother, respectively, on a 4-point scale, ranging from 1 ("No, never") to 4 ("Yes, always"). Two items each make up one of three latent factors, which are "Rejection and Punishment" (RP), "Emotional Warmth" (EW), and "Control and Overprotection" (CO). No measures of reliability are reported because of the measure's brevity.

Statistical analyses

IBM SPSS Statistics 23 was used for most statistical calculations. The confirmatory factor analysis (CFA) was conducted in IBM AMOS 23. The Pearson product-moment correlation coefficient was used for all correlations. The α level of significance tests was .05 unless noted otherwise. Means and standard deviations of the RS-5 scale and its items were determined, in addition to item difficulty and corrected item-total correlations. The RS-5 scale and items were tested for normality of distribution by calculating skewness and kurtosis. For the CFA, covariance matrices and

Table 1 Sample characteristics, including RS-5 sum score means and standard deviations.

	<i>n</i>	%	RS-5 <i>M (SD)</i>
Gender			
Female	2,670	53.7	27.00 (5.34)
Male	2,302	46.3	27.42 (5.02)
Age, years (<i>M</i> = 48.37; <i>SD</i> = 17.98)			
<40	1688	34.0	27.95 (5.09)
40-59	1741	35.0	27.54 (4.92)
≥60	1543	31.0	26.00 (5.41)
Education			
≤8 years	2,249	45.2	26.02 (5.31)
9 – 11 years	1,701	34.2	27.93 (4.92)
≥12 years	849	17.1	28.79 (4.52)
Student	173	3.5	27.54 (4.87)
Employment status			
Working full-time	1793	36.1	28.37 (4.65)
Working part-time	511	10.3	27.61 (4.80)
Retired	1487	30.0	26.06 (5.39)
Unemployed/working <15 h/week	753	15.1	26.01 (5.37)
Education/training	428	8.6	27.85 (5.28)
Family status			
Married	2,664	53.6	27.36 (5.02)
Single	998	20.1	27.61 (5.33)
Committed Relationship	211	4.2	28.84 (4.72)
Separated	61	1.2	26.85 (4.28)
Divorced	471	9.5	27.22 (5.15)
Widowed	567	11.4	25.12 (5.57)
Monthly net household income			
<1,500€	1,709	34.4	26.16 (5.48)
1,500€-2,500€	1,937	39.0	27.20 (4.99)
>2,500€	1,071	21.5	28.85 (4.70)
No answer	255	5.1	27.25 (4.98)

the maximum likelihood method were utilized. Common fit indices were employed to judge model fit, including χ^2 , the minimum discrepancy divided by degrees of freedom (CMIN/DF), the comparative fit index (CFI), the Tucker–Lewis Index (TLI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) and its 90% confidence interval. Recommended levels for these measures are reported as lower than five for CMIN/DF, larger than .95 for CFI and TLI, lower than .08 for SRMR and RMSEA [36-38].

Measurement invariance was tested in three steps using multiple-group analysis. First, the configural model – without any constraints – was compared to the metric model, which constrains unstandardized item loadings to be equal across groups. Secondly, the metric model and the scalar model, which constrains unstandardized item loadings and intercepts across groups, were compared. Commonly used fit indices for these comparisons are the difference in CFI and gamma hat [39,40]. The χ^2 -statistic is also considered and reported despite its sensitivity

to sample size.

Analyses of variance were conducted in order to test for differences in RS-5 scores across sociodemographic groups of gender, age, and education level. Additionally, post hoc tests in the form of Tukey’s HSD were conducted. Counteracting the accumulation of α error probability, a significance level of .01 was employed in both the ANOVAs and the post hoc tests. Cohen’s *d* is also reported, with greater than .2 being a small, greater than .5 being a medium, and greater than .8 being a large effect [41].

Results

Reliability and item characteristics

Internal consistency of the RS-5 scale was $\alpha = .87$. Skewness and Kurtosis are within the commonly agreed upon thresholds of lower than 1 for skewness and lower than 3 for kurtosis, indicating a normal distribution of the RS-5 items and scale [42,43]. The difficulty indices of RS-5 items were between .70 and .76, which means the items were generally answered in the affirmative by most participants. Furthermore, the items satisfied the common cutoff point for corrected item-total correlations of being higher than .50 [44]. Details can be found in **Table 2**.

Factor structure

Von Eisenhart Rothe and colleagues [1] proposed a model consisting of the RS-items C, F, G, H, and I. In the present study, the CFA of those same items shows acceptable to good model fit for the entire population, as can be seen in **Table 3**. Loadings of individual items on the latent variable were between .66 and .88. Total variance explained for the five variables was approximately 65%.

The results of the analysis of measurement invariance across sociodemographic groups of gender, age, and education are displayed in **Table 4**. The differences in CFI and gamma hat between models did not exceed .01. Therefore, scalar invariance could be shown for males and females as well as for different age and education groups.

Table 2 Descriptive item characteristics.

	<i>M(SD)</i>	Skewness	Kurtosis	<i>P</i>	<i>r_{it}</i>
RS C	5.56 (1.30)	-.83	.34	.76	.71
RS F	5.46 (1.29)	-.73	.19	.74	.67
RS G	5.54 (1.25)	-.80	.42	.76	.78
RS H	5.43 (1.29)	-.68	.08	.74	.62
RS I	5.22 (1.32)	-.51	-.16	.70	.65
RS-5 scale	27.20 (5.20)	-.62	.34		

Notes: *P* = item difficulty index; *r_{it}* = corrected item-total correlation

Table 3 Model fit indices in the CFA.

	$\chi^2(df)$	CMIN/DF	CFI	TLI	SRMR	RMSEA
RS-5 model	258.879 (5)	51.776	.978	.956	.028	.101

Notes: *df* = Degrees of freedom; CMIN/DF = Minimum discrepancy, divided by its degrees of freedom; CFI = Comparative-fit index; TLI = Tucker-Lewis-index; SRMR = Standardized root mean square residual RMSEA = Root mean square error of approximation.

Table 4 Fit indices for the multigroup analysis.

Model	χ^2 (df)	$\Delta \chi^2$	Δp	CFI	Δ CFI	GH	Δ GH
Gender							
Male	130.849 (5)			.974		.978	
Female	133.431 (5)			.981		.981	
Multigroup analysis							
Configural invariance	264.280 (10)			.978		.980	
Metric invariance	290.106 (14)	25.826	< .001	.976	.002	.978	.002
Scalar invariance	317.960 (20)	27.854	< .001	.974	.002	.976	.002
Age, years							
<40	105.135 (5)			.972		.977	
40-59	88.779 (5)			.979		.981	
≥60	70.289 (5)			.983		.983	
Multigroup analysis							
Configural invariance	264.203 (15)			.978		.978	
Metric invariance	280.238 (23)	16.035	.042	.977	.000	.976	.002
Scalar invariance	354.521 (35)	74.283	< .001	.971	.006	.974	.002
Education							
≤8 years	101.813 (5)			.981		.983	
9 – 11 years	100.281 (5)			.975		.978	
≥12 years	80.572 (5)			.954		.965	
Student	13.368 (5)			.969		.981	
Multigroup analysis							
Configural invariance	296.073 (20)			.975		.978	
Metric invariance	320.516 (32)	24.443	.018	.974	.001	.977	.001
Scalar invariance	426.452 (50)	105.936	< .001	.966	.008	.970	.007

Notes: df = degrees of freedom; CFI = comparative fit index; GH = gamma hat.

Mean differences with regard to sociodemographic variables

Men were found to score significantly higher when compared to women, $t(4933.08) = 2.86$, $p = .004$, $d = .08$. Age groups also differed with statistical significance in RS-5 score, $F(2, 4969) = 64.35$, $p < .001$, $\eta^2 = .03$. So did education groups, $F(3, 4968) = 80.49$, $p < .001$, $\eta^2 = .05$. Groups of employment status differed in their resilience scores, $F(4, 4967) = 55.48$, $p < .001$, $\eta^2 = .04$, as well did groups of family status $F(5, 4966) = 24.78$, $p < .001$, $\eta^2 = .02$. Finally, participants of different monthly net household income showed significant differences in RS-5 scores, $F(3, 4968) = 55.48$, $p < .001$, $\eta^2 = .04$. Means and standard deviations for all groups can be found in **Table 1**.

Post hoc comparisons for all sociodemographic variables did not exceed effect sizes of .50 except for three instances: Participants with eight years of education or less were significantly less resilient than those with 12 years or more, $t(1779.02) = 14.489$, $p < .001$, $d = .56$. Individuals, who were in a committed relationship at the time of the study were more resilient than widowers, $t(440.23) = 9.293$, $p < .001$, $d = .70$. Finally, participants with a net household income of less than 1,500€ per month scored significantly lower than those with a net household income of 2,500, $t(2521.99) = 13.778$, $p < .001$, $d = .52$.

Validity

To investigate the validity of the RS-5 scale, correlations to related psychological constructs were calculated and are reported in **Table 5**. A high positive correlation with the RSES was expected and found. Furthermore, there were moderate negative

correlations to measures of psychopathology such as the PHQ-2 and the GAD-7. The QLS-M, which measures life satisfaction, was also moderately associated with the RS-5 scale. The FEE subscales were weakly correlated with the RS-5.

Discussion

The main objective of the present study was to validate the RS-5 in the general population, specifically younger participants, and examine its psychometric properties. The RS-5 scale was shown to have good internal consistency with an α of .87, which is only slightly lower than that found in Schumacher's analysis of the longer RS-11 ($\alpha = .91$) [23]. This is evidence of the RS-5 scale's capability to measure resilience reliably with just a fifth of the items of the original RS-25 scale. Furthermore, factor loadings for all items of the RS-5 on a common factor were well above .50, indicating the validity of the single factor solution [44]. CFI, TLI, and SRMR demonstrate very good fit, while RMSEA along with the χ^2 -statistic and the CMIN/DF revealed mediocre to unacceptable fit. Both, the χ^2 -test and the CMIN/DF, however, are well-known to be sensitive to sample size [45] and should thus be interpreted with caution. Overall, model fit can thus be considered acceptable. Additionally, measurement invariance could be shown across groups of gender, age, and education. This means, the model fits the data equally well for any of these sociodemographic subgroups and thus allows for statistical comparisons between them.

The construct validity of the RS-5 was shown via correlations to several related psychological constructs. Firstly, the scale

Table 5 Correlations between the RS-5 and related psychological measures.

	RS-5
RSES	.56*
PHQ-2	-.31*
GAD-7	-.26*
QLS-M	.40*
FEE-RP ^a	-.14*
FEE-EW ^b	.13*
FEE-CO ^c	-.01

Notes: * p < .001; ^a = Rejection and Punishment; ^b = Emotional Warmth; ^c = Control and Overprotection

Table 6 Normative percentile values for the general population.

RS-5 Sum Score	Male		Female	
	<60 years (n = 1,585)	≥60 years (n = 717)	<60 years (n = 1,844)	≥60 years (n = 826)
5	0	0	.2	.1
6	0	.1	.2	.1
7	0	.3	.3	.4
8	0	.3	.4	.5
9	0	.3	.7	.6
10	.1	.4	.8	.7
11	.4	.8	.9	1.1
12	.6	1.1	1.0	1.3
13	.8	1.5	1.1	1.9
14	1.1	2.0	1.4	2.4
15	1.4	2.8	1.7	3.3
16	1.8	3.5	2.2	4.5
17	2.8	4.5	2.9	6.9
18	3.8	5.7	4.1	8.8
19	6.2	9.3	6.0	13.9
20	9.5	13.4	9.0	21.1
21	11.4	17.6	12.0	25.5
22	13.9	22.5	15.5	31.0
23	18.2	27.2	19.5	36.2
24	23.5	31.9	24.9	42.4
25	29.0	39.2	31.3	48.2
26	35.5	46.3	37.3	55.9
27	42.8	52.0	44.6	63.2
28	51.9	59.1	51.7	68.0
29	61.1	66.7	59.5	74.6
30	69.0	76.3	68.3	79.5
31	76.6	82.1	74.9	84.6
32	81.1	87.3	81.2	89.1
33	87.2	90.9	86.4	93.3
34	91.0	93.9	90.2	94.9
35	100	100	100	100

correlates highly with the RSES. This was expected, as the extent to which an individual can be resilient is closely linked to their self-esteem [6,7]. Furthermore, the expected correlation to the QLS-M, measuring life satisfaction, was moderately high. This finding is consistent with prior research indicating that resilient individuals are often more satisfied with life [8-10]. Secondly, there was a negative association between RS-5 and measures of psychopathology (PHQ-2 and GAD-7). Per definition, resilience describes an individual's fortitude against obstacles and adverse circumstances, and, therefore, moderate negative correlations to aforementioned measures were anticipated and could be confirmed [11-13]. Finally, the FEE correlated very weakly with the RS-5 questionnaire, indicating that parental rearing behavior is just barely or not at all associated with an individual's resilience later in life.

The analysis of differences between individuals in resilience based on sociodemographic characteristics revealed effects of varying size that should be more thoroughly investigated in further studies.

Study limitations

The present study utilized the 11-item version of the Resilience Scale. Thus, further validation of the RS-5 should be carried out, in order to rule out any external influences on the measurement.

Conclusions

To sum up, the RS-5 is a reliable and valid measure of resilience for older and younger populations alike. It displays a good model fit and can be recommended for usage in research and clinical applications.

References

- 1 Von Eisenhart Rothe A, Zenger M, Lacruz ME, Emeny R, Baumert J, et al. (2013) Validation and development of a shorter version of the resilience scale RS-11: results from the population-based KORA-age study. *BMC Psychology* 1: 1-7.
- 2 Luthar SS, Cicchetti D, Becker B (2000) The Construct of Resilience: A Critical Evaluation and Guidelines for Future Work. *Child Dev* 71: 543-562.
- 3 American Psychological Association (2016) *The Road to Resilience*.
- 4 Shastri PC (2013) Resilience: Building immunity in psychiatry. *Indian J Psychiatry* 55: 224-234.
- 5 Kent M, Rivers CT, Wrenn G (2015) Goal-Directed Resilience in Training (GRIT): A Biopsychosocial Model of Self-Regulation, Executive Functions, and Personal Growth (Eudaimonia) in Evocative Contexts of PTSD, Obesity, and Chronic Pain. *Behav Sci* 5: 264-304.
- 6 Schwarzer R, Warner LM (2013) Perceived Self-Efficacy and its Relationship to Resilience. In: Prince-Embury S, Saklofske HD (eds.) *Resilience in Children, Adolescents, and Adults: Translating Research into Practice*, Springer, New York. 139-150.
- 7 Veselska Z, Geckova AM, Orosova O, Gajdosova B, Van Dijk JP, et al. (2009) Self-esteem and resilience: the connection with risky behavior among adolescents. *Addict Behav* 34: 287-291.
- 8 Akbar M, Akram M, Ahmed M, Hussain MS, Lal V, et al. (2014) Relationship between Resilience and Life Satisfaction among Nomadic. *Int J Innov Appl Stud* 6: 515-529.
- 9 Cohn MA, Fredrickson BL, Brown SL, Mikels JA, Conway AM (2009) Happiness Unpacked: Positive Emotions Increase Life Satisfaction by Building Resilience. *Emotion* 9: 361-368.
- 10 Shi M, Wang X, Bian Y, Wang L (2015) The mediating role of resilience in the relationship between stress and life satisfaction among Chinese medical students: a cross-sectional study. *BMC Med Edu* 15: 1-7.
- 11 Macleod S, Musich S, Hawkins K, Alsgaard K, Wicker ER (2016) The impact of resilience among older adults. *Geriatr Nurs*.
- 12 Mguni N, Bacon N, Brown JF (2012) *The wellbeing and resilience paradox*. The Young Foundation, London.
- 13 Wiseman T, Foster K, Curtis K (2016) The experience of emotional wellbeing for patients with physical injury: A qualitative follow-up study. *Injury*.
- 14 Padesky CA, Mooney KA (2012) Strengths-Based Cognitive-Behavioural Therapy: A Four-Step Model to Build Resilience. *Clin Psychol Psychother* 19: 283-290.
- 15 Wagnild GM, Young HM (1993) Development and psychometric evaluation of the Resilience Scale. *J Nurs Meas* 1: 165-178.
- 16 Ahern NR, Kiehl EM, Sole ML, Byers J (2006) A review of instruments measuring resilience. *Issues Compr Pediatr Nurs* 29: 103-125.
- 17 Wagnild G (2009) A review of the Resilience Scale. *J Nurs Meas* 17: 105-113.
- 18 Windle G, Bennett KM, Noyes J (2011) A methodological review of resilience measurement scales. *Health Qual Life Outcomes* 9: 8.
- 19 Abiola T, Udofia O (2011) Psychometric assessment of the Wagnild and Young's resilience scale in Kano, Nigeria. *BMC Res Notes* 4: 509.
- 20 Heilemann MV, Lee K, Kury FS (2003) Psychometric properties of the Spanish version of the Resilience Scale. *J Nurs Meas* 11: 61-72.
- 21 World Medical Association (2013) Declaration of Helsinki: ethical principles for medical research involving human subjects. *Jama* 310: 2191-2194.
- 22 Federal Statistical Office of Germany (2013) *Population 2013*.
- 23 Kocalevent RD, Zenger M, Heinen I, Dwinger S, Decker O, Brähler E (2015) Resilience in the General Population: Standardization of the Resilience Scale (RS-11). *PLoS ONE* 10:e0140322.
- 24 Schumacher J, Leppert K, Gunzelmann T, Strauß B, Brähler E (2005) Die Resilienzskala—Ein Fragebogen zur Erfassung der psychischen Widerstandsfähigkeit als Personmerkmal. *Zeitschrift für Klinische Psychologie, Psychiatrie und Psychotherapie* 53:16–39.
- 25 Kroenke K, Spitzer RL, Williams JB (2003) The Patient Health Questionnaire-2: validity of a two-item depression screener. *Med Care* 41: 1284-1292.
- 26 Spitzer RL, Kroenke K, Williams JB (1999) Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. Jama* 282: 1737-1744.
- 27 Spitzer RL, Kroenke K, Williams JW, Löwe B (2006) A brief measure for assessing generalized anxiety disorder: The gad-7. *Archives of Internal Medicine* 166: 1092-1097.
- 28 Swinson RP (2006) The GAD-7 scale was accurate for diagnosing generalised anxiety disorder. *Evid Based Med* 11: 184.
- 29 Kroenke K, Spitzer RL, Williams JB, Monahan PO, Löwe B (2007) Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Ann Intern Med* 146: 317-325.
- 30 Lowe B, Decker O, Muller S, Brähler E, Schellberg D, et al. (2008) Validation and standardization of the Generalized Anxiety Disorder Screener (GAD-7) in the general population. *Med Care* 46: 266-274.
- 31 Rosenberg M (1965) *Society and the adolescent self-image*. Princeton University Press, Princeton, NJ.
- 32 Roth M, Decker O, Herzberg PY, Brähler E (2008) Dimensionality and Norms of the Rosenberg Self-esteem Scale in a German General Population Sample. *European Journal of Psychological Assessment* 24: 190-197.
- 33 Von Collani G, Herzberg PY (2003) Eine revidierte Fassung der deutschsprachigen Skala zum Selbstwertgefühl von Rosenberg. *Zeitschrift für Differentielle und Diagnostische Psychologie* 24: 9-22.
- 34 Daig I, Spangenberg L, Henrich G, Herschbach P, Kienast T, et al. (2011) Alters- und geschlechtsspezifische Neunormierung der Fragen zur Lebenszufriedenheit (FLZM) für die Altersspanne von 14 bis 64 Jahre. *Zeitschrift für Klinische Psychologie und Psychotherapie* 40: 172-178.
- 35 Petrowski K, Paul S, Zenger M, Brähler E (2012) An ultra-short screening version of the Recalled Parental Rearing Behavior questionnaire (FEE-US) and its factor structure in a representative German sample. *BMC Med Res Methodol* 12: 169.
- 36 Hu L, Bentler PM (1998) Fit Indices in Covariance Structure Modeling: Sensitivity to Underparameterized Model Misspecification. *Psychological Methods* 3: 424-453.
- 37 Hu L, Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling* 6: 1-55.
- 38 Schermelleh-Engel K, Moosbrugger H, Müller H (2003) Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*

- 8:23–74. Available from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.509.4258&rep=rep1&type=pdf>
- 39 Cheung GW, Rensvold RB (2002) Evaluating Goodness-of-Fit Indexes for Testing Measurement Invariance. *Structural Equation Modeling* 9: 233–255.
- 40 Milfont TL, Fischer R (2010) Testing measurement invariance across groups: Applications in cross-cultural research. *International Journal of Psychological Research* 3: 112-131.
- 41 Cohen J (1992) A power primer. *Psychological Bulletin* 112: 1.
- 42 Bulmer MG (1979) *Principles of Statistics*. Dover Publications, Mineola, NY.
- 43 Byrne BM (2010) *Structural Equation Modelling with AMOS: Basic Concepts, Application, and Programming*. Taylor & Francis, New York.
- 44 Hair J, Black W, Babin B, Anderson R (2010) *Multivariate Data Analysis*. Prentice Hall, Upper Saddle River, NJ.
- 45 Joereskog KG, Soerbom D (1993) *Lisrel 8: Structural equation modeling with the SIMPLIS command language*. Erlbaum, Hillsdale, NJ.