



How to measure self-esteem with one item? validation of the German single-item self-esteem scale (G-SISE)

Julia Brailovskaia¹ · Jürgen Margraf¹

© Springer Science+Business Media, LLC, part of Springer Nature 2018

Abstract

The aim of the present study was to investigate whether the German version of the Single-Item Self-Esteem Scale (G-SISE) is an appropriate instrument to measure the global self-esteem level. In three studies, the construct validity of G-SISE was analyzed. Study 1 ($N = 522$) found support for the convergence between G-SISE and the German Rosenberg Self-Esteem Scale (G-RSE), which is mostly used to assess the global self-esteem level. In Study 2a ($N = 989$), the associations between G-SISE, “Big Five” traits, subjective happiness and social support were analyzed. Results of Study 2b ($N = 348$) established the test-retest reliability of G-SISE over the time course of nine months. Taken together, the results show that the G-SISE is a valid, reliable and economical instrument for measuring the global self-esteem. Possible practical applications and limitations of G-SISE are discussed.

Keywords Self-esteem · Measurement · Validation · Personality · Mental health

Introduction

The increase of self-esteem has become a popular topic. Parents, teachers, supervisors, trainers and therapists try different ways to boost the self-esteem of their children, clients or patients, convinced that a high self-esteem causes positive outcomes, for example, increased performance and productivity (Baumeister et al. 2003). A literature review showed that self-esteem has therefore become a popular topic of different research fields, such as psychology, sociology, and medicine.

Self-esteem is defined as the emotional evaluation of one’s own behavior, traits and characteristics (Brown 2007). It reflects positive and negative attitudes toward the self (Rosenberg 1965). While some theories focused only on the global self-esteem, other distinguished individual facets of the global self-esteem, for example, emotional, social, performance-related and body-related (Diener et al. 1995; Rosenberg et al. 1995). The global self-esteem as well as its facets develop depending

on a person’s life experiences, for example, feedback of social interaction partners (Schlenker 1986). Mostly, people try to increase their own self-esteem by, for example, perceiving only positive feedback (Dauenheimer et al. 1999).

At first glance, a high self-esteem seems to bring about plenty of advantages. The level of self-esteem is positively related to life satisfaction, happiness, and social support (Diener and Diener 1995; Diener and Seligman 2002; Lyubomirsky et al. 2006; MacDonald and Leary 2012). Individuals with low self-esteem are predisposed to suffer from depression symptoms and often lack efficient coping strategies to manage stressful situations (Baumeister et al. 2003; Sedikides and Gregg 2003).

However, a high self-esteem also has some disadvantages. People with a high self-esteem are self-confident and are convinced of their own possibilities. They often overestimate their performance possibilities and take responsibility for tasks they are not able to fulfill. Frequently, they react aggressively to critic and refuse to admit their mistakes (Baumeister et al. 1993).

Furthermore, self-esteem is associated with different personality traits. A positive link between self-esteem and narcissism has been frequently described (Campbell et al. 2002; Rose 2002). Robins et al. (2001a) found significant associations between self-esteem and the “Big Five” personality traits (see Borkenau and Ostendorf 2008): extraversion, agreeableness, conscientiousness, and openness were positively related to self-esteem; neuroticism correlated negatively with self-esteem.

✉ Julia Brailovskaia
Julia.Brailovskaia@rub.de

Jürgen Margraf
Juergen.Margraf@rub.de

¹ Mental Health Research and Treatment Center, Ruhr-Universität Bochum, Massenbergr. 9-13, 44787 Bochum, Germany

Rosenberg Self-Esteem Scale

The most popular and widely used standardized instrument for measuring the global self-esteem level is the Rosenberg Self-Esteem Scale (RSE) (Rosenberg 1965).

The RSE is a self-report questionnaire consisting of ten items that are rated on a 4-point Likert scale. Five items (1, 3, 4, 7, 10) are positively formulated and five items (2, 5, 6, 8, 9) are negatively formulated. It is a valid and reliable instrument which has been translated and investigated in different languages (Gray-Little et al. 1997; Pullmann and Allik 2000). The German version of the RSE (G-RSE) was validated by Ferring and Filipp (1996). In 2003a, von Collani and Herzberg published a revised version of the German adaptation. Both versions showed good content validity and scale reliability (Cronbach's $\alpha = .84-.88$) (Ferring and Filipp 1996; von Collani and Herzberg 2003a).

However, since years, there is an international debate about the factor structure of the RSE. Most psychometric studies provide evidence either for a unidimensional structure that has been postulated by Rosenberg (1965) himself (e.g., Gray-Little et al. 1997; Mimura and Griffiths 2007; Pullmann and Allik 2000), or for a two-dimensional structure that differentiates between a positive self-esteem facet (items 1, 3, 4, 7, and 10) and a negative self-esteem facet (items 2, 5, 6, 8, and 9) (e.g., Marsh et al. 2010; Michaelides et al. 2016; Owens 1994). So far, studies favoring the two-dimensional structure did not come to a consensus how to interpret the two-dimensionality. While some of them describe both dimensions as two related but separated forms of the self (e.g., Goldsmith 1986), other consider them as a methodical artefact of item-wording (e.g., Marsh 1996).

In Germany, von Collani and Herzberg (2003b) described a multidimensional structure with three components: “positive self-esteem facet 1” including items 1 and 10, “positive self-esteem facet 2” including items 3, 4, and 7, and “negative self-esteem” including items 2, 5, 6, 8, and 9. However, on the level of a second-order factor, they assumed a unitary construct of global self-esteem.

Roth et al. (2008) who provided support for a unidimensional view of the German RSE postulated that because of a ceiling-effect of the scores distribution this questionnaire should only be used to measure self-esteem in the low medium range. An investigation of the association between extreme levels of self-esteem and, for example, narcissistic tendencies should be avoided. Schmitt and Allik (2005) administered the RSE to participants in 53 nations demonstrating that its negatively worded items are partly differently interpreted across nations, which limits the use of the RSE in studies conducting cross-cultural comparisons.

Considering the critique of the RSE, especially the disagreement about its factor structure, which influences the understanding of the construct self-esteem and the interpretation

of appropriate results, it seems reasonable to look for further possibilities to measure self-esteem.

The Single-Item Self-Esteem Scale

Even though, single-item scales were reported to have some shortcomings such as simplifying multidimensional topics and not being able to measure fine-grained differences between individuals (e.g., Nunnally and Bernstein 1994), they also are advantageous in specific settings. For example, single-item scales can be used as a brief pre-screening instrument in clinical settings where participants often display a low attention span. Especially large representative studies and longitudinal studies with several measurement points that nowadays often collect data online via text messaging or smartphones can profit from the shortness of such instruments by time-saving, preventing fatigue, and decreasing of motivation and drop-out of participants (e.g., Konrath et al. 2014). Earlier studies demonstrated single-items scales that measure constructs like risk-taking (Szrek et al. 2012), narcissism (Konrath et al. 2014), need to belong (Nichols and Webster 2013), and Fear of Missing Out (Riordan et al. 2018) to have adequate psychometric properties and to show similar valid results as the long measures of these variables.

In 2001a, Robins et al. developed a single-item questionnaire – the Single-Item Self-Esteem Scale (SISE) – to measure the global self-esteem in a very efficient way. The exact wording of the English language version of the SISE is the following: “Please indicate to what extent the following statement applies to you. *I have high self-esteem.*” In four studies conducted in the USA, they found that the SISE and the RSE had similar correlation pattern with different criterion measures, including demographic variables, “Big Five” personality traits, life satisfaction, and depression symptoms.

Across all four studies, the SISE was shown to be a reliable and valid instrument. However, so far, this short questionnaire, which has been validated in the English language, received little research interest. Therefore, in the present work we aimed to validate a German version of the SISE (G-SISE; German language version: “Bitte kreuzen Sie an, inwiefern die folgende Aussage auf Sie zutrifft. *Ich habe ein hohes Selbstwertgefühl.*”). Considering that this questionnaire is economical and time-saving, it could be advantageous in specific settings (e.g., pre-screenings, large-scale, longitudinal studies).

Three studies were conducted within the ongoing BOOM (Bochum Optimism and Mental Health) research program, which aims to identify risk and protective factors of mental health in longitudinal and cross-sectional studies (e.g., Bieda et al. 2016; Schönfeld et al. 2016; Brailovskaia et al. 2017b). The responsible Ethics Committee approved the implementation of the present study. All data were collected by online self-report surveys. Participation was voluntary and could be

compensated by course credits for students. All participants gave online their informed consent to participate.

Except G-SISE, which has been translated by our research group by the widely used translation-backtranslation-modification procedure (Berry 1989), validated German versions of all questionnaires were used. For all studies, considering earlier research on self-esteem (Robins et al. 2001a), a priori power analyses (G*Power program, version 3.1) were calculated. They revealed that in all samples a minimum $N=84$ was required. Thus the present sample sizes were large enough to achieve valid results (power $> .80$; $\alpha < .05$, effect size $f^2 = 0.15$) (cf., Mayr et al. 2007). The Statistical Package for the Social Sciences (SPSS) 23 was used for statistical analyses.

Study 1 aimed to assess the construct validity of G-SISE by investigating the relationship between G-RSE and G-SISE and by comparing their associations with further variables that earlier studies described to be associated with self-esteem (demographic variables, narcissism, the “Big Five” traits, and depression symptoms).

In Study 2a, the construct validity of the G-SISE was further investigated. Following the dual-factor model of mental health that defines positive and negative mental health to be interrelated but separated unipolar dimensions of general mental health (Keyes 2005; Suldo and Shaffer 2008), additionally to personality traits (i.e., narcissism, the “Big Five”), and negative mental health variables, positive mental health variables were included in the investigation (i.e., subjective happiness, social support).

Study 2b aimed to investigate the test-retest reliability of G-SISE over the course of nine months (two measurement time points, T1 and T2). Associations between G-SISE and the variables narcissism, “Big Five” traits, happiness, and social support at different measurement time points were analyzed.

Study 1

Method

Participants and Procedure

The total sample of Study 1 included 522 participants (371 women, 151 men). Data collection took place from April to May 2016. Participants were recruited by posters displayed in public places, for example, bakeries, at different German universities, and through participation invitations on various social networking sites. Demographic data of present sample are presented in Table 1.

Measures

Self-Esteem Two measures of self-esteem were used. Participants were asked to rate their global self-esteem using

the German version of the Single-Item Self-Esteem Scale (G-SISE) (see Robins et al. 2001a) on a 5-point Likert scale (1 = *not at all true of me*, 2 = *rather not true of me*, 3 = *some part true of me*, 4 = *rather true of me*, 5 = *very true of me*). The Revised Version of the German Adaptation of Rosenberg Self-Esteem Scale (G-RSE) (von Collani and Herzberg 2003a) was used as the second instrument for measuring self-esteem. The ten items of this questionnaire are rated on a 4-point Likert scale (1 = *does not apply at all to me*, 4 = *completely applies to me*; current reliability: $\alpha = .93$).

Narcissism The personality trait narcissism was assessed with the Narcissistic Personality Inventory (NPI-40) (Schütz et al. 2004). This questionnaire contains 40 forced-choice format items (0 = low narcissism value, 1 = high narcissism value; $\alpha = .90$).

“Big five” The NEO Five-Factor Inventory (NEO-FFI) (Borkenau and Ostendorf 2008) was used to measure the “Big Five” personality traits. This instrument contains 60 items (twelve items per domain) which are rated on a 5-point Likert scale (0 = *strongly disagree*, 4 = *strongly agree*). The five scales have different high internal consistency (neuroticism: $\alpha = .87$, extraversion: $\alpha = .88$, openness: $\alpha = .79$, agreeableness: $\alpha = .86$, conscientiousness: $\alpha = .86$).

Depression Symptoms To measure depression symptoms over the previous week, the scale depression of the Depression-Anxiety-Stress Scales 21 was used (DASS-21) (Lovibond and Lovibond 1995). It consists of seven items which range from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). This instrument has well-established psychometric properties, both for non-clinical and clinical samples ($\alpha = .93$).

Results and Discussion

Descriptive Statistics

Table 2 presents the descriptive statistics of the used scales. All investigated psychological variables were close to normally distributed (analyses of skewness (< 3) and kurtosis (< 8)).

G-SISE had a mean of 3.25 ($SD = 1.15$, range: 1–5), a median of 3.00, a mode of 3, and the following score distribution: 1 = 7.5%, 2 = 18.6%, 3 = 30.7%, 4 = 28.2%, 5 = 15%. The results are comparable with these revealed by Robins et al. (2001a) (SISE: $M = 3.50$, $SD = 1.10$). Present mean of G-RSE was 3.03 ($SD = .75$, range: 1–4), the median was 3.20, and the mode was 4.00. The values resemble the results described by Schmitt and Allik (2005) for a German sample and by Caprara et al. (2012) for an Italian sample.

Table 1 Demographic data (Study 1 to Study 2b)

	Study 1 (<i>N</i> = 522)	Study 2a (<i>N</i> = 989)	Study 2b (<i>N</i> = 348)
<i>Age (years):</i>			
<i>M (SD; Min–Max)</i>	25.69 (8.64; 18–59)	23.69 (5.29; 17–58)	24.76 (5.71; 17–58)
17–20 years	27.4%	32.2%	23.6%
21–25 years	38.9%	37.2%	36.5%
26–30 years	18.2%	22%	28.4%
31–40 years	7.8%	7%	9.8%
41–59 years	7.7%	1.5%	1.7%
<i>Employment</i>			
University students	76.6%	100%	100%
Employees	17.2%		
Trainees	4.8%		
Unemployed	1.1%		
Retired	0.1%		
<i>Marital status</i>			
Single	42.5%	47.1%	41.7%
In romantic relationship	48.5%	45.4%	50%
Married	9%	7.5%	8.3%

Due to rounding the sum of listed figures may be lower than 100%

M Mean; *SD* Standard Deviation; *Min* Minimum; *Max* Maximum

Factor Structure of G-RSE

To investigate the factor structure of G-RSE an exploratory factor analysis (EFA) was calculated. Considering the results of the Kaiser-Meyer-Olkin ($KMO = .929$) and the Barlett's test of sphericity ($\chi^2 = 3842.654$, $df = 45$, $p = .000$) the sample size was adequate for this analysis (cf., Field 2009). The principal component analysis (PCA) revealed two components/factors (rotation method: varimax) that in combination explained 73.2% of the variance (factor 1: 47.5%; factor 2: 25.7%). The screen plot confirmed the two-factor structure. Due to the factor loadings of the rotated component matrix, the items 1, 2, 5, 6, 8, 9, and 10 load on factor 1, the items 3, 4, and 7 load on factor 2 (see Table 3). These results support a two-dimensional solution, which however does not differentiate between positive and negative formulated items (see Goldsmith 1986). While factor 2 resembles the “positive self-esteem facet 2” described by von von Collani and Herzberg (2003b), factor 1 cannot be assigned to earlier models.

Next, to assess a deeper insight into the association between G-RSE and G-SISE, a second EFA was ran that included the G-SISE item additionally to the ten G-RSE items ($KMO = .938$; Barlett's test: $\chi^2 = 4325.429$, $df = 55$, $p = .000$). A two-factor solution with the same items distribution as in the first EFA was found, whereby 72% of the variance were explained (factor 1: 47.7%, factor 2: 24.3%). The G-SISE item loaded on factor 1 (see Table 3).

Construct Validity

To investigate the construct validity of G-SISE, its associations with G-RSE and its items, as well as the variables gender, age, narcissism, “Big Five” traits, and depression symptoms were assessed with t-tests for independent samples (gender differences), zero-order bivariate correlations, and multiple linear regression analyses. The effect size Hedges' g was included to consider the results of the t-tests (effect: small: $.20 \leq g < .50$, medium: $.50 \leq g < .80$, large: $g \geq .80$) (Hedges 1981) and the effect size Cohen's q was used to analyze differences between the results of the correlation analyses (effect: $.10 \leq q < .30$: small; $.30 \leq q \leq .50$: middle; $.50 < q$: large) (Cohen 1988).

G-SISE and G-RSE correlated significantly positively ($r = .75$, $p \leq .001$). A comparable result was described by Robins et al. (2001a) for the English language versions. The correlations between G-SISE and the single items of G-RSE ranged from .43 (Item 3) to .72 (Item 10) (all: $p \leq .001$). In comparison, the interrelations between the ten items of G-RSE ranged from .33 to .80 (all: $p \leq .001$).

The gender comparison revealed that men had (significantly) higher values of self-esteem than women (G-SISE: men: $M (SD) = 3.53 (1.25)$, women: $M (SD) = 3.13 (1.08)$, $t_{(246)} = -3.404$, $p < .01$, Hedges' $g = .35$; G-RSE: men: $M (SD) = 3.10 (.83)$, women: $M (SD) = 3.00 (.71)$, $t_{(245)} = -1.319$, $p > .05$). This result is consistent with previous research that reported men to have higher self-esteem than women, which was partly explained by gender

Table 2 Means, standard deviations, minima, maxima, skewness, and kurtosis of the used scales (Study 1 and Study 2a)

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurt</i>
<i>Study 1 (N = 522)</i>						
G-SISE	3.25	1.15	1	5	-.19	-.74
G-RSE	3.03	.75	1	4	-.67	-.37
NPI-40	14.60	8.22	1	40	-1.06	1.35
NEO-FFI: Neuroticism	2.07	.76	.25	3.92	.01	-.68
NEO-FFI: Extraversion	2.19	.75	0	4	.07	.35
NEO-FFI: Openness	2.67	.64	.08	4	-.57	1.21
NEO-FFI: Agreeableness	2.54	.71	.25	4	-.96	1.24
NEO-FFI: Conscientiousness	2.65	.67	.25	4	-.34	.23
DASS-21: Depression	5.70	5.83	0	21	1.13	.11
<i>Study 2a (N = 989)</i>						
G-SISE	3.33	1.08	1	5	-.34	-.50
G-NPI-13	3.87	2.30	0	12	.63	.29
BFI-10: Neuroticism	3.14	.96	1	5	-.04	-.81
BFI-10: Extraversion	3.15	1.01	1	5	-.03	-.84
BFI-10: Openness	3.71	.98	1	5	.50	-.63
BFI-10: Agreeableness	3.85	.76	1	5	-.61	-.01
BFI-10: Conscientiousness	3.47	.88	1	5	-.21	-.46
SHS	18.55	5.27	4	28	-.50	-.25
F-SozU K-14	4.30	.70	1.14	5	-1.51	2.71

M Mean; *SD* Standard Deviation; *Min* Minimum; *Max* Maximum; *Skew* Skewness; *Kurt* Kurtosis; *G-SISE* German Single-Item Self-Esteem Scale; *G-RSE* German Rosenberg’s Self-Esteem Scale; *G-NPI* German Narcissistic Personality Inventory; *NEO-FFI* NEO Five-Factor Inventory; *DASS* Depression-Anxiety-Stress Scales; *BFI* BIG Five Inventory; *SHS* Subjective Happiness Scale; *F-SozU K-14* Questionnaire Social Support

roles and stereotypical socialization (Caprara et al. 2012; Kling et al. 1999; Robins et al. 2001a).

Table 4 shows that the two measures of self-esteem had similar correlations with most of the other variables investigated in this study. Differences between the correlations of the two instruments were small (see Cohen’s *q*).

Both measures correlated significantly negatively with age. Narcissism was significantly positively correlated with both self-esteem measures. Mostly narcissistic people are popular interaction partners who know how to present their person to gain attention and admiration, which increase their self-esteem (Ames et al. 2006). Furthermore, there were significant correlations between self-esteem and the “Big Five” traits. Apart from the results of agreeableness, these correlations were similar for both self-esteem measures. They resembled results found by earlier research using SISE (e.g., Robins et al. 2001b) or RSE (e.g., Caprara et al. 2012; Schmitt and Allik 2005) as self-esteem measures. While self-esteem was significantly positively related to extraversion, openness, and conscientiousness, its association with neuroticism was significantly negative. In accordance with Pullmann and Allik

(2000), the relationship between self-esteem and agreeableness was negative, but only became significant for G-SISE. Previous research reported a negative link between agreeableness and narcissism. Moreover, low agreeableness was described to belong to the main characteristics of narcissistic people (Brailovskaia and Bierhoff 2016; Brailovskaia and Margraf 2016). Accordingly, in the current study, agreeableness was significantly negatively related to narcissism ($r = -.56, p < .01$). Additionally, agreeableness was significantly negatively correlated with self-esteem measured with G-SISE ($r = -.25, p < .01$). However, after controlling for narcissism (partial correlation), the correlation between agreeableness and self-esteem became significantly positively ($r = .14, p < .01$). Thus, the found negative association between agreeableness and self-esteem may partly be caused by the close positive relationship between self-esteem and narcissism. However, note that some earlier studies also described a positive relationship between self-esteem and agreeableness (Caprara et al. 2012; Robins et al. 2001a).

Both self-esteem measures correlated significantly negatively with depression symptoms. For RSE this negative association was also described by Caprara et al. (2012). In accordance with the results of Robins et al. (2001a), depression symptoms correlated stronger with G-RSE than with G-SISE (effect size: $q = .21$). Earlier studies showed self-esteem to be a significant predictor of depression (Murrell et al. 1991). To investigate this issue, we calculated multiple regression analyses. The first model with gender ($\beta = .195, p \leq .001$; 95% CI [1.419;3.590]), age ($\beta = -.189, p \leq .001$; 95% CI [-.184;-.071]), and G-SISE ($\beta = -.196, p \leq .001$; 95% CI [-1.427;-.571]) as independent variables and depression symptoms as the dependent variable explained 8.4% of the

Table 3 Rotated factor loads (1. EFA: G-RSE; 2. EFA: G-RSE and G-SISE) (Study 1)

	1. EFA		2. EFA	
	Factor 1	Factor 2	Factor 1	Factor 2
G-RSE: Item 1	.752	.411	.760	.404
G-RSE: Item 2	.822	.267	.813	.265
G-RSE: Item 3	.232	.842	.230	.842
G-RSE: Item 4	.215	.837	.224	.834
G-RSE: Item 5	.685	.407	.672	.407
G-RSE: Item 6	.862	.204	.848	.202
G-RSE: Item 7	.523	.660	.524	.657
G-RSE: Item 8	.778	.165	.788	.157
G-RSE: Item 9	.847	.290	.844	.285
G-RSE: Item 10	.778	.404	.787	.397
G-SISE	–	–	.714	.359

N 522; *EFA* exploratory factor analysis; *G-RSE* German Rosenberg’s Self-Esteem Scale; *G-SISE* German Single-Item Self-Esteem Scale

Table 4 Correlations of G-SISE and G-RSE with age, gender, personality traits, and mental health variables (construct validity), and Cohen's q (effect size) (Study 1 and Study 2a)

	G-SISE	G-RSE	q
<i>Study 1 (N = 522)</i>			
Age	-.09*	-.11*	.02
NPI-40	.61**	.51**	.15
NEO-FFI: Neuroticism	-.49**	-.63**	.21
NEO-FFI: Extraversion	.57**	.63**	.09
NEO-FFI: Openness	.26**	.23**	.03
NEO-FFI: Agreeableness	-.25**	-.06	.20
NEO-FFI: Conscientiousness	.34**	.45**	.13
DASS-21: Depression	-.15**	-.35**	.21
<i>Study 2a (N = 989)</i>			
Age	.07*		
G-NPI-13	.31**		
BFI-10: Neuroticism	-.50**		
BFI-10: Extraversion	.38**		
BFI-10: Openness	.01		
BFI-10: Agreeableness	.10**		
BFI-10: Conscientiousness	.10**		
SHS	.59**		
F-SozU K-14	.36**		

q Cohen's q (effect size: $.10 \leq q < .30$: small; $.30 \leq q < .50$: middle; $.50 \leq q$: large); gender: 0 = women, 1 = men; *G-SISE* German Single-Item Self-Esteem Scale; *G-RSE* German Rosenberg's Self-Esteem Scale; *G-NPI* German Narcissistic Personality Inventory; *NEO-FFI* NEO Five-Factor Inventory; *DASS* Depression-Anxiety-Stress Scales; *BFI* BIG Five Inventory; *SHS* Subjective Happiness Scale; *F-SozU K-14* Questionnaire Social Support.

* $p < .05$, ** $p < .01$

variance, $F(3,518) = 15.835$, $p \leq .001$. In the second model, gender ($\beta = .191$, $p \leq .001$; 95% CI [1.440;3.456]), age ($\beta = -.211$, $p \leq .001$; 95% CI [-.195;-.089]), and G-RSE ($\beta = -.383$, $p \leq .001$; 95% CI [-3.593;-2.374]) were taken as independent variables. Depression symptoms were included as the dependent variable. The model explained 19.1% of the variance, $F(3,518) = 40.829$, $p \leq .001$. Thus, the results of both self-esteem measures confirmed the earlier reported negative association between self-esteem and depression symptoms. However, self-esteem measured with the short G-SISE seems to be too global/general to be able to predict the multi-faceted depression symptoms as compared to the self-esteem assessed with the more detailed G-RSE.

Taken together, the results of Study 1 revealed that G-SISE is a valid instrument for measuring global self-esteem not only in English language samples, but also in German language samples. We found support for the convergence between G-SISE and G-RSE, whereby due to the EFA G-SISE loads on the same factor as seven items of the G-RSE. Both self-esteem

measures have some strengths which could be of benefit to specific research questions. While G-SISE is more suitable for short general surveys and pre-screenings, G-RSE should be preferred when considering multi-faceted negative mental health variables, especially depression symptoms. Interestingly, both instruments show inconsistent results with regard to the trait agreeableness. This emphasizes the assumption that this inconsistency is due to the relationship of the constructs themselves, rather than to the measures operationalizing them.

Study 2a

Method

Participants and Procedure

The sample of Study 2a consisted of 989 university students (690 women, 299 men). Table 1 shows demographic data of current sample. A participation invitation with a link of the online survey was sent by a collective e-mail to 1500 randomly selected students of a large German university at the beginning of the winter semester 2015/2016. Data collection took place in October 2015. At the end of the survey, participants were asked to provide their e-mail address, if they were agreeing to participate in later parts of the study. All 989 students had agreed to participate.

Measures

Self-Esteem The German version of SISE (see Robins et al. 2001a) was used to assess participants' global self-esteem (see Study 1).

Following earlier recommendations to use brief measures in investigations with several measurement points to decrease drop-out of participants (e.g., Konrath et al. 2014), the trait narcissism and the "Big Five" traits were assessed with the short measures G-NPI-13 (Brailovskaia et al. 2017a) and BFI-10 (Rammstedt and John 2007).

Narcissism To measure narcissism as a personality trait, a brief validated version of the Narcissistic Personality Inventory (G-NPI-13) (Brailovskaia et al. 2017a) consisting of 13 forced-choice format items was used (0 = low narcissism value, 1 = high narcissism value; $\alpha = .57$).

"Big Five" The traits of the "Big Five" were assessed with the Big Five Inventory 10 (BFI-10) (Rammstedt and John 2007). It consists of ten items rated on a 5-point Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Respectively, two items belong to one of the five scales. Therefore, due to the recommendation of Clark and Watson (1995) the

Cronbach's α and the mean interitem correlation (r_{mi}) were calculated to examine scale reliability: neuroticism ($\alpha = .57$, $r_{mi} = .40$), extraversion ($\alpha = .74$, $r_{mi} = .59$), openness ($\alpha = .56$, $r_{mi} = .41$), agreeableness ($\alpha = .39$, $r_{mi} = .26$), conscientiousness ($\alpha = .54$, $r_{mi} = .39$).

Subjective Happiness To measure global subjective happiness, the unidimensional Subjective Happiness Scale was used (SHS) (Lyubomirsky and Lepper 1999), a reliable questionnaire ($\alpha = .85$) consisting of four items rated on a 7-point Likert scale (range: 1–7).

Social Support To assess subjective perceived or anticipated support from the social network, the short version of the unidimensional German Questionnaire-Social Support was included (F-SozU K-14) (Fydrich et al. 2009). This instrument consists of 14 items rated on a 5-point Likert scale (1 = *not true*, 5 = *true*; $\alpha = .93$).

Results and Discussion

Descriptive Statistics

Descriptive statistics of the used scales are shown in Table 2. All values were close to normally distributed. The mean G-SISE value was 3.33 ($SD = 1.08$, range: 1–5), the median was 3.00, the mode was 4. G-SISE had the following score distribution which resembled Study 1: 1 = 6%, 2 = 15.6%, 3 = 30.9%, 4 = 34.1%, 5 = 13.4%.

Associations of Self-Esteem with Personality Traits, Happiness and Social Support

Next, the associations of G-SISE with age, gender, the scales measuring narcissism, “Big Five” traits, happiness and social support were investigated with a t-test for independent samples and the effect size Hedges' g (gender difference), zero-order bivariate correlations (see Table 3), and a multiple regression analysis.

Men had a significantly higher self-esteem than women (men: $M (SD) = 3.54 (1.06)$, women: $M (SD) = 3.24 (1.08)$, $t_{(987)} = -4.008$, $p < .01$, Hedges' $g = .28$). This result corresponds to those of Study 1 and earlier research (Robins et al. 2001a) emphasizing the suitability of G-SISE to investigate gender differences.

Self-esteem measured with G-SISE was significantly positively correlated with age. The low age range of the present sample (17–30 years: 91.5%) partly explains the low correlation result. According to earlier studies, narcissism was positively related to self-esteem (Brailovskaia and Margraf 2016). Also, a significant positive association was found between self-esteem and social support. Individuals lacking social support have lower self-esteem values than these with a

supportive social network (Baumeister et al. 2003). Furthermore, our results revealed a significant positive correlation between self-esteem and happiness. Various studies partly using different instruments for measuring self-esteem, showed that self-esteem serves as a strong predictor of happiness (e.g., Lyubomirsky et al. 2006). In the present study, to investigate the association between self-esteem and happiness, we calculated a multiple regression analysis with gender ($\beta = -.110$, $p \leq .001$; 95% CI [-1.842;-.685]), age ($\beta = -.004$, $p > .05$; 95% CI [-.054;.046]), and G-SISE ($\beta = .603$, $p \leq .001$; 95% CI: [2.701;3.195]) as independent variables and the happiness scale as the dependent variable. The model explained 35.9% of the variance, $F(3,985) = 184.047$, $p \leq .001$.

Comparable with Study 1 and earlier research, G-SISE correlated significantly positively with the scales measuring extraversion and conscientiousness, and significantly negatively with the neuroticism scale (e.g., Robins et al. 2001a; Robins et al. 2001b). Similar to Caprara et al. (2012) and Robins et al. (2001b), we found a significant positive association between G-SISE and the agreeableness scale. This contradicts the negative relationship in Study 1. However, it is important to note that the agreeableness scale used in the present sample had a low scale reliability which might partly influence the results. Furthermore, there was no significant correlation between the scale openness and G-SISE, replicating the result of Robins et al. (2001a).

The results of Study 2a provide further support for the validity of G-SISE as a short self-esteem measure that is also appropriate for investigations of positive mental health variables, like subjective happiness and social support.

Study 2b

Method

Participants and Procedure

Of the 989 students who participated in Study 2a, 348 (35.2%) individuals participated in Study 2b (252 women, 96 men). Table 1 presents demographic data of present sample. In the middle of the summer semester 2016, nine months after the first online survey, an e-mail containing a link to the online survey was sent to the whole sample of Study 2a since all students had agreed to a further participation. Data collection took place in June 2016. This time point was chosen to avoid high stress values in the student sample which could falsify the results. The examination period begins at the end of the summer semester. Earlier pilot investigations within the framework of the BOOM program (Margraf and Schneider 2017) showed that students' stress symptoms increase and values of happiness decrease during exams. About two

months after exams, stress symptoms decrease and happiness values increases again.

Measures

In the present study, the global self-esteem (G-SISE; see Robins et al. 2001a), narcissism (G-NPI-13; Brailovskaia et al. 2017a), “Big Five” traits (BFI-10; Rammstedt and John 2007), subjective happiness (SHS; Lyubomirsky and Lepper 1999), and social support (F-sozU K-14; Fydrich et al. 2009) were considered (see Study 2a).

Results and Discussion

Comparison of G-SISE at Measurement Time First (T1) and Second (T2)

The associations between G-SISE values measured at T1 and T2 were analyzed by calculating descriptive statistics, paired-samples t-tests, zero-order bivariate correlations, and by investigating their relationships with the scales measuring narcissism and “Big Five” traits (both measured at T1 and at T2), happiness and social support (both measured at T1) (correlations, multiple regression analysis). All calculations were conducted with $N = 348$.

All investigated variables were close to normally distributed. At the first time of measurement (T1), the mean G-SISE value was 3.36 ($SD = 1.10$, range: 1–5), the median was 3.00, and there were two mode values: 3 and 4. The score distribution was: 1 = 5.5%, 2 = 16.1%, 3 = 31.3%, 4 = 31.3%, 5 = 15.8%. At the second time of measurement (T2), the mean G-SISE value was 3.41 ($SD = 1.06$, range: 1–5). The median of G-SISE T2 was 4.00 and the mode was 4. Score distribution: 1 = 4.6%, 2 = 15.2%, 3 = 29.6%, 4 = 35.9%, 5 = 14.7%. Mean G-SISE T1 and G-SISE T2 values did not differ significantly ($t_{(347)} = -1.124$, $p = .262$). According to the results of Robins et al. (2001a), who described a correlation of .75 between G-SISE assessments over time, in the present study the correlation between the G-SISE T1 value and the G-SISE T2 value was $r = .72$, $p \leq .001$.

Table 5 presents the relationships between G-SISE T1 and G-SISE T2 values with values of narcissism, “Big Five” variables, subjective happiness and social support.

Correlations of G-SISE T1 with narcissism and “Big Five” variables of T1 and T2 were comparable high (effect sizes of the differences: $q < .10$). Also correlations of G-SISE T2 with narcissism and “Big Five” variables of T1 and T2 did not differ significantly ($q < .10$). Furthermore, there were no significant differences between correlations of G-SISE T1 and G-SISE T2 with social support of T1 ($q < .10$). The difference between correlations of G-SISE T1 and G-SISE T2 with happiness of T1 was small ($q = .11$). Comparable with Study 2a, a multiple regression analyses with gender ($\beta = -.151$, $p \leq .01$;

Table 5 Correlations of G-SISE at T1 and at T2 with narcissism, “Big Five” variables, subjective happiness, and social support (Study 2b)

	G-SISE T1		G-SISE T2	
	T1	T2	T1	T2
G-NPI-13	.33**	.33**	.21**	.23**
BFI-10: Neuroticism	-.50**	-.44**	-.49**	-.49**
BFI-10: Extraversion	.41**	.44**	.38**	.43**
BFI-10: Openness	.07	.07	-.06	-.03
BFI-10: Agreeableness	.12*	.12*	.10 ^(*)	.17**
BFI-10: Conscientiousness	.08	.10 ^(*)	.13*	.13*
SHS	.62**	–	.55**	–
F-SozU K-14	.41**	–	.41**	–

$N = 348$; T1 first measurement time point of G-NPI-13, BFI-10, SHS, F-SozU K-14, T2 second measurement time point of G-NPI-13 and BFI-10; G-SISE German Single-Item Self-Esteem Scale; G-SISE T1 first measurement time point of G-SISE; G-SISE T2 second measurement time point of G-SISE; G-NPI German Narcissistic Personality Inventory; BFI BIG Five Inventory; SHS Subjective Happiness Scale; F-SozU K-14 Questionnaire Social Support.

^(*) $p < .10$, * $p < .05$, ** $p < .01$

95% CI: [-2.758; -.737]), age ($\beta = .052$, $p > .05$; 95% CI: [-.032; .126]), and G-SISE T2 ($\beta = .556$, $p \leq .001$; 95% CI: [2.289; 3.143]) as independent variables and happiness measured at T1 as the dependent variable was calculated. The model explained 32.5% of the variance, $F(3,344) = 55.296$, $p \leq .001$.

According to present results, G-SISE shows good test-retest reliability values over the time course of nine months. This emphasizes the longtime validity of G-SISE.

General Discussion

Robins et al. (2001a) presented an English language brief scale consisting of just one item to assess the global self-esteem – the Single-Item Self-Esteem Scale – which by its shortness could be used in pre-screenings and surveys that allow only a minimum time on side of the participants. The present study aimed to investigate and to validate the German version of this short scale.

In general, our results demonstrate that G-SISE is a valid, reliable, economical and practical instrument for measuring the global self-esteem in German language samples. Most findings from previous research investigating self-esteem were replicated. The increase of self-esteem is one of the main aims of narcissistic people (Brailovskaia 2013). Accordingly, we found a close positive association of self-esteem with the trait narcissism in Study 1 to Study 2b measuring narcissism with the long and the brief version of the Narcissistic Personality Inventory (NPI-40 and G-NPI-13). Furthermore, corresponding to earlier studies (e.g., Robins et al. 2001b), we

found self-esteem to be positively linked to the “Big Five” variables extraversion and conscientiousness, while its association with neuroticism was negatively. Thereby, the “Big Five” was assessed by different measures (NEO-FFI and BFI-10) which demonstrated that these results are not just a methodical artefact. In Study 1, the negative link between self-esteem and depression symptoms was replicated (e.g., Brailovskaia and Margraf 2016). However, it should be mentioned that due to their multifaceted nature (Lovibond and Lovibond 1995), G-RSE seems to be more suitable to predict depression symptoms than G-SISE.

Also, the close association between self-esteem and happiness described in earlier studies was replicated in Study 2a and in Study 2b (Furnham and Cheng 2000; Lyubomirsky et al. 2006). In Study 2b, the test-retest reliability of G-SISE over a period of nine months was demonstrated.

Similar to the findings of Robins et al. (2001a) who conducted their studies in the USA with the English language SISE and RSE, in the German language sample of Study 1, self-esteem values measured with G-SISE and with G-RSE were high positively correlated. Furthermore, both self-esteem measures showed comparable high links to most investigated variables. Interestingly, the EFA revealed that G-SISE loads on the same factor as seven of the ten G-RSE items. And we found confirmation for a two-factor structure of the G-RSE, which however differs from most earlier suggested structures. This fits the earlier described inconsistent results due to the factor structure of RSE (Gray-Little et al. 1997; Michaelides et al. 2016).

Thus, taken together, similar to other earlier investigated single-item scales (e.g., measuring narcissism, Konrath et al. 2014; risk-taking, Szrek et al. 2012), G-SISE seems to be an appropriate economical instrument for measuring the global self-esteem, especially in large online surveys, in longitudinal studies (see Twenge and Campbell 2002) in order not to overload participants, to prevent cognitive fatigue and therefore attention deficits, and when a brief pre-screening, for example in an assessment center, is needed. It can be of significant benefit in studies using the experience sampling paradigm (see Hofmann et al. 2012) to measure for example the relationship between self-esteem and specific experiences in everyday life. G-SISE seems to be especially suitable for investigations considering associations between self-esteem and positive mental health variables.

Limitations and Further Research

Surely, our present work and G-SISE itself have some limitations. G-SISE measures only the global self-esteem and is not able to distinguish between the single self-esteem facets and therefore does not preserve their conceptual breadth (e.g., Diener et al. 1995). Thus, to answer research questions focusing on specific facets of self-esteem, other instruments apart

from G-SISE should be used. Also due to the shortness of G-SISE, it seems not to be appropriate to be used in studies investigating multi-faceted depression symptoms. Here, the more detailed G-RSE could be of advantage (Gray-Little et al. 1997). In this context, we strongly advise future studies to investigate the applicability of G-SISE in investigations of other negative mental health variables, for example, anxiety symptoms.

Furthermore, G-SISE consists of a positively formulated item with obvious content (to measure the self-esteem), which could encourage to a socially desirable response (see Robins et al. 2001a). However, the strong correspondence between G-SISE and G-RSE argues against a particularly strong social desirability bias in G-SISE responding that exceeds the one of G-RSE.

It is also important to mention that even though current results demonstrate SISE to be appropriate to assess the global self-esteem level not only in English-speaking adult samples, but also in German-speaking adults, so far, SISE has been used only in individualistic cultures that focus on the increase of self-esteem and self-confidence of the individual. In contrast, in collectivistic cultures the sense of community and the integration of the individual in the community context are more important, whereas the explicit expression of one’s self-esteem is rather undesirable (Markus and Kitayama 1991). Therefore, the question arises whether SISE can also be used in collectivistic cultures, especially for cross-cultural comparisons. Thus, the culture sensitivity of SISE should be investigated in further studies.

Moreover, in the present study, we investigated mostly young participants and our samples included more women than men, which limits the generalizability of our results. Although our findings are comparable with the results described by earlier studies with older samples including equal numbers of female and male participants, it is desirable to replicate our work with more age and gender representative samples.

Additionally, future studies investigating SISE should include measures of variables which enable the analysis of its discriminant validity, for example, the domain-specific self-evaluation of artistic ability (Pelham and Swann 1989) that was found to be not related to self-esteem (Robins et al. 2001a).

We also recommend to replicate the test-retest reliability examination of G-SISE over a longer period than nine months and with more than two measurement time points to increase the generalizability of the results.

To sum up, our study is the first research work that focused on the validity of G-SISE. Present results demonstrate that G-SISE can be considered as an appropriate instrument to measure self-esteem in specific research questions which focus mainly on the global self-esteem level, especially when a brief pre-screening is required, for example, in clinical samples or

in an assessment center. In future studies, we recommend to investigate G-SISE in the context of further personality and mental health variables, and to examine the application of SISE in cross-cultural works.

Funding The study was funded by the Alexander von Humboldt Professorship awarded to Jürgen Margraf by the Alexander von Humboldt-Foundation.

Compliance with Ethical Standards

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

This article does not contain any studies with animals performed by any of the authors.

The datasets during and/or analysed during the current study available from the corresponding author on reasonable request.

References

- Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality, 40*(4), 440–450.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1993). When ego threats lead to self-regulation failure: negative consequences of high self-esteem. *Journal of Personality and Social Psychology, 64*(1), 141–156.
- Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*(1), 1–44.
- Berry, J. W. (1989). Introduction to methodology. In H. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (Vol. 2, pp. 1–28). Boston: Allyn & Bacon.
- Bieda, A., Hirschfeld, G., Schönfeld, P., Brailovskaia, J., Zhang, X. C., & Margraf, J. (2016). Universal happiness? Cross-cultural measurement invariance of scales assessing positive mental health. *Psychological Assessment, 29*, 172–180.
- Borkenau, P., & Ostendorf, F. (2008). *NEO-Fünf-Faktoren-Inventar* (Vol. 2, neu normierte und vollständig überarbeitete Auflage). Göttingen: Hogrefe.
- Brailovskaia, J. (2013). *Narzisstisch und sensationssuchend?: eine Studie zum Zusammenhang zwischen Persönlichkeitsmerkmalen und Online-Selbstdarstellung am Beispiel von studiVZ*. Glückstadt: Hülsbusch.
- Brailovskaia, J., & Bierhoff, H.-W. (2016). Cross-cultural narcissism on Facebook: Relationship between self-presentation, social interaction and the open and covert narcissism on a social networking site in Germany and Russia. *Computers in Human Behavior, 55*, 251–257.
- Brailovskaia, J., & Margraf, J. (2016). Comparing Facebook users and Facebook non-users: Relationship between personality traits and mental health variables—an exploratory study. *PLoS One, 11*(12), e0166999.
- Brailovskaia, J., Bierhoff, H.-W., & Margraf, J. (2017a). How to identify narcissism with 13 items? Validation of the German narcissistic personality Inventory-13 (G-NPI-13). *Assessment, https://doi.org/10.1177/1073191117740625*.
- Brailovskaia, J., Schönfeld, P., Kochetkov, Y., & Margraf, J. (2017b). What does migration mean to us? USA and Russia: Relationship Between Migration, Resilience, Social Support, Happiness, Life Satisfaction, Depression, Anxiety and Stress. *Current Psychology, 1*–11.
- Brown, J. D. (2007). *The self*. New York: Psychology Press.
- Campbell, W. K., Rudich, E. A., & Sedikides, C. (2002). Narcissism, self-esteem, and the positivity of self-views: Two portraits of self-love. *Personality and Social Psychology Bulletin, 28*(3), 358–368.
- Caprara, G. V., Alessandri, G., Eisenberg, N., Kupfer, A., Steca, P., Caprara, M. G., et al. (2012). The positivity scale. *Psychological Assessment, 24*(3), 701–712.
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7*(3), 309–319.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Dauenheimer, D., Stahlberg, D., & Petersen, L. E. (1999). Self-discrepancy and elaboration of self-conceptions as factors influencing reactions to feedback. *European Journal of Social Psychology, 29*(56), 725–739.
- Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology, 68*(4), 653–663.
- Diener, E., & Seligman, M. E. (2002). Very happy people. *Psychological Science, 13*(1), 81–84.
- Diener, E., Wolsic, B., & Fujita, F. (1995). Physical attractiveness and subjective well-being. *Journal of Personality and Social Psychology, 69*(1), 120–129.
- Ferring, D., & Philipp, S.-H. (1996). Messung des Selbstwertgefühls: Befunde zur Reliabilität, Validität und Stabilität der Rosenberg-Skala. *Diagnostica, 42*, 284–292.
- Field, A. (2009). *Discovering statistics using SPSS (3ed.)*. London: Sage Publications.
- Furnham, A., & Cheng, H. (2000). Lay theories of happiness. *Journal of Happiness Studies, 1*(2), 227–246.
- Fydrich, T., Sommer, G., Tydecks, S., & Brähler, E. (2009). Fragebogen zur sozialen Unterstützung (F-SozU): Normierung der Kurzform (K-14). *Zeitschrift für Medizinische Psychologie, 18*(1), 43–48.
- Goldsmith, R. E. (1986). Dimensionality of the Rosenberg self-esteem scale. *Journal of Social Behavior and Personality, 1*(2), 253–264.
- Gray-Little, B., Williams, V. S., & Hancock, T. D. (1997). An item response theory analysis of the Rosenberg self-esteem scale. *Personality and Social Psychology Bulletin, 23*(5), 443–451.
- Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics, 6*, 107–128.
- Hofmann, W., Vohs, K. D., & Baumeister, R. F. (2012). Wait people desire, feel conflicted about, and try to resist in everyday life. *Psychological Science, 23*(6), 582–588.
- Keyes, C. L. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology, 73*(3), 539–548.
- Kling, K. C., Hyde, J. S., Showers, C. J., & Buswell, B. N. (1999). Gender differences in self-esteem: A meta-analysis. *Psychological Bulletin, 125*(4), 470–500.
- Konrath, S., Meier, B. P., & Bushman, B. J. (2014). Development and validation of the single item narcissism scale (SINS). *PLoS One, 9*(8), e103469.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales

- (DASS) with the Beck depression and anxiety inventories. *Behaviour Research and Therapy*, 33(3), 335–343.
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46(2), 137–155.
- Lyubomirsky, S., Tkach, C., & DiMatteo, M. R. (2006). What are the differences between happiness and self-esteem. *Social Indicators Research*, 78(3), 363–404.
- MacDonald, G., & Leary, M. R. (2012). Individual differences in self-esteem. *Handbook of Self and Identity*, 354–377.
- Margraf, J., & Schneider, S. (2017). Bochum optimism and mental health (BOOM) research program: Background, methods and aims. Manuscript in preparation.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224–253.
- Marsh, H. W. (1996). Positive and negative global self-esteem: A substantively meaningful distinction or artifacts? *Journal of Personality and Social Psychology*, 70(4), 810–819.
- Marsh, H. W., Scalas, L. F., & Nagengast, B. (2010). Longitudinal tests of competing factor structures for the Rosenberg self-esteem scale: Traits, ephemeral artifacts, and stable response styles. *Psychological Assessment*, 22(2), 366–381.
- Mayr, S., Erdfelder, E., Buchner, A., & Faul, F. (2007). A short tutorial of GPower. *Tutorial in Quantitative Methods for Psychology*, 3(2), 51–59.
- Michaelides, M. P., Zenger, M., Koutsogiorgi, C., Brähler, E., Stöbel-Richter, Y., & Berth, H. (2016). Personality correlates and gender invariance of wording effects in the German version of the Rosenberg self-esteem scale. *Personality and Individual Differences*, 97, 13–18.
- Mimura, C., & Griffiths, P. (2007). A Japanese version of the Rosenberg self-esteem scale: Translation and equivalence assessment. *Journal of Psychosomatic Research*, 62(5), 589–594.
- Murrell, S. A., Meeks, S., & Walker, J. (1991). Protective functions of health and self-esteem against depression in older adults facing illness or bereavement. *Psychology and Aging*, 6(3), 352–360.
- Nichols, A. L., & Webster, G. D. (2013). The single-item need to belong scale. *Personality and Individual Differences*, 55(2), 189–192.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory*. New York: McGraw-Hill.
- Owens, T. J. (1994). Two dimensions of self-esteem: Reciprocal effects of positive self-worth and self-deprecation on adolescent problems. *American Sociological Review*, 59(3), 391–407.
- Pelham, B. W., & Swann, W. B. (1989). From self-conceptions to self-worth: On the sources and structure of global self-esteem. *Journal of Personality and Social Psychology*, 57, 672–680.
- Pullmann, H., & Allik, J. (2000). The Rosenberg self-esteem scale: Its dimensionality, stability and personality correlates in Estonian. *Personality and Individual Differences*, 28(4), 701–715.
- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the big five inventory in English and German. *Journal of Research in Personality*, 41(1), 203–212.
- Riordan, B. C., Cody, L., Flett, J. A. M., Conner, T. S., Hunterm, J., & Scarf, D. (2018). The development of a single item FoMO (fear of missing out) scale. *Current Psychology*. <https://doi.org/10.1007/s12144-018-9824-8>.
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001a). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg self-esteem scale. *Personality and Social Psychology Bulletin*, 27(2), 151–161.
- Robins, R. W., Tracy, J. L., Trzesniewski, K., Potter, J., & Gosling, S. D. (2001b). Personality correlates of self-esteem. *Journal of Research in Personality*, 35(4), 463–482.
- Rose, P. (2002). The happy and unhappy faces of narcissism. *Personality and Individual Differences*, 33(3), 379–391.
- Rosenberg, M. (1965). *Society and adolescent self-image*. Princeton, NJ: Princeton University press.
- Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global self-esteem and specific self-esteem: Different concepts, different outcomes. *American Sociological Review*, 141–156.
- Roth, M., Decker, O., Herzberg, P. Y., & Brähler, E. (2008). Dimensionality and norms of the Rosenberg self-esteem scale in a German general population sample. *European Journal of Psychological Assessment*, 24(3), 190–197.
- Schlenker, B. R. (1986). Self-identification: Toward an integration of the private and public self. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 21–62). New York: Springer.
- Schmitt, D. P., & Allik, J. (2005). Simultaneous administration of the Rosenberg self-esteem scale in 53 nations: Exploring the universal and culture-specific features of global self-esteem. *Journal of Personality and Social Psychology*, 89(4), 623–642.
- Schönfeld, P., Brailovskaia, J., Bieda, A., Zhang, X. C., & Margraf, J. (2016). The effects of daily stress on positive and negative mental health: Mediation through self-efficacy. *International Journal of Clinical and Health Psychology*, 16(1), 1–10.
- Schütz, A., Marcus, B., & Sellin, I. (2004). Die Messung von Narzissmus als Persönlichkeitskonstrukt. *Diagnostica*, 50(4), 202–218.
- Sedikides, C., & Gregg, A. P. (2003). Portraits of the self. In M. A. Hogg & J. Cooper (Eds.), *Sage handbook of social psychology* (pp. 110–138). London: Sage Publications.
- Suldo, S. M., & Shaffer, E. J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review*, 37(1), 52–68.
- Szrek, H., Chao, L.-W., Ramlagan, S., & Peltzer, K. (2012). Predicting (un)healthy behavior: A comparison of risk-taking propensity measures. *Judgement and Decision Making*, 1(6), 716–727.
- Twenge, J. M., & Campbell, W. K. (2002). Self-esteem and socioeconomic status: A meta-analytic review. *Personality and Social Psychology Review*, 6(1), 59–71.
- von Collani, G., & Herzberg, P. Y. (2003a). Eine revidierte Fassung der deutschsprachigen Skala zum Selbstwertgefühl von Rosenberg. *Zeitschrift für Differentielle und Diagnostische Psychologie*, 24(1), 3–7.
- von Collani, G., & Herzberg, P. Y. (2003b). Zur internen Struktur des globalen Selbstwertgefühls nach Rosenberg. *Zeitschrift für Differentielle und Diagnostische Psychologie*, 24(1), 9–22.