

University of Southampton

Faculty of Environmental and Life Sciences

Psychology

**The Measurement and Definition of Self-Esteem: Meta-Research and a New Way
Forward**

Volume 1 of 2

by

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Thesis for the degree of Doctor of Philosophy

September 2018

University of Southampton

Abstract

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Self-esteem is a central research topic in psychology, but its measurement and definition have long been contentious topics. In this four-paper thesis, I investigate (1) the measurement of self-esteem in personality and social psychology, (2) the definition of self-esteem in personality and social psychology, (3) further explore the dimensionality of the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), and (4) construct and initially validate a new two-item self-esteem scale.

The first two papers of this thesis are meta-research. In the first paper, I extract detailed measurement information from 371 recently published research articles. I find that the RSES dominates the measurement of self-esteem in personality and social psychology. In the second paper, I analyse 117 definitions of self-esteem extracted from the same corpus of articles. I find that, while there is a lack of consensus on the definition of self-esteem, researchers most often define self-esteem narrowly as one's overall evaluation of his or her worth and/or value—a definition that is narrower than that which guided the construction of the RSES. In the third paper, to extend the research on its dimensionality, I recount, for the first time, the RSES's largely unknown transformation from a Guttman-type to Likert-type scale and explore item-level associations with variables theoretically linked to self-esteem. I find that the items of the RSES are heterogeneously correlated with perceptions of agency, communion, social status, inclusion, dominance, submission, agreeableness and quarrelsomeness; but not attachment anxiety or avoidance. In the fourth paper, with the problems of the RSES in mind, I report on the development and initial validation of a new self-esteem scale—the Worth and Value Self-Esteem Scale (WAVSES). This two-item scale is intended, above all, to be maximally content valid for self-esteem as it is narrowly defined in contemporary personality and social psychology.

Table of Contents

Table of Contents	i
Table of Tables	ix
Table of Figures.....	xii
Research Thesis: Declaration of Authorship.....	xv
Acknowledgements.....	xvi
Chapter 1 Introduction.....	xvii
1.1 The Measurement and Definition of Self-Esteem: Meta-Research and a New Way Forward	xvii
1.2 Thesis Overview.....	xviii
1.3 Paper 1: The Rosenberg and the Rest.....	xix
1.4 Paper 2: What is Self-Esteem?	xxi
1.5 Paper 3: Is the Rosenberg Self-Esteem Scale Unidimensional?	xxii
1.6 Paper 4: Development and Initial Validation of The Worth and Value Self-Esteem Scale	xxv
1.7 Contributions	xxviii
1.8 References	xxx
Chapter 2 The Rosenberg and the Rest: The Measurement of Self-Esteem in Personality and Social Psychology (2004-2015).....	1
2.1 Abstract	1
2.2 Introduction	2
2.3 Method	4
2.3.1 Eligibility Criteria, Search Terms, and Databases	4
2.3.2 Data Extraction.....	4
2.4 Results	5
2.4.1 Retrieved and Excluded Articles.....	5
2.4.2 General Statistics.....	5
2.4.3 Overall Measure Use	6
2.4.4 Longitudinal Trends	6
2.4.5 The Ten Most Used Measures: Brief Descriptions and Measurement Details ..	6
2.4.5.1 Rosenberg Self-Esteem Scale ($n = 430$, 55.92%).	6
2.4.5.2 Custom ($n = 76$, 9.88%).	7

Table of Contents

2.4.5.3 Self-Esteem Implicit Association Test ($n = 53$, 6.89%)	8
2.4.5.4 Name-Letter Test ($n = 43$, 5.59%)	9
2.4.5.5 Modified-for-States Rosenberg Self-Esteem Scale ($n = 42$, 5.46%). ...	10
2.4.5.6 State Self-Esteem Scale ($n = 31$, 4.03%)	11
2.4.5.7 Single-Item Self-Esteem Scale ($n = 20$, 2.60%)	11
2.4.5.8 Shortened Rosenberg Self-Esteem Scale ($n = 19$, 2.47%).....	12
2.4.5.9 The Single Item Name-Liking Measure ($n = 8$, 1.04%)	12
2.4.5.10 Self-Liking and Self-Competence Scales ($n = 7$, 0.91%).	12
2.4.6 Cronbach's Alphas for Multi-Item Self-Report Scales.....	13
2.4.7 Internal Consistency Reliability of Implicit Measures	13
2.5 Discussion.....	13
2.5.1 A Relatively Small Number of Instruments Accounted for the Majority of Measurement Occasions	14
2.5.2 The RSES Consistently Dominated	14
2.5.3 Custom Measures Ranked Second.....	16
2.5.4 Two "Implicit" Measures Ranked Third and Fourth	17
2.5.5 The Number of Response Options and Response Anchors Used with Self-Report Scales Varied Considerably	17
2.5.6 The Components of Implicit Measures Varied Considerably.....	18
2.5.7 How Does the Measurement of Self-Esteem Compare to Measurement Practices Elsewhere?.....	19
2.5.8 Limitations	19
2.5.9 Concluding Remarks.....	20
2.6 References.....	22
2.7 Tables.....	30
2.8 Figures.....	36

Chapter 3 What is Self-Esteem? Meta-Research on the Definition of Self-Esteem in Personality and Social Psychology (2004-2015) 41

3.1 Abstract.....	41
3.2 Introduction.....	42
3.2.1 Previous Accounts of Self-Esteem's Definitional Diversity	43
3.2.2 The Present Research.....	44
3.2.3 Defining Definition.....	45

3.3	Method	45
3.3.1	Search Terms and Eligibility Criteria.....	45
3.3.2	Definition Extraction.....	46
3.3.3	Content Analysis	47
3.4	Results	48
3.4.1	Articles Included and General Characteristics	48
3.4.2	Summary Statistics.....	48
3.4.3	Categories of Definition	49
3.4.3.1	Definition 1: Self-Worth/Value.....	49
3.4.3.2	Definition 2: Self-Attitude.....	50
3.4.3.3	Definition 3: Explicit/Implicit	50
3.4.3.4	Definition 4: Many Self-Evaluations	51
3.4.3.5	Definition 5: Self-Feelings	51
3.4.3.6	Definition 6: Global Evaluation	51
3.4.3.7	Definition 7: Self-Worth and Competence.....	51
3.4.3.8	Definition 8: Self-Value and Meaningfulness.....	52
3.4.3.9	Definition 9: Self-Acceptance/Liking	52
3.4.3.10	Definition 10: Mixed	52
3.4.3.11	Definition 11: Atypical.....	52
3.5	Discussion	53
3.5.1	Summary of Findings	53
3.5.2	A Critical and Historical Analysis of Self-Esteem Definitions.....	54
3.5.2.1	Self-Worth/Value	55
3.5.2.2	Self-Attitude	56
3.5.2.3	Explicit/Implicit.....	57
3.5.2.4	Many Self-Evaluations	58
3.5.2.5	Self-Feelings.....	58
3.5.2.6	Global Self-Evaluation	60
3.5.2.7	Other Definitions	60
3.5.3	Summary of Definitions of Self-Esteem	61
3.5.3.1	Critical Analysis	61
3.5.3.2	Historical Analysis	61
3.5.4	Why Are There Many Definitions of Self-Esteem?	62

Table of Contents

3.5.5 Comparing the Definition of Self-Esteem to Definitions of Other Constructs	64
3.5.6 Limitations	65
3.5.7 Recommendations.....	66
3.5.8 Conclusion	66
3.6 References.....	67
3.7 Tables.....	77
3.8 Figures.....	79

Chapter 4 Is the Rosenberg Self-Esteem Scale Unidimensional? Exploring Item-Level Correlations with Perceived Agency, Communion, Social Status, Social Inclusion, Social Behaviour, Attachment Anxiety and Attachment Avoidance 83

4.1 Abstract.....	83
4.2 Introduction.....	84
4.2.1 Is the RSES Unidimensional?.....	85
4.2.2 Beyond Factor Analysis: Item-Level Analysis	88
4.2.3 The Present Research.....	88
4.2.4 Related Prior Research.....	89
4.3 Study 1	91
4.3.1 Agency and Communion: Definition, Theory, and Previous Research with the RSES	91
4.3.2 Hypotheses.....	91
4.4 Method	92
4.4.1 Samples, Participants, Measures, and Participant Exclusions	92
4.4.1.1 Sample 1.....	92
4.4.1.2 Sample 2.....	92
4.4.1.3 Sample 3.....	93
4.4.1.4 RSES Item and Average Scoring	93
4.4.2 Analytic Strategy	93
4.5 Results.....	94
4.5.1 Sample 1	94
4.5.1.1 Basic Statistics and RSES CFA	94
4.5.1.2 Scale and Item-Level Correlations.....	94

4.5.2 Sample 2	95
4.5.2.1 Basic Statistics and RSES CFA.....	95
4.5.2.2 Scale and Item-Level Correlations	95
4.5.3 Sample 3	95
4.5.3.1 Basic Statistics and RSES CFA.....	95
4.5.3.2 Scale and Item-Level correlations.....	96
4.5.4 Mini Meta-Analysis.....	96
4.6 Discussion	96
4.7 Study 2.....	98
4.7.1 Self-Esteem, Social Inclusion, Social Status, and Social Behaviour: Theory, and Research with the RSES	98
4.7.2 Hypotheses	99
4.7.3 Method	100
4.7.3.1 Participants and Procedure	100
4.7.3.2 Measures.....	100
4.7.3.3 Perceptions of Social Behaviour	100
4.7.4 Participant Exclusions and Missing Data.....	101
4.7.5 Analysis Strategy.....	101
4.8 Results	101
4.8.1 Basic Statistics and CFA.....	101
4.8.2 Scale-Level Correlations	101
4.8.3 Heterogeneity Tests for Item-Level Correlations.....	102
4.8.4 Contrast Tests.....	102
4.8.4.1 Transient Evaluation/General Evaluation Items.....	102
4.8.4.2 Positively-Worded/Negatively-Worded Items	102
4.8.4.3 Self-Competency/Self-Liking Items.....	102
4.8.5 Discussion	103
4.9 Study 3.....	104
4.9.1 Attachment Experiences, Self-Concept, and Attachment Orientation	104
4.9.2 Hypotheses	105
4.9.3 Method	105

Table of Contents

4.9.3.1 Participants.....	105
4.9.3.2 Measures	106
4.9.3.3 Participant Exclusions and Missing Data.....	106
4.9.3.4 Analysis Strategy	106
4.9.4 Results.....	106
4.9.4.1 Basic Statistics and CFA.....	106
4.9.4.2 Scale-Level Correlations.....	106
4.9.4.3 Item-Level Correlations: Heterogeneity Tests.....	107
4.9.4.4 Contrast Tests.....	107
4.9.5 Discussion	107
4.10 General Discussion	108
4.10.1 Why are Item-Level Correlations Heterogeneous and why are Positively-Worded and Negatively-Worded Items Differentially Correlated with Theoretically Related Variables?	109
4.10.2 Limitations	111
4.10.3 What's Next?	112
4.10.4 Implications	114
4.11 References.....	115
4.12 Tables.....	126

Chapter 5 Development and Initial Validation of a Brief Measure of Self-Esteem: The Worth and Value Self-Esteem Scale (WAVSES) 143

5.1 Abstract.....	143
5.2 Introduction.....	144
5.2.1 The Problems of the RSES	145
5.2.2 The Present Research.....	148
5.2.3 The Worth and Value Self-Esteem Scale (WAVSES): Approach, Definition, and Format	149
5.2.3.1 What is Self-Esteem?.....	149
5.2.3.2 What is Self-Esteem Not?.....	150
5.2.3.3 Scale Format	151
5.2.3.4 Is a New Scale Needed?.....	151
5.2.3.5 Are Two Items a Problem?	152

5.3 Study 1: Item Comprehension, Concurrent Validity, and Convergent Validity	153
5.3.1 Rationales for Concurrent Validity Variables	153
5.3.1.1 Perceived Social Inclusion and Social Status.....	153
5.3.1.2 Attachment Anxiety and Avoidance	154
5.3.1.3 Life Satisfaction	154
5.3.1.4 Big Five Personality Dimensions	155
5.3.1.5 Major Depressive Disorder Symptoms	155
5.3.2 Hypotheses	156
5.3.3 Method	156
5.3.3.1 Sample Size	156
5.3.3.2 Participants and Exclusions	156
5.3.3.3 Procedure	157
5.3.3.4 Measures.....	157
5.3.4 Results	159
5.3.4.1 WAVSES.....	159
5.3.4.2 Respondent Comprehension of the WAVSES	159
5.3.4.3 Concurrent Validity	159
5.3.4.4 Convergent Validity	160
5.3.5 Discussion	160
5.4 Study 2: Direct Replication of Study 1	161
5.4.1 Method	161
5.4.1.1 Sample Size	161
5.4.1.2 Participants	161
5.4.1.3 Measures.....	161
5.4.2 Results	162
5.4.2.1 WAVSES.....	162
5.4.2.2 Comprehension of the WAVSES	162
5.4.2.3 Concurrent Validity	162
5.4.2.4 Convergent Validity	163
5.4.3 Discussion	163
5.5 Study 3: Test-Retest	164

Table of Contents

5.5.1 Hypotheses.....	164
5.5.2 Method	164
5.5.2.1 Sample Size.....	164
5.5.2.2 Participant Recruitment and Payment.....	164
5.5.2.3 Procedures and Measures.....	165
5.5.3 Results and Discussion	165
5.5.3.1 Participants and Data Collection.....	165
5.5.3.2 WAVSES	165
5.5.3.3 Test-Retest Correlations.....	165
5.6 Study 4: Item-Level Analysis	165
5.6.1 Method	166
5.6.2 Results.....	166
5.6.3 Discussion	167
5.7 General Discussion	167
5.7.1 Limitations	168
5.7.2 Anticipated Criticisms	169
5.7.3 Summary and Conclusions	170
5.8 References.....	171
5.9 Tables.....	187
5.10 Figures.....	210

Table of Tables

Paper 1

Table 1. Number and Percentage of Measurement Occasions (N = 769) Accounted for by the 29 Instruments Used to Measure Self-Esteem.....	30
Table 2. Percentage of Measurement Occasions Accounted for by Number of Response Options and Cronbach's Alpha Statistics for Commonly Used Scales	32
Table 3. Number of Response Anchor Combinations and Response Anchor Information for Commonly Used Self-Report Scales	33
Table 4. Self-Esteem Implicit Association Test Stimuli.....	35

Paper 2

Table 1. The Ten Most Frequently Used Words for Each of Definition of Self-Esteem.....	77
Table 2. Candidate Origin Texts and Examples of Allied Works for Each Definition of Self-Esteem	78

Paper 3

Table 1. Items of the Rosenberg Self-Esteem Scale (Rosenberg, 1965, pp. 305-307) and Original Guttman-Scale Contrived Items	126
Table 2. Single-Factor Confirmatory Factor Analyses on the Original Ten-Item RSES (1999-2015): Fit Statistics and Sample Characteristics	127
Table 3. Multidimensional Perspectives on the RSES.....	131
Table 4. Average, Item-Level Correlations, and 95% Confidence Intervals for the RSES with Communion in Study 1	132
Table 5. Average, Item-Level Correlations, and 95% Confidence Intervals for the RSES with Agency in Study 1	133
Table 6. Item-Level Correlations and 95% Confidence Intervals for the RSES with Perceived Inclusion, Status, Dominance, Submissiveness, Agreeableness, and Quarrelsomeness in Study 2	134
Table 7. Pearson's r Correlations Between Attachment Dimensions, as Measured by the Experiences in Close Relationships Scale, and Rosenberg Self-Esteem Scale Average or Sum Scores in 13 Studies (N = 3762).....	135

Table 8. RSES Item-Level Correlations and 95% Confidence Intervals for Attachment Anxiety and Avoidance (Study 3).....	136
Table 9. Outcomes of Hypothesis Tests and Effect Size Differences Across Samples and Studies	137
Paper 4	
Table 1. Pearson's r Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Self-Report Measures of Social Inclusion and Social Status	187
Table 2. Pearson's r Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale, and Attachment Dimensions	188
Table 3. Pearson's r Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Life Satisfaction, as Measured by the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)	190
Table 4. Pearson's r Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Big Five Personality Dimensions of Agreeableness (A), Conscientiousness (C), Extraversion (E), Neuroticism (N) and Openness (O).....	192
Table 5. Pearson's r Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Depressive Symptom Scales.....	196
Table 6. Meta-Analysed Pearson's r Correlations Between the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and Self-Reported Social Inclusion and Status, Attachment Dimensions, Satisfaction With Life, Big Five Personality Traits, and Major Depressive Disorder Symptoms	198
Table 7. Hypotheses for the Concurrent and Convergent Validity of the WAVSES	199
Table 8. Missing Data and Participant Exclusions for Study 1 (N = 267)	200
Table 9. Sample Demographic Characteristics for Study 1 (N = 267)	201
Table 10. Distribution of Comprehension, Ease of Answer, and Psychological Relevance for WAVSES Items in Study 1	202
Table 11. Missing Data and Participant Exclusions for Crowdflower Sample (N = 281).....	204
Table 12. Pearson's r Correlations, 95% Confidence Intervals, and Descriptives for Self-Esteem Scales in Study 1 (all dfs = 265, all ps < .001)	204

Table of Tables

Table 13. Sample Characteristics for Crowdflower Sample (N = 281)	205
Table 14. Distribution of Comprehension, Ease of Answer, and Psychological Relevance for WAVSES Items in Study 2	206
Table 15. Pearson's r Correlations, 95% Confidence Intervals, and Descriptive Statistics for Self-Esteem Scales in Study 2	207
Table 16. Sample Characteristics for Study 3 (N = 108)	208
Table 17. WAVSES Correlations with RSES Items	209

Table of Figures

Paper 1

Figure 1. Full-text articles identified and excluded, total number of self-esteem studies and measurement occasions 36

Figure 2. Percentage of measurement occasions accounted for by the ten most used measures of self-esteem in each year (2004 to 2015). 37

Figure 3. Distribution of Cronbach's alphas ($N = 515$) for multi-item self-report scales 38

Figure 4. Distribution of reliability estimates (internal consistency and test-retest type) for SE-IAT ($n = 27$) and NLT ($n = 22$). 39

Paper 2

Figure 1. Percentage of articles that contained a definition of self-esteem by year (2004 - 2015). 79

Figure 2. Frequency of 33 words used more than five times by researchers to define self-esteem. 80

Figure 3. Word cloud for the 33 words used most frequently by researchers to define self-esteem. 81

Figure 4. Percentage of definitions ($N = 117$) accounted for by each category of definition, arranged in order of popularity 82

Paper 3

Figure 1. Mini-meta-analysed RSES item-level correlations with perceived communion and agency across the three samples included in Study 1. Error bars are 95% CIs. Dashed lines indicate mean item-level correlation 138

Figure 2. RSES item-level correlations with social measures in Study 2. Error bars are 95% CIs. Dashed lines show mean item-level correlation 139

Figure 3. RSES item-level correlations with attachment dimensions in Study 3. Error bars are 95% CIs. Dashed lines show mean item-level correlation 140

Figure 4. RSES item means and standard deviations. Bars display item means and error bars display size of standard deviation. The colour of the bar shows the item's "strength" in the original Guttman-scale RSES, with darker colours representing "stronger" items. Dashed line shows the mean of item means 141

Figure 5. RSES item skew. The colour of the bar show the item's "strength" in the original Guttman-scale RSES, with darker colours representing "stronger" items. The dashed line shows the mean skew.	142
Paper 4	
Figure 1. Meta-analysed correlations and 95% confidence intervals for concurrent validity variables and self-esteem, as measured by the RSES. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms.....	210
Figure 2. Distribution of participants' WAVSES scores in Study 1. <i>M</i> score = grey dashed vertical line.....	211
Figure 3. Correlations for the WAVSES, RSES and SISE in Study 1. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms.....	212
Figure 4. Distribution of participants' WAVSES scores in Study 2. <i>M</i> score = grey dashed vertical line.....	213
Figure 5. Correlations for the WAVSES, RSES and SISE in Study 2. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms.....	214
Figure 6. WAVSES correlations with concurrent validity variables in Studies 1 and 2. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms. Error bars are 95% CIs.....	215
Figure 7. Participant's (<i>N</i> = 108) z-scores at time 1 by participant's z-scores at time 2 in Study 3 for the WAVSES (<i>r</i> = .84), RSES (<i>r</i> = .92), and SISE (<i>r</i> = .86)	216

Research Thesis: Declaration of Authorship

Print name: Adam James Pegler

Title of thesis: The Measurement and Definition of Self-Esteem: Meta-Research and a New Way Forward

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.

Signature:

Date:

Acknowledgements

I would like to thank my family for their support and encouragement. To my mother and grandmother, Sue Evans and Julie Pegler: you are the strongest, kindest, people I know. To my father and grandfather, Steve and James Pegler: thank you for encouraging a curiosity for the world that has served me so well so far. To my partner, Lucy: thank you for your patience and belief in me. If each of you had not supported me unfailingly over the last four years, I would neither be putting the finishing touches to this thesis, nor looking to the future with such optimism.

Second, I would like to thank my supervisors Dr Aiden P. Gregg and Dr Claire Hart. To Aiden: thanks for encouraging me to take on the challenge of doctoral study and for believing I had what it took long before I did. Thanks for encouraging me to tread my own path and for constantly challenging me to improve. I have learned so much along the way. To Claire: thank you for your support. Your energy, patience and empathy has carried me over the finish line.

Third, I would like to thank a number of colleagues. To Dr Kathy Carnelley: thank you for inviting me to teach with you in each of the last four years. Thank you to the former and present members of the Centre for Research on Self and Identity, especially Dr Joost Leunissen, Dr Verbon Cheung, Dr Jacob Juhl, and Professor Constantine Sedikides, for their guidance, encouragement and wisdom. Thank you to Dr Nikhila Mahadevan and Dr Olga Bialobrzeska for allowing me to re-analyse data they collected during their doctoral studies. Thank you to Glenn Miller, Dr Amos Channon, and Professor Pauline Leonard of the Southampton ESRC Doctoral Training Centre for several fantastic and extremely enjoyable training opportunities during my doctoral studies. Lastly, thank you to my friends Nikhil Mistry, Polly Langdon, and James Linehan for encouraging me not to give up. I did not.

Chapter 1 Introduction

1.1 The Measurement and Definition of Self-Esteem: Meta-Research and a New Way Forward

Self-esteem is perhaps one of the most researched constructs in the history of psychology (e.g., MacDonald & Leary, 2012; Robins, Trzesniewski, & Donnellan, 2011; Zeigler-Hill, 2013) and the social sciences more generally (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011). Psychologists have been perennially interested in self-esteem since William James’ (1890/2007) categorisation of self-esteem as a class of “self-feeling” (p. 305), “worthy to be classed as a primitive emotional species as are, for example, rage and pain” (p. 307). In the 125 years that have passed since James’ writings, they have defined the construct in a number of ways (Kwan, John, & Thein, 2007; Leary, 2006; Wells & Marwell, 1976), developed a multitude of theories to explain its relations with psychological and social functioning (e.g., Branden, 1969; Leary & Baumeister, 2000; Mahadevan, Gregg, Sedikides, & De Waal Andrews, 2016; Maslow, 1943; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), and constructed numerous questionnaires and other instruments to assess it (e.g., Donnellan, Trzesniewski, & Robins, 2015; Heatherton & Wyland, 2003). In the process, they have generated a research literature of intimidating size: today, a search of the *Social Science Citation Index* of social scientific publications with titles that contain the term self-esteem returns almost 7,000 articles. In the same database, self-esteem is identified as a topic of study in an additional 23,000 articles—a number that equates to over 600 publications on self-esteem each year since the citation index’s inception in 1974.

Self-esteem is also the focus of considerable attention outside of academic research. In the late 1980s, the Californian government channelled academic research and theory on self-esteem into politics with the establishment of the Californian Task Force to Promote Self-Esteem and Personal and Social Responsibility (Mecca, Smelser, & Vasconcellos, 1989). In their final report, *Toward a State of Esteem* (California State Department of Education, 1990), the task force concluded that self-esteem was the “likeliest candidate for a social vaccine” (p. 21). As such, they recommended that high self-esteem should be promoted in every school and every workplace in the state, and that self-esteem-enhancing childcare be made available to all. The task force’s conclusions were likely to have provided the foundations for the so-called “self-esteem movement”—the concerted and widespread efforts of North American teachers, parents, and therapists to boost the self-esteem of their pupils, children, and clients, based on the assumption that a high level of self-esteem is a psychological cure-all (Baumeister, Campbell, Krueger, & Vohs, 2003).

Perhaps due to the longstanding attention to self-esteem in social scientific inquiry, and the political and social movements that have drawn on that scrutiny, self-esteem is now a household word (Baumeister & Vohs, 2018). In fact, self-esteem has a Zipf scale value of 3.34, which means that it has appeared as a spoken word on British Broadcast Corporation (BBC) television broadcasts between 1 and 10 times per million words since 2008 (van Heuven, Mandera, Keuleers, & Brysbaert, 2014). To put that in to context, the term shares a value on this scale with common words such as “heartache”, “smoker”, “Bethlehem” and “hypocrisy”, and has a higher value on this scale than other well-researched constructs of personality and social psychology, including narcissism (2.23), extraversion (1.95), conscientiousness (2.38), agreeableness (2.3), neuroticism (2.25), and openness (3.33). From the academy, via government, and in to the home, research and theory on self-esteem now inhabits many corners of modern society.

1.2 Thesis Overview

The four papers that comprise this thesis, *The Definition and Measurement of Self-Esteem: Meta-Research and a New Way Forward*, add a new chapter to psychological research on self-esteem. Given the size of the literature, it is fitting that the first two papers are meta-research. Meta-research is research on research and involves taking a bird’s eye view of science, with the ultimate aim of evaluating and improving research practices (Ioannidis, Fanelli, Dunne, & Goodman, 2015; Ioannidis, 2018). Whereas the first paper is meta-research on the prior *measurement* of self-esteem in personality and social psychology, the second paper is meta-research on the prior *definition* of self-esteem in personality and social psychology. Moving away from surveying the research landscape, the third paper is an item-level psychometric investigation of the dimensionality of the Rosenberg Self-Esteem Scale (Rosenberg, 1965; RSES). In the fourth and final paper, I draw on the findings of the meta-research reported in the first and second papers, the historical and item-level analysis of the RSES conducted in the third paper, and report on the development and initial validation of a brief self-esteem questionnaire: *The Worth and Value Self-Esteem Scale* (WAVSES). This scale is intended to be maximally content valid for the narrow self-worth/value definition of self-esteem now popular in psychology, and, where researchers define self-esteem in this way, a viable alternative to the dominant Rosenberg Self-Esteem Scale. The fourth paper represents a constructive response to my preceding meta-analytic and psychometric investigations—the first of many that might be undertaken to improve research on self-esteem.

I, Adam Pegler, the author of this thesis, conceptualised, wrote, and analysed the data in each paper. I collected all of the data in the first, second, and fourth papers. In the third, I collected one dataset (Study 2) and re-analysed the data from four studies (Studies 1 and 3) collected by the co-authors of that study.

1.3 Paper 1: The Rosenberg and the Rest

In the first paper, *The Rosenberg and the Rest: The Measurement of Self-Esteem in Personality and Social Psychology (2004-2015)*¹ (Pegler, Gregg, & Hart, 2018a), I report on the first systematic meta-research on the measurement of self-esteem in psychological research. Although a number of reviewers have concluded that psychological researchers have predominantly assessed self-esteem with the Rosenberg Self-Esteem Scale (Blascovich & Tomaka, 1991; Donnellan, Trzesniewski, & Robins, 2015; Kwan & Mandisodza, 2007), they have derived their conclusions solely from comparing the number of citations for publications connected to the development of measures. This form of research on measurement practices, the citation count method, though popular, has considerable shortcomings. Most seriously, the citation count method does not involve the direct observation of measurement practices. In addition, because researchers cite publications connected to the development of a measure for a variety of reasons, the citation of a publication connected to a measure can only be a weak proxy of measurement use.

My meta-research approach was more direct and comprehensive. I identified every paper published in twelve of the field's leading journals from 2004 to 2015, which contained the term "self-esteem" in its title. I extracted detailed measurement information from each. Specifically, I counted the number of studies in which self-esteem was measured, and the instrument, or instruments, that was used in each study to measure self-esteem. To arrive at a rich picture of the current state of play in the measurement of self-esteem, I also recorded variable aspects of the measurement process. For example, I documented the number of response options and response anchors researchers used with self-report measures, as well as the nature of the stimuli and scoring algorithms employed with implicit measures. Lastly, I recorded reported values for reliability indices, such as Cronbach's alpha (Cronbach, 1951).

My exhaustive literature research returned 371 articles. Researchers measured self-esteem on at least one occasion in the vast majority of those articles (329, 89%) and on 769 measurement occasions in total. I found that the RSES dominated the measurement of self-esteem during this period. It accounted for 56% of measurement occasions. Its nearest competitor, the Self-Esteem Implicit Association Test (Greenwald & Farnham, 2000) accounted for a mere 7% of measurement occasions. Emphasizing the RSES's influence, the list of the top-ten most used measures featured two modified versions of the RSES: specifically, shortened (2%) and modified for states versions (5%). Moreover, examining the data longitudinally, I observed that the RSES accounted by far the most measurement occasions of all measures in each year from, and including, 2004 to 2015. In

¹ For appendices and data, including a table of measurement information for all 326 articles on self-esteem, see: <https://osf.io/6wfvq/>

fact, in two of those years the RSES accounted for an impressive two-thirds of total measurement occasions.

Although, in the context of the body of work presented in this thesis, the most important finding of this meta-research was that the RSES has dominated the measurement of self-esteem in recent personality and social psychology, a number of important secondary findings speak to the flexibility of measures in research on self-esteem. For example, response options and response anchors for self-report measures varied considerably between studies. For the RSES, researchers variously provided participants with two, four, five, six, seven, nine or ten response options and employed one eighteen different response anchor combinations. Stimuli and scoring algorithms for implicit measures were similarly unfixed. For example, researchers used 138 different negative and positive word item stimuli with the Self-Esteem Implicit Association Test, of which only 31 were the original stimuli that appeared in the pioneering work of Greenwald and Farnham (2000). Moreover, researchers seven different scoring algorithms to analyse Self-Esteem Implicit Association Test response latencies. Another intriguing finding was that on one in ten measurement occasions researchers employed custom (ad-hoc) scales in their research, apparently preferring an untested instrument to one that had been the subject of validation research. In better news for the self-esteem research community, however, the vast majority of reported Cronbach's alphas for self-report scales exceeded rules of thumb for basic research ($>.80$) (Furr, 2011; Nunnally & Bernstein, 1994).

This meta-research documents, for the first time, the full flexibility of self-esteem measures in psychological research. The variability of measurement details and quite frequent use of the use on-the-fly measures in research on self-esteem is in keeping with psychological research on emotion (Weidman, Steckler, & Tracy, 2016), mindwandering (Weinstein, 2017), aggressive behaviour (Elson, Rohangis, Johannes, Scharkow, & Quandt, 2014) and research in personality and social psychology in general (Flake, Pek, & Hehman, 2017). However, the messy measurement landscape revealed by this meta-research might reduce researchers confidence that research findings from one study on self-esteem are relevant to another (Leary, 2006), complicate the interpretation and synthesis of research results (Wylie, 1974; 1989), jeopardise the replicability of research findings, and prevent definitive empirical testing of theories of self-esteem (Fiske, 1971, Krause, 2012). Going forward, then, one of the self-esteem research community's main priorities should be to achieve greater consistency on the assessment of self-esteem.

1.4 Paper 2: What is Self-Esteem?

In the second paper, *What is Self-Esteem? The Definition of Self-Esteem in Personality and Social Psychology (2004-2015)*² (Pegler, Gregg, & Hart, 2018b), I report on the first meta-research on the *definition* of self-esteem in personality and social psychology. In this investigation, I had two linked research questions: (a) in *what* ways have researchers defined self-esteem? and (b) in *how many* ways have researchers defined self-esteem? Although a number of researchers have offered anecdotal accounts of the various definitions of self-esteem in psychological research (Brown & Marshall, 2006; Buhrmester, Blanton, & Swann, 2011; Kwan, John, & Thein, 2007; Leary, 2006; Mruk, 2006; Mruk, 2013; Wells & Marwell, 1976), this meta-research represents the first attempt to provide a data-driven answer to each of these questions with a systematic survey of the literature.

I read each paper identified in Pegler, Gregg, and Hart (2018a) from start to finish and, where possible, extracted definitions of self-esteem from each. The first notable finding was that it was common for researchers *not* to define self-esteem in their articles on self-esteem—two-thirds did not contain a definition of the construct. Nevertheless, the aspects of the definitional terrain that I could quantify were surprisingly diverse. Although researchers' definitions (of which there were 117 in total) were just a dozen words long on average, they used 238 different words to define self-esteem. References were also diverse: across the corpus, researchers cited 54 different publications to support their definitions.

To determine in *what* ways, and to estimate how many ways researchers had defined self-esteem, I carried out a directed content analysis of definitions (Hsieh & Shannon, 2005). My analysis suggests that researchers have defined self-esteem in at least nine different ways. Presented from most common to least common, I identified the following categories of definition: (1) self-worth/value, (2) self-attitude, (3) explicit/implicit, (4) many self-evaluations, (5) self-feelings, (6) global/overall, (7) self-worth and competence, (8) value and meaningfulness, and (9) self-acceptance or self-loving. Mixed definitions, which combined two or more of those definitions, and atypical definitions, which did not easily fit in to any specific category, were also present (but relatively uncommon). The self-worth/value definition—typically, that self-esteem is an individual's overall or global evaluation of their own worth and value—was by far the most popular, accounting for a third of definitions. Both the self-attitude definition—that self-esteem is the positivity or favourability of the self-attitude or attitudes—and the explicit/implicit definition—that self-esteem is comprised of both explicit (conscious) and implicit (unconscious) self-evaluations—accounted for one in ten definitions.

² For all appendices and data, including all 117 definitions of self-esteem: <https://osf.io/4wvtu/files/>

A number of interesting findings are revealed by an historical investigation of these definitions of self-esteem, which involved comparing them with definitions extracted from peer-review articles, book chapters, dictionaries of psychology, psychology textbooks, antiquated dictionaries of the English language, and classic English literature. First, the most popular definition of self-esteem in personality and social psychology may be close to the terms first meaning in English. Indeed, one of the earliest recorded uses of the term features an apparent command to value one's self. In John Milton's *Paradise Lost* the angel Raphael urges Adam to "weigh with her thyself; then value; oft times nothing profits more than self-esteem" (Milton, 1667/2000, p. 182). Second, none of the popular definitions have recent origins. One definition (self-feelings) first appeared in psychology, in a primitive form, in William James' classic *Principles of Psychology* (1890/1950) during the late nineteenth century. Four definitions (self-worth/value, self-attitude, self-acceptance/liking, and worth and competence) first appeared in psychological research in the mid-to-late 1960s. Two definitions (value and meaning, global/overall) first appeared in the 1980s. Finally, one definition (explicit/implicit) first appeared in the 1990s. Third, in the case of the latter of these definitions, implicit self-esteem has evolved from the unknown *effect* of the self-attitude on evaluation of self-associated objects, to "unconscious" self-evaluations. Overall, the findings of this historical research not only help to contextualise modern definitions of self-esteem in personality and social psychology, but also demonstrate how definitions of the construct have evolved over time. Moreover, they suggest that establish definitions do not appear to go extinct easily: new branches on the self-esteem tree are rarely lopped.

Importantly, comparisons of the definitions extracted in this study with the definition of self-esteem that guided the construction of the RSES, reveals an important finding: definitions of self-esteem have narrowed since the RSES was constructed. In the final paper of the thesis (Pegler, Gregg, & Hart, 2018c), I argue that evolution of definitions in this way undermines the content validity of the RSES—that is, "the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose" (Haynes, Richard, & Kubany, 1995, p. 238).

1.5 Paper 3: Is the Rosenberg Self-Esteem Scale Unidimensional?

In the third paper, *Is the Rosenberg Self-Esteem Scale Unidimensional? Exploring Item-Level Correlations with Perceived Agency, Communion, Social Status, Social Inclusion, Social Behaviour, Attachment Anxiety and Attachment Avoidance* (Pegler, Gregg, Hart, Mahadevan, & Bialobrzeska, 2018), I extend research on the dimensionality of the dominant RSES. Moving away from the analysis of internal consistency of the RSES with confirmatory factor analysis—typical of the previous literature on the scale's dimensionality—I report on the first investigation of the scale's item-level correlations with aspects of self, social perception, and personality theoretically linked to self-esteem. I pursued two analytic strategies. First, in line with the arguments of Mottus

(2016), I explored whether items were heterogeneously correlated with theoretically related variables. Second, following the arguments of Smith, McCarthy and Zapolski (2009), I explored whether putative dimensions—posited to exist by researchers in the previous research literature—are differentially correlated with theoretically related variables.

I do three things before these analyses to set the scene. First, I set out the RSES's intriguing history. Specifically, I recount its largely unrecognized transformation from a Guttmann-type scale (see Guttman, 1944) to a Likert-type one. I point out the differences between the original and modern forms of the scale, including the changes made to response anchors and the development of a much simpler scoring procedure. I also reflect on what the scale's genesis as a Guttman scale might mean practically for its dimensionality. I argue that, the RSES is perhaps predisposed to multidimensionality, because the items of a Guttman scale are not designed to be interchangeable indicators of single underlying continuum. Second, I bring together the results of 42 confirmatory factor analyses in which researchers specified and estimated the single-factor uncorrelated errors model (i.e., the unidimensional measurement model) for RSES data. Although rules of thumb for goodness-of-fit statistics for structural equation modelling should be approached with some scepticism (e.g., Kline, 2011; Marsh, Hau & Wen, 2004), I find that the vast majority of articles report fit statistics well below the conventional cut-off values of $> .95$ for CFI and TLI and $< .06$ for RMSEA (Hu & Bentler, 1999). In fact, average values for the three fit indices were far short of benchmark targets (M CFI = .83, M TLI = .77, and M RMSEA = .13) and fit statistics exceeded conventional cut-offs in only one of 42 tested samples. Third, to inform my exploratory hypotheses, I review multidimensional theories on the RSES: the positive and negative self-esteem perspective (see Owens, 1993; e.g., Boduszek, Hyland, Dhingra, & Mallet, 2013), the selfliking/self-competence perspective (Tafarodi & Milne, 2002), the general evaluation/transient evaluation perspective (Kaufmann, Rasinski, Lee, & West, 1991), and the self-competency/self-derogation perspective (Alessandri, Vechionne, Eisenberg, & Laguna, 2015). To my knowledge, this is the first time that all four perspectives on the RSES have been considered together.

In Study 1, in light of the theory on the antecedents of self-esteem contained within the dual perspective model (Abele and Wojciszke, 2014), I investigated item-level correlations with agency and communion in three datasets. The first, a sample of Polish adults ($N = 211$, M age = 28, 83% female), the second, a sample of English-speaking adults recruited from an online crowdsourcing platform ($N = 872$, M age = 32, 65% female), and the third, a sample of English university students ($N = 608$, M age = 22, 82% female). Employing tests of the heterogeneity of correlated coefficients (Meng, Rosenthal, & Rubin, 1993), I found that items were heterogeneously correlated with agency and communion to a statistically significant degree in each sample. For communion, meta-analysed item-level correlations across the three samples, using Bonett's (2008) method, ranged from small ("I wish I could have more respect for myself", $r = .10$) to medium ("I feel that I have a number of good qualities", $r = .35$). For agency, meta-analysed item-level correlations ranged from medium

(“I wish I could have more respect for myself”, $r = .34$) to large (“I am able to do things as well as most other people”, $r = .54$) for agency (combined $N = 1541$). Moreover, exploring multidimensional theories on the RSES, I found that (a) in each sample, positively-worded items were more strongly correlated with both communion and agency than negatively-worded items and (b) transient evaluation items were less strongly positively correlated with communion and agency than general evaluation items in two samples. Importantly, in addition to being statistically significant, effect size differences were nontrivial. In contrast, although statistically significant in two samples, effect size differences between self-competence and self-loving items were much smaller.

In Study 2, considering classic perspectives on self-esteem and social interaction (e.g., Barkow, 1975; Maslow, 1942; Rosenberg, 1965) and recent evolutionary theories of self-esteem (sociometer theory: Leary, Tambor, Terdal, & Downs, 1995; hierometer theory: Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016), I investigated RSES item-level correlations with areas of self-reported social experience and social behaviour. I examined item-level correlations with individuals' perceptions of their social inclusion, social status, dominance, submissiveness, quarrelsomeness, and agreeableness in a large sample of UK adults recruited from the online crowdsourcing platform *Crowdflower* ($N = 637$, M age = 35, 50% female).

As in Study 1, I found that items were heterogeneously correlated with each domain. For social inclusion, item-level correlations ranged from medium to large for social inclusion and social status; from small to large for submissiveness and dominance; from negligible to medium for agreeableness and quarrelsomeness. As in Study 1, positively and negatively-worded items were differentially correlated with each social variable, and effect size differences were nontrivial. Moreover, transient evaluation items were less strongly positively correlated with social inclusion, social status, dominance and agreeableness than general evaluation items. However, contrary to expectations, transient evaluation items were more *strongly* negatively correlated with perceived submissiveness and quarrelsomeness—but effect size differences were more modest. As in Study 1, I observed little evidence in favour of the self-loving/self-competency perspective. Self-competency and self-loving items were differentially associated with social domains to a statistically significant level in three cases, yet effect size differences were small and considerably smaller than effect size differences observed for positively and negatively-worded items.

Finally, in Study 3, in light of adult attachment theory (Bartholomew & Horowitz, 1991; Bowlby, 1979; Mikulincer & Shaver, 2016), I investigated RSES item-level correlations with self-reported attachment anxiety and attachment avoidance in a large sample of UK undergraduates ($N = 477$, $M = 21$, 85% female). In contrast to Studies 1 and 2, I did not find that item-level correlations with either attachment dimension were significantly heterogeneous—although item-level correlations ranged from small (I certainly feel useless at times, $r = -.14$) to medium (I feel I do not have much to be proud of, $r = -.27$) for attachment avoidance. Item-level correlations were less variable for

attachment anxiety. Similarly, positively-worded and negatively-worded and self-competency and self-liking items were not differentially associated with attachment anxiety or avoidance. Transient evaluation and general evaluation items were not differentially correlated with attachment anxiety, but were for attachment avoidance—although the effect size difference was quite small.

Apart from in Study 3, in the case of attachment avoidance and attachment anxiety, I consistently found that the items of the RSES were heterogeneously correlated with variables theoretically related to self-esteem. Moreover, effect size differences between items, and groups of items (positively-worded/negatively-worded; transient evaluation/general evaluation; self-competency/self-liking) were often sizeable. Overall, however, effect size differences were most pronounced for positively versus negatively-worded items.

I argue that the results of the three studies suggest that, on the whole, the items of the RSES—and, specifically, positively-worded and negatively-worded items—cannot be considered interchangeable indicators of a single dimension and, in turn, the RSES is likely not a unidimensional scale. However, I also argue that a number of interpretations of the results are possible. First, the RSES assesses both positive and negative self-esteem (Owens, 1993; 1994). Second, the RSES assesses both self-derogation and self-competence (Allessandri et al., 2015). Third, the RSES does not assess two psychological dimensions but, instead, a method effect is responsible the results of these studies—as has been argued in relation to factor analytic findings with the RSES (e.g., Carmines & Zeller, 1979; Schmitt & Allik, 2005). Before we can draw a definitive conclusion on the matter, researchers may need to develop stronger theories on the RSES’s dimensionality.

A practical implication of this research is that, when researchers use shortened versions of the RSES (a common practice in psychological research: Pegler et al., 2018a), research results may depend on which items they chose. Specifically, selecting negatively-worded items is likely to (a) *attenuate* correlations with theoretically related variables that are *positively* correlated with self-esteem, and (b) *potentiate* correlations with theoretically related variables that are *negatively* correlated with self-esteem.

1.6 Paper 4: Development and Initial Validation of The Worth and Value Self-Esteem Scale

In the fourth paper, *Development and Initial Validation of a Measure of a Narrowly Defined Self-esteem: The Worth and Value Self-Esteem Scale (WAVSES)* (Pegler, Gregg, & Hart, 2018c)³, I take the first constructive step in light of the evidence base on the measurement and definition of

³ For data, code and materials see: <https://osf.io/9jzfr/>

self-esteem provided the first three papers. I outline the problems of the RSES, specifically its: (1) lack of content validity for modern definitions of self-esteem (revealed by Pegler, Gregg, & Hart, 2018b), (2) probable multidimensionality (as explored in Pegler, Gregg, Hart, Mahadevan, & Biolobrzeska, 2018), and (3) previously unknown or underappreciated transformation from a Guttman scale to a Likert-type scale (as recounted in Pegler, Gregg, Hart, Mahadevan, & Biolobrzeska, 2018). I then report on the development and initial validation of the The Worth and Value Self-Esteem Scale (WAVSES), a two-item, readily understandable, self-esteem self-report scale intended, above all else, to be maximally content valid for self-esteem defined narrowly as an individual's overall evaluation of his or her worth and value, and to directly assess self-esteem defined in this way. Thus, in this paper, I act on lessons learned from my meta-research on the measurement and definition of self-esteem to develop a new measure that help brings greater coordination between the concept and assessment of self-esteem in personality and social psychology.

In Study 1 ($N = 267$, 50% female), I investigated three things. First, I assessed respondents' comprehension of the two items of the WAVSES: (1) Overall, I am a person of worth and (2) Overall, I am a person of value. Second, the concurrent validity of the WAVSES—the extent to which the measure correlates with criteria assessed at the same time (Simms, 2008). Third, the convergent validity of the WAVSES—the extent to which the scale correlates with other indicators of the same or similar constructs (Simms, 2008). For the exploration of the scale's concurrent validity, I examined correlations with seven key variables theoretically or empirically linked to self-esteem: (1) perceived social inclusion, (2) perceived social status, (3) attachment anxiety, (4) attachment avoidance, (5) satisfaction with life, (6) the Big Five personality dimensions, and (7) major depressive disorders symptoms. I predicted the sign and magnitude of correlations between the WAVSES and these variables based on the meta-analyses of previous research results with the Rosenberg Self-Esteem Scale. For the study of the scales convergent validity, I examined correlations with the Rosenberg Self-Esteem Scale and the Single-Item Self-Esteem Scale (Robins, Hendin, & Trzesniewski, 2001). All hypotheses for concurrent and convergent validity were preregistered⁴.

Importantly, I found that participants reported few problems with understanding the either of the items. The vast majority of participants strongly disagreed that they did not understand the items (81%) or some of the words included (88%). Regarding concurrent validity, largely in line with hypotheses, I found that participants responses to the WAVSES were correlated in predicted directions and strengths. They were: (a) moderately to strongly negatively correlated with attachment anxiety and avoidance; (b) strongly negatively correlated with neuroticism and major depressive disorder symptoms; (c) moderately to strongly positively correlated with

⁴ <https://osf.io/9jzfr/registrations/>.

conscientiousness, extraversion, and agreeableness; and (d) strongly positively correlated with social inclusion, social status, and life-satisfaction. Regarding convergent validity, the WAVSES was strongly positively correlated—but not to an extent indicative of redundancy—with both the Rosenberg Self-Esteem Scale ($r = .75$) and the Single-Item Self-Esteem Scale ($r = .70$).

In light of recent efforts to increase the number of replication studies in psychological research and increasing awareness of the importance of the replication of initial research results for the accumulation of knowledge (e.g., Nosek, Spies, & Motyl, 2012; Zwaan, Etz, Lucas & Donnellan, 2018), Study 2 ($N = 281$, female = 51%) was a direct replication of Study 1. The two studies shared identical materials and procedures, and only differed in one respect: participants were recruited from a different crowdsourcing platform. I found that Study 1 and Study 2 95% confidence intervals for concurrent and convergent validity correlations overlapped in all but one case. The exception was the correlation with major depressive disorder symptoms. The consistency of the results between Studies 1 and 2, in the main, is promising (LeBel, McCarthy, Earp, Elson, & Vanpaemel, 2018) and suggests that the pattern of results that emerged in Study 1 were not serendipitous false-positives.

In Study 3 ($N = 108$, female = 69%), I investigated the test-retest reliability of the WAVSES. Participants responded to the WAVSES, the Rosenberg Self-Esteem Scale, and Single-Item Self-Esteem Scale on two occasions, two weeks apart. I found that the test-retest correlation for the WAVSES was very strongly positive ($r = .84$), which is a promising finding for a construct that is theorised to be stable over time (Borsboom, 2005). The test-retest correlation for the WAVSES was a little less strongly positive than the RSES ($r = .92$). Lastly, in Study 4, given that in Studies 1, 2, and 3 the two items of the WAVSES were very strongly positively correlated ($r = .89$, $r = .91$, and $r = .87$, respectively), I examined item-level correlations in the data from Study 1 and 2 and item-level test-retest in the data from Study 3. This analysis shows that both items had almost identical correlational profiles: for convergent, concurrent, and test-retest validity (p. 35). I conclude that, at this point, the two items appear to be practically interchangeable and, as such, researchers could use either item of the WAVSES.

Overall, I conclude that the initial validity evidence is promising. However, several limitations of the validation research reported here should be noted, and these limitations point to clear directions for future research. First, so far, research has only investigated (and confirmed) the convergent validity of the scale with self-report measures. Future research, therefore, should test whether hypothesised associations arise with different measures of theoretically related variables—for example, sociometric indexes and peer reports of social inclusion and social status. Second, until now, samples have consisted of British and North American participants, who have been recruited from online crowdsourcing platforms and internet message boards. Moreover, although large enough to provide 90% power to detect smallest anticipated effect sizes based on the meta-analysis of previous research results with the RSES, sample sizes have been relatively low for psychometric

research on self-esteem scales. For example, the initial validation of the Lifespan Development Scale (Harris, Donnellan, & Trzesniewski, 2017) featured the analysis of responses from 2,795 participants in total (Sample 1: 1,403, Sample 2: 201, Sample 3: 451, Sample 4: 211, Sample 5: 438, Sample 6: 91). Future research on the WAVSES should therefore feature larger samples. Ideally, such samples would not only be more sizeable, but representative and random samples of a specified adult population. Third, it is not yet known whether the WAVSES can be used in experimental research on self-esteem. Although some have argued that self-esteem is a trait, which—like intelligence—is not easily manipulated under experimental conditions (Blascovich & Tomaka, 1991), between-group self-esteem differences have been observed when the Rosenberg Self-Esteem Scale has been used in experimental research (Lamer, Reeves, & Weisbuch, 2015; Leonardelli, Lakin, & Arkin, 2007).

1.7 Contributions

The programme of research reported here contributes to the self-esteem literature in a number of important ways.

1. The research charts, in detail, the measurement of self-esteem in personality and social psychological research. It shows that the Rosenberg Self-Esteem Scale (1965) dominates the measurement of self-esteem and reveals the flexibility of self-esteem measures for the first time.
2. It shows that personality and social psychologists do not share a single definition of self-esteem. Instead, they have recently defined self-esteem in at least nine different ways. The self-worth/value definition—that self-esteem is an individual’s overall evaluation of his or her worth/value—is shown to be the most popular definition of self-esteem.
3. The research explores how the items of the Rosenberg Self-Esteem Scale are correlated with a psychological variables theoretically related to self-esteem. I provide evidence that items of the RSES are heterogeneously correlated with communion, agency, social status, social inclusion and social behaviour (Studies 1 and 2), but not attachment anxiety or avoidance (Study 3). These findings represent further evidence that the items of the RSES are not interchangeable indicators of a single underlying variable (i.e., the RSES is not unidimensional). However, I argue that a definitive conclusion may require stronger theories on the dimensionality of the RSES.
4. Using the results of the first three papers as an evidence base for highlighting defects in the definition and measurement of self-esteem, I developed and initially validated a new brief self-esteem scale: the Worth and Value Self-Esteem Scale (WAVSES). I designed the items of the WAVSES to reflect the popular self-worth/value definition of self-esteem. I anticipate that the development of this scale will help to harmonize the definition and measurement of self-esteem in psychological research. Importantly, I find promising

evidence in favour of the validity of the WAVSES. This is a first step, and first of many possible steps, towards improving self-report measures of self-esteem.

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Chapter 2 The Rosenberg and the Rest: The Measurement of Self-Esteem in Personality and Social Psychology (2004-2015)

2.1 Abstract

How has self-esteem been measured in personality and social psychology? For the first time, we provide a comprehensive picture with meta-research. We extracted precise measurement information from 338 articles published in twelve leading journals from 2004 to 2015 (total measurement occasions = 769). We report the range of instruments used; the proportion of measurement occasions accounted for by each; longitudinal patterns in instrument use; and variable aspects of the measurement process. As regards instrument usage, consistency emerged. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) dominated, followed by custom and implicit measures. As regards measurement details, substantial variability emerged (e.g., in response options and scoring algorithms). We critically discuss the potential causes and consequences of these measurement practices.

Keywords: self-esteem, measurement, assessment, meta-research, self-concept

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2.2 Introduction

Self-esteem is purportedly one of the most studied constructs in the history of psychology (e.g., MacDonald & Leary, 2012; Robins, Trzesniewski, & Donnellan, 2011; Zeigler-Hill, 2013) and the social sciences more generally (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011). Its popularity as a subject of social scientific inquiry continues. At the time of writing, a Web of Science search for articles published in 2016 with titles that contain the exact phrase “self-esteem” returned 357 articles published in an array of journals. From the *Journal of Health Psychology* to *Computers in Human Behaviour*, from *Psychiatry Research* to *Modern Journal of Language Teaching Methods*, from *Pediatric Obesity* to *Psychology of Music*. The specific question that guides the present meta-research, however, is: how has self-esteem been measured in recent personality and social psychology? This is an important question for at least three reasons.

First, measures bridge the gap between the researcher and their target of inquiry, and thus play an essential role in scientific research and theory (Furr, 2011, Reynolds, 2010, Simms, 2008). As has often been noted, scientific progress in psychology relies on the psychologist being able to validly measure the things he or she is interested in (e.g., Cattell, 1946; Clark & Watson, 1995; Fiske, 1971, Wylie, 1974). Indeed, Nunnally and Bernstein (1994) have claimed “the science of psychology can progress no faster than the measurement of its key variables” (p. 7). High quality measures should be constructed and used in each area of psychological research—including on self-esteem. This will be more likely to be achieved when meta-research on measurement practices is undertaken.

Second, past surveyors of research on self-esteem and the self-concept have arrived at pessimistic conclusions about its measurement. In the mid-1970s, Wylie (1974) contended that, despite a proliferation of measures in prior decades, “a really well-developed instrument has not appeared in the self-concept area” (p. 328), and that many commonly used measures were in need of considerable refinement. Later commentators have alarmingly described the measurement of self-esteem as “haphazard and inconclusive” (Demo, 1985, p. 1490), “chaos” (Heatherton & Wyland, 2003, p. 221), and, paraphrasing William James, “a blooming, buzzing confusion” (Kwan & Mandisodza, 2007, p. 259). A fresh and comprehensive audit should help to determine whether the situation has improved.

Third, recent decades have seen the rise of “implicit”, “indirect” or “non-reactive” measures of self-esteem (e.g., Bosson, 2006; Bosson, Swann, & Pennebaker, 2000; Buhrmester, Blanton, & Swann, 2011; Oakes, Brown, & Cai, 2008; Perinelli, Alessandri, Donnellan, & Laguna, 2017) such as the Self-Esteem Implicit Association Test (SE-IAT: Greenwald & Farnham, 2000) and the Name Letter Test (NLT). To our knowledge, however, no one has yet investigated how often these instruments have been used to measure self-esteem, relative to traditional self-report measures. Indeed, in a recent review, Donnellan, Trzesniewski, and Robins (2015) chose not to provide

information about implicit measures due to their poor convergent and criterion validity (p. 113)—a pessimistic perspective on this class of instruments shared with other investigators (e.g., Burhmester et al., 2011; Falk & Heine, 2015; Falk, Heine, Takemura, Zhang, & Hsu, 2015; Perinelli, Alessandri, Donnellan, & Laguna, 2017). In view of these controversies, some quantification of their usage levels and methodological variations would be welcome.

Previous work suggests that researchers have most often assessed self-esteem with the Rosenberg Self-Esteem Scale (for its original Guttman scale form, see Rosenberg, 1965; for its more recent Likert-type scale form, see Blascovich & Tomaka, 1991; and for a discussion of the largely unnoticed transition between them, see (Pegler, Gregg, Hart, Mahadevan, & Bialobrzeska, 2018). Most recently, Donnellan et al. (2015) pooled the number of Google Scholar citations, received between 2003 and 2013, for publications from which well-known self-esteem instruments originate. Society and the Adolescent Self-Image (Rosenberg, 1965)—the publication in which the items of the Rosenberg Self-Esteem Scale first appeared—accounted for 53% of them. This figure was by far the largest proportion accounted for by any instrument. The second and third most cited instruments were the collection of Self-Perception Profiles (e.g., Harter, 2012) and the Coopersmith Self-Esteem Inventory (Coopersmith, 1967), which accounted for 23% and 9% of citations, respectively. This recent research echoes the findings of earlier citation counts: Society and the Adolescent Image accounted for the largest percentage (31%) of pooled citations of self-esteem instruments between 1991 and 2004 in the *SocialSciSearch* database (Kwan & Mandisodza, 2007), as well as the largest proportion of pooled citations (25%) between 1967 and 1991 in the *psycINFO* database (Blascovich & Tomaka, 1991).

However, the citation count method (CCM) of meta-research has a number of serious limitations, despite its popularity. First, publications that include measures of self-esteem are often cited for reasons other than their use in research (Blascovich & Tomaka, 1991). Second, so that citations can be pooled, CCM requires the researcher to decide in advance which instruments are being used to measure self-esteem and to then identify a primary citation. This a priori approach is problematic because it limits the analysis to (a) instruments that the researcher happens to be aware of, and (b) instruments that do indeed have primary citations (ad-hoc or impromptu measures do not). Third, because CCM does not involve the direct observation of measurement practices, it does not permit the investigation of any potentially interesting and consequential details that vary from study-to-study. The limitations of the CCM mean that only tentative and incomplete conclusions about the measurement of self-esteem in personality and social psychology can be drawn from previous research.

Given the utility of knowing how self-esteem has been measured, as well as the shortcomings of previous research on the topic, we decided to carry out comprehensive meta-research on the measurement of self-esteem. We aimed to generate, for the first time, a detailed picture of the construct's assessment in recent personality and social psychology by extracting measurement

information from a comprehensive corpus of published research articles. We pursued four specific meta-research goals: (1) identify the full range of instruments used by researchers, (2) determine the proportion of measurement occasions accounted for by each instrument, (3) examine whether there have been any longitudinal changes in instrument usage, and (4) identify and provide information on variations in measurement procedure (e.g., number of response options and response anchors for self-report scales; different scoring algorithms for implicit instruments). The achievement of such aims would provide a sound empirical basis, an evidence base, for critical reflection on how researchers have recently assessed self-esteem.

2.3 Method

2.3.1 Eligibility Criteria, Search Terms, and Databases

We targeted all of the articles with titles containing the exact term “self-esteem”, published between January 2004 and December 2015, in a relevant online database of twelve prominent journals of personality and social psychology: (a) *Journal of Personality and Social Psychology*, (b) *Personality and Social Psychology Bulletin*, (c) *Self and Identity*, (d) *Journal of Research in Personality*, (e) *Journal of Experimental Social Psychology*, (f) *Personality and Individual Differences*, (g) *Journal of Personality*, (h) *Social and Personality Compass*, (i) *European Journal of Social Psychology*, (j) *European Journal of Personality*, (k) *Psychological Science*, and (l) *Social Psychological and Personality Science*. The search interface URL for each journal appears in Appendix A. All appendices, supplementary material, and data for this article are available on the Open Science Framework at <https://osf.io/6wfvq/>.

We targeted these journals because they are well known in the field of personality and social psychology for publishing research on self-esteem. Articles between 2004 and 2015 were targeted because, at the start of the project, the last research on the measurement of self-esteem covered a thirteen year period up to 2004 (Kwan & Mandisodza, 2007). Note, however, that this is no longer the case (see Donnellan et al., 2015).

2.3.2 Data Extraction

For each publication, we manually extracted information pertaining to (a) the number of studies where self-esteem was measured and (b) the instruments(s) used in each study to measure self-esteem. Importantly, in regards to (b), we identified the instruments(s) that had been used by the researcher with the explicit intention of measuring self-esteem, whether or not it had originally been constructed to assess it. Measures of trait, state, implicit, or explicit self-esteem and self-esteem stability were all treated more broadly as measures of self-esteem. Translated versions of a scale were not treated as separate instruments.

To capture variation measurement details from study-to-study, we recorded the number of response options and response anchors employed with self-report measures. For implicit measures, we also recorded the stimuli employed (i.e., category labels and categorized items for the IAT), the number of response options, the response format, and scoring algorithm.

To capture study-to-study variation in the psychometric properties of self-report measures we recorded Cronbach's alphas (Cronbach, 1951), a statistic widely employed as an index of internal consistency reliability or internal consistency (Sijtsma, 2009; Streiner, 2003). We also recorded internal consistency reliability estimates provided for the SE-IAT and NLT. If the lowest and highest of a range of alphas were reported in a study, then both coefficients were recorded. If multiple alphas were reported at several time points in longitudinal research, then the first coefficient was recorded ($n = 30$). If multiple alphas were reported pertaining to a number of subsamples of participants ($n = 40$), all coefficients were recorded.

2.4 Results

2.4.1 Retrieved and Excluded Articles

Our search initially retrieved 371 articles. Identification and exclusion decisions are depicted in Figure 1. We excluded articles concerned specifically with collective self-esteem ($n = 2$), performance self-esteem ($n = 1$), organisation-based self-esteem ($n = 1$), and academic self-esteem ($n = 1$). We also discounted articles that we deemed a priori unlikely to contain novel measurement occasions in basic research: meta-analyses ($n = 4$); reply articles ($n = 1$); narrative literature review articles ($n = 7$); reanalyses of previously published data ($n = 1$); and psychometric articles that involved the analysis of the properties of existing measures of self-esteem ($n = 13$) or the introduction of a new measure of self-esteem ($n = 2$). Thus, a total of 338 articles were included in the analysis. References for all articles appear in Appendix B.

Psychometric investigations (e.g., confirmatory factor analyses), as well as papers that documented the construction and initial validation of a new instrument, were excluded because research of this kind involves the critical evaluation of measures of self-esteem, rather than their direct use in empirical research.

2.4.2 General Statistics

Figure 1 shows that self-esteem was assessed in 329 of the 338 included articles (97.34%) and in 585 individual studies. Overall, self-esteem was measured on a total of 769 occasions—a larger number than separate studies that reflects the common practice of measuring self-esteem with more than one instrument. Measurement details for each study—the instrument(s) used, number of response options, response anchors, and reported Cronbach's alpha—are tabled in Appendix C.

Further details on implicit measures can be found in Table 1 of Appendix D (for the NLT) and Table 2 of Appendix D (for the SE-IAT). Further information on custom measures can be found in Appendix E.

2.4.3 Overall Measure Use

Twenty-nine different instruments were used by researchers to assess self-esteem. Table 1 shows the number and percentage of measurement occasions accounted for by each type of instrument. Researchers employed the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) on more than half of measurement occasions (55.93%). Next came custom instruments, the Self-Esteem Implicit Association Test (SE-IAT; Greenwald & Farnham, 2000), the Name Letter Test (NLT) and the modified-for-states Rosenberg Self-Esteem Scale (RSES-MFS; Rosenberg, 1965), each accounting for between 5% and 10% of measurement occasions. The remaining instruments to make the top ten most used—namely, the State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991) the Single Item Self-Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001), shortened Rosenberg Self-Esteem Scales (RSES-S; Rosenberg, 1965), the Single-Item Name Liking measure (SINL; Gebauer, Riketta, Broemer, & Maio, 2008) and the Self-Liking and Self-Competence Scales (SLSC; Tafarodi & Swann, 1995; Tafarodi & Swann, 2001)—accounted for less than 5% of measurement occasions ($M = 2.21\%$). Altogether, the ten leading instruments accounted for the vast majority of measurement occasions ($n = 729$, 94.80%).

2.4.4 Longitudinal Trends

Figure 2 shows the percentage of measurement occasions accounted for by each of the ten most used measures of self-esteem for the twelve years from 2004 through 2015. The RSES dominated in each year and accounted for fewer than half of measurement occasions in only two years (2004 and 2007). In three years (2005, 2010, and 2014) the figure rose as high as two-thirds. In contrast, instruments other than the RSES rarely came to prominence. Even “runner-up” custom measures accounted for over 15% of the measurement occasions in only two years (2004 and 2008). The NLT (in 2004 and 2006), the SE-IAT (in 2012 and 2013), and custom measures (in 2005, 2007, 2013, and 2015) accounted for between 10 and 15% of measurement occasions on a handful of occasions.

2.4.5 The Ten Most Used Measures: Brief Descriptions and Measurement Details

2.4.5.1 Rosenberg Self-Esteem Scale (n = 430, 55.92%).

The RSES is a self-report scale comprising the ten items of the self-esteem scale that appear in Rosenberg (1965) (see also Blascovich & Tomaka, 1991; Donnellan et al., 2015). After reverse-

scoring negatively phrased items, responses are aggregated (either summed or averaged) to provide a self-esteem score, with higher scores indicating higher levels of self-esteem.

The RSES was originally a Guttman scale with four response options (Rosenberg, 1965, p. 305-307) with the following response anchors: 1 (*strongly agree*), 2 (*agree*), 3 (*disagree*), and 4 (*strongly disagree*). Table 2 shows that researchers preferred four response options, likely reflecting deference to the original version of the RSES. Thereafter, versions with greater numbers of scale points were decreasingly common, with the qualification that even-numbered scales tended to be avoided.

Table 3 shows the 18 different response anchor combinations that were employed with the RSES. By far the most common combination, accounting for nearly three quarters of measurement occasions, was *strongly disagree* to *strongly agree* ($n = 165$, 73.66%). The next most common combinations were *very strongly disagree* to *very strongly agree* ($n = 8$, 3.57%) and *strongly agree* to *strongly disagree* ($n = 8$, 3.57%)—the scale's original response anchors.

2.4.5.2 Custom ($n = 76$, 9.88%).

We classified as custom or ad hoc (Furr, 2011) those self-report scales—other than the Rosenberg Self-Esteem Scale modified for states or the shortened Rosenberg Self-Esteem Scale (see both below)—that (a) sometimes mixed items or procedures from specific measures of self-esteem, but (b) did not have primary citations, and/or that (c) were not known to have been the subject of a systematic validation process in that specific form.

Detailed information for all custom measures can be found in Appendix E. We could identify, broadly speaking, four types of custom measures. First, some featured items that enquired into self-related feelings or affect, an example being the single item “Overall, how good or bad do you feel about yourself?” Second, some featured items assessing overall or general self-evaluations, examples being the single items “In general, I have a positive opinion of myself” and “In general, I like myself”. Third, some instruments comprised a selection of the bipolar adjective rating scales drawn from McFarland and Ross (1982) (e.g., accepted-rejected, unimportant-important). Fourth, some scales mixed item subsets from miscellaneous scales, or adapted items from a frequently used scale, an example being a hybrid of items from the RSES (see above) and the performance and social subscales of the SSES (see below).

The majority of custom instruments ($n = 74$, 84.21%) were multi-item self-report scales. On average, they featured fewer items than the RSES ($M = 7.67$, $Mdn = 5$, $SD = 8.13$, range = 1-42). Table 2 shows that researchers preferred five and seven point response formats. Table 3 shows that custom scales featured eighteen different response anchor combinations —the same number employed with the RSES. The response anchors most frequently used by researchers were *not at all*

to *very much* ($n = 14$, 29.79%), *not at all* to *extremely* ($n = 7$, 14.89%) and *strongly disagree* to *strongly agree* ($n = 5$, 10.64%).

2.4.5.3 Self-Esteem Implicit Association Test ($n = 53$, 6.89%)

The SE-IAT is an implicit measure pioneered by Greenwald and Farnham (2000, p. 1024). It is a version of the Implicit Association Test, which is a typically computerised procedure that “provides a measure of strengths of automatic associations” (Greenwald, Nosek, & Banaji, 2003, p. 197). In essence, the SE-IAT is a speeded binary sorting task (Gregg & Klymowsky, 2013). It originally consisted, and canonically still consists, of seven blocks of trials, comprising five practice blocks and two crucial test blocks. In the SE-IAT, the “compatible” test block (i.e., reflecting more “automatic” pairings, indicative of higher self-esteem) has respondents press one key whenever either a self-related or positive word appears (e.g., *me, joy*), and another key whenever either a non-self-related or negative word appears (e.g., *them, vomit*). In contrast, the “incompatible” test block (i.e., reflecting less “automatic” pairings, indicative of lower self-esteem) has respondents press one key whenever either self-related or negative words appear, and another key whenever either non-self-related or positive words appear. In both blocks, respondents are instructed to proceed as quickly as possible without making errors. The greater the positive difference in average response latencies between “compatible” and “incompatible” blocks—that is, the easier it was for respondents to associate themselves (rather than some contrasting category) with positive (rather than with negative labels)—the higher the participants implicit self-esteem is considered to be. However, as Appendix D documents, beyond these commonalities SE-IATs differed in notable ways.

First, several different algorithms were used to process SE-IAT data (like IAT data in general; Greenwald, Poehlman, Uhlmann, & Banaji, 2009). About a fifth of the time, a simple difference score, derived from averaged trial latencies per block, served as the index ($n = 10$, 18.87%). In one case (1.89%) latencies were additionally log-transformed beforehand to contain skewness. About half the time researchers used versions of an improved “*D*-algorithm” devised by Greenwald et al. (2003). Its purpose is to help control for individual differences in response speed known to confound IAT effects. To achieve this, the *D*-algorithm divides the difference score by the so-called “pooled standard deviation”—computed across all critical latencies without regard for the block from which they derive. The *D*-algorithm comes in slight variants, which differ on additional issues, such as how to deal with classification errors. Statistics were as follows: Original *D* procedure ($n = 11$: 18.87%); *D*₁ procedure ($n = 5$, 9.43%); *D*₂ procedure ($n = 4$, 7.55%); *D*₄ procedure ($n = 2$, 3.77%), a mixture of *D* procedures ($n = 2$, 5.66%), and a procedure reported only as “based on *D*” ($n = 1$, 1.89%). Finally, different scoring procedures for a paper-and-pencil SE-IAT were applied one occasion (1.89%). Note, however, that in almost a third of cases ($n = 16$, 30.19%), researchers did not provide enough information to determine the scoring method they had used.

In addition to scoring procedures, researchers used various category labels to represent the target concepts. On just under a third of occasions (18), labels contrasted a “self” category against an “other” category: *Self* and *Other* ($n = 12$, 27.91%); *Self* and *Others* ($n = 4$, 9.30%); *I* and *Other* ($n = 1$, 1.89%), and *Me* and *Others* ($n = 1$, 1.89%). About a quarter of the time ($n = 14$, 26.42%), labels contrasted a “self” category against some negation of the self-category: *Self* and *Not-Self* ($n = 6$, 11.32%) *Me* and *Not-Me* ($n = 6$, 11.32%)—as in Greenwald & Farnham, 2000; Figure 1)—*I am* and *I am not* ($n = 1$, 1.89%), and *Self-related* and *Non self-related* ($n = 1$, 1.89%). On a few other occasions, the labels *Self* and *Object* were employed ($n = 4$, 7.55%). Lastly, the single category *Self* was employed with a single-category IAT on 2 occasions (3.77%). Researchers provided insufficient information to determine concept labels on the remaining ten occasions (18.86%).

Category labels for attributes varied less. On nearly half of measurement occasions, researchers used *Pleasant* and *Unpleasant* ($n = 24$, 45.28%, as in Greenwald & Farnham, 2000; Figure 1). On a handful of occasions, they used alternatives: *Positive* and *Negative* ($n = 9$, 16.98%) and *Good* and *Bad* ($n = 2$, 3.77%). Insufficient information was provided to determine attribute labels on 17 occasions (32.07%).

Lastly, researchers used a miscellany of positive and negative items. Table 4 shows that 71 different positive items (e.g., *active*, *cheerful*, *excellent*) were reported across the SE-IAT studies. Just 14 of these appeared in the original SE-IATs designed by Greenwald and Farnham (2000, p. 1038). In addition, a total of 67 negative items were reported (e.g., *agony*, *bomb*, *cockroach*). Similarly, just 17 of these appeared in the original SE-IATs designed by Greenwald and Farnham (2000, p. 1038). There was less variation, however, in the target concept stimuli. A total of 14 different self-related stimuli (e.g., *me*, *my*, *I*) and 28 non-self-related stimuli (e.g., *they*, *them*, *others*) were employed by researchers. Among the former, half of the stimuli were idiographic (e.g. items specific to the participant: the participant’s first name, last name, or birth place). Among the latter, less than a third of stimuli were idiographic (e.g. other’s first name, last name, city of residence). Yet, researchers often did not report SE-IAT items: negative ($n = 22$, 41.51%), positive ($n = 18$, 33.96%), self items ($n = 17$, 32.07%), and non-self-related ($n = 21$, 39.62%).

2.4.5.4 Name-Letter Test ($n = 43$, 5.59%)

The NLT is based on the *name letter effect*. This is the tendency for people to prefer those letters of the alphabet in their own name—a phenomenon first identified by Jozef Nuttin (1985) (for an historical overview of research on this phenomenon, see Hoorens, 2014). To our knowledge, the NLT was first suggested as an index of “implicit” self-esteem by Greenwald and Banaji (1995, p. 12; see also Albers, Rotteveel, & Dijksterhuis, 2009; Stieger, Voracek, & Formann, 2012). In modern versions of the NLT, participants are required to rate each letter of the alphabet for how much it appeals to them (as opposed to selecting some letters over others). In general, the more positively an individual rates the letters in their own name—after controlling for one or more

confounds—the higher their “implicit” self-esteem is deemed to be. However, in practice, the NLT overwhelmingly takes the form of the Initial Preferences Task (IPT), where only ratings for those letters are compared to alternatives. Indeed, here, focal letters were both initials on 38 occasions (88.37%), all name letters on 3 occasions (6.98%), and first-name initial on 1 occasion (2.33%). Not enough information was provided to determine this measurement detail on 1 occasion (2.33%).

As with the IAT, scoring algorithms for the NLT vary across studies (see LeBel & Gawronski, 2009, for a review of these algorithms). This reflects the fact that liking for key name letters can be reasonably compared either to liking for non-name letters (a “self-corrected algorithm”), or to general liking for those letters in the population (a “baseline correct algorithm”), or to both (a “double-correction algorithm”). Additionally, one can try to control for respondents’ own evaluative response biases either by computing the difference between ratings of the initials and non-initials in one’s name (an “ipsatized double-correction algorithm”), or by standardizing all ratings within each respondent (a “z-transformed double-correction algorithm”). Further complicating the picture, any of the former three algorithms can be combined in principle with either of the latter two.

Researchers used five algorithms here. The baseline-corrected algorithm was by far the most commonly applied ($n = 29$, 67.44%). Next came the ipsatized double-correction algorithm ($n = 4$, 9.30%), followed by the self-corrected algorithm ($n = 2$, 4.65%) and the z-transformed-double-correction algorithm ($n = 1$, 2.33%) (see LeBel & Gawronski, 2009, for further details of these scoring procedures). An additional simpler scoring procedure, consisting of mean z -scores for name letters, was applied on one occasion (2.33%). On a further six occasions (13.95%), not enough information was provided to determine the algorithm applied.

The precise evaluational instructions given to participants also varied (as noted by Sakellaropoulou and Baldwin, 2007, and Stieger et al., 2012). Over half the time participants rated the extent to which they *liked* the letters ($n = 23$, 53.49%). But they were also instructed to rate how *beautiful* they were ($n = 8$, 18.60%), how *attractive* they were ($n = 3$, 6.98%), how *beautiful* as well as *attractive* they were ($n = 3$, 6.98%), and on one occasion (2.33%), how *nice* they were. On five occasions (11.63%) not enough information was provided to determine the instruction given. The number of response options for rating scales varied too, with large numbers predominating. Five response options were used on 5 occasions (11.63%), six on 1 occasion (2.33%), seven on 16 occasions (37.21%), and nine on 11 occasions (25.58%). Researchers provided insufficient information to determine the number of response options on ten occasions (18.87%).

2.4.5.5 Modified-for-States Rosenberg Self-Esteem Scale (n = 42, 5.46%).

The RSES-MFS is a self-report scale that typically features modified versions of the items of the self-esteem scale that appear in Rosenberg (1965). Such items appear with either the clause “right now” or “at this present moment” attached (e.g., “Right now, I feel that I am a person of worth, at

least on an equal plane with others”, “At this present moment, I take a positive attitude toward myself”). Alternatively, participants are asked to rate each item in relation to “how they feel about themselves today”. Modifications such as these are intended to allow the researcher to assess levels of state self-esteem, or levels of self-esteem over a specific period of time. The RSES-MFS is scored identically to the RSES. Table 2 shows that researchers overwhelmingly preferred ten or more response options with the RSES-MFS (69.70%). Table 3 shows that the RSES-MFS was almost exclusively used with a *strongly disagree* to *strongly agree* response anchor format ($n = 28$, 93.33%).

2.4.5.6 State Self-Esteem Scale ($n = 31$, 4.03%)

The SSES (Heatherton & Polivy, 1991) is a 20-item self-report scale (p. 898), the content of which is based on two earlier self-esteem scales (Heatherton & Polivy, 1991, p. 897). The scale comprises seven items intended to assess *performance* self-esteem (e.g., “I feel confident about my abilities”), six intended to assess *appearance* self-esteem (e.g., “I feel satisfied with the way my body looks right now”), and seven intended to assess to *social* self-esteem (e.g., “I am worried about whether I am regarded as a success or failure”). Separate performance, appearance, and social self-esteem scores are calculated by reverse-scoring the negatively-phrased items, and then averaging responses to the items pertaining to each type of self-esteem. A total self-esteem score is taken by averaging all item responses after reverse-scoring.

The SSES originally featured five response options (Heatherton & Polivy, 1991, p. 897), with the following response anchors: 1 (*not at all*), 2 (*a little bit*), 3 (*somewhat*), 4 (*very much*), 5 (*extremely*). Table 2 shows that researchers preferred five response options in the present survey ($n = 18$, 72.00%). As Table 3 shows, the original response anchors were the most commonly employed ($n = 8$, 44.44%), but five other response anchor combinations were used including *strongly disagree* to *strongly agree* ($n = 3$, 16.67%) and *completely false* to *completely true* ($n = 3$, 16.67%).

2.4.5.7 Single-Item Self-Esteem Scale ($n = 20$, 2.60%)

The SISE (Robins et al., 2001) requires participants to indicate on a scale from 1 (*not very true of me*) to 5 (*very true of me*) the extent to which they agree with the statement “I have high self-esteem”. Table 2 shows that the scale was used primarily with the original 5 response options (68.43%). Table 3, however, shows that researchers most frequently used the SISE with *strongly disagree* to *strongly agree* response anchors ($n = 10$, 52.63%)—much more so than with the original format ($n = 3$, 15.78%).

2.4.5.8 Shortened Rosenberg Self-Esteem Scale ($n = 19$, 2.47%)

The RSES-S is any self-report measure that uses some, but not all, items of the RSES. Such abbreviations of the RSES have appeared in self-esteem research for several decades (Robins et al., 2001). The number of items abstracted from the original RSES ranged from one to nine ($M = 5.11$, $Mdn = 4$). Table 2 shows that four and five response options were preferred with the RSES-S. Table 3 shows that the RSES-S was most often used with *strongly disagree* to *strongly agree* response anchors ($n = 8$, 57.14%), but six other response anchor combinations were employed including *disagree* to *agree*, *very inaccurate* to *very accurate*, and *extremely uncharacteristic of me* to *extremely characteristic of me* (all $n = 1$, 7.14%).

2.4.5.9 The Single Item Name-Liking Measure ($n = 8$, 1.04%)

The SINL (Gebauer et al., 2008) is the most recently devised measure to appear in the top ten most used measures of self-esteem. It might be considered a type of hybrid between the “explicit” SISE and “implicit” NLT. Participants respond to the question “How much do you like your name, in total?” on a scale from 1 (*not at all*) to 9 (*very much*). Researchers used the SINL with a 9-point scale on all occasions.

2.4.5.10 Self-Liking and Self-Competence Scales ($n = 7$, 0.91%).

These are the original (Tafarodi & Swann, 1995) and revised (Tafarodi & Swann, 2001) Self-Liking and Self-Competence Scales. The original version consists of twenty items designed to assess two distinct dimensions of self-esteem (each with 10 items). The first dimension is *selfliking*, defined as “our affective judgement of ourselves, our approval and disapproval of ourselves, in line with internalized social values” (Tafarodi & Milne, 1995, p. 325). Items such as “I like myself” and “I feel comfortable about myself” capture this. The second dimension is self-competence, defined as “the overall sense of oneself as capable, effective and in control” (Tafarodi & Milne, 1995, p. 325). Items such as “I perform very well at a number of things” and “I am a capable person” capture this.

The revised version contains 16 items. Four are drawn verbatim from the original scale. A further seven are reworded. For example, “I feel good about who I am” appears in the revised version as “I feel great about who I am”. The remaining five items are novel (e.g., “I wish I were more skilful in my activities”). In both versions, after the reverse scoring of negatively-phrased statements, the relevant items of each subscale are averaged to provide indices of self-liking and self-competence. Higher scores represent higher levels of each.

The scales originally featured 5-point response format (Tafarodi & Swann, 1995, p. 327; Tafarodi & Swann, 2001, p. 658), with *strongly disagree* to *strongly agree* response anchors. As Table 2 shows, researchers used the SLSC with five response options on all of the occasions where the

number of response options were reported. Table 3 shows that the original response anchors were employed on the one occasion that response anchors for the SLSC were reported.

2.4.6 Cronbach's Alphas for Multi-Item Self-Report Scales

At least one Cronbach's alpha was reported on 465 of the 617 (75.36%) occasions that a multi-item self-report scale was used. The mean Cronbach's alpha reported across all measures ($N = 515$) was .86 ($SD = .06$, $Mdn = .87$, range .52 - .96). The distribution of alphas for the five most commonly used multi-item self-report scales are reported in Table 2 and displayed in boxplots in Figure 3. With the exception of the RSES-S, mean coefficients for all other scales met Nunnally and Bernstein's (1994, p. 265) rule of thumb for basic research ($>.80$), which has more recently been endorsed by Furr (2011). They also exceeded the mean coefficient of $\alpha = .79$ reported in a sample of 2015 articles appearing in the flagship journal Journal of Personality and Social Psychology in 2015 ($SD = .13$, range = .18 -.87; Flake, Pek, & Hehman, 2017).

2.4.7 Internal Consistency Reliability of Implicit Measures

The distribution of reliability estimates for the SE-IAT and NLT is presented in Figure 4. Average reliability coefficients for implicit measures were lower than multi-item self-report scales. The internal consistency reliability of the SE-IAT was assessed in three ways (see Appendix D): as a Spearman-Brown adjusted split-half correlation on nine occasions ($M = .67$, $Mdn = .68$, $SD = .09$, range = .49 - .76); as an unadjusted split-half correlation on seven occasions ($M = .62$, $Mdn = .61$, $SD = .07$, range = .55 - .76); and as a Cronbach's alpha on eight occasions ($M = .78$, $Mdn = .72$, $SD = .13$, range = .63 - .98). No estimate of internal consistency was provided on 27 occasions (50.94%).

The internal consistency reliability of the NLT was assessed in two ways (see Appendix D). First, reported on eight occasions, was a correlation between rating of the first name initial and the last name initial ($M = .46$, $Mdn = .47$, $SD = .14$, range = .28 - .68) (as in Bosson, Swann, & Pennebaker, 2000, p. 635). Second, reported on seven occasions, was Cronbach's alpha ($M = .58$, $Mdn = .58$, $SD = .13$, range = .41 - .84). In addition, five test-retest reliability correlations were reported: one for both initials ($r = .60$), two for first-name initials ($rs = .82$ & .71), and two for last-name initials ($rs = .77$ & .55). Neither internal consistency reliability nor test-retest reliability information were provided just over half the time ($n = 23$, 53%).

2.5 Discussion

We sought to develop here, for the first time, a detailed picture of the measurement of self-esteem in personality and social psychology. Our meta-research goals included identifying the range of instruments used by researchers to assess self-esteem, the proportion of measurement occasions

accounted for by each, longitudinal trends in instrument usage, and variations in measurement procedures. To achieve these aims, we extracted exact methodological information from 328 articles on self-esteem published in leading journals of personality and social psychology.

Our meta-research points to several noteworthy conclusions about the measurement of self-esteem in the two fields during this time period: (1) a relatively small number of instruments accounted for the majority of measurement occasions; (2) the RSES consistently dominated; (3) custom measures ranked second; (4) two “implicit” measures ranked third and fourth; (5) the number of response options and response anchors employed with self-report instruments varied considerably, and (6) the components of implicit measures varied considerably.

2.5.1 A Relatively Small Number of Instruments Accounted for the Majority of Measurement Occasions

Heatherton and Wyland (2003) described the measurement of self-esteem up to the date of their review as “chaos”. If by “chaos” they meant some sort of assessment free-for-all, devoid of discernible pattern, this is certainly *not* what we found for the period we investigated. To the contrary, as Table 1 shows, we found that a relatively small number of instruments accounted for the vast majority of measurement occasions. The RSES dominated and only eight other instruments accounted for more than 1% of measurement occasions. Namely, custom instruments, the SISE, SSES, RSES-MFS, RSES-S and—three “implicit” measures—the SE-IAT, NLT, and SINL. Together, the ten instruments preferred by researchers accounted for almost 95% of measurement occasions.

2.5.2 The RSES Consistently Dominated

The RSES dominated the measurement of self-esteem. Overall, the original scale accounted for well over half of all measurement occasions—several times as much as its nearest “competitor”. In no year did its “market share” fall below 40%. Importantly, if one were to add modified versions of the RSES to the total, the composite figure would approach two-thirds. Clearly, the scale was a perennial fixture of the self-esteem measurement landscape. If it shows any trend, Figure 2 shows that the relative popularity of RSES has not only stayed stable, but has risen.

Why did the Rosenberg dominate? Perhaps the main reason is that it enjoys a *sterling reputation*. It has been described as the “gold standard” instrument (Bleidorn, Arslan, Denissen, Rentfrow, Gebauer, & Gosling, 2015, p. 4; Gebauer, Sedikides, Wagner, Bleidorn, Rentfrow, Potter, & Gosling, 2015, p. 530), as “the standard by which new measures are evaluated” (Blascovich & Tomaka, 1991, p. 123), and as having “excellent” psychometric properties “despite it being brief and easy to administer” (Koestner & Mageau, 2006, p. 96). Moreover, it is said to be “highly reliable” (Baldwin, Bacchus, & Fitzsimmons, 2004, p. 84), to have “shown high reliability and

good validity” (Benetti & Kambouropolous, 2006, p. 345), to have “excellent reliability and validity” (Ciarrochi, Heaven, & Davies, 2007, p. 1166), and to be “a widely used, reliable and valid measure” (Bos, Huijding, Muris, Vogel, & Biesheuvel, 2010, p. 312). The measure has also fared reasonably well in otherwise critical reviews of methodology in self-concept and self-esteem research (e.g., Wells and Marwell, 1976, p. 194; Wylie, 1974, p. 180-190; Baumeister, Campbell, Krueger, & Vohs, 2003, p. 5). Indeed, it has been accorded the accolade of being “*The Self-Esteem Scale*” (Kwan & Mandisodza, 2007, p. 265, emphasis added). Only a few commentators have raised occasional concerns (e.g., Byrne, 1996; Marsh, Scalas, & Nagengast, 2010; Tafarodi & Swann, 1995), including more recently ourselves (Pegler, Gregg, Hart, Mahadevan, & Bialobrzeska, 2018).

The second reason is perhaps its sheer *convenience and interpretability*. The RSES consists of just ten simple statements, presumed to converge on a single underlying construct. It is easy for respondents to complete and for researchers to score. Ironically, however, a sizeable psychometric literature—building on earlier investigations (Wylie, 1989, pp. 27-29)—points to RSES exhibiting a multifactorial complexity whose precise nature remains disputed (e.g., Alessandri, Vecchione, Eisenberg, & Laguna, 2015; Boduszek, Hyland, Dhingra, & Mallet, 2013; Donnellan, Ackerman, & Brecheen, 2016; Dunbar, Ford, Hunt, & Der, 2000; Farrugia, Chen, Greenberger, Dmitrieva, & Macek, 2004; Gana, Alaphilippe, & Bailly, 2005; Gana, Saada, Bailly, Joulain, Herve, & Alaphilippe 2013; Greenberger, Chen, Dmitrieva, & Farrugia, 2003; Richardson, Ratner, & Zumbo, 2009; Roth, Decker, Herzberg, & Brahler, 2008). Hence, the RSES, though undeniably simple to administer, may not be as simple to interpret.

The third reason is perhaps that the RSES builds on its prior popularity. First conceived in the 1960’s (Rosenberg, 1965), at the beginning of the self-esteem movement (Baumeister et al., 2003), it likely enjoys a “first mover advantage” that all subsequent rival instruments must struggle to displace. In the period prior to our investigation, the signs are that the RSES was also the leading measure of self-esteem (Blascovich & Tomaka, 1991; Kwan & Mandisodza, 2007). Accordingly, researchers are liable to employ the RSES simply because it helpfully coordinates the findings of their own research endeavours with the findings of many other researchers before them. As Brase and Guy (2004) have put it, using the RSES “provides good comparability with previous results” (p. 476), and affords, as Hill and Durante (2009) have put it, “maximum relevance to prior research” (p. 1595). That researchers should coordinate in this way is, all else equal, surely a benefit, lending coherence and direction to the investigation of self-esteem. Note, however, that the benefit only exists to the extent that the RSES validly and reliably captures self-esteem as it is defined by researchers. That the RSES dominates means, in effect, that the stakes are higher with respect to it: for the sake of self-esteem research, it had better live up to its sterling reputation. Researchers should perhaps guard against complacency here, given that any measurement

instrument is liable to enjoy some degree of irrational evaluational advantage to the extent that it has been well-established (Eidelman & Crandall, 2012).

2.5.3 Custom Measures Ranked Second

Although past reviewers of self-concept research have heavily criticised their use (e.g., Wylie, 1974), one of an assortment of custom instruments was used about one time in ten, such that they collectively ranked second. This commonplace resort to such “ad hoc” (Furr, 2011, p. 5), or impromptu, instruments perhaps suggests that some researchers are dissatisfied with the more “official” alternatives.

Although we classified them into separate categories, the RSES-MFS and RSES-S might also be considered custom measures of self-esteem. Although both stem from an instrument which was subject to a validation process (Rosenberg, 1965), to our knowledge they have not been independently validated in themselves. Moreover, there are good grounds for suspecting that the properties of the original RSES might not automatically generalize to these altered forms. As regards the RSES-MFS, it is created by adding the temporally qualifying prefix phrase “Right now....” to all items. But the original items varied in their temporal extension (e.g., “I feel I have a number of good [i.e., enduring] qualities” versus “At times [i.e., one some occasions but not others], I think I am no good at all”). Hence, this variance would be removed or altered. As regards the RSES-S, the inclusion and exclusion of different numbers of items and items subsets would, of course, change both content coverage and internal consistency. As a consequence, one might expect non-trivial difference from the original RSES in terms of, for example, their factor structure, test-retest reliability, and predictive validity (Furr, 2011).

Although these instruments have substantial gaps in their psychometric CVs, so to speak, we believe that their use may be defensible. In the case of the RSES-MFS, modifications to the RSES are intended to capture state, not trait, self-esteem. Moreover, if self-esteem is defined narrowly as an individual’s overall evaluation of his or her worth, the RSES-MFS may capture self-esteem more directly or efficiently than the “go-to” alternative, the SSES (Heatherton & Polivy, 1991)—which focuses on evaluations of self across a variety of specific domains, such as physical appearance (e.g., “I feel satisfied with the way my body looks right now”) or educational attainment (e.g., “I feel that I have less scholastic ability right now than others”). In other words, it may be a more content valid instrument. The RSES-S, on the other hand, is probably deployed largely for practical reasons. Shortened versions are likely used (a) due to constraints on the number of items that can be embedded in larger questionnaires, or because (b) the research involves secondary analysis of longitudinal sociological surveys, which often include shortened versions of the RSES (see, for example, Erol & Orth, 2013; Kuster & Orth, 2013).

2.5.4 Two “Implicit” Measures Ranked Third and Fourth

More recently devised “implicit” or indirect measures of self-esteem accounted for a considerable percentage of self-esteem measurement occasions. In line with the claims made by recent surveyors of the literature (Buhrmester et al., 2011), the NLT or the SE-IAT were the most used instruments and were about equal in popularity. Together, they accounted for 12.48% of measurement occasions—thereby collectively exceeding custom measures, but still only a quarter as popular as the RSES. The SINL (Gebauer et al. 2008), which is something of a hybrid index, added a handful of additional measurement occasions. These instruments represent perhaps the most distinctive methodological set over the period studied. Although no usage trends are apparent in the data studied, they represent measurement innovations that came into fashion, not surprisingly, with the rise of the “implicit” sub-branch of social cognition in the closing years of the 20th Century (Greenwald & Banaji, 1995; Payne & Gawronski, 2010), although the birth of the NLT as an instrument (Nuttin, 1985) considerably predates that of the IAT (Greenwald et al., 1998).

2.5.5 The Number of Response Options and Response Anchors Used with Self-Report Scales Varied Considerably

Two variable aspects of the measurement of self-esteem identified here is the number of response options and the response anchors used with self-report scales. For example, as Table 4 shows, the RSES most often featured four and five response options but was used with every response option from two to ten, with the exception of three and eight. Why? The variation, in this case, likely stems from a tension between, on the one hand, the precedent set by the original RSES which featured a 4-point scale (Rosenberg, 1965), and, on the other hand, expert recommendations that 5-point to 7-point scales are psychometrically optimal (Furr, 2011, p. 18). Moreover, Table 5 shows that self-report measures were employed with a wide variety of response anchors. The RSES, for example, was most often used with a *strongly disagree* to *strongly agree* response format, but no fewer than 17 others were also employed.

Is the variability in response scales in the measurement of self-esteem something to worry about? Many studies have found that even minor modifications to response formats influence scale score distributions and the strength of correlations with other scales (Krosnick, Judd, & Wittenbrink, 2005; Schwarz, 1999). To our knowledge, however, only one study has specifically investigated the matter in respect of measures of self-esteem. In that study, the RSES correlated somewhat heterogeneously with extraversion when it featured with four, five, or seven response options ($r = .53$, $r = .40$, $r = .48$) but homogenously with neuroticism ($r = -.73$, $r = -.75$, $r = -.73$) (Hamby, 2015). Clearly, more research is required. However, it may safely be said that the degree of heterogeneity observed in respect of the number of response options, specifically for the RSES and to a lesser extent other self-report scales, is needlessly large.

2.5.6 The Components of Implicit Measures Varied Considerably

Several components of the two leading “implicit” measures of self-esteem also varied considerably. For the SE-IAT, category labels, attribute labels, items categorised, and scoring procedure were unfixed. Across 53 measurement occasions, researchers used nine different combinations of category labels, three different combinations of attribute labels, 71 different positive items, 67 different negative items, and nine different scoring procedures. For the NLT, evaluational instructions, the number of response options employed, and scoring procedures were similarly unfixed. Across 43 measurement occasions, researchers issued five different evaluational instructions, used four different response formats were employed, and applied seven different scoring procedures. The unstandardized use of the SE-IAT and NLT is in keeping with the unstandardized use of the IAT in general (Fiedler, Messner, & Bluemke, 2006; Nosek, Greenwald, & Banaji, 2007) and other instruments frequently used in psychology (e.g. the Competitive Reaction Time Task; Elson, Mohseni, Breuer, Scharkow, & Quandt, 2014; the probe-caught method for the assessment of mind-wandering: Weinsten, 2017).

To our knowledge, only a handful of studies have investigated the empirical interchangeability of measures of implicit self-esteem with different stimuli, response options, formats, and scoring procedures. Their findings, however, suggest that the details do matter. In the case of the SE-IAT, Oakes, Brown and Cai (2008) found that the strength of SE-IAT correlations with explicit self-esteem (self-loving, as measured by the Self-Liking and Self-Competence Scale) depended on whether self-related (e.g., *lovable, inadequate*) or non-self-related items (e.g., *balloon, famine*) were used as pleasant and unpleasant stimuli. In addition, Karpinski (2004) found that two IATs with different category labels and stimuli—the first comprised of self (e.g., the participants name, *me, I*) and unspecified other (e.g., *her, him, them*) categories; the second comprised of self (e.g., the participants name, *me, I*) and specified other (e.g., friend’s first name, friend’s last name, *him*) categories—were virtually uncorrelated within participant ($r = -.03$). In the case of the NLT, in two studies, Sakellaropoulou and Baldwin (2007) found that NLTs incorporating liking and attractiveness ratings were imperfectly correlated within participant ($r = .62$ and $r = .73$, respectively). In addition, they found that responses to experimental manipulations of narcissism were predicted by the interaction between scores on liking and attractiveness NLTs, but not by scores on either NLT individually. Although more research is required here, it seems likely that research findings with implicit measures will depend on their precise composition. Future investigators of implicit self-esteem should be aware of this, especially those interested in replicating research results.

2.5.7 How Does the Measurement of Self-Esteem Compare to Measurement Practices Elsewhere?

We have already mentioned that unstandardized use of the SE-IAT and NLT is in keeping with the unstandardized use of IAT in general and other measures frequently used in psychology. Two recent studies—one based on a sample of JPSP research articles published in 2014 (Flake et al., 2017), and the other based on research articles pertaining to emotion (Weidman, Streckler, & Tracy, 2016)—help us to further determine how the measurement of self-esteem compares to the measurement of other key constructs.

The measurement of self-esteem was distinctive in a number of ways. First, both Flake et al. (2017) and Weidman et al. (2016) found that the use of single-item instruments was commonplace, accounting for 30% and 58% of measurement occasions, respectively; the corresponding figure in our meta-research was a mere 4%. Second, both research teams found that the use of custom instruments was even more frequent than the use of single-item scales, accounting for 40% and 69% of measurement occasions, respectively. The corresponding figure in our meta-research was a mere 10%. This disparity suggests that past criticisms of the measurement of self-concept for an over-reliance on custom instruments (Wylie, 1974, p. 324) have been heeded by the self-esteem research community—perhaps a reassuring takeaway.

Nonetheless, the measurement of self-esteem shows some signs of greater heterogeneity. In our survey, researchers used a total of 28 instruments (conservatively grouping customs instruments together as one; the figure without is 78). In contrast, fewer instruments were used to assess happiness ($n = 10$), sadness ($n = 12$), anger ($n = 19$), and anxiety ($n = 10$) (Weidman et al., 2016).

2.5.8 Limitations

The comprehensive observational meta-research method employed here has a number of strong advantages over the CCM method employed in research until now. Nevertheless, like all meta-research (Ioannidis, 2010), ours has a number of limitations. The first limitation, related to our data extraction process, is that we treated measures variously described as measures of self-esteem, explicit self-esteem, implicit self-esteem, stability of self-esteem, state self-esteem, and trait self-esteem inclusively as measures of self-esteem. We extracted measurement information without respect to these differentiations. We anticipate that a number of readers will argue that a more fine-grained analysis, in which these classes of measures were treated separately, might have been warranted. We would argue, however, that these are ostensibly and logically closely related constructs (e.g., the measurement of the stability of self-esteem necessarily entails the measurement of self-esteem; the measurement of the state form of self-esteem often only differs from the trait form by small changes of the wording of trait scales). As such, we do not believe that we have compared apples with oranges.

The second limitation, related to our inclusion/exclusion criteria for studies, is that our meta-research only included articles with the exact term “self-esteem” in their titles. Conceivably, self-esteem may have been measured in other articles, and in systematically different ways. Our meta-research, then, more specifically concerns the measurement of self-esteem in personality and social psychology *in research where self-esteem is of primary interest*. A third and final limitation is that the meta-research presented here does not include unpublished studies on self-esteem, which we did not include for simplicity.

The three limitations of our work may mean that we have painted an imperfect picture of the measurement of self-esteem. That said, we have no specific reasons to believe that we would have arrived at different conclusions—for example, that the RSES was the most used measure, or that implicit measures were among the next most popular measures—if we had included studies in articles without self-esteem in their titles, or unpublished studies. This is, however, a potentially interesting direction for future meta-research.

2.5.9 Concluding Remarks

Suppose we had to integrate our conclusions into a single take-home message, what would it be? Perhaps it would be this: The recent measurement of self-esteem has been consistent at one level but diverse at another. First, it has been consistent insofar as researchers used the RSES far more frequently than all other measures. If it is the case that whatever the RSES assesses maps on faithfully and dependably to what researchers mean by self-esteem, then the consistent domination of the RSES is desirable. However, if it is the case that the RSES does not do so, then the current state of play is far less desirable. So: Is the RSES valid in this sense? That is a complex and subtle question which merits its own extensive treatment. However, in electing to largely rely on the RSES, the field of personality and social psychology as a whole has, in effect, assumed as much. Much of the study of self-esteem in the field either stands or falls on the basis of this assumption.

Second, the recent measurement of self-esteem was notably diverse in so much as there was substantial variation in the details of measurement (e.g., the number of response options and response anchors attached to self-report scales, stimuli and labels for the SE-IAT, and evaluational instructions for the NLT). Is this diversity warranted or unwarranted? It arguably depends. On the one hand, advantages certainly accrue to measurement details being uniform from study-to-study. Possibly irrelevant variation across studies is minimized, together with the “noise” to which it gives rise, thereby making the “signal” of any real effect pertaining to self-esteem clearer. In addition, to the extent that some measure of self-esteem in its particularity (e.g., with a specific response format or set of stimuli) has been subjected to a prior validation procedure, one can of course more be confident about that validity generalizing in a new context to the extent that it remains unaltered (Furr, 2011).

On the other hand, researchers might like some assurance that any findings they obtain with respect to self-esteem are not merely the narrow artefacts of restricted operationalizations. Some researchers might consider it desirable to demonstrate self-esteem related findings are robust across a variety of minor psychometric variations. It is also worth considering that some of the diversity that we have observed is the result of well-motivated attempts at methodological improvement and innovation. For example, it is possible that some diversity observed in the use of measurement instruments—in particular, the use of an array of custom instruments—reflects an earnest, although informal, attempt to optimize the quality of measurement. In particular, on a minority of occasions, researchers may have resorted to such custom instruments instead of the RSES because they are persuaded, perhaps based on an *a priori* inspection of content, that their items better represent the construct of self-esteem as they define it. Still, researchers' use of impromptu instruments might well evoke justified scepticism, given that their validity depends on the intuitions of the researcher.

At all events, we now know what we are dealing with when it comes to how personality and social psychologists have assessed self-esteem. Opinions may vary about what the facts derived from our analysis mean; but those facts are now on the table. Measurement practices cannot fail to have a bearing on the success or failure of the endeavours of researchers of self-esteem, given that hypotheses concerning self-esteem cannot be tested in their absence: In the science of self-esteem, measures of the construct are “where the rubber meets the road”. The current meta-research provides researchers, for the first time, with a detailed account of the measurement of self-esteem in personality and social psychology.

2.6 References

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2.7 Tables

Table 1. *Number and Percentage of Measurement Occasions (N = 769) Accounted for by the 29 Instruments Used to Measure Self-Esteem*

Measure	n	%
Rosenberg Self-Esteem Scale (Rosenberg, 1965)	430	55.92
Custom instruments	76	9.88
Self-Esteem Implicit Association Test (Greenwald & Farnham, 2000)	53	6.89
Name Letter Preference Test (Greenwald & Banajia, 1995)	43	5.59
Modified for states Rosenberg Self-Esteem Scale (Rosenberg, 1965)	42	5.46
State Self-Esteem Scale (Heatherton & Polivy, 1991)	31	4.03
Single Item Self-Esteem Scale (Robins, Hedin, & Trzesniewski, 2001)	20	2.60
Shortened Rosenberg Self-Esteem Scale (Rosenberg, 1965)	19	2.47
Single Item Name-Liking Measure (Gebauer, Riketta, Broemer, & Maio, 2008)	8	1.04
Self-Liking and Self-Competence Scales (Tafarodi & Swann, 1995; 2001)	7	0.91
Three subscales of the Revised Inadequacy Scale (Fleming & Courtney, 1984)	5	0.65
Full Revised Inadequacy Scale (Fleming & Courtney, 1984)	4	0.52
Self-esteem affective priming tasks	4	0.52
Birthday number preferences	4	0.52
Bachman revision of Rosenberg Self-Esteem Scale (Bachman, 1970)	3	0.39
Implicit Self-Evaluation Survey (Pelham & Hetts, 1999)	3	0.39
Unspecified	3	0.39
Global subscale of Self-Perception Profile for Children (Harter, 1988)	2	0.26
Texas Social Behaviour Inventory (Helmreich and Stapp, 1974)	2	0.26
Culture-Free Self-Esteem Inventory (Battle, 1992)	1	0.13
Self-Attributes Questionnaire (Pelham & Swann, 1989)	1	0.13
e-Darling Trait Self-Esteem Scale (Gebauer, Leary, & Neberich, 2012)	1	0.13
Self-Esteem Go No-Go Association Test (Nosek & Banaji, 2001)	1	0.13
Shortened Coopersmith Self-Esteem Inventory (Coopersmith, 1967)	1	0.13
Piers-Harris Children's Self-Concept Scale (Piers, 1984)	1	0.13
California Self-Evaluation Scales (Phinney & Gough, 1984)	1	0.13
Narcissistic Personality Inventory (Raskin & Hall, 1979)	1	0.13
Pictorial State Self-Esteem Scale (Bradley & Lang, 1994)	1	0.13
Self-Perception Profile for Adolescents (Harter, 1988)	1	0.13

Table 2. *Percentage of Measurement Occasions Accounted for by Number of Response Options and Cronbach's Alpha Statistics for Commonly Used Scales*

	RSES	Custom	RSES-MFS	SSES	RSES-S	SISE	SLSC
Response options							
Occasions reported	265	72	33	25	15	19	2
2	0.75	—	—	—	6.67	—	—
3	—	2.63	—	—	—	—	—
4	36.60	5.26	3.03	8.00	26.67	—	—
5	30.56	21.05	9.09	72.00	46.66	68.42	100.00
6	4.15	—	—	—	—	—	—
7	15.85	35.53	15.15	8.00	13.33	5.26	—
8	—	—	—	—	—	—	—
9	11.70	9.21	3.03	4.00	—	15.78	—
10+	0.38	2.63	69.70	8.00	6.67	—	—
Cronbach's alpha							
<i>M</i>	0.87	0.82	0.89	0.85	0.76	—	0.88
<i>Mdn</i>	0.88	0.84	0.89	0.86	0.79	—	0.90
<i>SD</i>	0.05	0.09	0.04	0.04	0.10	—	0.07
<i>n</i>	367	70	20	32	20	—	6

Note. RSES = Rosenberg Self-Esteem Scale (Rosenberg, 1965). RSES-MFS = modified for states Rosenberg Self-Esteem Scale. SSES = State Self-Esteem Scale (Heatherton & Polivy, 1991). RSES-S = shortened Rosenberg Self-Esteem Scale. SISE = Single Item Self-Esteem Scale (Robins, Hendin, & Trzesniewski, 2001). SLSC = Self-Liking and Self-Competence Scales (Tafarodi & Milne, 1995; Tafarodi & Swann, 2001). Response option percentages are the percentage of measurement occasions accounted for *when response options were reported*.

Table 3. Number of Response Anchor Combinations and Response Anchor Information for Commonly Used Self-Report Scales

Scale	N	N reported (%)	Response anchor combinations
RSES	18	224 (52.09)	<p><i>Strongly disagree to strongly agree (n = 165)</i></p> <p><i>Very strongly disagree to very strongly agree (n = 8)</i></p> <p><i>Strongly agree to strongly disagree (n = 8)</i></p> <p><i>Not very true of me to very true of me (n = 5)</i></p> <p><i>Totally disagree to totally agree (n = 4)</i></p> <p><i>Don't agree at all to I totally agree (n = 4)</i></p> <p><i>Completely true to not at all true (n = 4)</i></p> <p><i>Disagree very much to agree very much (n = 4)</i></p> <p><i>Not at all descriptive of me to very descriptive of me (n = 4)</i></p> <p><i>Not at all to very much (n = 3)</i></p> <p><i>Not at all to extremely (n = 3)</i></p> <p><i>Completely disagree to completely agree (n = 2)</i></p> <p><i>Strongly disagree, disagree, agree, strongly agree (n = 2)</i></p> <p><i>Yes to no (n = 2)</i></p> <p><i>Does not describe me at all to describes me very well (n = 1)</i></p> <p><i>Applies not at all to applies totally (n = 1)</i></p> <p><i>Does not apply to me at all to applies to me very well (n = 1)</i></p> <p><i>Not at all to very strongly agree (n = 1)</i></p>
Custom	18	47 (61.84)	<p><i>Not at all to very much (n = 14)</i></p> <p><i>Not at all to extremely (n = 7)</i></p> <p><i>Strongly disagree to strongly agree (n = 5)</i></p> <p><i>Very bad to very good (n = 3)</i></p> <p><i>Very cold to very warm (n = 3)</i></p> <p><i>Agree to disagree (n = 1)</i></p> <p><i>Applies not at all to applies totally (n = 1)</i></p> <p><i>Disagree to agree (n = 2)</i></p> <p><i>Dislike extremely to like extremely (n = 1)</i></p> <p><i>Dislike strongly to like strongly (n = 1)</i></p> <p><i>Extremely low to extremely high (n = 1)</i></p> <p><i>False to true (n = 1)</i></p> <p><i>Never to always (n = 1)</i></p> <p><i>Not at all to especially (n = 1)</i></p> <p><i>Strongly agree to strongly disagree (n = 1)</i></p> <p><i>Strongly disagree, disagree, agree, strongly agree (n = 1)</i></p> <p><i>Very low to very high (n = 1)</i></p> <p><i>Yes to no (n = 1)</i></p>
RSES-MFS	3	30 (71.42)	<p><i>Strongly disagree to strongly agree (n = 28)</i></p> <p><i>Disagree very much to agree very much (n = 1)</i></p> <p><i>Not at all descriptive of me to very descriptive of me (n = 1)</i></p>
SSES	6	18 (58.06)	<p><i>Not at all to extremely (n = 8)</i></p> <p><i>Strongly disagree to strongly agree (n = 3)</i></p> <p><i>Completely false to completely true (n = 3)</i></p>

Scale	<i>N</i>	<i>N</i> reported (%)	Response anchor combinations
			<i>Not at all to very much (n = 2)</i> <i>Don't agree at all to I totally agree (n = 1)</i> <i>Not at all descriptive of me to very descriptive of me (n = 1)</i>
RSES-S	7	14 (73.68)	<i>Strongly disagree to strongly agree (n = 8)</i> <i>Agree to disagree (n = 1)</i> <i>Disagree to agree (n = 1)</i> <i>Disagree very much to agree very much (n = 1)</i> <i>Extremely uncharacteristic of me to extremely characteristic of me (n = 1)</i> <i>Never to very often (n = 1)</i> <i>Very inaccurate to very accurate (n = 1)</i>
SISE	5	19 (95.00)	<i>Strongly disagree to strongly agree (n = 10)</i> <i>Does not apply at all to applies completely (n = 3)</i> <i>Not very true of me to very true of me (n = 3)</i> <i>Disagree to agree (n = 2)</i> <i>I do not have this trait to I show this trait very much (n = 1)</i>
SLSC	1	1 (14.28)	<i>Strongly disagree to strongly agree (n = 1)</i>

Table 4. *Self-Esteem Implicit Association Test Stimuli*

Positive (<i>n</i> = 71)	Active, admirable, beach, beautiful, bright*, candy, charm, cheerful, child, clown, diamond*, dream, even-handed, excellent, flower, free, freedom, friend, gift, gifted, good, happiness, happy, harmony, health*, heaven, holiday, human, humor, idea, joy*, kiss, laughter, life, love, loveable, luck, lucky*, mother, nice*, palace, paradise, party, peace*, pleasant, pleasure, praise, precious, pride, rainbow, safety, satisfied, silk, smart*, smile, soul, splendid*, success*, summer, sun, sunny, sunrise*, sunset, sunshine, trust, vacation, valuable, valued*, warmth*, victory, worthy*
Negative (<i>n</i> = 67)	Agony*, anger, angry, army, awful*, bad, bomb, brutal*, cancer, cockroach, coffin, coma, cost, crime, death*, despair, dirt, disaster, disease, dishonest, dumb, evil, failure*, filth*, fraud, garbage, greedy, grief*, hell, inadequate, inertial, inferior, jail, liar, mean, misery, murder, pain*, panic, pest, pimple, poison*, poor, rotten*, sad, shame, sickness*, sin, skull, snake, spider, stink*, stupid*, threat, tragedy*, trash, ugly*, undesirable, unjust, unlovable, unpleasant, useless*, vain, virus, vomit*, war, weary
Self-related (<i>n</i> = 14)	Me*, my*, own, I*, self*, other, mine*, first name*, last name*, month of birth, place of birth, gender*, zodiac sign, city of residence*
Non-self-related (<i>n</i> = 28)	They*, your, them*, you, others, theirs, other, it*, that, his, her, those, other's first name, other's last name, these, their*, him, best friend's family name, best friend's first name, best-friend's hometown, best friend's birthday, we, our, ours, us, other's birthday, other's city of residence

Note. * = item appears in Greenwald & Farnham (2000, p. 1038, APPENDIX A).

2.8 Figures

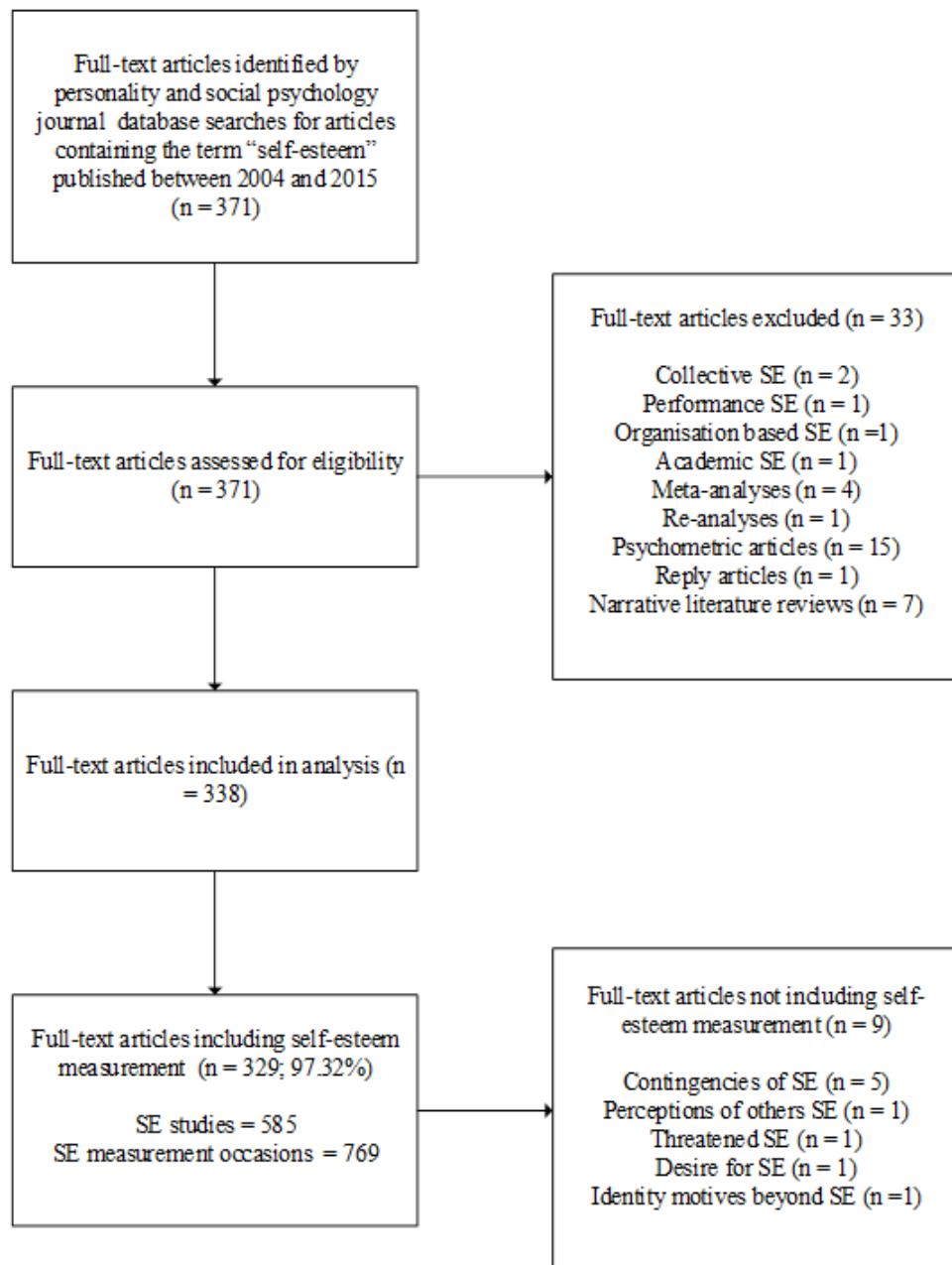


Figure 1. Full-text articles identified and excluded, total number of self-esteem studies and measurement occasions. SE = self-esteem.

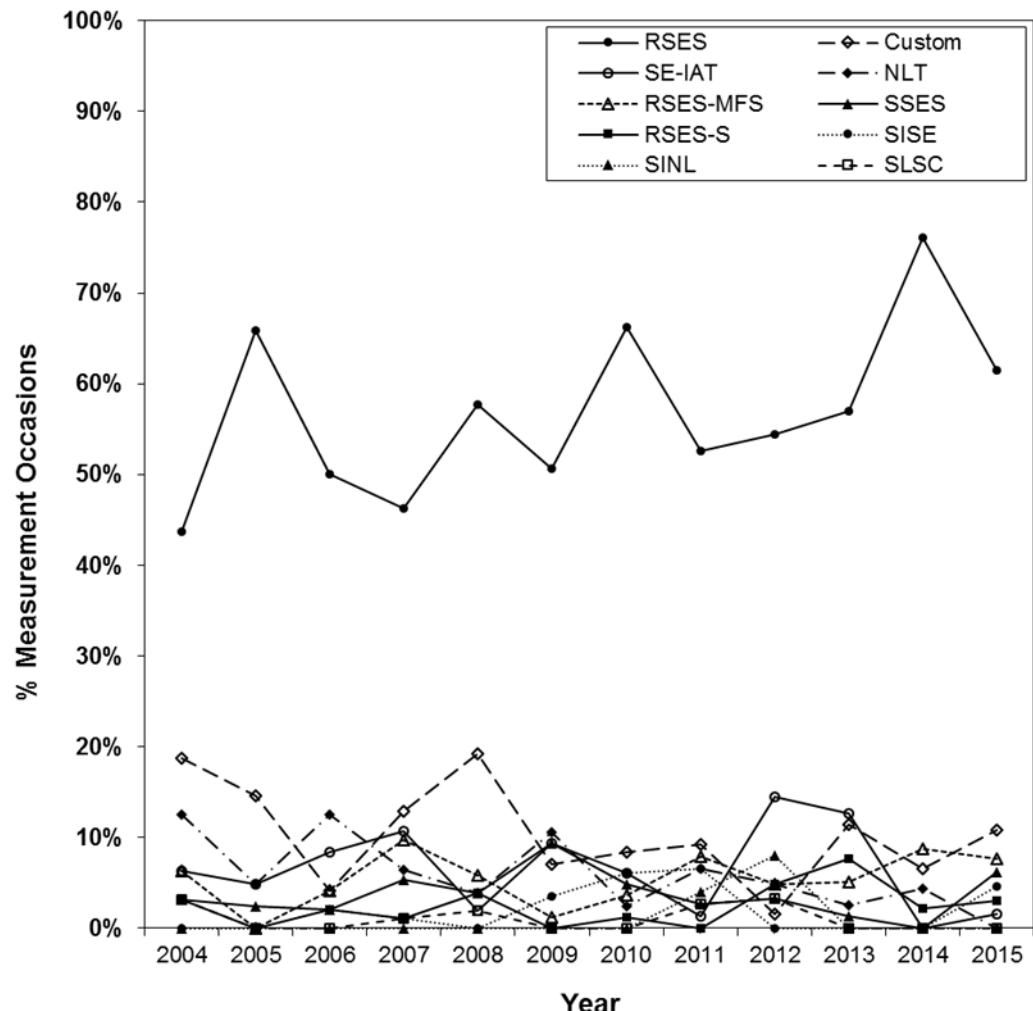


Figure 2. Percentage of measurement occasions accounted for by the ten most used measures of self-esteem in each year (2004 to 2015).

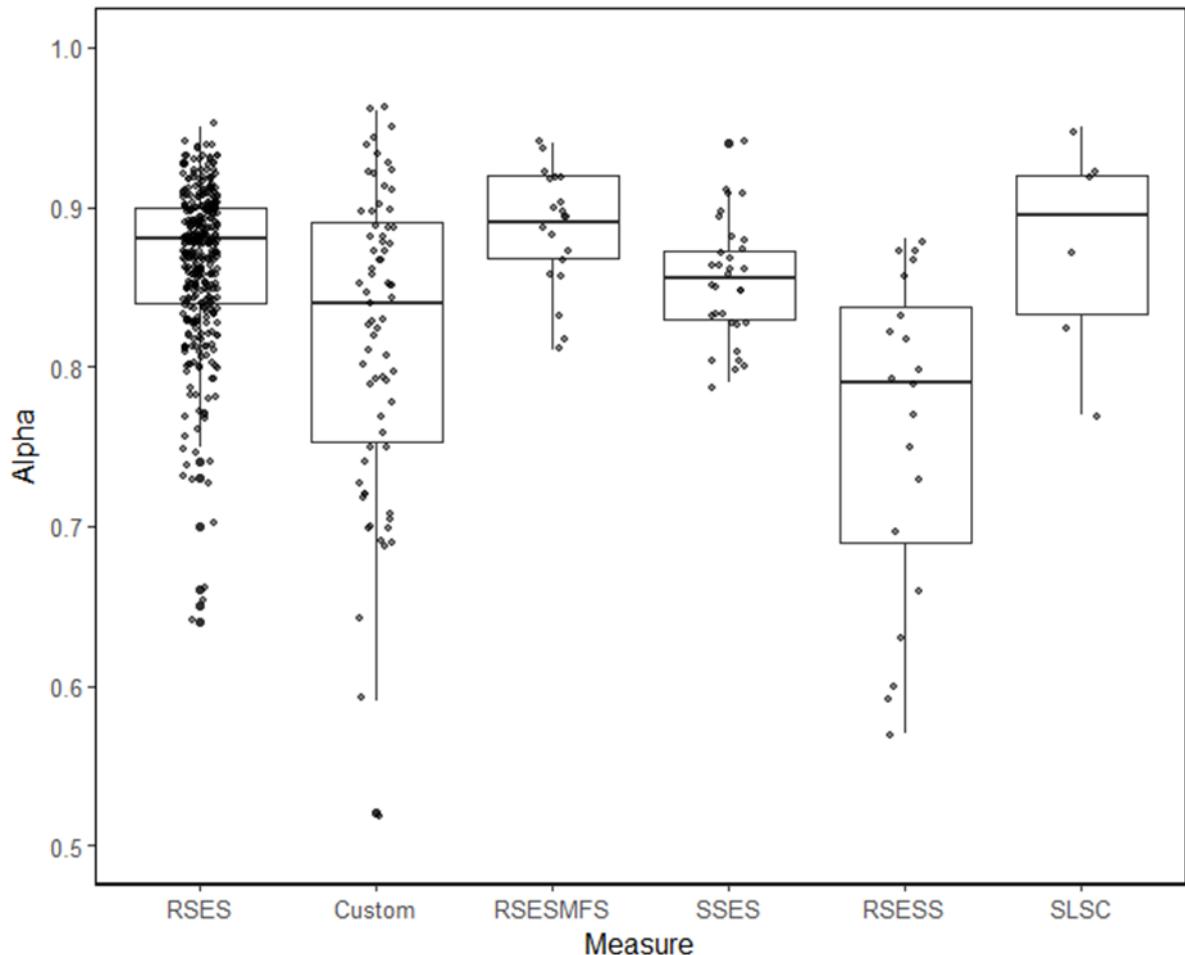


Figure 3. Distribution of Cronbach's alphas ($N = 515$) for multi-item self-report scales.

Note. Band = median, lower hinge = 25th percentile, upper hinge = 75th percentile, lower whisker = smallest observation greater than or equal to lower hinge + 1.5 times interquartile range, upper whisker = largest observation less than or equal to upper hinge + 1.5 times interquartile range.

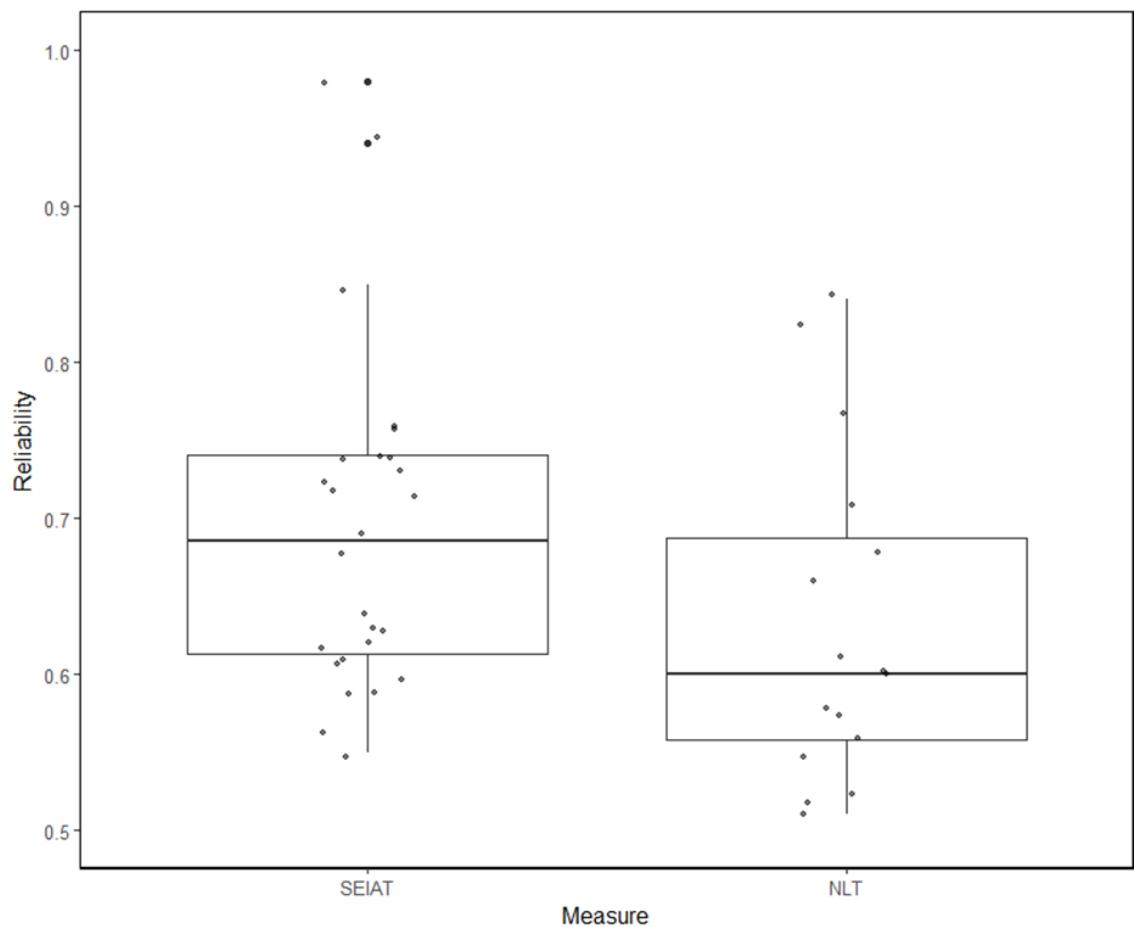


Figure 4. Distribution of reliability estimates (internal consistency and test-retest type) for SE-IAT ($n = 27$) and NLT ($n = 22$).

Chapter 3 What is Self-Esteem? Meta-Research on the Definition of Self-Esteem in Personality and Social Psychology (2004-2015)

3.1 Abstract

Commentators have repeatedly claimed that there has been a lack of consensus among researchers on the definition of self-esteem in psychology. The present paper is the first to investigate the matter with systematic meta-research. We analysed the content of 117 definitions of self-esteem, extracted from 366 articles, published in 12 leading personality and social psychology journals, between 2004 and 2015. We found that researchers defined self-esteem in at least nine different ways, and in a manner at odds with prior impressionistic accounts. The self-worth/value definition, nonetheless, clearly emerged as the most popular, accounting for one-third of definitions. To provide further interpretative context, we trace the history of several leading definitions, and critically discuss their advantages and drawbacks. We conclude by offering recommendations for how self-esteem might be better defined going forward.

Key words: self-esteem, self-worth, self-concept, definition, meta-research

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3.2 Introduction

“During a period of rapid development, many new concepts are invented and old ones given new meaning... the same word can be used by different authors in partially or completely different ways” (Maslow, 1945, p. 239)

For more than 60 years, various commentators have claimed that definitions of self-esteem, in psychology and allied fields, suffer from a troubling *lack of consensus* (e.g., Blascovich & Tomaka, 1991; Brissett, 1972; California State Department of Education, 1990; Coopersmith, 1959; Demo, 1985; Dutton & Brown, 1997; Gray-Little, & Appelbaum, 1979; Mruk, 1999; Smith & Petty, 1995; Stake, 1985; Wells & Marwell, 1976). For example, in the mid-1970s, Wells and Marwell (1976) claimed, in an influential review, that “self-esteem is a deceptively slippery concept” (p. 5) such that “any attempt to derive a fairly rigorous definition of self-esteem...is likely to be frustrated by the current state of vagueness and fragmentation” (p. 7), further contending that “the variety of self-esteem uses is truly myriad” (p. 25). Evidently, matters have not much improved since, for in the last decade or so, levels of concern over the many and varied definitions of the construct have, if anything, intensified (e.g., Branden, 2006; Brown, Dutton, & Cook, 2001; Brown & Marshall, 2006; Butler & Gasson, 2005; Heatherton & Wyland, 2003; Koch & Sheppard, 2008; Kwan, John, & Thein, 2007; Kwan & Mandisodza, 2007; Lonnqvist et al. 2009; Mruk, 2006, 2008, 2013; Neff & Vonk, 2009; Oakes, Brown, & Cai, 2008; Sowislo & Orth, 2013; Tafarodi & Ho, 2006). In fact, one leading scholar has recently gone as far as to argue that the lack of a shared definition of self-esteem is the research community’s “most pressing problem” (Leary, 2006, p. 425), creating a barrier to the development of theory, impeding the practical application of the field’s knowledge, and slowing the pace at which research proceeds. On this view, the purported *definitional diversity* is metaphorically akin to pollution that enters a river near its source that goes on to endanger the entire downstream ecosystem: initial conceptual confusions threaten to contaminate later empirical work.

Moreover, two specific problems may be identified. The first is that any lack of consensus regarding self-esteem’s definition is liable to complicate its measurement (Byrne, 1996; Kwan, John & Thein, 2007; Wells & Marwell, 1976). In particular, because the construction of a measure of any psychological variable is guided by its definition (e.g., Bollen, 2011; Cattell, 1948; Clark & Watson, 1995; Cronbach & Meehl, 1955; Furr, 2011; Krause, 2012; Loevinger, 1957; Simms, 2008), definitional diversity is liable to prompt the construction of non-interchangeable measures (Fiske, 1971). Furthermore, where definitions of a construct vary, the content validity of those measures—that is, “the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose” (Haynes, Richard, & Kubany, 1995, p. 238)—must vary too. Ultimately, a wide variety of self-esteem scales, and other types of assessment instruments, may proliferate, which do not in fact converge on any core

construct, and whose validation criteria may diverge. Historically, many have alleged that this is the case (Baumeister, Campbell, Kreuger, & Vohs, 2003; Blascovich & Tomaka, 1991; Demo, 1985; Heatherton & Wyland, 2003; Leary, 2006; Wells & Marwell, 1976) and, although the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) has largely dominated recent research in personality and social psychology, an array of other instruments are nevertheless in use whose details differ markedly (Pegler, Gregg, & Hart, 2018). Note, however, that if definitions of self-esteem are indeed diverse, then the fact that self-esteem is predominantly assessed with a single instrument like the RSES hardly improves the situation. After all, a single instrument necessarily operationalizes only a single corresponding construct and if researchers have a multiplicity of non-redundant constructs in mind, then they cannot be validly measuring all of them.

The second problem is that any lack of consensus regarding self-esteem's definition may give rise to the development of incompatible theories of self-esteem. Seemingly comparable theories of self-esteem may, on closer inspection, contain different definitions of the construct. For example, *terror management theory* defines self-esteem as "the feeling that one is an object of primary value in a meaningful universe" (Greenberg et al. 1992). In contrast, *sociometer theory* defines self-esteem as an "attitude toward oneself [...] an evaluation of oneself" which has "an essential affective quality that cold cognitions about the self do not" (Leary, Tambor, Terdal, & Downs, 1995, p. 519). In further contrast, *dominance (or prestige) theory* defines self-esteem as "a goal-state maintained so long as the self can evaluate itself as higher than others" (Barkow, 1975, p. 555). Thus, whereas the first theory construes self-esteem in terms of *value and meaning*, the second does so in terms of *self-feelings*, while the third does so in terms of *superiority belief maintenance*. Although researchers often assume that such theories offer rival interpretations of the same underlying phenomenon (e.g., Galliot & Baumeister, 2007; Gebauer et al., 2015; Leary, Cottrell, & Phillips, 2001; MacDonald, Saltzman, & Leary, 2003), such assumptions may be ill founded—leading to a version of the *jingle fallacy* (Larsen & Bong, 2016). If so, then the empirical consequences may be profound. Studies seeming to pit rival theories of self-esteem against one another may not in fact do so, if they "talk past one another" at the level of basic definitions (see also the Discussion section below).

3.2.1 Previous Accounts of Self-Esteem's Definitional Diversity

In addition to asserting *that* there is a lack of consensus on the definition of self-esteem across psychology, several theorists and researchers have also offered accounts of the *character* of the definitional diversity. For example, Mruk (2006) has argued that researchers have defined self-esteem in one of three ways: (a) in terms of *worthiness*—namely, perceptions of one's overall value; (b) in terms of *competence*—namely, what someone backs themselves as able to do; or (c) in terms of a *combination* of both. For their part, Brown and Marshall (2006, pp. 4-5, italics added below) have argued that the term "self-esteem" has one of the three following references: (a) "a

personality variable that represents the way people *generally feel about themselves*"; (b) "the way people *evaluate their various abilities and attributes*"; and (c) "*self-evaluative emotional reactions*". More recently, Leary (2006) attempted a more comprehensive account of alternative definitions, listing a total of seven: "liking one's self, feeling good about oneself, believing that one has the ability to achieve one's goals, possessing a sense of self-worth, experiencing pride (as opposed to shame), holding a positive attitude toward oneself, [and] feeling able to cope with threats and challenges" (p. 424). He claimed the second—feeling good or bad about one's self—was the most common—a view seconded by Brown, Dutton and Cook (2001, p. 616). Additionally, Leary echoed the claims of past commentators (Wells & Marwell, 1976) in alleging that researchers often fail to define the construct in articles where it is the focus of attention. Finally, several commentators have noted a difference in general emphasis: whereas some researchers have highlighted emotion or affect in defining self-esteem (i.e., stipulating that it entails subjective feelings), others have highlighted cognition (i.e., stipulating that it represents an information-based judgment) (Kwan, John, & Thein, 2007; Mruk, 2013; Wells & Marwell, 1976).

However, some researchers do not detect such definitional diversity. In an influential review, Buhrmester, Blanton and Swann (2011) stated that "throughout most of the 6 decades since the introduction of the first measure of self-esteem (Raimy, 1948), theorists agreed that explicit self-esteem refers to feelings of self-worth or the global evaluation of the self [such that] *there is consensus* regarding the nature of self-esteem" (p. 365, italics added). Even more recently, Gebauer, Sedikides, Wagner, Bleidorn, Rentfrow, Potter, and Gosling (2015) maintained that "psychologists *widely agree* on the definition of self-esteem" (p. 527, italics added), which they went on to define as "the overall sense of worthiness and value that people place on themselves" (p. 527). Thus—perhaps a little ironically—there exists a lack of consensus on whether there is a lack of consensus on the definition of self-esteem.

3.2.2 The Present Research

So far, we have surveyed the conclusions reached by other commentators regarding the definition of self-esteem after they themselves have conducted surveys of the relevant theoretical and research literature. In general, they have claimed to discern definitional diversity—despite a few reports to the contrary. In addition, commentators' accounts of that definitional diversity have diverged. Although no doubt thoughtful, we argue that the accounts of the many definitions of self-esteem given by commentators to date are impressionistic opinions—a fact that may account for the lingering inconsistencies between them.

Accordingly, the purpose of the present paper was to clarify the definition of self-esteem in modern personality and social psychology with systematic and detailed *meta-research* (i.e., research *on* research; Ioannidis, Fanelli, Dunne, & Goodman, 2015). Specifically, we extracted and analysed researchers' definitions of self-esteem from a large corpus of recent, relevant, and representative

publications. Our aims were (a) to characterize *in what ways* self-esteem has been defined, and (b) to provide a data-driven estimate of *how many* distinct definitions of self-esteem there have been. Furthermore, given the critical importance of adequate definitions of focal variables for research progress (Gerring, 1999; Machado & Silva, 2007; MacKenzie, 2003; Podsakoff, MacKenzie, & Podsakoff, 2016), we also aimed to compare, contrast, evaluate, and trace the histories of these definitions. Our ultimate objective was to provide a map of, and guide to, the definitional landscape of self-esteem in psychology.

3.2.3 Defining Definition

Before proceeding, it is important to make it clear that we use the term definition in this article as Aristotle did: “a formula in words that tells us what the object of definition is” (Deslauriers, 2007, p. 1). In line with Guttman (1991), we assume that a definition is different from, and should not consist solely of, a hypothesis—an assertion that can be empirically tested (e.g., that self-esteem *is* a key contributor to mental health)—and a supposed definition that does is not a definition but a *hypo-definition*. On a similar note, we draw a distinction between theories, which are “systems of signs and symbols... to catch what we call the ‘world’: to rationalize, explain and master it” (Popper, 1959, p. 59), and definitions, which are the more axiomatic (although not unchangeable) “building blocks” of theories (Gerring, 1999, p. 381). We did not intend here to survey theories of self-esteem: for example, that self-esteem is part of an evolved psychological mechanism that tracks relational value (Leary & Baumeister, 2000), or social status (Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016), or that it provides a buffer against existential terror (Pyszczynski, Greenberg, Solomon, Arndt, and Schimel, 2004). Importantly, we also assume that definitions are conventions (Popper, 1959; Russell, 1948), which means that we do not consider it appropriate to discuss whether a definition is right or wrong *per se*. It follows that it is neither our intention to persuade researchers that there is one “true” definition of self-esteem, so to speak, nor to argue that any particular description is correct or incorrect.

3.3 Method

3.3.1 Search Terms and Eligibility Criteria

We targeted each article published between January 2004 and December 2015 that contained the term “self-esteem” in its title, published in twelve major outlets of social and personality psychology: (a) *Journal of Personality and Social Psychology*, (b) *Personality and Social Psychology Bulletin*, (c) *Self and Identity*, (d) *Journal of Research in Personality*, (e) *Journal of Experimental Social Psychology*, (f) *Personality and Individual Differences*, (g) *Journal of Personality*, (h) *Social and Personality Compass*, (i) *European Journal of Social Psychology*, (j)

European Journal of Personality, (k) *Psychological Science*, and (l) *Social Psychological and Personality Science* (see Appendix A for each journal search interface URL).

Definitions of self-esteem in personality and social psychology do appear in articles other than those containing the exact term self-esteem. We assumed, however, that researchers that published an article in a peer-review journal with the term in its title would be especially interested in its definition. Thus, we judged these articles especially likely to contain a definition of self-esteem. Moreover, we reasoned that systematically targeting peer-reviewed journals, rather than alternative outlets for academic work such as review chapters in edited volumes, would allow us to extract a set of definitions that would be representative of personality and social psychology as a whole.

We targeted the twelve journals listed because they were frequent and influential publishers of research on self-esteem. We targeted articles published between 2004 and 2015 because the project was allied to a project on the measurement of self-esteem (Pegler, Gregg, & Hart, 2018), where the last data on that topic, at the time of the current projects conception, covered a ten year period up to 2003 (see Kwan & Mandisodza, 2007). We did not target unpublished manuscripts.

3.3.2 Definition Extraction

We considered an article to contain a definition if it was clear that it contained a definite assertion that represented a formula in words that told us what self-esteem was. In many cases, this meant that the article contained an explicit statement of what the term self-esteem referred to. Examples of this type of definition include “self-esteem refers to an individual’s subjective evaluation of his or her worth as a person” and “self-esteem is the overall evaluation of the self reflecting how much individuals accept and like themselves”. In addition, we also extracted definitions stated in parenthetical comments. Examples include “self-esteem (i.e., the degree to which people judge themselves as worthy of value, Rosenberg, 1965)” and “self-esteem research has focused on self-esteem level (i.e., relatively enduring favorable or unfavorable attitudes toward the self)”.

Definitions that contained phrases such as “self-esteem is generally defined as...” or “self-esteem is typically viewed as” and then provided a single description of the construct were eligible for extraction. However, descriptions that alluded to a lack of consensus yet did not clearly identify a single definition of the construct (3) were not. An example of the latter is “Researchers disagree on how best to define self-esteem. Considerable contemporary research defines self-esteem as a global, unitary evaluation of the self. However, some researchers depict self-esteem as two dimensional, consisting of feelings of both selfliking and self-competence”.

The first author extracted all definitions. To guard against false positives (i.e. the detection of a definition when not present), all articles initially identified as containing a definition by the first author were re-read by all authors. Two definitions were dropped following this process. To guard against false-negatives (i.e. the failure to detect a definition when present), the first author

inspected a random sample of 25 of articles (10%) initially identified as absent of a definition. None of these articles were judged to contain a definition upon second reading.

3.3.3 Content Analysis

There are many formal methods for the synthesis of quantitatively expressed research findings (e.g., Rosenthal & Di Matteo, 2001; Schmidt & Hunter, 2015). To our knowledge, comparable codes of conduct for the integration and comparison of non-numerical aspects of research (e.g. researchers' verbal definitions of the target of their inquiry) do not yet exist. The study of textual data is, however, commonplace. Consequently, many methods for the analysis of text have been devised. One method, content analysis, allows the researcher to reduce large bodies of textual data to basic categories or dimensions and for the quantitative expression of qualitative information (Smith, 2000). This technique was most suited to our research aims. We followed general guidelines for this type of analysis provided by Smith (2000) and Hsieh and Shannon (2005).

For the analysis of researchers' definitions, the whole definition—for example “one's overall sense of worthiness as a person”—was chosen as the coding unit. Each was copied verbatim from source, anonymised, and read repeatedly. One code was then applied to each.

Initially, we attempted to assign definitions to one of ten categories, according to an “*a priori*” coding scheme derived from prior perspectives on the lack of consensus regarding the definition of self-esteem outlined above. This theory-driven approach has been described as *directed content analysis* (Hsieh & Shannon, 2005). The ten categories were: worth/worthiness, competence, worthiness and competence, self-evaluations, feeling good about oneself, self-liking, pride versus shame, belief in one's ability to cope with threats and challenges, belief in one's ability to achieve goals, and having a positive attitude of oneself.

However, this *a priori* coding scheme had two problems. First, because researchers' previous accounts of definitions of self-esteem were quite brief, it was difficult to derive useful descriptions or examples of the categories in a coding manual. Second, the *a priori* coding scheme proved conceptually insufficient. On the one hand, it contained categories that were not present; on the other hand, it lacked categories that were. To remedy these deficiencies, the coding scheme was modified by the first author. This process was aided by a word frequency analysis performed in the text analysis software package *NVivo 11*. The following categories were dropped from the coding scheme because they did not reflect any of the definitions in the corpus: *competence; pride versus shame; belief in one's ability to cope with threats and challenges; and belief in one's ability to achieve one's goals*. In contrast, the following new categories were added so that some definitions could be reflected: *explicit/implicit; global self-evaluation; meaning and value; mixed; and atypical*. In addition, the main thrust of two featured categories—feeling good about oneself, and holding a positive attitude of oneself—were modified to reflect the typical content of feeling or

attitude-related definitions. The final set of categories are elaborated below (see Appendix B for the coding manual).

3.4 Results

3.4.1 Articles Included and General Characteristics

Our search retrieved 371 articles. We excluded five articles because a specific type of self-esteem was cited in their titles: “collective self-esteem” ($n = 2$), “performance self-esteem” ($n = 1$), “organisation based self-esteem” ($n = 1$), and “academic self-esteem” ($n = 1$). Thus, a total of 366 articles were brought forward for definition extraction. Five types of article were present: meta-analyses (quantitative syntheses of existing research) ($n = 4$); reanalyses of previously published data or replies ($n = 2$); psychometric articles (examinations of the statistical properties of an existing measure of self-esteem, or the introduction of a new one) ($n = 16$); narrative literature reviews (summaries of broad research areas) ($n = 7$); and empirical articles (correlational or experimental research on self-esteem) ($n = 336$). The references for the full set of articles identified by our search appear in Appendix C. This corpus of articles is identical to the one used in recent meta-research on the measurement of self-esteem (Pegler et al., 2018; Chapter 2).

3.4.2 Summary Statistics

Just under one-third of articles ($n = 117$; 32.06%) contained a definition of self-esteem. Figure 1 shows the percentage of articles that contained a definition of self-esteem ranged from 20.00% in 2004 to 42.68% in 2013 and 2015 alike⁵. The vast majority of these definitions ($n = 103$, 88.03%) appeared in the introduction, usually on the manuscript’s first or second page.

A *lexical* analysis of the definitions provides a useful preliminary glimpse into their composition. Researchers’ definitions (see Appendix D, Table D1) comprised 12.10 words on average ($SD = 8.34$, $Mdn = 10$). In total, 238 different keywords were used to define self-esteem (see Appendix D, Table D2). More than half were used only once ($n = 130$, 54.62%), around a fifth were used twice

⁵ There was a small positive Spearman’s rank correlation between journal impact factor and the presence of a definition ($r_s = .14$). Visualisation of this relationship, however, suggested this effect was influenced heavily by a single data point, and the association declined substantially when this outlier was removed from the analysis ($r_s = .07$). Similarly, impact factor had a small positive correlation with the length of definition ($r_s = .09$), but the removal of the outlier data point substantially reduced the association ($r_s = .04$). We surmise that the presence and length of definition was negligibly correlated with impact factor.

($n = 28$, 21.54%), and just less than a third ($n = 71$, 29.83%) were used on three or more occasions. Figure 2 displays the identity and frequency of the words most often (> 5 occasions) used to define the construct ($n = 34$, 14.29%). Those words can be arranged roughly into 10 semantic clusters: *self* (self, individual, individuals, oneself, person, personal, one); *worth* (worth, value, worthiness, esteem); *evaluation* (evaluation, evaluations, evaluative, appraisal); *overall* (overall, global, general); *attitude* (attitude); *valence* (positive, negative, good); *feelings* (feeling, feel, sense); *explicit* (explicit, conscious); *implicit* (implicit, automatic); and, finally, *other* (concept, refers). The same data are illustrated in word cloud in Figure 3.

On just under two-thirds of occasions ($n = 72$, 61.54%), at least one reference was cited in support of a definition (*Range*: 1 to 5). Overall, 53 separate publications were cited (see Appendix D, Table D3, for the full list). By far the most commonly cited was Rosenberg (1965) ($n = 26$, 20.80%), followed by Greenwald and Banaji (1995) ($n = 11$, 8.80%), Leary and Baumeister (2000) ($n = 9$, 7.20%), Blascovich and Tomaka (1991) ($n = 5$, 4.00%), and James (1890) ($n = 4$, 3.20%).

3.4.3 Categories of Definition

Definitions were coded as belonging to 1 of 11 categories of meaning that were expressly designed, for the sake of clarity and simplicity, to be mutually exclusive, despite some degree of conceptual overlap. We labelled them: (1) self-worth/value, (2) self-attitude, (3) explicit/implicit, (4) many self-evaluations, (5) self-feelings, (6) global evaluation, (7) self-acceptance/liking, (8) value and meaning, (9) self-worth and competency/capability, (10) mixed, and (11) atypical. Table 1 displays the ten most frequently used words for each definition and Figure 4 displays their comparative popularity within the corpus. Inter-rater agreement between the first and third authors was good ($\kappa = .90$). The majority of definitions were coded identically ($n = 107$, 91.45%).

3.4.3.1 Definition 1: Self-Worth/Value

On 39 occasions (33.33%), self-esteem was defined in terms of an individual's *own worth or value*. In one version (1a), self-esteem was a global/overall evaluation/appraisal of one's worth. Here, self-esteem was declared to be "an individual's global evaluation of his or her worth as a person", "a person's overall evaluation or appraisal of his or her worth", "an individual's subjective evaluation of his or her worth as a person", a "general evaluation and appraisal of one's worth", or a "global evaluation of one's self-worth". In another version (1b), self-esteem was perceptions, beliefs or considerations of worth. Here, it was declared to be "one's perceived self-worth", "intimate perceptions of self-worth", and "whether a person considers himself adequate, a person of worth—not whether he considers himself superior". Another version (1c) referred to a "sense" or "feelings" of worth. Here, self-esteem was declared to be "one's overall sense of worthiness as a person", "an individual's general sense of his or her value or worth", or "one's global feelings of self-worth".

Further definitions conceptualized self-esteem equivalently in terms of an individual's appraisal/evaluation of his or her *value*—essentially a synonym for worth (1d). Here, self-esteem was declared to be “a person’s appraisal of his or her value”, “a person’s appraisal or evaluation of his or her value”, or as something that “reflects the value that one places on the self”. Highlighting the semantic similarity, self-esteem was also occasionally defined in terms of evaluations of worth or value (1e), as in “self-esteem refers to an individual’s general sense of his or her value or worth” or “self-esteem can be defined as the overall evaluation of one’s worth or value as a person”. On three occasions (7.69%), this global worth or value concept was referred to more specifically as *global self-esteem*. The three most commonly cited publications to support this definition were Rosenberg (1965), Leary and Baumeister (2000), and Makikangas and Kinnunen (2003).

3.4.3.2 Definition 2: Self-Attitude

On 12 occasions (10.26%), self-esteem was defined in terms of *an attitude toward the self*. It was declared to be “a positive or negative attitude towards oneself”, “a person’s positive or negative attitude toward himself or herself”, “a favorable (or unfavorable) attitude toward oneself”, “an attitude of summary evaluation of the self”, or a “relatively enduring favourable or unfavourable attitudes toward the self”. More minimally, self-esteem was defined as “an attitude toward the self”. Similar definitions substituted the term “orientation” for “attitude”. For example, self-esteem was defined as “a positive or negative orientation toward oneself”, or a “general positive or negative orientation toward the self”. On one occasion, the construct defined was referred to more specifically as *global self-esteem*. The three publications most commonly cited in support of this definition were Rosenberg (1965), Sedikides and Gregg (2003), and Baumeister, Campbell, Krueger, and Vohs (2003).

3.4.3.3 Definition 3: Explicit/Implicit

On 13 occasions (11.11%) self-esteem was defined in terms of having *both an explicit and an implicit aspect*. Self-esteem was declared to have a dual nature: “[...] whereas explicit self-esteem (ESE) refers to a conscious self-evaluation, implicit self-esteem (ISE) refers to automatic, over-learned, and non-conscious self-evaluations”. Similarly: “explicit self-esteem is defined as consciously held attitudes toward the self, and implicit self-esteem reflects automatic associations between self-concept and positivity or negativity that are formed through experiential learning”. Or again: “implicit SE, reflecting a more automatic and reflexive appraisal that may not be voluntarily accessible... explicit SE, reflecting an individual’s conscious, deliberative, and assessable view of self”. The three most commonly cited publications to support this definition were Greenwald and Banaji (1995), Rosenberg (1965), and Kernis (2003).

3.4.3.4 Definition 4: Many Self-Evaluations

On 7 occasions (5.98%), self-esteem was defined in terms of a *multiplicity of self-evaluations, views, or perceptions*. It was defined as “the extent to which one holds favourable views of oneself” or “an individual’s perceptions and evaluations of himself or herself”. Alternatively, it was defined as “how individuals perceive themselves and their personal attributes, such as competence and talent” or “one’s conscious or explicit evaluations of oneself”. The use of plural terms (e.g., views, thoughts, and perceptions) straightforwardly distinguishes these definitions. Notably, however, none of these definitions were accompanied by citations.

3.4.3.5 Definition 5: Self-Feelings

On 7 occasions (5.98%), self-esteem was defined in terms of *feeling or affect*, but *not* in terms of feelings of self-worth (as was the case with several of the self-worth/value definitions outlined above). It was defined as “how one feels about oneself”, “a personality dimension that captures how good we feel about ourselves”, or a “one-dimensional construct, in which feeling good and feeling bad about the self occupy opposite ends of a single continuum”. Relatedly, self-esteem was defined as “an individual’s emotional relation toward the self”, “the way that people feel about themselves”, and “self-related affect”. On one occasion, the construct defined was referred to more specifically as *global self-esteem*. The only publication cited to support this reference was James (1890).

3.4.3.6 Definition 6: Global Evaluation

Again on 7 occasions (5.98%), self-esteem was defined in terms of the *global, overall, or general evaluation of self*. Self-esteem was defined as “an individual’s overall evaluation of the self”, “the general evaluation of the self”, the tendency “to judge oneself as a whole: this global self-evaluation is commonly referred to as self-esteem”, or the “global component of self-concept”. Importantly, these definitions did not contain the term “worth” nor “value”, thereby distinguishing them from Definition 1. On one occasion, the construct defined was referred to more specifically as *global self-esteem*. The three publications most commonly cited to support this definition were Tesser (2001), Shavelson, Hubner, and Stanton (1976), and Leary and MacDonald (2003).

3.4.3.7 Definition 7: Self-Worth and Competence

On 2 occasions (1.71%), self-esteem was defined in terms of self-worth *and* competence. Self-esteem was “people’s evaluations of self-worth and competence”, it was a “positive or negative evaluation toward the self that indicates the degree to which one experiences oneself as worthy and capable”.

3.4.3.8 Definition 8: Self-Value and Meaningfulness

On 3 occasions (2.56%), self-esteem was defined in terms of *value and perceptions of meaningfulness*. Self-esteem was defined as “the belief that one is a valuable member of a meaningful cultural worldview”, the “perception of oneself as a valued, significant member of a meaningful cultural reality”, or “a sense of personal significance and value”.

3.4.3.9 Definition 9: Self-Acceptance/Liking

On 3 occasions (2.56%), self-esteem was defined in terms of *acceptance of, or liking for, oneself*. Self-esteem was defined as “the overall evaluation of the self...reflecting how much individuals accept and like themselves”, or “the aspect of self-knowledge that reflects how much individuals like themselves”.

3.4.3.10 Definition 10: Mixed

On 9 occasions (7.69%), definitions could be characterized as *mixtures* of those definitions already described. Definitions of this type typically contained the conjunctions “and” or “or”. For example, self-esteem was defined as (italics added) “the extent to which an individual likes *or* values the self” (self-acceptance/liking + self-worth/value); “a person’s overall evaluation *or* appraisal of his or her worth” (global self-evaluation + self-worth/value); the “global evaluation *and* appraisal of *or* attitude toward the self” (global self-evaluation + self-attitude); or “one’s attitude *or* global affective orientation towards oneself” (self-attitude + self-feelings). On two occasions, the construct defined was referred to more specifically as *global self-esteem*.

3.4.3.11 Definition 11: Atypical

Fourteen definitions (11.96%) did not easily conform to any of the categories of definition outlined above. Although they often contained the same or similar words as other definitions did, they were problematically obscure. For example, self-esteem was defined as “a top-down tendency toward positive or negative affect in appraisal, experience, and behaviour”—a very broad and complex definition that omits the self. Alternatively, it was defined as “an evaluative component of the self”—a rather minimal and vague definition in which no object of evaluation is specified. Other examples included: “the perception of positive internal attributes”, a “positive/negative concept of self”, and “the global evaluation of the own self and the association of the own person with positive or negative attributes”.

3.5 Discussion

3.5.1 Summary of Findings

Our first aim was to clarify the definition of self-esteem in modern personality and social psychology. We sought to determine how, and in how many ways, researchers in the two fields had defined self-esteem. To do so, we analysed the content of 117 definitions of self-esteem, extracted from 366 articles, published across 12 prominent journals, over a period spanning 12 years.

We found that the definitional landscape was diverse. Syntactically, researchers used more than two 200 different words in their definitions, despite definitions being typically succinct (i.e., about a dozen words). Referentially, researchers cited no fewer than 50 publications in support of their definitions. Semantically, we identified at least nine distinct categories of definition (plus 2 overflow categories: mixed and atypical definitions). In the corpus we studied—reasonably representative of high-quality academic research—we can confidently assert the following: self-esteem researchers were *not* “all on the same page”, conceptually speaking.

Nonetheless, the major types of definition were not equally common (Figure 4). Leaving aside the mixed and atypical categories, most researchers opted for the self-worth/value definition: it accounted for about 33% of definitions in the corpus. The self-attitude, explicit/implicit, and many self-evaluations definitions were the “runners-up”: each accounted for around 10% of instances. Next came the self-feelings, global self-evaluation, and many self-evaluations definitions, each accounting for around 6% of definitions. Finally, the least popular definitions were self-worth and competence, self-value and meaningfulness, and self-acceptance/liking, each accounting for only 3% of instances. Hence, the definitional diversity we observed was at least partly mitigated by a definite pattern of collective preference. If determining the definition of self-esteem were to be an electoral matter, then self-worth/value would win, albeit not by a majority, but a plurality, of votes.

How do our empirical findings compare with previous impressionistic accounts of how self-esteem has been defined? Our findings strongly support the general claim that self-esteem has been defined in many different ways—indeed, in even more than the three (Brown & Marshall, 2006; Mruk, 2006) or seven (Leary, 2006) previously suggested. However, our findings contradict the details of previous accounts. Contrary to Leary’s (2006) claims, we found no evidence that self-esteem was defined in recent personality and social psychology as (a) the experience of the self-conscious emotion of pride, (b) the belief that one has the ability to achieve one’s goals, or (c) feeling able to cope with threats and challenges. Furthermore, we found no evidence for the contention—made by both Brown et al. (2001) and Leary (2006)—that the majority of researchers define self-esteem as a general good or bad feeling about oneself. In fact, only a minority (6%) endorsed the self-feelings definition. Finally, against Mruk (2006), we found no evidence of self-esteem ever being defined, in isolation, in terms of self-competence (although we did find it was very occasionally [in 3% of

cases] defined in terms of worth *and* competence). Accordingly, our meta-research supports prior claims of definitional diversity, but contradicts many claims about the character of that diversity.

In addition, the definitions of self-esteem that we empirically extracted are difficult to collectively reconcile with an entry in the most recent version of *American Psychological Association Dictionary of Psychology* (APA, n.d.)—a reference work that might be regarded as authoritative. There, self-esteem is defined broadly, and at some length, as follows:

“the degree to which the qualities and characteristics contained in one’s self-concept are perceived to be positive. It reflects a person’s physical self-image, view of his or her accomplishments and capabilities, and values and perceived success in living up to them, as well as ways in which others view and respond to that person. The more positive the cumulative perception of these qualities and characteristics, the higher one’s self-esteem”

Note that no mention is made in this definition of any attitude towards the self, nor of any feelings about the self; nor is any distinction drawn between implicit and explicit domains. Nor is there any direct reference made to self-worth or value (notwithstanding an oblique reference to living up to important values). Arguably, the APA’s definition, which highlights an array of self-evaluative domains, most closely resembles the many self-evaluations definition; but this characterisation is, as we have seen, comparatively rare in personality and social psychology. Furthermore, APA’s definition lists, before any other attribute, having a positive body image as relevant to self-esteem—something completely absent from the definitions extracted here.

Finally, it is important to note that the definitions we extracted came from only a minority of articles in the corpus. Less than one-third (32%) contained *any* definition. This is despite APA guidelines that state that the “method section describes in detail how the study was conducted, including conceptual and operational definitions of the variables used in the study” (APA, 2010, p. 29). These observations are, nonetheless, in line with the previous complaints about the shortage of definitions of self-esteem in the psychological literature (Leary, 2006; Wells & Marwell, 1976).

3.5.2 A Critical and Historical Analysis of Self-Esteem Definitions

Having mapped the definitional landscape of self-esteem, we now pursue our second aim: to trace the history of and critically evaluate each definition. We examine the six most popular definitions in turn, drawing on criteria for evaluating definitions of constructs in the social and behavioural sciences: both the criteria outlined by Gerring (1999)—familiarity, resonance, parsimony, coherence, differentiation, depth, theoretical utility—and Podsakoff, MacKenzie, and Podsakoff (2016)—representativeness, completeness (describes property, entity, theme, dimensionality, stability), differentiation, and clarity. To help trace the history of these definitions, we extracted additional definitions from research articles, book chapters on self-esteem, dictionaries and textbooks published over the last 125 years (see Appendix E).

3.5.2.1 Self-Worth/Value

The popularity of the self-worth/value definition of self-esteem may ultimately derive from the history of the term “esteem” itself. Consider the entry in the antique *Royal English Dictionary* (Fenning, 1763): “To ESTEEM, V. A [estimer (Fr.) aestimo (Lat.)] to set a value on a thing; to compare, or fix the value of a thing by comparison; to prize; to value; to regard as an object of worth and reverence; to regard; to respect or account” (no page number). Moreover, the contemporary *Oxford Dictionary of English* traces the origin of the term “esteem” to its use as a “noun in the sense of ‘worth, reputation’ in Middle English” (Esteem, 2005). Thus, the self-worth/value definition of self-esteem flows quite naturally from the historical meaning of “esteem”, and one can see how hyphenation might naturally have evolved. “Self-esteem” is the esteem (value/worth) one invests in oneself; or, equivalently, to have self-esteem is to value (esteem) one’s self.

The self-worth/value definition has at least three advantages. First, it accords with traditional usage, ensuring a high degree of familiarity. Second, its exemplars were on average only 10 words in length, and so it is pleasingly succinct. Third, it is descriptively complete, in the sense that its exemplars typically describe the *property* of self-esteem (i.e., whatever that is stated to be, most often an evaluation) and the *entity* to which the property applies (i.e., the person).

The self-worth/value definition has a long if convoluted history in psychology and sociology. It appears to have been popularised by Morris Rosenberg, who stated in *Society and the Adolescent Self-Image* that “high self-esteem, as reflected in our scale items, expresses the feeling that one is ‘good enough’. The individual simply feels that *he is a person of worth...*” (1965, p. 20, italics added). Nonetheless, numerous references to worth and value can be found in texts published earlier than this (see Brownfain, 1952 in Wells & Marwell, 1976; Coopersmith, 1964, p. 221; Hovland & Janis, 1959, p. 230; Rosenberg, 1963, p. 35; Shibusaki, 1961, p. 235-236 & 434). Unlike modern definitions of this kind, however, none of these older definitions refer either to an “overall”, “general”, or “global” worth or value, or to an “evaluation” of worth or value. The definition, then, has evidently evolved since this point.

Some commentators claim that the term “self-esteem” has a modern origin (e.g. Hewitt, 1998). However, it has in fact been in use in English since the mid-17th century. In a key passage in Volume VII of John Milton’s *Paradise Lost*, the angel Raphael urges Adam—who is praising Eve rather than appreciating his own merit—to take a more balanced view. He advises Adam that, although Eve is “worthy well” of his “cherishing [...] honouring and [...] love”, this should extend “Not to [his, i.e., Adam’s] subjection: weigh with her [i.e., Eve] thyself; Then value; Oft times nothing profits more than *self-esteem*, grounded on just and right.” (Milton, 1667/2000, p. 182, italics added). If this interpretation is correct, then many modern personality and social psychologists use the term self-esteem in a similar way to English writers during the Stuart

Restoration period. Adam is apparently being exhorted to “[...] see [himself] as a person of worth, at least on an equal plane to others [i.e., Eve]”—the first item on Rosenberg’s (1965) self-esteem scale.

3.5.2.2 Self-Attitude

Exemplars of the self-attitude definition were the briefest, comprising an average of 7 words. The self-attitude definition shares the advantage of specifying both the property (i.e., the attitude) and the entity (i.e., the person). It additionally has substantial theoretical utility. The attitude approach to self-esteem has enabled researchers to draw on wider attitude theory (DeMarree & Rios, 2014; Rosenberg, 1965). For example, Greenwald and Banaji (1995) made use of theory and research on attitudes in general—specifically, the concept of an implicit attitude—when they proposed that self-esteem, as a *self*-attitude, might operate implicitly. Another example, DeMarree et al., (2010) drew on wider psychological research on the accessibility of attitudes when they explored the accessibility of self-esteem.

The main drawback with the self-attitude definition, however, is that—although it may not be obvious at first—the term “attitude” is *itself* definitionally diverse (Gawronski, 2007; Wells & Marwell, 1976). To illustrate this point, consider first Eagly and Chaiken’s (2007) well-known “umbrella” definition of attitude:

“an individual’s propensity to evaluate a particular entity with some degree of favorability or unfavourability. Evaluation refers to all classes of evaluative responding, whether overt or covert, cognitive, affective, or behavioural. Evaluation thus encompasses the evaluative aspect of beliefs and thoughts, feelings and emotion and intention and overt behaviour. None of these reactions need be consciously experienced by the holder of an attitude, although they may be conscious” (p. 583)

Consider also, by way of comparison, Fazio’s (2007) definition of attitude(s):

“[...] attitudes are [...] summary evaluations. However, this should not imply that attitudes are necessarily cold, belief-based judgments of favorability. The term “evaluation” is used broadly to include not only analytic assessments but also “hot” affective reactions. Like Zanna and Rempel’s (1988) formulation, the model views these evaluative summaries as potentially stemming from beliefs, affect, and/or behavioral information.” (p. 4)

On the other hand, adding to the variation, Gawronski and Bodenhausen (2007) use the term attitude as a “general term for the conglomerate of processes and mechanisms underlying evaluative responses” (p. 710). The point is, if the particular conceptualisation of attitude is itself not specified, then self-attitude definitions suffer from imprecision and ambiguity. Otherwise put,

the lack of consensus on the definition of attitude is imported in to the researcher's definition of self-esteem.

At least the history of the self-attitude definition can be plausibly identified. It most likely originates (again) in Rosenberg's (1965) *Society and the Adolescent Self-Image*, where it is stated that "people have attitudes toward objects, and that the self is one of the objects toward which one has attitudes" (p. 18). Rosenberg also retained this definition in some later writings: "we may ask whether our self-attitudes are generally positive or negative, that is, whether we have high or low self-esteem" (Rosenberg, 1979, p. 23). The emergence of an attitude approach to self-esteem in Rosenberg's writings during this period seems sensible given the attitude's purported status as the dominant social psychology concept during the 1950s and 1960s (McGuire, 1986).

3.5.2.3 Explicit/Implicit

The explicit/implicit definition of self-esteem again satisfactorily identifies both a property (i.e., evaluation/s) and an entity (i.e., the person). Additionally, it specifies that self-esteem is multi-dimensional (i.e., comes in conscious and unconscious forms). For that reason, perhaps, it is the least compact of all definitions. It also exhibits two other distinctive features. First, and unsurprisingly, self-esteem was only defined in this way when indirect measures of self-esteem were employed alongside more conventional self-report measures (i.e., the self-esteem *Implicit Association Test* or the *Name-Letter Preference Task*; Greenwald & Farnham, 2000; Hoorens, 2014). Secondly, and more curiously perhaps, exemplars of the definition more often refer to self-evaluations or associations in the *plural* (8 out of 12 cases) than to self-evaluation in the singular (4 out of 12 cases). In this regard, it is similar to the many self-evaluations category below (which lacked any implicit component).

Spalding and Hardin (1999) asserted that "the primary distinction between explicit and implicit self-esteem concerns whether self-evaluations are accessible to conscious awareness" (p. 535). If so, then the explicit/implicit and self-attitude definitions of self-esteem are arguably consonant with one another—so long as one allows, as most researchers do, that attitudes too make take either conscious or unconscious form (as in Eagly & Chaiken, 2007 and Fazio, 2007, above). On this view, then, explicit self-esteem is a self-attitude (or a set of self-attitudes) of which one is consciously aware, and implicit self-esteem a self-attitude (or a set of self-attitudes) of which one is not.

The explicit/implicit definition has considerable theoretical and empirical utility. In particular, it has arisen in tandem with theories about how self-esteem might take an unconscious or automatic form (Epstein & Morling, 1995; Greenwald & Banaji, 1995; Koole & Pelham, 2003), and facilitated the development and refinement of indirect measures designed to capture implicit self-esteem (Greenwald & Farnham, 2000; Hoorens, 2014; but see Bosson, Swann, & Pennebaker, 2000; Falk & Heine, 2015).

It is worth noting that definitions of implicit self-esteem observed here depart quite considerably from the original, and reductive (Tafarodi & Ho, 2006), definition of implicit self-esteem offered by Greenwald and Banaji (1995) and reiterated five years later by Greenwald and Farnham (2000): “implicit self-esteem is the introspectively unidentified (or inaccurately identified) *effect* of the self-attitude on evaluation of self-associated and self-dissociated objects” (p. 11, emphasis added). A likely origin text for the explicit/implicit definition observed here is Spalding and Hardin (1999), where the following contrast is drawn: “the primary distinction between explicit and implicit self-esteem concerns whether self-evaluations are accessible to conscious awareness” (p. 535). It is important to note here, however, that general references to an unconscious kind of self-esteem appear in the self-esteem literature at least as early as Coopersmith (1967).

3.5.2.4 Many Self-Evaluations

The many self-evaluations definition again appropriately specifies both a property (i.e., multiple evaluations or perceptions) and an entity (i.e., the person). It also resembles a definition that Brown and Marshall (2006) claimed was commonplace among researchers: “the way people evaluate their various abilities and attributes” (p. 5). Moreover, as pointed out above, it also corresponds most closely to the definition of self-esteem supplied by *APA Dictionary of Psychology* (APA, n.d.).

However, one drawback is that the self-evaluations referred to are rarely expanded upon. This is even more surprising given that there exist bespoke instruments designed to assess self-esteem multi-dimensionally. One is Messer and Harter’s (2012) Self-Perception Profile for Adults, which assesses people’s specific evaluations of their intelligence, sociability, morality, nurturance, athletic ability, job competence, physical appearance, intimate relationships, sense of humor, adequacy as a provider, and household management skills. Another is Heatherton and Polivy’s (1991) State Self-Esteem Scale, which features items pertaining to one’s academic performance, social competence, and physical appearance. Yet none of these dimensions were ever mentioned in researchers’ definitions.

A further oddity is that the researcher who invoked the many self-evaluations definition never provided any relevant citations. This suggests that its justification may be more informal—perhaps part of the background “lore” of the field (Abelson, 1995, p. 106)—rather than strictly scholarly. This makes its historical roots harder to unearth and, regrettably, we can offer little information on its origins in psychological research.

3.5.2.5 Self-Feelings

The self-feelings definition resembles William James’ description of self-esteem in terms of “self-feeling” and “affection” (James, 1890/1950, p. 306) and is likely the oldest definition of self-esteem in academic psychology. The Oxford English Dictionary states that “feeling” is defined in a number of ways, but principally as “an emotional state or reaction” (*'Feeling'*, 2005), and this is

how William James seems to have used the term, categorising self-esteem under “the emotions of self” (James, 1890/2007, p. 305). If the term “self-esteem” is being used in this way by contemporary researchers, then self-feeling definitions of self-esteem state that self-esteem is a fundamentally emotional construct. If defined in this way, self-esteem is, as Wells and Marwell (1976) put it, “what it feels like” (p. 67).

The self-feelings definition can also be found, or is implied, in a number of influential texts since James’ pioneering work. For example, Bachman (1970) presented self-esteem data on a sample U.S. adolescents in a chapter entitled *Self-Esteem and Other Affective States*. In addition, the original publication of the influential sociometer theory of self-esteem (Leary, Tambor, Terdal, & Downs, 1995) contained the running head *Self-Esteem Feelings*, and defensibly so, given that, unless perceptions of social exclusion or relational devaluation *felt* bad, it would be difficult to explain why they would carry any motivational force (Leary & Baumeister, 2000, p. 15-16). Finally, the continuing significance of the self-feelings definition can be seen in the fact that it underlies a newly introduced measure of self-esteem. Harris, Donnellan, and Trzesniewski (2018) reported the provisional validation of a Lifespan Self-Esteem Scale, suited to administration with children as well as adults. All four of its items employ variants of the word “feel” (e.g., “When you think about yourself, how do you feel?”). Complementing this, all five of its response options refer to states of feeling (*very sad, sad, neutral, happy, very happy*), reinforced by accompanying emoji-like faces whose expressions correspondingly transition from tearful sulks to beaming smiles. Although the measure’s justification may have been pragmatic, it entails a conceptual commitment too.

Self-feelings definitions specify a property (i.e., feeling) and entity (i.e., the individual), are concise, and, as already stated, have a long history. Scheff and Fearon, (2004) have argued that a potential problem with this definition, however, is that precisely *which* feelings constitute self-esteem are not specified. This is perhaps problematic given that emotional experiences of humans have long been theorised to be very diverse. Indeed, Tracy and Robins (2007) have argued that, due to a lack of integration between self and emotion sub-disciplines of psychology, it is common for self researchers to fail to specify which emotions constitute or accompany self phenomena. Moreover, they have claimed that shame and pride are the affective experiences most closely tied to self-evaluations.

There is a further terminological complication in respect of the self-feelings definition. As a verb, the word “feel”—which features in many exemplars as a term or a root—does not only mean to experience an emotion subjectively, but also to appraise or to render a judgment. In this regard, it serves as a synonym for “think”, “believe” or “construe”. The *APA Publication Manual* (6th Edition) warns, however, that “in informal style [...] ‘feel’ broadly substitutes for ‘think’ or ‘believe’, but in scientific style such latitude is not acceptable” (APA, 2010, p. 68, single quotes added). Still, it is hard to determine whether the term “feel” in the exemplars we extracted was

meant to convey affectivity, or appraisal—or both. Thus, as with most definitions of self-esteem, what is meant often remains ambiguous in some way.

3.5.2.6 Global Self-Evaluation

Baumeister, Smart, and Boden (1996, p. 5) provided one notable account of the global self-evaluation definition (which again specifies both a property [i.e., global self-evaluation] and an entity [i.e., the person]). Seeking a definition that was “broad and inclusive” as opposed to “narrow and precise”, Baumeister and colleagues stated that: “by self-esteem we mean simply a favourable global evaluation of oneself”. They further clarified that “any assumption or belief that one is a superior being, or any broadly favorable assessment of self-esteem (especially in comparison with other people), is relevant” (p. 9). Note that this account violates one of Rosenberg’s (1965) definitions: “When we deal with self-esteem, we are asking whether the individual considers himself *adequate—a person of worth—not* whether he considers himself *superior to others*” (p. 62, italics added).

Global/overall definitions were parsimonious and specified both a property (self-evaluation) and entity (individual). A striking feature of this definition of self-esteem, however, is that it stands squarely at odds with the many self-evaluations definition. If the evaluation (or whatever appraisal-related or affective-implying term one prefers) pertains to the self as a whole, then it cannot pertain to parts of the self, and vice versa. Logically, then, the two types of definitions mutually exclude one another.

Unfortunately, we have been unable to trace the history of this definition confidently. We do know, however, that descriptions of self-esteem that include the term “global” appear in a number of well-cited texts. For example, Harter (1993) defined self-esteem as “the level of global regard that one has for the self as a person” (p. 88), Baumeister, Krueger, Campbell and Vohs (2003) stated that “high self-esteem refers to a highly favorable global evaluation of the self” (p. 2), and Marsh and Craven (2006) described self-esteem as “the global component of self-concept” (p. 134). The earliest example of this definition of self-esteem we have observed, and candidate origin text at this point, is “self-esteem means a global evaluation of the self”, which appeared in Baumeister & Tice (1985, p. 450). The global/overall definition appears therefore to be a relatively recent arrival on the definitional scene and is at least twenty years younger than the more popular self-worth/value and self-attitude definitions.

3.5.2.7 Other Definitions

The self-worth and competence definition can be considered as an extended version of the self-worth/value definition. As Mruk (2013) points out, it likely stems from Branden’s definition of self-esteem as “the conviction that one is competent to live and worthy of living” (Branden, 1969, p. 110). The value and meaningfulness definition, which can also be viewed as an extended version

of the self-worth/value definition, appears to originate in writings on terror management theory. Consider the following excerpt from Greenberg, Pyszczynski, and Solomon (1986): "Self-esteem is an anxiety-buffering sense of personal value... that consists of two components: first, faith in a particular cultural drama that portrays life as meaningful, important, and enduring; and second, belief that one plays a significant part in that drama" (p. 198). Brown, Dutton, and Cook (2001, p. 616) recently described this kind of definition of self-esteem as "exotic" and our finding that a mere 3% of definitions were accounted for by this category of definition supports this claim. The self-acceptance/liking definition, like a number of the major definitions, likely takes its cue from Rosenberg (1965): "self-esteem... implies self-acceptance" (p. 31), but references to acceptance in the definition of self-esteem appear as early as Brownfain (1952, p. 598). Note also that Tafarodi and colleagues (Tafarodi & Milne, 2002; Tafarodi & Swann, 1995; Tafarodi & Swann, 2001) have defined self-esteem in terms of self-liking, in combination with self-competence, but that specific two-dimensional conceptualisation of self-esteem did not appear in the articles included here.

3.5.3 Summary of Definitions of Self-Esteem

3.5.3.1 Critical Analysis

As we document above, all definitions can be characterized as having a mix of advantages and drawbacks. Although readers, like theorists and researchers before them, will have their own preferences, we find it difficult to declare any definition clearly superior—even if the self-worth/value has proven to be the most popular. We confine ourselves to a few relevant summary observations.

First, some definitions of self-esteem, one way or another, arguably gloss over relevant details. For example: Which feelings matter in the self-feelings definition? And: which domains of evaluation matter in the many self-evaluations definition? Surely not all. Hence, these definitions here are arguably too open, and could be more precisely stipulated.

Second, the crucial elements of the definitions are themselves often definitionally problematic, which means that definitions of self-esteem inherit their difficulties. For example: What exactly does attitude mean in the self-attitude mean? What does implicit mean in the explicit/implicit definition? Admittedly, it is probably too much to expect that any definition define all of its key terms; but there is no getting away from the fact that their obscurity nonetheless imperils the clarity of any definition.

3.5.3.2 Historical Analysis

Many definitions of self-esteem appear to stem from or are allied to specific texts or theoretical accounts of self-esteem (see Table 3). Pulling the historical information together, five definitions

first found use in psychology in the 1960s or earlier, two emerged in the 1980s, and one first appeared in psychology around the turn of the millennium. In addition, the self-feelings definition can perhaps be traced to William James' influential *The Principles of Psychology* (1890/1950) and is almost certainly the oldest kind of definition of self-esteem in psychology.

The self-attitude, self-worth, and self-acceptance/liking definitions of self-esteem can be traced back at least as early as Rosenberg's *Society and the Adolescent Self-Image* (Rosenberg, 1965). Self-worth/value definitions, however, do predate this text and, in fact, this description of the construct might be close to the original 17th century meaning of the term. The worth and competence definition can be traced to psychotherapist Nathaniel Branden's *The Psychology of Self-Esteem* (Branden, 1969). Two definitions, to our knowledge, first appeared in the 1980s: the value and meaning definition in terror management theory (Greenberg, Pyszczynski, & Solomon, 1986) and the global/overall evaluation definition (Baumeister & Tice, 1985). The explicit/implicit definition first appears in the literature much later than the other definitions, apparently emerging around the turn of 21st century (Bosson, Swann, & Pennebaker, 2000; Spalding & Hardin, 1999). This definition is different from Greenwald and Banaji's (1995) more reductive definition of implicit self-esteem (Tafarodi & Ho, 2006). Unfortunately, the history of the many self-evaluations definition has been harder to trace.

3.5.4 Why Are There Many Definitions of Self-Esteem?

Our meta-scientific enterprise of classifying and counting researchers' definitions of self-esteem in personality and social psychology yielded one undeniable conclusion: there are many definitions of self-esteem. Providing a comprehensive and definitive explanation for why this is the case is a tall order. Many factors are liable to have contributed to the current state of affairs. We share some speculative ideas below.

First, theory and research on self-esteem have a very long history in psychology. Modern researchers have 125 years of varied definitions draw on (see Appendix E). All else equal, this would increase the probability of contrasting definitions being adopted by different researchers.

Second, classic texts contain definitions that are themselves diverse, loose, and inconsistent. A case in point is the seminal *Society and the Adolescent Self-Image* (Rosenberg, 1965). Rosenberg started out systematically enough. He took as his "point of departure the view that people have attitudes toward objects, and that the self is one of the objects toward which one has attitudes" (Rosenberg, 1965, p. 5). Rosenberg then outlines a definition of self-esteem that will guide his inquiry in a chapter entitled *Definition and Measurement*: "self-esteem, as noted, is a positive or negative attitude toward a particular object, namely, the self". Moreover, this definition is reiterated when the self-esteem scale based on this definition is unveiled: "while the reader may question one or

another item”, Rosenberg states, “there is little doubt that the items generally deal with a favourable or unfavourable attitude toward the self” (p. 18).

Next, however, Rosenberg proceeded to depart his austere definition to embrace a considerably richer one. He continues: “high self-esteem, as reflected in our scale items, expresses the feeling that one is ‘good enough’. The individual simply feels that he is a person of worth; he respects himself for what he is, but he does not stand in awe of himself nor does he expect others to stand in awe of him. He does not necessarily consider himself superior to others” (p. 30). In contrast, “low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, self-contempt. The individual lacks respect for the self he observes” (p. 31). As a result, clarity disappears. As broad, vivid, and heuristic as Rosenberg’s account of the people with varied self-esteem might be, gone is any systematic definition of self-esteem. More loaded concepts such as “respect” are appealed to; elements of social comparison are specified (relative superiority versus parity); and self-conscious emotions make an appearance (self-contempt versus self-awe). Does this new array of factors constitute self-esteem? And if it does, does it do so alongside, or instead of, attitudinal favorability towards the self? Or are such factors merely antecedents, consequences, or concomitants of self-esteem, that—when translated into scale items—serve as proxy indicators for attitudinal favorability towards the self? The relevant passages leave such questions unanswered.

Because of this equivocation, different researchers have been able to cite Rosenberg to make an array of confident but perhaps oversimplified claims. These include that “throughout his career, Rosenberg argued for a *simple, unitary conception of self-esteem* as ‘the feeling that one is good enough’ (Rosenberg, 1965, p. 31)” (Tafarodi & Swann, 2001, p. 656, italics added), or that “Rosenberg took an *integrated approach to self-esteem, including both affective and cognitive-evaluative aspects of the self* in his conceptualization of self-esteem” (Kwan, Huang, & Hui, 2009, italics added), or that “As Rosenberg (1965) explained, ‘... with self-esteem we are asking whether the individual *considers himself adequate—a person of worth*—not whether he considers himself superior to others” (Tracy, Cheng, Robins, & Trzesniewski, 2009, italics added). Alternatively, they have been able to claim that “self-esteem is defined as *one’s attitude or global affective orientation towards oneself* (Rosenberg, 1965)” (Richter & Ridout, 2011, italics added), or that self-esteem is “the degree to which people *judge themselves worthy of value*” (Zuffiano et al. 2014, italics added), or that “self-esteem refers to a person’s *overall evaluation of their self-worth* (Rosenberg, 1965)” (Shim, Wang, & Cassudy, 2013, italics added), or that, “self-esteem is an *attitude toward oneself* (Rosenberg, 1965)” (Bernstein, Claypool, Young, Tuscherer, Sacco, Brown, 2013, p. 1294). This room for semantic manoeuvre provided by Rosenberg and others has been, we expect, a nontrivial source of the lack of consensus regarding the definition of self-esteem that we observe today.

Third, self-esteem researchers on the ground (as opposed to meta-researchers taking a bird’s eye view of the self-esteem literature) are likely as susceptible as their study participants to the *false*

consensus effect, which is “the tendency of people to overestimate the commonness of their own responses, attitudes, behaviours, and habits within the general population” (Dunning, 2012, p. 483). They may be inclined to adhere to an “illusion of a universally accepted, well-defined phenomenological entity” (Blascovich & Tomaka, 1991, p. 116) when it comes to research on self-esteem. As a result, it may not have seemed imperative to undertake a comprehensive meta-scientific survey like the present one. In general, any systemic problem like definitional diversity, if it lies beyond the immediate view of individual researchers, may naturally go undetected or underappreciated. For our own part, we were surprised by the extent of the definitional diversity that we documented, and in fact we were only alerted to its possibility accidentally, when undertaking a review of many papers on self-esteem for other purposes.

Another key result of our investigation was that over two-thirds of articles lacked a definition of self-esteem altogether. We can think of three reasons why researchers might not define their target of enquiry. First, they might think that it is not necessary to do so because everything is already in order. This would be consistent with our hypothesis concerning the false consensus effect described above: researchers, lacking the big picture, presume that the definition of self-esteem is adequately settled. Second, as working scientists rather than philosophers, researchers are pragmatically oriented, and prioritize empirical investigation over conceptual analysis, even when the latter carries implications for the former. This is especially true of psychological researchers (Machado, Lourenco, & Silva, 2000). Simply put, they just want to get on with the job. Third, it is possible that some psychologists remain influenced by the antiquated positivistic doctrine of *operationalism* (Bickhard, 2001)—a philosophical position on meaning in science that can be traced to Bridgman, holding the “meaning of a theoretical term is synonymous with the operations by which it is measured” (Borsboom, 2005, p. 41). If so, then measurements of self-esteem would dictate or even constitute definitions of self-esteem, and the verbal definition of self-esteem would be surplus to requirements.

3.5.5 Comparing the Definition of Self-Esteem to Definitions of Other Constructs

A question that naturally follows the findings of the present study is this: How does the definition of self-esteem—being notably diverse—compare to the definition of other psychological variables? Stated differently: Is the lack of consensus unique to self-esteem or is the problem more widespread? To the best of our knowledge, no other meta-scientific surveys of definitions, of the exact type undertaken here, have yet been undertaken elsewhere in psychology. However, many commentators have claimed that similar problems exist in other areas. A lack of consensus on the definition of focal phenomenon is purportedly a feature of research on working memory (Cowan, 2016), emotion regulation (Thompson, 1994), attitudes (Gawronski, 2007), attention (Anderson, 2011), emotion (Russell, 1991), love (Fehr & Russell, 1991), intelligence (Spearman & Wynn Jones, 1950), the Big Five personality dimensions (Block, 1995), impulsivity (Whiteside & Lynam,

2001), psychological resilience (Liu, Wang, Zhou, & Li, 2014), narcissism (Krizan & Herlache, in press), executive function (Willoughby, Holochwost, Blanton, & Blair, 2014), self-concept (Epstein, 1973), the self in general (Leary & Tangney, 2012), and personality in general (Fiske, 1971). A lack of consensus on key concepts is a feature of research outside of psychology as well. Definitions of key concepts in social sciences such as sociology vary in regards to the intellectual tradition (e.g. Marxist, Weberian) of researchers (Gerring, 1999). Moreover, a number of foundational theories in biology, contain an admission of a lack of agreement on the definition of the entity that they seek to explain (e.g., the species; Darwin, 1859, p. 101; the gene; Dawkins, 1976, p. 28). Indeed, the lack of consensus on the definition of a species is known well enough in biology to have a shorthand—the “species problem” (Okasha, 2016).

3.5.6 Limitations

The first limitation of our meta-research is that definitions of self-esteem were not composed specifically for the purposes of our research. As such, we had no influence over the elicitation of the textual data we analyzed (Smith, 2000). We were, for example, unable to encourage researchers to clarify or elaborate on term usage. For example, it might have been helpful, for example, for us to have been able to press researchers on the meaning of the word “feel”, to clarify whether its intended meaning was affective, or whether it merely denoted appraisal more generally. However, we presumed—we hope not too charitably—that researchers exercised due diligence when formulating their definitions, and did not merely pick one arbitrarily to tick a perceived box. That is, we presumed that researchers meant exactly what they said.

A second limitation of our research is that we focused only on definitions of self-esteem in articles from peer-reviewed journals, which often have strict word limits. It is possible that these restrictions encourage researchers to publish less complex definitions of self-esteem than they would ideally like to. To combat this problem, in future research definitions could be collected from researchers in a specially designed survey, where such constraints are absent.

The final limitation of our study is that one of our aims, to estimate how many definitions of self-esteem exist, was undoubtedly a difficult one to achieve. We accept that black-and-white boundaries between definitions are hard to determine precisely. We also accept that an analysis of the kind undertaken here necessarily involves some degree of subjectivity. Mindful of such considerations, we invite the sceptical readers to make sense of the definition of self-esteem in alternative ways using our materials and corpuses of definitions, which are publically available here: <https://osf.io/4wvtu/>.

3.5.7 Recommendations

Establishing a more consensual and definitive definition of self-esteem is not going to be achieved overnight. Nonetheless, we hope that our map of the definitional terrain will facilitate greater appreciation among self-esteem researchers of what they were collectively thinking, and serve as a fruitful springboard for renewed discussion regarding the definition of self-esteem.

We have four recommendations that we believe, if considered, will help strengthen the definition of self-esteem in the future.

1. *Prioritise clear communication of the definition of self-esteem that guides one's theory and research.* Either during the Introduction section or Method section (as encouraged by APA guidelines), authors should explicitly tell the reader—in as much detail as they can, and in more detail than heretofore—what self-esteem is. This will reduce uncertainty over what authors understand by this term, to a first approximation anyhow. Now that we have established that definitional diversity is a reality, articulating definitions of self-esteem as a matter of course seems warranted—as opposed to omitting two-thirds of the time.
2. *Identify the scholarly tradition(s) to which one's preferred definition belongs (where it does).* Again, we do not recommend any one definition over another. However, whatever definition one inclines towards, it would be a good idea to also specify its exact or approximate provenance, and accordingly to include at least one, and perhaps several, references documenting it. (Note: one-third of the definitions we extracted lacked *any* reference). This would assist researchers and readers in properly contextualizing a definition. It might additionally serve to limit the unwanted proliferation of atypical definitions that may amplify definitional diversity.
3. *If one's definition departs from those already established, then one should clearly explain how it does so, and provide an ample justification for the departure.* Although precedent should carry some weight, there is nothing special about the definitions we have extracted. Better alternatives might be formulated in future. However, a case should be made for a novel definition.

3.5.8 Conclusion

In our title, we posed the question: “What is self-esteem?” Today, the simplest answer is “It depends who you ask.” Most commonly, researchers in the fields of personality and social psychology define self-esteem as an individual’s overall self-worth and value; but they define self-esteem in a variety of other ways too. We hope our meta-scientific survey of definitional practice serves as a spur to both improved definitions of self-esteem and greater conceptual unity in future.

3.6 References

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3.7 Tables

Table 1. *The Ten Most Frequently Used Words for Each of Definition of Self-Esteem*

Definition	
Self-worth/value	Worth, person, self, value, evaluation, one, appraisal, general, individual, overall
Self-attitude	Toward, attitude, self, negative, positive, oneself, attitudes, enduring, favourable, orientation
Explicit/implicit	Self, esteem, implicit, conscious, explicit, automatic, evaluations, evaluation, refers, awareness
Many self-evaluations	Self, evaluations, one, attributes, conscious, feelings, oneself, thoughts, views, capabilities
Global evaluation	Self, global, evaluation, concept, evaluations, aspect, broadest, captures, component, esteem
Self-worth + competence	Oneself, capable, competence, degree, evaluation, evaluations, experiences, indicates, negative, one
Self-value + meaningfulness	Cultural, meaningful, member, belief, one, oneself, perception, personal, reality, sense
Self-acceptance/liking	Individuals, like, much, self, accept, evaluations, overall, reflecting, aspect, knowledge
Mixed	Self, attitude, evaluation, oneself, global, toward, affective, evaluative, feelings, individual

Table 2. *Candidate Origin Texts and Examples of Allied Works for Each Definition of Self-Esteem*

Definition	Candidate Origin Text	Allied Works
Self-worth/value	Rosenberg (1965) Near to original meaning of term (17th century English)	Bachman & O'Malley (1977), Bachman & O'Malley (1977), Baumeister, Campbell, Krueger, & Vohs (2003, p. 2), Crocker & Park (2012, p. 309), Fleming & Watts (1980), Rosenberg (1965), Shibutani (1961), Coopersmith (1964), Smelser (1989), Judge & Bono, (2001, p. 80), Leary & Baumeister (2000); Rosenberg (1963), Pelham, (1995, p. 1141).
Self-attitude	Rosenberg (1965)	Baumeister, Tice, & Hutton (1989, p. 548), Rosenberg, Schooler, Schoenbach, & Rosenberg (1995, p. 141-142)
Implicit/explicit	Epstein & Morling (1995); Greenwald & Banaji (1995)	Spalding & Hardin (1999); Bosson, Swann, & Pennebaker (2000), Bosson, Brown, Zeigler-Hill, & Swann (2003)
Many self-evaluations		APA (n.d.), Messer & Harter (1986, 2012)
Self-feelings	James (1890/2007)	Leary, Tambor, Terdal & Downs (1995), Brown & Dutton (1995, p. 713), Brown, Dutton, & Cook, (2001, p. 616), Dutton & Brown (1997, p. 146), Kernis, Cornell, Sun, Berry, & Harlow (1993, p. 1190), Leary, Cottrell, & Phillips (2001, p. 903), McDonald & Leary, (2012, p. 354), Marayuma, Rubin, & Kingsbury (1981, p. 963)
Global evaluation	Baumeister and Tice (1985)	Baumeister, Smart, & Boden (1996, p. 27), Kernis, Granneman, & Barclay (1989), Harter (1993, p. 88), Diener & Diener (1995, p. 654), Swann & Bosson (2010, p. 594)
Self-worth + competence	Branden (1969)	McFarlin & Blascovich (1981, p. 521), Gergen & Gergen (1981), Tafarodi & Swann (1995; 2001)
Self-value + meaningfulness	Greenberg, Pyszczynski, & Solomon (1986)	Terror management theory (e.g. Greenberg et al. 1992, p. 913)
Self-acceptance/liking	Rosenberg (1965)	McDavid & Harari (1968), Tafarodi & Swann (1995; 2001)

3.8 Figures

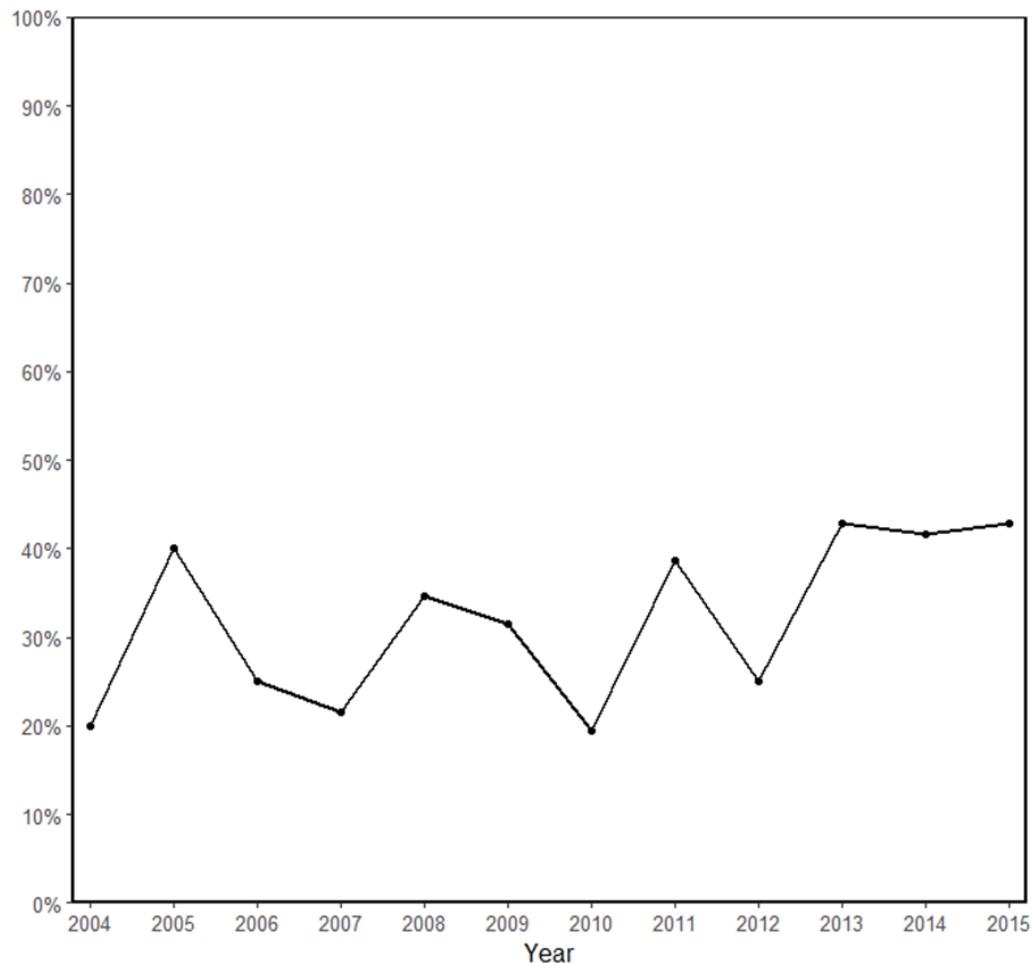


Figure 1. Percentage of articles that contained a definition of self-esteem by year (2004 - 2015).

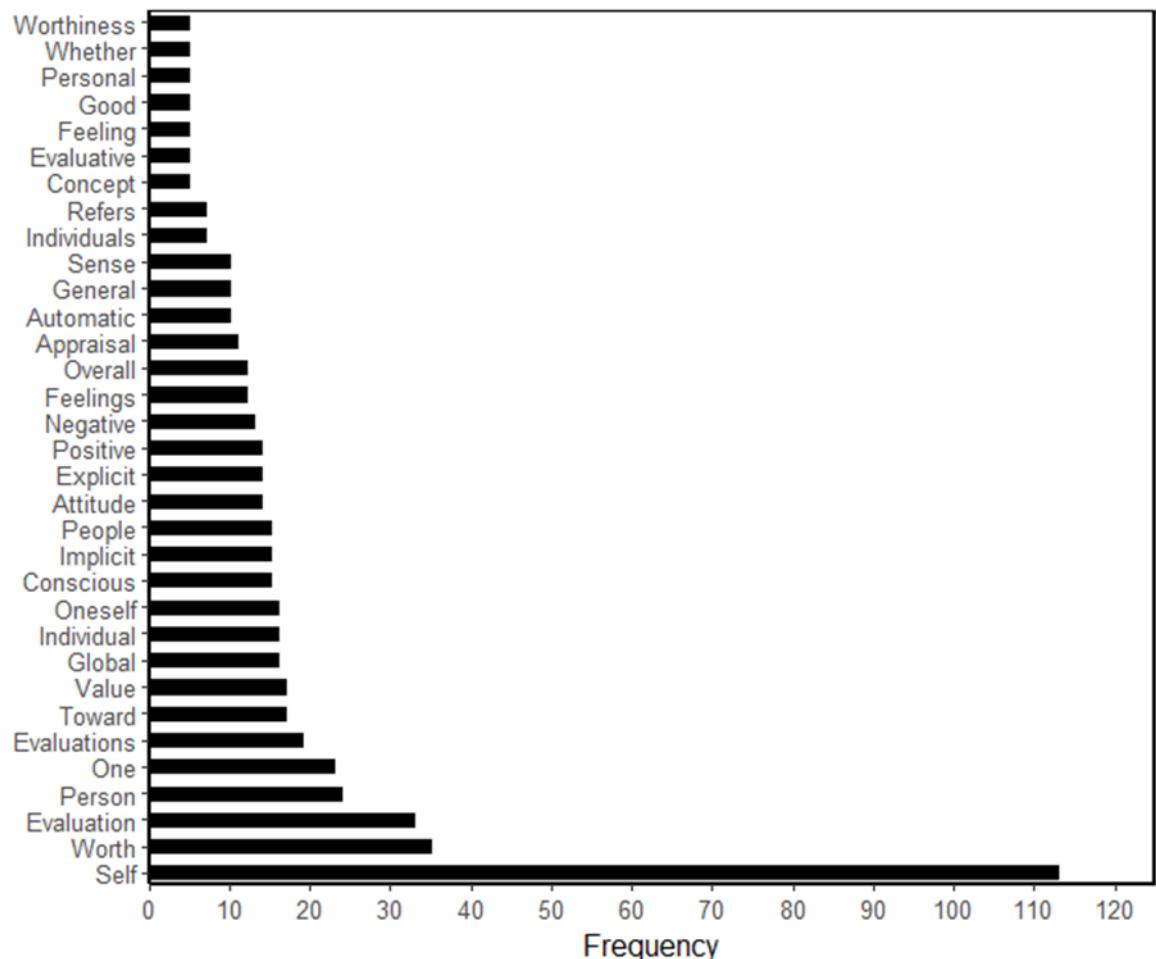


Figure 2. Frequency of 33 words used more than five times by researchers to define self-esteem.



Figure 3. Word cloud for the 33 words used most frequently by researchers to define self-esteem.

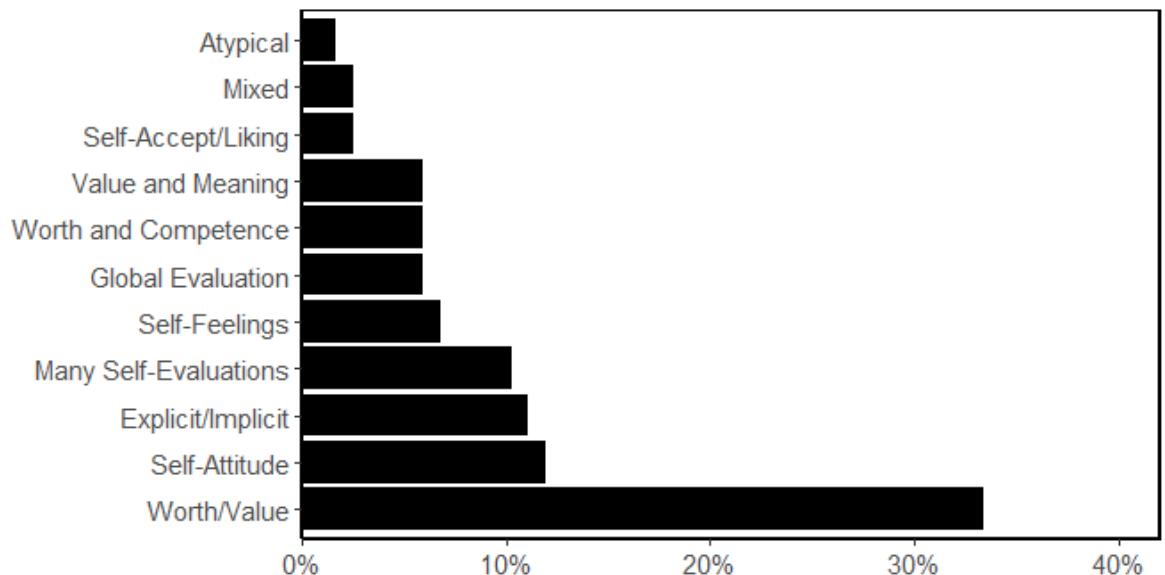


Figure 4. Percentage of definitions ($N = 117$) accounted for by each category of definition, arranged in order of popularity.

Chapter 4 Is the Rosenberg Self-Esteem Scale Unidimensional? Exploring Item-Level Correlations with Perceived Agency, Communion, Social Status, Social Inclusion, Social Behaviour, Attachment Anxiety and Attachment Avoidance

4.1 Abstract

Researchers have long debated the dimensionality of the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) and they have proposed a number of theories on the scale's dimensionality. Previous research on the dimensionality of the RSES has almost exclusively involved modelling the internal structure of the scale with confirmatory factor analysis, but there are alternative approaches to determining the dimensionality of a measurement instrument. To further the research on this issue, in the secondary analysis of five datasets, we investigated item-level correlations with three sets of variables theoretically linked to self-esteem: perceptions of agency and communion (Study 1), perceptions of social status, social inclusion and social behaviour (Study 2), and self-reported attachment anxiety and avoidance (Study 3). We found the items of the RSES were heterogeneously correlated with each variable, except attachment anxiety and avoidance. Moreover, positively-worded and negatively-worded items were differentially correlated with each variable, except attachment avoidance and anxiety. We conclude that the evidence suggests that RSES is not comprised of equivalent indicators of a single psychological variable, i.e. it is not unidimensional. However, we argue that stronger theoretical rationales for multidimensional perspectives on the RSES, as well as research designs that minimise careless responding, are required before a strong conclusion can be drawn.

Key words: self-esteem, Rosenberg Self-Esteem Scale, agency, communion, social status, social inclusion, attachment orientation.

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4.2 Introduction

In 1965, a ten-item scale was constructed to assess self-esteem. It was comprised of five negatively-worded items, for example “I feel I do not have much to be proud of”, and five positively-worded items, for example “I am able to do things as well as most other people” (See Table 1). As a Guttman -type scale (see Guttman, 1944; 1947), its items were designed to be stronger or weaker than others. In fact, the scale contained six “contrived” items, which meant that some items were considered to be equal in strength and responses to those items were combined during the scoring process. The three items that formed the first contrived item were the strongest—specifically, items one, “I feel that I’m a person of worth, at least on an equal plane with others”, two, “I feel that I have a number of good qualities”, and three, “All in all, I am inclined to feel I am a failure”. The two items that formed the sixth contrived item and contained the qualifiers “at times” were the weakest: items nine, “I certainly feel useless at times”, and ten, “At times I think I am no good at all” (see Rosenberg, 1965, p. 305-307). The other five items, four to eight, fell between these extremes.

Although respondents were able to respond to the scale’s items in with either (1) “strongly agree”, (2) “agree”, (3) “disagree”, or (4) “strongly disagree”, the scoring procedure treated items as if they had just two response options. Specifically, for each item, respondents received either a score of zero—if their response indicated a positive attitude toward the self—or one—if their response indicated a negative attitude toward the self. Somewhat paradoxically, the former category of response, indicative of self-positivity, was termed a negative response, and the latter, indicative of self-negativity, was termed a positive response. For positively-worded items, “strongly disagree” and “disagree” were regarded as positive responses and “agree” and “strongly agree” were regarded as negative responses. In contrast, for negatively-worded items, “agree” or “strongly agree” were regarded as positive responses and “disagree” or “strongly disagree” were regarded as negative responses.

To calculate the respondent’s self-esteem score, the researcher identified the strongest contrived item with a positive response, indicative of a negative attitude toward the self, or, alternatively, where the contrived item contained more than one item, with positive responses to more than half of the items within it. Respondents then received a score of a whole number between one and six, which was determined solely by the strongest contrived item with a positive response. Specifically, respondents received a score of six if they provided positive responses to two out of the three items of the first contrived item; a score of five if they provided positive responses to either of the two items of the second contrived item, but none to the first; a score of four if they provided a positive response to the third, single-item, contrived item, but none to the first or second; a score of three if they provided a positive response to the fourth, single item, contrived item, but none to the first, second, or third; a score of two if they provided a positive response to the fifth, single-item

contrived item, but none to the first, second, third, fourth, or fifth; and a score of one if they provided a positive response to at least one of the two items of the sixth contrived item, but none to the first to the fifth. Finally, if the participant failed to provide a positive response to any of the contrived items—an eventuality that represents the highest degree of self-positivity—they received a score of zero. Thus, perhaps counterintuitively, higher scores represented lower levels of self-esteem.

The scale is now over 50 years old. Between infancy and middle age it transformed. As in its original form, respondents indicate the extent to which they agree with the same ten items, most often on a four-point scale, but it is used as a Likert-type instrument now (see Blascovich & Tomaka, 1991). Its modern scoring procedure is much less complex than the original, consisting simply of the reverse scoring of negatively-worded items and subsequent averaging (or summing) of all item scores. Self-esteem scores can range anywhere between 1 and 4; or alternative extremes, depending on the number of response options employed. The modern form of the scale therefore differs from the original in at least two major ways: (a) higher scores represent higher, not lower, self-esteem and (b) the idea that it contains stronger or weaker items has been lost. Somewhere along the line, in tribute to the author of the scales items, this instrument became known among researchers as The Rosenberg Self-Esteem Scale (RSES)—although it was presented as the New York State Self-Esteem Scale by its constructor (Rosenberg, 1979, p. 291).

In its unoriginal and modified Likert-type form the RSES has become by far the most used measure of self-esteem in personality and social psychology. In fact, between 2004 and 2015 the scale accounted for 56% of self-esteem measurement occasions in the two fields (Pegler, Gregg, & Hart, 2018). An observation that emphasises its methodological monopoly, the next most used self-report measure of self-esteem, the State Self-Esteem Scale (Heatherton & Polivy, 1991), accounted for a mere 4%. In this article, we draw on the RSES's largely unknown history, the meta-analysis of previous psychometric research results, and multidimensional theories on the RSES, to extend the research literature on the dimensionality of the RSES by investigating item-level correlations variables theoretically linked to self-esteem.

4.2.1 Is the RSES Unidimensional?

Despite its transformation from a Guttman scale to a Likert-type one, the modern form of the RSES is generally regarded as the gold-standard measure of self-esteem in personality and social psychology (Blascovich & Tomaka, 1991; Donnellan et al., 2015) and the scale enjoys an exceptional reputation in the two fields (Pegler et al., 2018). Researchers have long debated, however, whether the scale is unidimensional (Donnellan, Ackerman, & Brecheen, 2016; Ervin & Stryker, 2001; Marsh, Scalas, & Nagengast, 2010). Although researchers have defined the term “unidimensional” in a number of ways (McIver and Carmines, 1981), it is most commonly used to refer to the situation in which the items of a scale assess a single psychological variable or

construct (Clark & Watson, 1995; Hattie, 1985; Lumsden, 1961; McIver & Carmines, 1981; Reise, Waller, & Comrey, 2000). As Furr (2011) has put it, “a scale’s items might be unidimensional, all reflecting a common psychological variable, or they might be multidimensional, reflecting two or more psychological variables” (p. 26).

The flashpoint for this debate appears to have been, and continues to be, the scales poor performance in factor-analytic investigations. Exploratory factor analyses, or the related technique of principal components analyses, typically find two factors with eigenvalues greater than 1 (Donnellan et al., 2016; Kaplan & Pokorny, 1969; McIver & Carmines, 1981; see Huang & Dong, 2012 for a meta-analysis) or that only a relatively small proportion of variance is accounted for by a first factor (Schmitt & Allik, 2005). Typically, researchers find that while positively-worded items have high factor loadings on the first factor, negatively-worded items have high factor loadings on the second factor.

In addition, confirmatory factor analyses typically find that the single factor uncorrelated error model—the unidimensional model in structural equation modelling (Hopwood & Donnellan, 2010; Kline, 2011; Reise, 2012)—fits poorly. To check the veracity of this claim, we searched for articles that applied a single factor uncorrelated errors model to RSES data from at least one sample, between 1995 and 2015. We extracted four pieces of information: (a) overall fit statistics (specifically, χ^2 , CFI, TLI, and RMSEA), (b) estimation method, (c) sample characteristics (e.g. nationality, average age), and (d) sample size. Although rules of thumb for goodness-of-fit statistics in SEM should not be taken too literally (e.g., Kline, 2011; Marsh, Hau & Wen, 2004), Table 1 shows that the vast majority of articles report fit statistics well below conventional cut-off values of $> .95$ for CFI and TLI and $< .06$ for RMSEA (Hu & Bentler, 1999). In fact, mean values for the three fit indices were as follows: CFI = .83, TLI = .77, and RMSEA = .13—far short of benchmark targets. Moreover, the model had poor fit in samples drawn from different geographical regions, of various sizes, and average ages. Overall, the evidence thus suggests that RSES is not a single-factor scale and, in turn, indicates that the scale is not unidimensional.

A number of researchers, however, have argued that these poor statistical results simply stem from the fact that the RSES is comprised of both positively and negatively-worded items (Bachman & O’Malley, 1986; Carmines & Zeller, 1979; Corwyn, 2000; Demo, 1985; Dunbar, Ford, & Hunt, 2000; Gana, Alaphilippe, & Bailly, 2005; Huang & Dong, 2012; Marsh, 1996; McIver & Carmines, 1981; McKay, Boduzsek, & Harvey, 2014; Roth, Decker, Herzberg, & Brahler, 2008; Schmitt & Allik, 2005; Tomas & Oliver, 1999; Vasconcelos-Raposo, Fernandes, Teixeira, & Bertelli, 2011; Wang, Siegal, Falck, & Carlson, 2001). This linguistic tension results in a response set that is “a general tendency to respond to interview or questionnaire items in a particular manner, irrespective of their content” (Carmines & Zeller, 1979, p. 65). This is unfortunate, but the presence of this “substantively irrelevant method effect” (Schmitt & Allik, 2005, p. 625) is not a good reason to

conclude that that the RSES is not unidimensional. From this perspective, despite apparent factor-analytic evidence to the contrary, a single score taken from all ten items of the RSES is adequate.

Other researchers have rejected this argument, interpreting the poor single-factor model fit as meaningful (Marsh et al., 2010). No fewer than four multidimensional perspectives on the RSES exist. Each proposes that the typical factor-analytic characteristics of the RSES are best explained by the scale assessing two distinct psychological dimensions. First, inspired by Owens' (1993; 1994) definition of self-esteem as consisting of both positive and negative self-esteem, a number of researchers have posited that positively-worded items assess "positive self-esteem" and negatively-worded items assess "negative self-esteem" (e.g., Andrews & Brown, 1993; Ang, Neubronner, Oh, & Leong, 2006; Boduszek, Hyland, Dhingra, & Mallet, 2013; Boduszek, Shevlin, Mallett, Hyland, & O'Kane, 2012). Second, Tafarodi and colleagues (e.g., Tafarodi & Milne, 2002; Tafarodi & Swann, 1995; Tafarodi & Swann, 2001) have argued that the RSES is comprised of items that tap two distinct but related forms of personal value, specifically self-loving and self-competence—a distinction that has also been supported by Richardson, Ratner, & Zumbo (2009). Whereas items one to five assess self-loving, items six to ten assess self-competence. Third, other researchers have contended that the RSES assesses both "general evaluation" and "transient evaluation" (Kaufmann, Rasinski, Lee, & West, 1991), with items 9 and 10—those items containing the qualifiers "at times"—indicators of the latter. Fourth, and lastly, different researchers have contended that the scale assesses both "self-competency" and "self-derogation" (Alessandri, Vechionne, Eisenberg, & Laguna, 2015). Distinctions between these perspectives are summarised in Table 3.

There are two other reasons, in addition to factor analytic results and multidimensional theories, to suspect that the RSES might not be unidimensional. The first reason is that a broad definition of self-esteem provided the foundation for the content of the scales items (see Rosenberg, 1965, p. 30-31) and broadly defined constructs are liable to give rise to multidimensional scales (McGrath, 2005). While Rosenberg defined self-esteem as "a positive or negative attitude toward a particular object, namely, the self" (p. 30), he also stated that high self-esteem variously involved "the feeling that one was good enough", the feeling that one was "a person of worth" and that the individual "respects himself for what he is" (p. 31). Second, as outlined in detail above, the RSES originally took the form of a Guttman scale. Crucially, in Guttman scaling unidimensionality is defined in an esoteric way (McIver & Carmines, 1981) and consequently the items of a Guttman scale are permitted to differentially represent a construct of interest—to be weaker or stronger than others. As a result, it was not Rosenberg's intention to select items that, aside from measurement error, interchangeably represent a single underlying construct, as researchers often aim to do in contemporary psychometrics (Bollen & Bauldry, 2011).

4.2.2 Beyond Factor Analysis: Item-Level Analysis

Like earlier investigators (Wells & Marwell, 1976), recent investigators have almost exclusively used factor analysis in their attempts to determine the dimensionality of the RSES. As such, they have largely relied on statistical indices that speak to the nature of inter-item covariance/correlation matrices—to the scales internal correlational consistency. Methods of investigating the dimensionality of a scale outside of factor analysis, however, also exist. The application of these alternative research strategies, it has been argued, are often critical to determine whether subscales are really warranted (Reise, 2012; Reise, Bonifay, & Haviland, 2013).

As set out by Smith, McCarthy and Zapolski (2009), one alternative approach to assess the dimensionality of a psychological scale is to treat items pertaining to putative dimensions separately in basic research. If differential relationships with other constructs, behaviours, or attitudes are absent, then the theory that the measure is unidimensional is strengthened. On the other hand, if differential relationships are present, then theory that the measure is unidimensional is weakened. Another alternative, but similar, approach is to investigate, at the item-level, whether the items of a scale have consistent associations with dependent variables (Mottus, 2016): items that pertain to a single trait, it is argued, will be similarly related to dependent variables (Vainik, Mottus, Esko, & Realo, 2015).

Ideas similar to these can be found in the psychometric literature on the RSES as early as Carmines & Zeller (1979)—as pointed out by Marsh (1996) and Marsh et al. (2010). Most recently, in a similar vein, Donnellan et al. (2016) encouraged researchers to determine whether models of the dimensionality of the RSES were “substantively meaningful” or had “practical implications” (p. 2) by examining the criterion-related validity of putative dimensions—in addition to considering the fit of CFA models. What’s more, the idea that a unidimensional scale should have items that are consistently related with other variables, in addition to being internally consistent, is not new. Regarding the problem of drawing strong conclusions from factor analysis alone, 65 years ago Cattell—one of the chief proponents of factor analysis—warned that “the factor itself is not a unity; it is only evidence of a unity” (Cattell, 1952, p. 315). He further stressed that “the reality of the functional unity which we call a factor can...be tested both within and without correlation methods...such checks lie outside factor analysis” (pp. 89-90, emphasis added). In subsequent decades, Cattell (1978, pp. 234 & 530) repeated this point, and Cronbach (1971, pp. 469-472), Gorsuch (1974, pp. 187-188) and Kline (1979, pp. 22-23) expressed similar viewpoints.

4.2.3 The Present Research

In the present research, we pursued two strategies that we hoped would shed more light on the dimensionality of the RSES. First, drawing on the arguments of Mottus (2016), we explored whether the items of the RSES were homogenously or heterogeneously correlated with variables

theoretically related and regularly studied in relation to self-esteem. Second, drawing on the arguments of Smith et al. (2009), we explored whether theories on the dimensionality of the RSES had substantive implications. We investigated these things in the secondary analysis of five datasets with reference, in Study 1, to the dual perspective model (Abele & Wojciszke, 2014), in Study 2, to sociometer theory (Leary, Tambor, Terdal, & Downs, 1995) and hierometer theory (Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016), and, in Study 3, to attachment theory (Bartholomew & Horowitz, 1991; Bowlby, 1979; Mikulincer & Shaver, 2016).

4.2.4 Related Prior Research

Although there is an extensive psychometric literature on the RSES, to our knowledge, researchers have not previously investigated whether item-level correlations with other psychological variables are broadly heterogeneous. A number of studies, mostly intended to determine whether the two factors that emerge in EFA are spurious or meaningful, have, however, investigated specifically whether the positively-worded and negatively-worded items of the RSES are differentially correlated with other areas of self-concept, cognition, and behaviour. The findings of these studies have been mixed and complex.

Four studies have found that positively-worded and negatively-worded items were almost identically correlated with focal variables. First, Carmines and Zeller (1979) found average scores for positively and negatively-worded items were correlated very similarly with father's education ($r = .17$; $r = .15$), intelligence ($r = .22$; $r = .24$) and perceptions of personal control ($r = .31$; $r = .33$). Second, McKay et al. (2014) found almost identical correlations with academic ($r = .23$; $r = .21$), social ($r = .20$; $r = .16$) and emotional (both $r = .31$) self-efficacy. Third, Donnellan et al. (2016) found that the negative and positive factors in CFA were similarly correlated with extraversion ($r = .31$; $r = .35$), openness ($r = .17$; $r = .13$, Model 8) and optimism illusion ($r = .18$; $r = .20$, Model 8). Fourth, Schmitt and Allik (2005: Table 5), found that positively-worded and negatively-worded items were similarly associated with extraversion across 53 countries.

In contrast, other studies have observed differential correlations for positively-worded and negatively-worded items. First, Owens (1993) found that negatively-worded items (before reverse scoring) were more strongly correlated with negative affect ($r = .69$; $r = -.30$), depression ($r = .62$; $r = -.32$) and anxiety ($r = .50$; $r = -.17$) than positively-worded items. Second, Ang et al. (2006) found positively-worded items were more strongly correlated with mastery goal orientation ($b = .58$; $b = .10$) and academic self-efficacy ($b = .56$; $b = .15$) than negatively-worded items. Third, Alessandri, Vechionne, Eisenberg, and Laguna (2015) found that positively-worded items were more strongly related to GPA ($b = .20$; $b = .07$) than negative items, but negatively-worded items were more strongly correlated with major depressive disorder symptoms than positively-worded items ($b = .32$; $b = .04$). Fourth, Donnellan et al. (2016; Model 8) found that the factor corresponding to positively-worded items in CFA was more strongly correlated with life

satisfaction ($r = .28$; $r = .11$) than negatively-worded items, but that the factor corresponding to negatively-worded items was more strongly correlated with narcissism ($r = .15$; $r = .05$) than the positively-worded items. Sixth, Quilty et al. (2006; Study 1, Model 8) found that the negatively-worded item factor was more strongly correlated with behavioural inhibition sensitivity than the positively-worded item factor ($r = -.27$; $r = -.06$).

To add further complexity, two cross-cultural studies have found differential correlations for positively and negatively-worded items in samples of participants from some nations, but not others. Schmitt and Allik (2005; Table 5) found that negatively-worded items were more strongly negatively correlated with neuroticism than positively-worded items in 44 of 53 nations. The difference between the two correlations was $\geq .10$ in 18—just over a third⁶. Moreover, they also found that positively-worded items were more strongly positively correlated with openness to experience than negatively-worded items. The difference between the two correlations was $\geq .10$ in 23 nations—just over 40%. In the second of the two cross-cultural studies, Farrugia, Chen, Greenberger, Dmitrieva, and Macek (2004) found that negatively-worded items were more strongly correlated with depressed mood than positively-worded items for adolescents from the Czech Republic ($\gamma = -.48$; $\gamma = .03$) and China ($\gamma = -.38$; $\gamma = .01$), but not from the United States ($\gamma = -.21$; $\gamma = -.18$) or South Korea ($\gamma = -.22$; $\gamma = -.20$).

⁶ e.g., Lithuania ($r = -.46$; $r = -.28$), Cyprus ($r = -.50$; $r = .37$), Israel ($r = -.41$; $r = -.30$), Serbia ($r = -.44$; $r = -.26$).

4.3 Study 1

In light of prior theories and research on the dimensionality of the RSES, the aim of Study 1 was to investigate (1) whether the items of the RSES have heterogeneous relationships with agency and communion, and (2) whether any of the existing multidimensional theories on the RSES have substantive implications in correlational research.

4.3.1 Agency and Communion: Definition, Theory, and Previous Research with the RSES

The dual perspective model (DPM; Abele and Wojciszke, 2014; Wojciszke, Barylka, Parzuchowski, Szymkow, & Abele, 2011) proposes that two dichotomies characterize social behaviour and cognition. First, individuals primarily perceive themselves and others in terms of agency—their “achievement and task functioning (competence, assertiveness, decisiveness)” (p. 197)—and communion—their “maintenance of relationships and social functioning (helpfulness, benevolence, trustworthiness)” (p. 197). Second, individuals can assume two perspectives in social interaction: that of either an actor (the self) or an observer (the other). While the DPM posits that communal information tends to have the greatest overall influence in social cognition, when an individual assumes the perspective of an actor, agentic information is more influential. According to the DPM, because self-perception involves entering the actor perspective, where agentic information predominates, levels of self-esteem are primarily determined by agentic information.

In line with the DPM, recent correlational research has found that average RSES scores are more strongly associated with agency than communion. First, in a sample of U.S. students, Ziegler-Hill (2010) found that total RSES scores, by the rules of thumb for effect sizes provided by Cohen (1992), had a moderate correlation with agency ($r = .37$), but a small correlation with communion ($r = .19$). Second, in two studies with samples of Polish adults, agency was found to be more strongly predictive of overall RSES scores than communion in multiple regression analyses ($\beta = .39$ vs $\beta = .02$, Wojciszke & Bialobrzeska, 2014; $\beta = .47$ vs $\beta = .01$, Wojciszke, Barylka, Parzuchowski, Szymkow, & Abele, 2011).

4.3.2 Hypotheses

We had four hypotheses in Study 1:

1. Due to the logical (i.e. the broad definition of self-esteem that guided the scales' construction and the scale's genesis as a Guttman scale) and factor-analytic evidence (i.e. consistent poor single-factor model fit) that suggests that scale is not unidimensional, Hypothesis 1 was that Item-level correlations with agency and communion would be

heterogeneous. Evidence in favour of this hypothesis would imply that the scale is not comprised of interchangeable indicators of a single underlying construct.

2. Based on Kaufman and colleague's perspective on the RSES as comprising of both transient evaluation and general evaluation items (Kaufman et al., 1991), and Rosenberg's treatment of these items as the weakest indicators of self-esteem, Hypothesis 2 was that the two items that include the time qualifiers "at times" (items nine and ten), would have attenuated relationships with communion and agency.
3. Drawing on Owens' concept of positive and negative self-esteem (Owens, 1993; 1994), the self-competency/self-derogation perspective on the RSES (Alessandri et al., 2015), and recent research which has found that negatively-worded and positively-worded items were differentially correlated with a number of psychological variables, Hypothesis 3 was that positively-worded items (items one, two, four, six and seven) and negative-worded items (items three, five, eight, nine and ten), taken together, would be differentially correlated with agency and communion. Due to the inconsistent findings of prior research, this hypothesis was not directional.
4. Based on the self-competency/self-loving perspective on the RSES (Tafarodi & Milne, 2002), Hypothesis 4 was that self-competence items (items one, two, three, four, and five) and self-loving items (items six, seven, eight, nine and ten), taken together, would be differentially correlated with agency and communion.

4.4 Method

4.4.1 Samples, Participants, Measures, and Participant Exclusions

4.4.1.1 Sample 1

Sample 1 consisted of data from 211 Polish adults with a mean age of 28.07 years ($SD = 11.58$; 36 males), who responded to a Polish language version of the RSES featuring a 7-point scale. For the measure of communion, participants rated themselves on a set of 15 communal adjectives (e.g. friendly, helpful, obliging). For the measure of agency, participants rated themselves on 15 agentic adjectives (e.g. ambitious, effective, energetic). Participants responded to communion and agency scales using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

4.4.1.2 Sample 2

Sample 2 comprised of data from 872 English-speaking adults with an average age of 32.24 years ($SD = 12.40$; 307 males), recruited from the crowdsourcing platform *CrowdFlower*, originally for an online survey on self-esteem, self-perception, and social status. The RSES featured a 5-point scale, from 1 (*strongly disagree*) to 5 (*strongly agree*). For the measure of communion, participants rated how caring, helpful, supportive, friendly, kind, gentle, and nice they were. For the measure of

agency, participants rated how competent, effective, strong, powerful, capable, intelligent, and talented they were. Again, participants responded to communion and agency scales using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

In the original study, a total of 134 participants were excluded because either they (a) shared an IP address with another participant (2.4%), (b) were under 18 years of age (1.9%), (c) reported poor English proficiency (0.6%), (d) completed the questionnaire in under half the median completion time (4.8%), (e) left greater than 10% of the questions blank (3.2%), or (f) provided stereotyped responses (1.1%). We excluded a further participant from the dataset due to incomplete RSES data.

4.4.1.3 Sample 3

Sample 3 consisted of data from 608 participants with a mean age of 22.34 years ($SD = 7.03$; 112 males), who responded to the RSES with a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*). For the measure of communion, participants rated how kind, understanding, warm, and compassionate they were. For the measure of agency, participants rated how competent, determined, confident and assertive they were. Again, participants responded to communion and agency scales using a 7-point scale from 1 (*strongly disagree*) to 10 (*strongly agree*). We excluded fifteen respondents (2.4%) from the analysis due to missing RSES data.

4.4.1.4 RSES Item and Average Scoring

For each sample and in each study reported here, negatively phrased RSES items were reverse scored before analyses. Average scores were calculated by taking the mean of all ten items, after reverse scoring.

4.4.2 Analytic Strategy

For each sample, we tested Hypothesis 1 with Meng's test of the heterogeneity of correlated coefficients (Meng, Rosenthal and Rubin, 1992, p. 173: equations 2, 3, and 5). We tested Hypothesis 2 with a contrast test between the average of the fishers z transform for the two transient evaluation items, given as \bar{z}_{r_1} , and the average fishers z transform of the other 8 items, given as \bar{z}_{r_2} —in line with the method and notation of Meng et al. (1992, equation 6). We tested hypothesis 3 with a contrast test between the average fishers z transform for positively worded items, again given as \bar{z}_{r_1} , and the average fishers z transform for negatively worded items, again given as \bar{z}_{r_2} . Lastly, we tested hypothesis 4 with a contrast test between the average fishers z transform for self-competence items, again given as \bar{z}_{r_1} , and the average fishers z transform for self-loving items, again given as \bar{z}_{r_2} .

Because we tested eight hypotheses for each sample (four hypotheses for correlations with both communion and agency), we opted to apply the simple unweighted Bonferroni correction for

multiple hypothesis tests (Shaffer, 1995). We thus set α at .006 (.05/8). To integrate results across the three samples, we also performed a mini meta-analysis (Goh, Hall, & Rosenthal, 2016), using the unweighted method of combining sample correlations and creating confidence intervals given by Bonett (2008, equations 1 & 4).

4.5 Results

4.5.1 Sample 1

4.5.1.1 Basic Statistics and RSES CFA

The mean RSES score for the sample was 4.95 ($SD = 1.05$). On average, participants rated themselves higher on communion ($M = 5.52$, $SD = .77$), than agency ($M = 4.98$, $SD = .85$). Communion and agency were positively correlated with a medium-to-large effect size, $r = .40$. See Appendix A for inter-item correlations, item level means, SDs , skew and kurtosis for the RSES. As in previous research, the single-factor uncorrelated errors model fit the ten-item RSES data poorly, $\chi^2(35) = 343.97$, $p < .001$, $CFI = .740$, TLI , $RMSEA = .205$, 90% CI [.186, .225], $SRMR = .105$.

4.5.1.2 Scale and Item-Level Correlations

Scale and item-level zero-order Pearson's r correlations for sample 1 are displayed in Table 4. In line with Hypothesis 1, the test of heterogeneity for item-level correlations was significant for communion, $\chi^2(9) = 66.39$, $p < .001$, $SD = .13$, range = .03 - .42, and agency, $\chi^2(9) = 37.97$, $p < .001$, $SD = .09$, range = .23 - .53.

In line with Hypothesis 2, transient evaluation items were less strongly correlated with communion ($\bar{z}_{r_1} = .11$, $\bar{z}_{r_2} = .27$, $z = 4.08$, $p < .001$). In contrast, transient evaluation items were not less strongly correlated with perceived agency ($\bar{z}_{r_1} = .45$, $\bar{z}_{r_2} = .44$, $z = -0.29$, $p = .39$). In line with Hypothesis 3, negatively-worded and positively-worded items were differentially correlated with both communion and agency. Specifically, positively worded items more strongly positively correlated with communion than negatively worded items ($\bar{z}_{r_1} = .36$, $\bar{z}_{r_2} = .12$, $z = 7.47$, $p < .001$). Positively worded items were also more strongly positively correlated with agency than negatively worded items ($\bar{z}_{r_1} = .51$, $\bar{z}_{r_2} = .36$, $z = 4.34$, $p < .001$). In line with Hypothesis 4, self-competency items were more strongly positively correlated with communion than self-loving items ($\bar{z}_{r_1} = .30$, $\bar{z}_{r_2} = .19$, $z = 3.33$, $p = .001$). However, self-competency items and self-loving items were not differentially correlated with agency ($\bar{z}_{r_1} = .44$, $\bar{z}_{r_2} = .44$, $z = -0.04$, $p = .48$).

4.5.2 Sample 2

4.5.2.1 Basic Statistics and RSES CFA

The mean RSES score for the sample was 3.57 ($SD = .81$). As in Sample 1, on average, participants rated themselves higher on communion ($M = 5.89, SD = .78$), than agency ($M = 5.38, SD = .97$).

See Appendix A for inter-item correlations, item level means, SDs , skew and kurtosis for the RSES. As in Sample 1, the single-factor uncorrelated errors model fit the ten-item RSES data poorly, $\chi^2 (35) = 765.517, p < .001$, $CFI = .856$, $TLI = .815$, $RMSEA = .155$, 90% CI [.145, .164], $SRMR = .067$ —although fit statistics were more favourable than for Sample 1.

4.5.2.2 Scale and Item-Level Correlations

Scale and item-level Pearson's r correlations for sample 2 are presented in Table 4. In line with Hypothesis 1, the test of heterogeneity for item-level correlations was significant for communion, $\chi^2 (9) = 56.37, p < .001, SD = .06$, range = .15 - .34, and agency, $\chi^2 (9) = 92.35, p < .001, SD = .06$, range = .39 - .59.

Against Hypothesis 2, transient evaluation items did not have significantly attenuated correlations with communion, ($\bar{z}_{r_1} = .25, \bar{z}_{r_2} = .28, z = 1.72, p = .04$), but did with perceived agency ($\bar{z}_{r_1} = .51, \bar{z}_{r_2} = .58, z = 3.35, p = <.001$). In line with Hypothesis 3, negatively-worded and positively-worded items were differentially correlated with both communion and agency. Specifically, positively-worded items more strongly positively correlated with communion than negatively-worded items, ($\bar{z}_{r_1} = .32, \bar{z}_{r_2} = .23, z = 6.00, p < .001$). Positively-worded items were also more strongly positively correlated with agency than negatively-worded items ($\bar{z}_{r_1} = .64, \bar{z}_{r_2} = .50, z = 8.42, p < .001$). Against Hypothesis 4, self-competency items were not significantly differentially correlated with communion than self-loving items, ($\bar{z}_{r_1} = .29, \bar{z}_{r_2} = .26, z = 1.77, p = .038$).

However, in line Hypothesis 4, self-competency items were significantly more strongly positively correlated with agency than self-loving items ($\bar{z}_{r_1} = .60, \bar{z}_{r_2} = .53, z = 3.83, p = .001$).

4.5.3 Sample 3

4.5.3.1 Basic Statistics and RSES CFA

The mean RSES score for the sample was 5.12 ($SD = 1.14$). As in Samples 1 and 2, on average, participants rated themselves higher on communion ($M = 7.15, SD = 1.56$), than agency ($M = 6.66, SD = 1.49$). See Appendix A for inter-item correlations, item level means, SDs , skew and kurtosis for the RSES. As in samples 1 and 2, the single-factor uncorrelated errors model again fitted the ten-item RSES data poorly, $\chi^2 (35) = 688.29, p < .001$, $CFI = .825$, $TLI = .775$, $RMSEA = .175$, 90% CI [.164, .187], $SRMR = .075$.

4.5.3.2 Scale and Item-Level correlations

Scale and item-level zero-order Pearson's r correlations for Sample 3 are presented in Table 4. In line with Hypothesis 1, the test of heterogeneity for item-level correlations with communion was significant, $\chi^2(9) = 36.83, p < .001, SD = .06$, range = .12 - .29, range = .15 - .34. The test of heterogeneity for item-level correlations with agency was also significant, $\chi^2(9) = 30.37, p < .001, SD = .05$, range = .38 - .51.

In line with Hypothesis 2, transient evaluation items had attenuated correlations with communion, ($\bar{z}_{r_1} = .17, \bar{z}_{r_2} = .22, z = 2.29, p = .01$), and perceived agency, ($\bar{z}_{r_1} = .43, \bar{z}_{r_2} = .50, z = 3.06, p = .001$). In line with Hypothesis 3, negatively worded and positively worded items were differentially correlated with both communion and agency: Positively worded items were significantly more strongly positively correlated with communion than negatively worded items, ($\bar{z}_{r_1} = .23, \bar{z}_{r_2} = .18, z = 2.87, p = .002$). Positively worded items were also more significantly strongly positively correlated with agency than negatively worded items ($\bar{z}_{r_1} = .53, \bar{z}_{r_2} = .45, z = 4.49, p < .001$). In line with Hypothesis 4, self-competency items were more strongly positively correlated with communion ($\bar{z}_{r_1} = .26, \bar{z}_{r_2} = .16, z = 5.14, p < .001$) and agency ($\bar{z}_{r_1} = .52, \bar{z}_{r_2} = .46, z = -0.04, p = .003$) than selfliking items.

4.5.4 Mini Meta-Analysis

See Table 4 and Figure 1 for meta-analysed item-level correlations and confidence intervals across the three samples. In line with prior research (Ziegler-Hill, 2010; Wojciszke & Bialobrzeska, 2014; Wojciszke et al., 2011), across the three samples, average RSES scores were more strongly positive correlated with perceived agency, $r = .60 [.56, .64]$ than perceived communion, $r = .30 [.25, .35]$. While the item with the strongest meta-analysed correlation with communion was item 2 ($r = .35$; "I feel that I have a number of good qualities"), the item with the strongest meta-analysed correlation with agency was item four ($r = .54$, "I am able to do things as well as other people"). For both agency and communion, the item with the weakest meta-analysed correlation was item eight ($r = .10, r = .34$; "I wish I could have more respect for myself").

4.6 Discussion

In light of the DPM (Abele and Wojciszke, 2014), in Study 1 we investigated (a) whether the RSES item level correlations with agency and communion were heterogeneous and (b) whether prior perspectives on the dimensionality of RSES had substantive implications. Consistent with our first hypothesis, we found that RSES item-level correlations with communion and agency were heterogeneous. RSES item-level correlations with communion ranged from small to medium; with agency, they ranged from medium to large. This result was consistent across three samples.

We also found that if dimensions proposed by previous theorists were observed then differential research results followed. Our second hypothesis recognized the distinction between transient evaluation and general evaluation outlined by Kaufman et al. (1991). Consistent with this hypothesis, in four out of six cases, transient evaluation items had significantly attenuated relationships with agency and communion. Whereas the positive correlation between general evaluation items and communion was medium, the positive correlation between transient evaluation items and communion was small. Similarly, whereas the positive correlation between the general evaluation items and agency was large, the correlation between transient evaluation items and agency was medium-to-large.

Consistent with our third hypothesis, which observed the distinctions drawn by Owens (1993; 1994) and Alessandri et al. (2015), we found that positively-worded and negatively-worded items were differentially correlated with agency and communion. Specifically, across all three samples, positively-worded items were more strongly positively correlated with both agency and communion than negatively-worded items. Moreover, effect size differences were non-trivial for either agency (Sample 1, $r = .51$ vs $r = .36$; Sample 2 $r = .64$ vs $r = .50$; Sample 3, $r = .53$ vs $r = .45$) or communion (Sample 1, $r = .36$ vs $r = .12$; Sample 2, $r = .32$ vs $r = .23$; Sample 3, $r = .23$ vs $r = .18$). These findings are similar to prior research that has found that positively-worded items are more strongly correlated than negatively-worded items with a number of psychological variables (e.g., Ang et al., 2006; Alessandri et al., 2015; Donnellan et al., 2016).

We found mixed support for our fourth hypothesis, which observed Tafarodi and Milne's (2002) self-competence and selfliking perspective. In four out of six cases, self-competence and selfliking items had significantly different correlations with agency or communion. In samples 2 and 3, agency was significantly more strongly positively correlated with self-competence items than selfliking items. The effect size difference, however, was not huge—in both cases (Sample 2: $r = .60$ vs $r = .53$; Sample 3: $r = .52$ vs $r = .46$) and indeed smaller than the effect size differences for positively-worded and negatively-worded items. Similarly, on two occasions—in Samples 1 and 3—we found that communion was significantly more strongly positively correlated with selfliking items than self-competence items. Effect size differences here were a little larger, but still modest (Sample 1: $r = .30$ vs $r = .19$; Sample 3: $r = .26$ vs $r = .16$).

In summary, in Study 1 we found consistent support for our first hypothesis, that RSES item-level correlations with agency and communion would be heterogeneous. These results can be interpreted as implying that the items of the RSES are not interchangeable indicators of a single underlying construct (i.e., it is not unidimensional). In addition, we also found that observing distinctions drawn by previous perspectives on the dimensionality of the RSES often had substantive implications. We observed the most consistent and largest effect size differences for positively-worded versus negatively-worded items. Overall, in the present study, the positively-worded/negatively-worded item distinction—corresponding to both the positive self-

esteem/negative self-esteem perspective of Owens (1993; 1994) and the self-competency and self-derogation perspective of Alessandri et al. (2015)—mattered most.

4.7 Study 2

In Study 2 we investigated whether, with a different set of variables theoretically related to self-esteem, we would find a pattern of results similar to those observed in Study 1. We explored RSES item-level correlations with perceptions of social status, social inclusion, and social behaviour.

4.7.1 Self-Esteem, Social Inclusion, Social Status, and Social Behaviour: Theory, and Research with the RSES

Self-esteem and self-concept have long been linked in psychological research and theory to an individual's social experiences and behaviour (e.g., Barkow, 1975; Bowlby, 1979; Coopersmith, 1967; Gebauer, Sedikides, Wagner, Bleidorn, Rentfrow, Potter, & Gosling, 2015; Maslow, 1942; Mecca, Smelser, & Vasconcellos, 1989; Rosenberg, 1965; Rosenberg & Pearlin, 1978). Recently, evolutionary theorists have proposed that self-esteem is the output of an evolved psychological mechanism that functions to regulate an individual's social standing and interpersonal behaviour. According to the original version of sociometer theory (Leary, Tambor, Terdal, & Downs, 1995) self-esteem is the output of a psychological system that evolved to function both as a monitor and a regulator of an individual's social inclusion⁷. In contrast, hierometer theory (Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016; Mahadevan, Gregg, & Sedikides, 2018), posits that self-esteem (and self-regard more broadly) is part of psychological system that evolved to function as a monitor of social status and regulator of social status appropriate behaviour within social hierarchies.

Consistent with the original version of sociometer theory, a number studies have found that perceived social inclusion was strongly positively associated with average RSES scores (Gailliot & Baumeister, 2007; Leary et al., 1995, Study 5; Leary, Cottrell, & Phillips, 2001; Study 3; Kirkpatrick, Waugh, Valencia & Webster, 2002; Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016; Webster & Kirkpatrick, 2005). The mean correlation between social inclusion and the RSES reported across these studies was large ($r = .53$, range = .39-.62). Consistent with hierometer theory, two research teams have found that perceived social status was positively

⁷ More recent versions of theory have posited that self-esteem is dependent more broadly on relational value, not social inclusion, which is defined as the extent to which “an individual believes that other people regard their relationships with him or her to be valuable or important” (MacDonald & Leary, 2012, p. 356).

correlated with average RSES scores. First, Huo, Binning, and Molina (2010) found responses to a five-item perceived status scale (e.g. “Most of the time I feel that people at school respect my achievements” and “Most of the time I feel that the people at school think highly of my abilities and talents”) were moderately positively correlated with average RSES scores in a sample of U.S. adolescent students ($r = .28$). Second, Mahadevan et al. (2016) found perceived general social status (e.g. “Most of the time I feel that people see me as an important person”), rather than specifically in a school context, was strongly positively correlated with average RSES scores (Study 1, $r = .63$; Study 2, $r = .61$).

Other studies have examined the association between average RSES scores and perceptions of social behaviour. Leary et al. (2001; Study 3) found average RSEs scores were associated perceptions of social dominance with a medium-to-large effect size ($r = .44$). Similarly, Mahadevan et al. (2016) found that self-reported behavioural assertiveness, assessed with the dominance and submission subscales of the Social Behaviour Inventory (Moskowitz, 1994), was correlated with average RSES scores with a medium-to-late effect size (Study 1 $r = .48$; Study 2 $r = .39$). Mahadevan and colleagues also found that behavioural affiliateness, assessed with the agreeableness and quarrelsomeness subscales of the same scale, was correlated with a small-to-medium effect size with average RSES scores (Study 1 $r = .25$; Study 2 $r = .21$).

Relatedly, a number of research teams have found that average RSES are moderately positively correlated with the agreeableness subscales of the Big Five Inventory (John & Srivastava, 1999) and the NEO-Five Factor Inventory (Costa & McCrae, 1992): Zeigler-Hill, Holden, Enjaian, Southard, Besser, Li, and Zhang (2015; Study 1, $r = .25$; Study 2, $r = .38$), Robins, Hendin, & Trzesniewski (2001; Study 1, $r = .23$), Meier, Orth, Denissen, and Kuhnel (2011, $r = .30$), Watson, Suls, and Haig (2002; Study 1, $r = .25$; Study 2, $r = .23$; Study 3, $r = .12$). In the same studies, average RSES scores were found to be moderately to strongly positively correlated with extraversion: Zeigler-Hill et al. (2015; Study 1, $r = .31$; Study 2, $r = .24$), Robins, et al. (2001; Study 1, $r = .41$), Meier et al. (2011, $r = .54$), Watson et al. (2002; Study 1, $r = .47$; Study 2, $r = .40$; Study 3, $r = .46$).

To our knowledge, however, researchers have not previously explored RSES item-level associations with perceptions of social standing and social behaviour. The aim of Study 2 was to investigate the heterogeneity of RSES item-level correlations, and to examine the substantive implications of multidimensional theories on the RSES, with the dimensions of social behaviour outlined by Moskowitz (1994): dominance, submissiveness, agreeableness and quarrelsomeness.

4.7.2 Hypotheses

In Study 2, we had the same for exploratory hypotheses as in Study 1:

1. That item-level correlations with each social variable would be heterogeneous.

2. That the two items that include the time qualifier statements “at times” (items nine and ten) would have attenuated relationships with each social variable.
3. That positively-worded (items one, two, four, six and seven) and negatively-worded items (items three, five, eight, nine and ten) would be differentially correlated with each social variable.
4. That self-competence (items one, two, three, four, and five) and self-liking (items six, seven, eight, nine and ten) items would be differentially correlated with each social variable.

4.7.3 Method

4.7.3.1 Participants and Procedure

Six-hundred-and-thirty-seven participants from the UK (316 males, M age = 35.52, SD = 11.96) were recruited from the crowdsourcing platform *CrowdFlower*, originally for a survey on self-esteem and dental health. Questionnaires and items within questionnaires were randomly ordered. Participants were paid \$0.20.

4.7.3.2 Measures

4.7.3.2.1 RSES

Participants responded to a seven-point RSES from 1 (*strongly disagree*) to 7 (*strongly agree*).

4.7.3.2.2 Perceptions of Social Inclusion and Status

Participants responded to a ten-item measure of perceived social inclusion (e.g. “people include me in their social activities”, “people like me as a person”), and social status (e.g. “people admire me”, “people think highly of my abilities and talents”). Both scales were originally developed in Huo, Binning, and Molina (2010) and subsequently modified by Mahadevan, Gregg, and Sedikides (2016). Both scales featured a seven-point response format, from 1 (*strongly disagree*) to 7 (*strongly agree*).

4.7.3.3 Perceptions of Social Behaviour

Participants completed modified versions of the four 12-item scales of the Social Behaviour Inventory appearing in Moskowitz (1994): including dominance (e.g., “I set goals for others or us”, “I speak in a clear firm voice”); submissiveness (e.g., “I go along with the others”, “I do not say how I feel”); agreeableness (e.g., “I listen attentively to others”, “I express reassurance”), and quarrelsomeness (e.g., “I criticize others”, “I raise my voice”). Each scale had a seven-point response format, from 1 (*strongly disagree*) to 7 (*strongly agree*). See Appendix B for the wording of all items included in Study 2.

4.7.4 Participant Exclusions and Missing Data

We detected careless and insufficient effort responders with the response time and long string methods presented in Curran (2016). We excluded thirty-seven participants for taking less than two seconds on average to answer each item (i.e. taking less than 192 s). In addition, we excluded thirty-four participants for providing (a) a string of five or more identical consecutive responses, prior to reverses scoring on the RSES, social status and social inclusion scales, or (b) six or more identical consecutive responses on the social behaviours scales. Missing data were a problem for 51 (9.01%) of the remaining 566 participants. We excluded ten participants due to more than 5% missing data across the seven scales. Where missing data was <5%, we imputed missing values using the expectation-maximization (EM) maximum likelihood approach, as recommended by Schafer & Graham (2002). The final number of participants in Study 2 was therefore 556 (87.28% of original sample).

4.7.5 Analysis Strategy

We tested all hypotheses using the same methods as Study 1. Again, we opted to apply the simple unweighted Bonferroni correction for multiple hypothesis tests. Because we tested four hypotheses across six variables, we set α at .002 (.05/24).

4.8 Results

4.8.1 Basic Statistics and CFA

The mean RSES score for was 4.54 ($SD = 1.22$). Inter-item correlations, means, SDs , skew and kurtosis appear in Appendix B. As in Study 1, using normal maximum likelihood estimation, the single-factor uncorrelated errors model fit poorly, $\chi^2(35) = 674.61, p < .001$, $CFI = .813$, $RMSEA = .181 [.169, .193]$, $SRMR = .088$. See Appendix B for correlations between all seven scales and descriptive statistics.

4.8.2 Scale-Level Correlations

RSES average scores were strongly positively correlated with perceived social inclusion ($r = .60, t(554) = 17.65, p < .001, 95\% CI [.55, .65]$) and perceived social status ($r = .62, t(554) = 18.59, p < .001, 95\% CI [.56, .66]$), moderately positively correlated with perceived dominance ($r = .36, t(554) = 9.08, p < .001, 95\% CI [.28, .43]$), and weakly positively correlated with perceived agreeableness ($r = .18, t(554) = 4.19, p < .001, 95\% CI [.09, .26]$). In contrast, RSES average scores were moderately negatively correlated with perceived submissiveness ($r = -.44, t(554) = -11.53, p < .001, 95\% CI [-.50, -.37]$) and weakly negatively correlated with perceived quarrelsomeness ($r = -.15, t(554) = -3.47, p < .001, 95\% CI [-.23, -.06]$).

4.8.3 Heterogeneity Tests for Item-Level Correlations

Table 5 presents and Figure 2 displays item-level correlations with perceived inclusion, status, dominance, submissiveness, agreeableness, and quarrelsomeness. In line with Hypothesis 1, the test of the heterogeneity of item-level correlations was significant for all six areas of social perception: social inclusion, $\chi^2(9) = 118.64, p < .001, SD = .09$, range = .29 - .57; social status, $\chi^2(9) = 188.86, p < .001, SD = .11$, range = .29 - .62; dominance $\chi^2(9) = 170.86, p < .001, SD = .12$, range = .10 - .42; submissiveness $\chi^2(9) = 129.75, p < .001, SD = .10$, range = -.47 - -.18; agreeableness, $\chi^2(9) = 149.30, p < .001, SD = .12$, range = -.04 - .34; and, finally, quarrelsomeness $\chi^2(9) = 109.84, p < .001, SD = .10$, range = -.23 - .03.

4.8.4 Contrast Tests

4.8.4.1 Transient Evaluation/General Evaluation Items

Transient evaluation items were less strongly correlated, and at a statistically significant level, with inclusion ($\bar{z}_{r_1} = .40, \bar{z}_{r_2} = .53, z = 5.33, p < .001$), status ($\bar{z}_{r_1} = .39, \bar{z}_{r_2} = .56, z = 6.69, p < .001$) dominance ($\bar{z}_{r_1} = .19, \bar{z}_{r_2} = .32, z = 5.32, p < .001$), and agreeableness ($\bar{z}_{r_1} = .03, \bar{z}_{r_2} = .18, z = 6.31, p < .001$). Transient evaluation items also had statistically significant different relationships with submissiveness ($\bar{z}_{r_1} = -.38, \bar{z}_{r_2} = -.33, z = 2.34, p = .009$) and quarrelsomeness ($\bar{z}_{r_1} = -.17, \bar{z}_{r_2} = -.08, z = 3.62, p < .001$), but, contrary to hypothesis, these relationships were *more strongly negative*, not attenuated.

4.8.4.2 Positively-Worded/Negatively-Worded Items

In line with Hypothesis 3, negatively-worded and positively-worded items were differentially correlated with all social variables. Positively-worded items more strongly positively correlated than negatively-worded items with perceived social inclusion ($\bar{z}_{r_1} = .60, \bar{z}_{r_2} = .42, z = 9.04, p < .001$), social status, ($\bar{z}_{r_1} = .64, \bar{z}_{r_2} = .40, z = 9.04, p < .001$), dominance, ($\bar{z}_{r_1} = .41, \bar{z}_{r_2} = .17, z = 12.58, p < .001$), and agreeableness ($\bar{z}_{r_1} = .24, \bar{z}_{r_2} = .05, z = 10.46, p < .001$). In contrast, positively-worded items were less strongly negatively-correlated with perceived submissiveness ($\bar{z}_{r_1} = -.24, \bar{z}_{r_2} = -.43, z = 10.03, p < .001$), and quarrelsomeness ($\bar{z}_{r_1} = -.01, \bar{z}_{r_2} = -.19, z = 10.04, p < .001$).

4.8.4.3 Self-Competency/Self-Liking Items

In line with Hypothesis 4, self-competency items were significantly more strongly positively associated than self-loving items with perceived social inclusion ($\bar{z}_{r_1} = .55, \bar{z}_{r_2} = .47, z = 3.73, p < .001$), dominance ($\bar{z}_{r_1} = .32, \bar{z}_{r_2} = .26, z = 3.13, p < .001$), and agreeableness ($\bar{z}_{r_1} = .21, \bar{z}_{r_2} = .08, z = 6.95, p < .001$). However, they were not more strongly associated with social status (\bar{z}_{r_1}

$= .55$, $\bar{z}_{r_2} = .50$, $z = 2.53$, $p = .006$), quarrelsomeness ($\bar{z}_{r_1} = -.08$, $\bar{z}_{r_2} = -.11$, $z = 2.53$, $p = .101$), or submissiveness, ($\bar{z}_{r_1} = -.34$, $\bar{z}_{r_2} = -.33$, $z = -.42$, $p = .34$).

4.8.5 Discussion

In Study 2, in light of two recently proposed evolutionary theories of self-esteem, we turned our attention to RSES item-level correlations with perceived social experiences and behaviour. We had the same four hypotheses as in Study 1.

As in Study 1, and consistent with our first hypothesis, we found that RSES item-level correlations with perceived social status, social inclusion, and the four dimensions of social behaviour were heterogeneous. Item-level correlations ranged from medium to large for social inclusion and social status; from small to medium for dominance and submissiveness; and from negligible to medium for agreeableness and quarrelsomeness.

Consistent with our second hypothesis, and with some of the results of Study 1, we found that transient evaluation items were less strongly correlated with four social variables. Namely, perceived social inclusion, social status, dominance and agreeableness. Surprisingly, contrary to our second hypothesis, we found that transient evaluation items were more *strongly* negatively correlated with perceived submissiveness and quarrelsomeness. Effect size differences here, however, were modest.

As in Study 1 and consistent with our third hypothesis, positively-worded and negatively-worded items were differentially correlated with each social variable. Specifically, we found that positively-worded items were significantly more strongly positively correlated with perceived social inclusion, social status, dominance, and agreeableness than negatively-worded items. As in Study 1, effect size differences were non-trivial (social inclusion, $r = .60$ vs $r = .42$; social status, $r = .64$ vs. $r = .40$; dominance, $r = .41$ vs $r = .17$; and agreeableness, $r = .24$ vs $r = .05$). For variables that were negatively correlated with RSES average scores, however, our results were different. In those cases, we found that negatively-worded items were significantly *more strongly* negatively correlated than positively-worded items. Again, effect size differences were non-trivial (submissiveness, $r = -.24$ vs $r = -.43$; quarrelsomeness, $r = -.01$ vs $r = -.19$).

As in Study 1, we found weak support for our fourth hypothesis. In three out of six cases, we found that self-competence and self-loving items had significantly different correlations with social variables. In each case, we found that self-competence items were significantly more strongly positively correlated with the social variable than self-loving items. However, as in Study 1, the effect size differences, although statistically significant, were not huge. Indeed, in two cases they were small (social inclusion, $r = .55$ vs $r = .47$; dominance, $r = .32$ vs $r = .26$) and in one case the difference was modest (agreeableness, $r = .21$ vs $r = .08$). Importantly, these effect size differences

were much smaller than the effect size differences observed between positively-worded and negatively-worded items.

In summary, as in Study 1, we found consistent support for our first hypothesis, that RSES item-level correlations with social variables would be heterogeneous. This finding provides further evidence the items of the RSES are not interchangeable indicators of a single underlying construct (i.e., the RSES is not unidimensional). Moreover, we found that when we observed the distinctions drawn by previous theorists on the dimensionality of the RSES, substantive implications followed. As in Study 1, we observed the most consistent and largest effect size differences when positively-worded and negatively-worded items were treated as separate dimensions. As in Study 1, the positively-worded/negatively-worded distinction mattered most. In Study 3, we turned our attention to RSES item-level correlations with another set of variables theoretically related to self-esteem: attachment anxiety and avoidance.

4.9 Study 3

4.9.1 Attachment Experiences, Self-Concept, and Attachment Orientation

Two foundational ideas of attachment theory are: (1) that experiences with attachment figures influence the nature of an individual's working models of self and others, and (2) that working models of self and others provide the basis for an individual's attachment orientation (Bartholomew & Horowitz, 1991; Mikulincer & Shaver, 2016; Chapter 6). Attachment figures are those individuals to whom proximity is maintained, that provide a secure base for exploration, a safe haven in times of need, and elicit distress upon separation (Hazan, Campa, & Gur-Yaish, 2006). In childhood, attachment figures are primarily parents, grandparents, or older siblings; in adulthood, attachment figures are primarily romantic partners (Mikulincer, 2006).

Many research teams have used these ideas to guide the investigation of the relationship between self-concept and attachment orientation. Early research on adult attachment favoured typologies in the conceptualisations and measurement of attachment orientation (Hazan & Shaver, 1987, Bartholomew & Horowitz, 1991). However, in recent personality and social psychology, following the work of Brennan, Clark, and Shaver (1998), adult attachment orientation has increasingly been conceptualised and measured as two continuous dimensions. The first is attachment anxiety, defined as "the degree to which a person worries that a partner will not be available in times of need and engages in hyperactivating strategies" (Mikulincer, 2006, pp. 28-29). The second is attachment avoidance, defined as "the extent to which a person distrusts relationship partner's good will, deactivates the attachment system, and strives to maintain behavioural independence and emotional distance from partners" (Mikulincer, 2006, p. 28).

Supporting the idea that working models of self influence attachment orientation, a number of studies have found that both anxiety and avoidance, as measured by the Experiences in Close Relationships Scale (ECR, Brennan et al., 1998) or the revised version of that scale (ECR-R, Fraley, Waller, & Brennan, 2000), are negatively associated with average RSES scores. Table 6 displays Pearson's *r*s found in those studies, as well as meta-analysed correlation coefficients. Studies included in this table include the thirteen identified by Mikulincer and Shaver (2016, Chapter 6, Table 6.1) and an additional study identified through a search of the literature. The table shows that correlations between RSES scores and attachment anxiety ranged from -.16 to -.62, whereas correlations between RSES scores and attachment avoidance ranged from -.10 to -.54. The meta-analysed correlation between RSES scores and attachment anxiety is stronger ($r = -.40$, 95% CI [-.37, -.43]) than the meta-analysed correlation between RSES scores and attachment avoidance ($r = -.33$, 95% CI [-.30, -.36]). The aim of Study 3 was to investigate whether the items of the RSES are heterogeneously associated with attachment anxiety and attachment avoidance.

4.9.2 Hypotheses

As in Study 1 and 2, in Study 3 we had four hypotheses:

1. Item-level correlations with attachment anxiety and avoidance would be heterogeneous.
2. The two items that include the time qualifier statements “at times” (items nine and ten), would have attenuated relationships with both attachment anxiety and avoidance.
3. Positively-worded items (items one, two, four, six and seven) and negatively-worded items (items three, five, eight, nine and ten) would be differentially correlated with both attachment anxiety and avoidance.
4. Self-competence items (items one, two, three, four, and five) and selfliking (items six, seven, eight, nine and ten), taken together, would be differentially correlated with both attachment anxiety and avoidance.

4.9.3 Method

4.9.3.1 Participants

Participants were 477 undergraduates at a large university in the south of England (84.6% female, M age = 20.97, SD = 2.84) who filled-out an online pre-test survey for the 2015-2016 academic year. Sixty-nine per cent of participants described themselves as British, 10.6% as from another White background, and 4.7% as Chinese.

4.9.3.2 Measures

4.9.3.2.1 RSES

Participants responded to a 7-point RSES from 1 (*strongly disagree*) to 7 (*strongly agree*).

4.9.3.2.2 Attachment Orientation

Attachment orientation was assessed with a 12-item shortened version of the ECR (Wei, Russell, Mallinckrodt, & Vogel, 2007). Six items assessed attachment anxiety (e.g., “I need a lot of reassurance that I am loved by my partner”, “I do not often worry about being abandoned”) and six items assessed attachment avoidance (e.g., “I try to avoid getting close to my partner”, “I am nervous when people get too close to me”). Items had an eight-point response scale from 0 (*disagree strongly*) to 7 (*agree strongly*).

4.9.3.3 Participant Exclusions and Missing Data

We excluded four participants due to $> 5\%$ missing data. As in Study 2, for participants with less than 5% missing data ($n = 12$), we imputed missing values with the expectation-maximization (EM) maximum likelihood method.

4.9.3.4 Analysis Strategy

We tested all hypotheses with the same methods as in Studies 1 and 2. As in previous studies, we opted to apply the simple unweighted Bonferroni correction for multiple hypothesis tests (Shaffer, 1995, p. 569). Because we tested four hypotheses across two variables, as in Study 1, we set the significance level α at .006 (.05/8).

4.9.4 Results

4.9.4.1 Basic Statistics and CFA

The mean RSES score was 4.87 ($SD = 1.14$), mean attachment anxiety was 3.50 ($SD = 1.22$), and mean attachment avoidance was 3.06 ($SD = 1.02$). See Appendix D for RSES inter-item correlations, item means, SD , skew and kurtosis. As in Studies 1 and 2, using normal maximum likelihood estimation, the single-factor uncorrelated errors model fit the RSES poorly, $\chi^2(35) = 554.496$, $p < .001$, $CFI = .815$, $TLI = .763$, $RMSEA = .177$ [.164, .190], $SRMR = .077$.

4.9.4.2 Scale-Level Correlations

RSES average scores were negatively correlated with attachment anxiety with a medium-to-large effect size, $r = -.46$, $t(471) = -11.16$, $p < .001$, 95% CI [-.53, -.38]. RSES average scores were negatively correlated with attachment avoidance with a medium effect size, $r = -.29$, $t(471) = -6.52$,

$p < .001$, 95% CI [-.37, -.20]. Both of these effect sizes are broadly consistent with the meta-analysed values in Table 7 (anxiety: $r = -.40$, avoidance: $r = -.33$).

4.9.4.3 Item-Level Correlations: Heterogeneity Tests

Item-level correlations and 95% confidence intervals with attachment anxiety and avoidance appear in Table 8 and are displayed in Figure 3. The test of heterogeneity was statistically significant neither for attachment anxiety, $\chi^2(9) = 8.22, p = .51$, nor attachment avoidance, $\chi^2(9) = 19.25, p = .02$.

4.9.4.4 Contrast Tests

4.9.4.4.1 Transient Evaluation/General Evaluation Items

Against Hypothesis 2, transient evaluation items and general evaluation items were not differentially associated with attachment anxiety ($\bar{z}_{r_1} = -.34, \bar{z}_{r_2} = -.38, z = 1.25, p = .11$) but they were for attachment avoidance ($\bar{z}_{r_1} = -.14, \bar{z}_{r_2} = -.23, z = -3.33, p = <.001$).

4.9.4.4.2 Positively-Worded/Negatively-Worded Items

Against Hypothesis 3, positively worded and negatively worded items were not significantly differentially correlated with attachment anxiety ($\bar{z}_{r_1} = -.33, \bar{z}_{r_2} = -.37, z = -1.55, p = .07$) or attachment avoidance ($\bar{z}_{r_1} = -.22, \bar{z}_{r_2} = -.21, z = 0.88, p = .19$).

4.9.4.4.3 Self-Competency/Self-Liking Items

Against Hypothesis 4, self-competency and self-loving items were not differentially correlated with attachment anxiety ($\bar{z}_{r_1} = -.33, \bar{z}_{r_2} = -.37, z = -1.65, p = .05$) or attachment avoidance ($\bar{z}_{r_1} = -.24, \bar{z}_{r_2} = -.19, z = -1.87, p = .03$).

4.9.5 Discussion

In Study 3, we investigated RSES item-level correlations with attachment anxiety and avoidance. We tested the same hypotheses as in Studies 1 and 2.

The results of Study 3 were different from the results in Studies 1 and 2. For attachment anxiety, against our first hypothesis, we found that RSES item-level correlations were not significantly heterogeneous (although they ranged from medium to medium-to-large). This was the first time, across the three studies, that the test of heterogeneity of item-level correlations was not significant at the Bonferroni adjusted alpha level. In addition, we found little support for any of the other hypotheses for attachment anxiety. We did not find significantly different correlations between (a) transient evaluation items and general evaluation items, (b) positively-worded and negatively-

worded items, nor (c) self-competence items and self-loving items. Thus, in relation to attachment anxiety, theoretical perspectives on the dimensionality of the RSES, in our sample, did not have substantive implications.

Results of significant tests for item-level correlations with attachment avoidance were the same, apart from one exception. Against Hypothesis 1 and the results of Studies 1 and 2, we found that item-level correlations with attachment avoidance were not significantly heterogeneous, although correlations ranged from small to medium. Departing from the most consistent results of Studies 1 and 2, against our third hypothesis, we found that negatively-worded and positively-worded items were not differentially correlated with attachment avoidance (as was also the case for attachment anxiety). Moreover, against Hypothesis 4, we did not find that self-competence and self-loving items were differentially correlated with attachment avoidance. In line with Hypothesis 2, however, we did find that transient evaluation items were significantly less strongly correlated with attachment avoidance than general evaluation items. Whereas transient evaluation items had, on average, small correlations with attachment avoidance, general evaluation items had small-to-medium correlations with attachment avoidance. Thus, in contrast to Studies 1 and 2, we conclude that, in Study 3, none of the theoretical perspectives on the RSES had consistent or strong substantive implications.

4.10 General Discussion

In the set of secondary analyses reported here, we found that the items of the RSES were heterogeneously correlated with an array of variables theoretically linked to self-esteem, except attachment anxiety and avoidance. In Study 1, with reference to the DPM (Abele & Wojciszke, 2014), item-level correlations with agency varied from medium-to-large to large, while item-level correlations with communion varied from small to medium. In Study 2, with reference to sociometer (Leary, Tambor, Terda, & Downs, 1995) and hierometer (Mahadevan, Gregg, Sedikides, & de Waal-Andrews, 2016) theories, item-level correlations with social inclusion and social status ranged from medium to large, with dominance and submissiveness from small to medium, with quarrelsomeness from negligible to small, and, lastly, with agreeableness from negligible to medium. In contrast, in Study 3, with reference to attachment theory (Mikulincer & Shaver, 2016), we did not find that item-level correlations with attachment avoidance and attachment anxiety were significantly heterogeneous. Although our conclusions are somewhat complicated by the results of Study 3, the quite consistent pattern of results observed in Studies 1 and 2 perhaps undermine the idea that the RSES assesses a single underlying trait (Mottus, 2016; Vainik et al., 2015) and provides a broad kind of evidence that supports the general theory that the scale is *not* unidimensional.

Table 8 summarises the outcomes of significance tests and effect sizes differences for comparisons of item-level correlations pertaining to multidimensional theories on the RSES. Across three studies, substantive implications were strongest and most consistent when positively-worded and negatively-worded item correlations were contrasted. Positively-worded and negatively-worded items were differently correlated with all variables, except attachment anxiety and avoidance. Positively-worded items were more strongly positively correlated to six variables: agency, communion, social inclusion, social status, dominance, and agreeableness. Negatively-worded items were more strongly negatively correlated to two variables: perceived submissiveness and quarrelsomeness. Importantly, in addition to being statistically significant, effect size differences between positively and negatively-worded items were often sizeable.

In contrast, we found limited support for the transient evaluation/general evaluation and self-competence/self-loving perspectives. While significantly different correlations for the hypothesised dimensions outlined by these theories did occasionally emerge, effect size differences were typically small. Moreover, much smaller than the effect size differences between positively-worded and negatively-worded items. Thus, out of all of our hypotheses derived from theories on the dimensionality of the RSES, our results lend the greatest support to the hypothesis that positively-worded and negatively-worded items of the RSES assess distinct psychological variables.

4.10.1 Why are Item-Level Correlations Heterogeneous and why are Positively-Worded and Negatively-Worded Items Differentially Correlated with Theoretically Related Variables?

There are at least three possible interpretations of our findings. The first, informed by the arguments of Owens (1993; 1994), is that whereas positively-worded items assess positive self-esteem, negatively-worded items assess negative self-esteem. In Studies 1 and 2, we observed differential correlations because the two variables differentially influence, or are differentially influenced by, perceptions of agency, communion, social standing, and social behaviour. The second interpretation, based on the arguments of Allessandri et al. (2015), is that whereas positively-worded items assess self-competence, negatively-worded items assess self-derogation. In Studies 1 and 2, we observed differential correlations because the two variables differentially influence, or are differentially influenced by, perceptions of agency, communion, social standing, and social behaviour. The third, alternative, interpretation is that the differences are not substantively meaningful—as has been argued in relation to factor analytic findings with the RSES (e.g. Dunbar et al., 2000; Marsh, 1996; Schmitt & Allik, 2005). Instead, differential effect sizes are due to a method effect: positively-worded and negatively-worded items do not assess distinct psychological variables; negatively-worded (or positively-worded) items simply assesses self-esteem with greater error.

We are unsure as to which explanation best accounts for the data. In the case of the first interpretation, there are not strong theoretical reasons to believe, for example, that positive self-esteem should be more strongly correlated with perceptions of social inclusion and social status than negative self-esteem. According to Owens (1993), negative self-evaluations are important because they help “maintain a viable self-system and a predictable, orderly social relations” and aid “successful negotiation of social reality by yielding interpersonal predictability” (p. 289).

Challenging that theory somewhat, we found that negative self-esteem was less strongly correlated with perceptions of social inclusion and social status than positive self-esteem. Likewise, there are not strong theoretical reasons to believe, for example, that positive self-esteem should be uncorrelated, but negative self-esteem should be negatively correlated, with quarrelsome ness.

Although, consistent with our results, Owens (1993) noted that negative self-esteem (which he also referred to as self-deprecation) was “associated more strongly with variables describing people at variance with themselves or with others” (p. 295), he offered no theoretical explanation for these findings.

It is also difficult to determine whether the self-derogation and self-competence perspective of Alessandri et al. (2015) is better able to account for the data. Although Allessandri and colleagues did define the self-derogation and the self-competence constructs that they posited to account for their findings (p. 6), they did not offer a theory on the different roles that the two variables might play in psychological functioning. Given this lack of detail, it is not easy to evaluate whether the pattern of results observed here better aligns with their multidimensional theory on the RSES. For example, why should self-competence be more strongly positively correlated with perceived social status, social inclusion, dominance and agreeableness, than self-derogation? If our results are replicable, theories of self-derogation and self-competence that follow should be mindful of this pattern of results.

Because theories on the dimensionality of the RSES, in their present form, cannot convincingly account for our results, it is possible that a method effect is responsible. Moreover, a number of observations imply that a method effect interpretation of the observed differences in correlations between positively and negatively-worded items cannot be ruled out. First, as Table 8 shows, within samples, effect size differences for positively and negatively-worded items across different variables are very consistent. In Study 2, the effect size differences between positively and negatively-worded items were close to $r = .20$ for each social variable (.22, .24, .24, .19, .21, .18). In Study 1, effect size differences for agency and communion in sample 1 were .15 and .24, in sample 2 they were .14 and .09, and in sample 3 they were .08 and .05. This mechanistic regularity would seem hard to account for theoretically. Why should positive and negative self-esteem, or self-derogation and self-competency, have such consistently different associations with an array of variables?

If a method effect is responsible for our results, rather than any hypothesised multidimensionality of the RSES, the next question that we might ask is, what mechanism is responsible? What exactly is causing two spurious factors to emerge in EFA, poor single-factor model fit in CFA, and the differential item-level correlations with theoretically-related variables observed here? Few prior investigators have offered a direct answer to this question. Three teams of researchers, however, have suggested that respondents' poor verbal ability might have something to do with it, after finding that correlations between positively and negatively-worded items increased with verbal ability (Corwyn, 2000; Dunbar et al., 2000; Marsh, 1996)—although this finding was not replicated in more recent research (Greenberger, Chen, Dmitrieva, & Farraggia, 2003; Roth, Decker, Herzberg, & Brahler, 2008). The only other research team who have speculated on a method effect mechanism offered a list of potential candidate influences including social desirability, demand characteristics and item ambiguity, but did not commit to a specific mechanism (Gana et al., 2005). Unfortunately, we were not able to investigate the influence of verbal ability on the heterogeneity of item-level correlations or differential correlations for putative dimensions of the RSES in the studies reported here. It is important to point out, however, that the effects we were obtained in samples of university students and adult crowdsourcing website users, two populations that, we expect, would have little difficulty understanding negatively-worded statements.

If participants' poor comprehension of negatively-worded items is unlikely to be responsible for a method effect, then what might be? In a recent article, Weijters, Baumgartner, & Schillewaert (2013) identified acquiescence, careless responding, and confirmation bias as candidate mechanisms for negatively-worded item method effects. It seems plausible that two of those mechanisms, acquiescence—indifferent agreement to negative items—and/or careless responding, could give rise to attenuated correlations with theoretically related variables. However, a result that is harder to explain is that we found that the negatively-worded items of the RSES were sometimes more strongly negatively-correlated with variables than positively-items. Correlations, in these cases were not simply attenuated. Future studies of RSES item-level correlations should include an index of net acquiescence, as in Weijters (2013). If acquiescence drives method effects with the RSES, heterogeneity and/or differential correlations with related variables for positively and negatively-worded items should not be found, or should diminish, when acquiescent participants are excluded from analysis. Moreover, careless responding should be deterred in future research by, for example, using identified surveys, or the inclusion of instructed or bogus items (Meade & Craig, 2012).

4.10.2 Limitations

The first limitation of our research is that it was correlational. While it was not our intention to do so, we are unable to determine from the findings of the studies presented here whether areas of agency, communion, social standing, and social behaviour are differentially *causally* related to the

putative dimensions of the RSES. For example, we cannot determine whether any putative positive or negative self-esteem constructs, assessed by positively and negatively-worded items, might play different *causal* roles in psychological processes. Further experimental and longitudinal research is required on this topic.

The second limitation our research is that we analysed datasets that only included self-report measures of variables theoretically related to self-esteem. Although it is common for researchers to solely use self-report measures in psychometric work on the RSES (e.g. Alessandri et al., 2015; Ang et al., 2006; Donnellan et al., 2016; Schmitt & Allik, 2005), some theories of self-esteem posit that self-esteem levels influence actual interpersonal behaviour—not merely *perceptions* of interpersonal behaviour (e.g., hierometer theory; Mahadevan et al., 2016). We do not know whether we would have observed a similar pattern of findings if we had analysed comparable datasets with behavioural measures of focal variables. The inclusion of behavioural indexes of target variables should, in addition to the methods to deter careless responding discussed above, be a priority in future secondary analyses and primary research.

The third limitation of research is the lack of diversity in the samples analysed. While one sample was comprised of Polish adults, two samples were comprised primarily of early to mid-thirties crowdsourced English-speaking adults, and two samples were comprised primarily of young-adult female British undergraduates. We do not know whether our findings will hold in samples of individuals not drawn from western, educated, industrialized, rich, and democratic (WEIRD) societies (Henrich, Heine, & Norenzayan, 2010). Because previous research does indicate that the psychometric functioning of the RSES might differ across cultures (Farrugia, Chen, Greenberger, Dmitrieva, & Macek, 2004; Schmitt & Allik, 2005), this limitation should be addressed in future research.

4.10.3 What's Next?

We are sure that this research is, as Donnellan et al. (2016) put it in a recent related article, “far from the last word on the topic” (p. 8). The RSES deserves careful scrutiny as long as it continues to dominate the measurement of self-esteem and as long as strong answers to questions pertaining to its psychometric properties evade researchers. To briefly recap before discussing future directions for research, we found that item-level associations with many variables theoretically related to self-esteem were heterogeneous and that, in particular, positively and negatively-worded items had differential correlations with theoretically related variables. We have argued, however, that—at present—multidimensional perspectives on the RSES are unable to fully account for these results. It is possible, therefore, that they are the product of a theoretically-irrelevant method effect. It is still not clear whether responses to all ten items of the RSES are adequately represented by taking a single score, or whether subscales are required.

What might be done in future studies to shed further light on the issue? One possibility is to undertake experimental research, rather than correlational research, in which positively and negatively items are treated as separate dimensions. If the RSES is unidimensional, we would expect to see all of the items respond similarly to traditionally employed and efficacious manipulations of self-esteem, such as the life-alone or demarcated rejection procedures (Gerber & Wheeler, 2009). On the other hand, if the RSES assesses both positive and negative self-esteem, and if negative self-esteem helps individuals to negotiate social reality more than positive self-esteem (Owens, 1993) we might expect to find potentiated responses for negative items. Stated statistically, we might expect larger effect sizes (e.g., Cohen's d) between experimental conditions and control conditions to for negatively-worded items than positively-worded items. Although the RSES is often used with the intention of measuring a stable trait, some research does suggest that non-modified versions of the scale are responsive to manipulations (Lamer, Reeves, & Weisbuch, 2015; Leonardelli, Lakin, & Arkin, 2007).

Another option is to adopt a similar strategy in longitudinal research, charting growth trajectories at the item level across time. Levels of self-esteem, as measured by the RSES or RSES type instruments, appear to increase from late adolescence to adulthood (e.g. Bleidorn, Arslan, Denissen, Rentfrow, Gebauer, Potter, & Gosling, 2015) and then drop in old age (Trzesniewski, Donnellan, & Robins, 2003; Robins & Trzesniewski, 2005; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). If the RSES is unidimensional, and if positive and negative items do not pertain to separable underlying constructs, then we might expect largely invariant growth trajectories across the lifespan for each item.

Lastly, Figure 4 and Figure 5 show that, in our studies, item-level characteristics were related to their “strengths” in the original Guttman-scale version of the RSES. Figure 4 shows that item-level means were related to strength of the contrived item, with the means of items that originally comprised stronger contrived items (e.g., “I feel that I’m a person of worth, at least on an equal plane with others”) mostly higher than the means of the items that comprised weaker contrived items (e.g., “At times I think I am no good at all”). It also shows an opposite trend for item-level standard deviations: responses were more variable for items that comprised the weaker contrived items (e.g., “At times I think I am no good at all”) than stronger contrived items (e.g., “I feel that I’m a person of worth, at least on an equal plane with others”). Figure 5 shows starker item-level differences, revealing that the weakest contrived items in the original scale (“At times I think I am no good at all”, “I certainly feel useless at times”, and “I wish I could have more respect for myself”) are far less negatively skewed than the other items. Although our focus here was on item-level correlations with theoretically related variables, and we mention this finding here only in passing, future research should examine this interesting pattern of results more closely and any possible implications for the dimensionality of the RSES.

4.10.4 Implications

Setting aside difficult interpretations of the pattern of results, and the as yet unresolved issue of the dimensionality of the RSES, a simple practical implication of the present set of studies relates to the use of shortened versions of the instrument—a practice that recent meta-research shows is common in personality and social psychology (Pegler, Gregg, & Hart, 2018). The present research shows that effect sizes in research on self-esteem might depend on which items of the RSES are chosen. For whatever reason—perhaps because negatively-worded and positively-worded items assess negative and positive self-esteem, respectively, or perhaps due to a method effect—the items of the RSES are not empirically interchangeable. We encourage researchers that employ shortened versions of the RSES in their work to be mindful of this. The present research highlights the particular possibility that the use of negatively worded items will result in attenuated relationships with theoretically related variables.

Our results perhaps also speak to the wider psychometric discussion on whether including a mix of positively-worded and negatively-worded items is an optimal strategy in scale development. It has been known for some time that scales that have a mixture of negatively-worded and positively-worded items often have complicated internal structures which fall short of conventional psychometric standards (DiStefano & Motl, 2006; Schmitt & Stults, 1985; Weijters, Baumgartner, & Schillewaert, 2013). The present research suggests that such mixed wording might also complicate item-level correlations with theoretically related variables. Future research should investigate whether the items of other scales with a mix of positively-worded and negatively-worded items and a disputed dimensionality—of which there a large number (Zhang & Savalei, 2016)—have similarly heterogeneous item-level correlations with theoretically related variables.

4.11 References

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4.12 Tables

Table 1. *Items of the Rosenberg Self-Esteem Scale (Rosenberg, 1965, pp. 305-307) and Original Guttman-Scale Contrived Items*

Item	Wording	Contrived Item
1	I feel that I'm a person of worth, at least on an equal plane with others	1
2	I feel that I have a number of good qualities	1
3	All in all, I am inclined to feel that I am a failure	1
4	I am able to do things as well as most other people	2
5	I feel I do not have much to be proud of	2
6	I take a positive attitude toward myself	3
7	On the whole, I am satisfied with myself	4
8	I wish I could have more respect for myself	5
9	I certainly feel useless at times	6
10	At times I think I am no good at all	6

Table 2. Single-Factor Confirmatory Factor Analyses on the Original Ten-Item RSES (1999-2015): Fit Statistics and Sample Characteristics

Study	EM	χ^2	CFI	TLI	RMSEA		N	Nation	Language	<i>M age</i>	RO
					[95% CI]						
Alessandri et al. (2013)	ML	189	.84	—	.13 [.10, .14]		388	—	—	—	—
Alessandri et al. (2015)	ML	7344	.74	.67	.14		11028	U.S.	English	38.17	4
Aluja et al. (2007)	—	229	.86	.82	.11		447	French	French	20.90	—
Boduszek et al. (2012)	MLR	192	.71	.62	.12		845	Polish	Polish	33.85	4
Boduszek et al. (2013)	MLR	224	.81	.76	.09		669	U.S.	English	41.06	4
Corwyn (2001) S1	WLS	172	—	—	.07		939	U.S.	English	—	4
Corwyn (2001) S2	WLS	1086	—	—	.07		6044	U.S.	English	—	4
Corwyn (2001) S3	WLS	99	—	—	.07		414	U.S.	English	—	4
Dhingra (2013)	—	387	.88	.85	.12		761	British	English	—	4
Donnellan et al. (2015)	MLR	872	.72	.78	.15		1127	U.S.	English	18.31	5
Dunbar et al. (2000) S1	ML	343	.85	.80	.10		852	British	English	—	4
Dunbar et al. (2000) S2	ML	254	.86	—	.09		858	British	English	—	4

Study	EM	RMSEA						Language	<i>M age</i>	RO
		χ^2	CFI	TLI	[95% CI]	<i>N</i>	Nation			
Farrugia et al. (2004) S1	—	325	.85	.81	.14	422	U.S.	English	16.60	6
Farrugia et al. (2004) S2	—	436	.73	.66	.15	496	Czech	Czech	16.90	6
Farrugia et al. (2004) S3	—	236	.78	.74	.11	502	Chinese	Chinese	17.60	6
Farrugia et al. (2004) S4	—	261	.86	.82	.11	497	Korean	Korean	16.50	6
Franck et al. (2008)	—	157	.87	.84	.08	442	Dutch	Dutch	36.10	4
Gana et al. (2005)	WLS	160	.93	—	.07	864	French	French	72.71	4
Gana et al. (2005)	FIML	615	.80	.68	.14	892	French	French	72.73	4
Greenberger et al. (2003)	ML	241	.82	.77	.15	257	US	English	20.10	6
Li et al. (2015) S1	DWSL	258	.94	—	.14	350	Chinese	Chinese	14.17	4
Li et al. (2015) S2	DWSL	163	.94	—	.10	352	Italian	Italian	14.17	4
Li et al. (2015) S3	DWSL	258	.94	—	.14	343	Costa Rica	Costa Rican	14.74	4
Lindwall et al. (2012)	FIML	701	.80	—	.14	1177	British, Swedish, Finish,	English, Swedish, Finish,	73.64	4

Study	EM	χ^2	CFI	TLI	[95% CI]	N	Nation	RMSEA			RO
								Greek,	Greek,		
								Italian	Italian		
Martin-Albo et al. (2007)	ML	367	.75	—	.15	420	Spanish	Spanish	21.29	4	
McKay et al. (2014)	ML	1286	.89	.86	.10	3862	Irish	English	—	4	
Michaelides (2015) S1	ML	192	.84	—	.15 [.13, .17]	205	Cypriot	Greek	21.35	4	
Michaelides (2015) S2	ML	167	.73	—	.16 [.14, .19]	144	Cypriot	Greek	37.23	4	
Mullen et al. (2013)	ML	756	.76	.69	.19 [.17, .20]	603	US	English	69.94	5	
Pullman & Allik (2000)	—	—	—	—	.06	608	Estonian	Estonian	—	5	
Quilty et al. (2006) S1	ML	487	.81	.70	.16	503	Canadian	English	18.70	9	
Quilty et al. (2006) S2	ML	380	.83	.72	.14	501	US	English	52.20	5	
Roth et al. (2008) S2	ML	1531	.85	.81	.13 [.13, .14]	2489	German	German	48.32	6	
Supple et al. (2012) S1	WLS	174	.86	.82	.18	124	US	English	—	4	

Study	EM	RMSEA									
		χ^2	CFI	TLI	[95% CI]	N	Nation	Language	<i>M</i> age	RO	
Supple et al. (2012) S2	WLS	1030	.80	.75	.19	790	Latino, U.S.,	English	—	4	
							Mexican				
							Salvadorian,				
							Guatemalan				
Supple et al. (2012) S3	WLS	484	.82	.77	.20	334	Armenian, Iranian	English	—	4	
Tafarodi & Milne (2002) S1	ML	621	—	—	.14 [.13, .15]	836	Canadian	English	19.00	5	
Tafarodi & Milne (2002) S2	ML	864	—	—	.14 [.13, .15]	1648	Canadian	English	19.00	5	
Tomas & Oliver (1999)	ML	352	.83	.78	—	640	Spanish	Spanish	15.80	4	
Vasconcelos-Raposo et al. (2011)	ML	886	.85	—	.12	1763	Portuguese	Portuguese	—	4	
Wang et al. (2001)	FWLS	162	.98	.97	.09	430	US	English	37.40	4	
Wang et al. (2015)	ML	269	.83	.78	.16 [.14, .18]	280	Chinese	Chinese	22.64	6	

Note. EM = estimation method, DWLS = diagonally weighted least squares, ML = maximum likelihood, MLR = robust maximum likelihood, FIML = full-information maximum likelihood, WLS = weighted least squares, FWLS = fully weighted least squares. A blank cell indicates was not reported. All χ^2 p<.05. S = sample.

Table 3. *Multidimensional Perspectives on the RSES*

Item (abridged)	Wording	Owens (1993; 1994)	Tafarodi & Milne (2002)	Kaufman et al. (1991)	Alessandri et al. (2015)
I feel that I am a person of worth...	P	PSE	SC	GE	SC
I feel that I have a number of good...	P	PSE	SC	—	SC
All in all, I am inclined to feel I am a failure.	N	NSE	SC	—	SD
I am able to do things as well as...	P	PSE	SC	GE	SC
I feel I do not have much to be proud of..	N	NSE	SC	GE	SD
I take a positive attitude toward...	P	PSE	SL	—	SC
On the whole, I am satisfied with...	P	PSE	SL	GE	SC
I wish I could have more respect for...	N	NSE	SL	—	SD
At times I think I am no good at all.	N	NSE	SL	TE	SD
I certainly feel useless at times.	N	NSE	SL	TE	SD

Table 4. *Average, Item-Level Correlations, and 95% Confidence Intervals for the RSES with Communion in Study 1*

Item	Sample 1	Sample 2	Sample 3	Mini-Meta
<i>M</i>	.30 [.17, .42]	.34 [.28, .40]	.26 [.20, .32]	.30 [.25, .35]
1	.34 [.22, .45]	.31 [.25, .37]	.27 [.21, .33]	.31 [.25, .36]
2	.42 [.30, .53]	.34 [.28, .40]	.29 [.23, .35]	.35 [.30, .40]
3	.21 [.08, .34]	.25 [.19, .31]	.22 [.16, .28]	.23 [.17, .28]
4	.32 [.19, .44]	.27 [.21, .33]	.24 [.18, .30]	.28 [.22, .33]
5	.13 [.00, .26]	.24 [.18, .30]	.23 [.17, .29]	.20 [.14, .25]
6	.36 [.24, .47]	.34 [.28, .40]	.15 [.08, .21]	.28 [.23, .33]
7	.30 [.17, .42]	.30 [.24, .36]	.20 [.14, .26]	.27 [.21, .32]
8	.03 [-.11, .16]	.15 [.08, .21]	.12 [.05, .19]	.10 [.04, .16]
9	.12 [-.02, .25]	.24 [.18, .30]	.14 [.07, .20]	.17 [.11, .22]
10	.09 [-.05, .22]	.25 [.19, .31]	.19 [.13, .25]	.18 [.12, .23]
<i>SD</i>	.13	.06	.06	
Range	.03 - .42	.15 - .34	.12 - .29	.10 - .35

Note. S = sample. *M* is the mean average across all ten items. Correlations are Pearson's *rs*. Meta-analysis estimate and confidence interval method is unweighted method of Bonett (2008; Equations 1 & 4)

Table 5. *Average, Item-Level Correlations, and 95% Confidence Intervals for the RSES with Agency in Study 1*

Item	Sample 1	Sample 2	Sample 3	Mini-Meta
<i>M</i>	.56 [.46, .65]	.66 [.62, .70]	.59 [.55, .63]	.60 [.56, .64]
1	.42 [.30, .53]	.58 [.53, .62]	.47 [.42, .52]	.49 [.44, .53]
2	.46 [.35, .56]	.54 [.49, .59]	.50 [.45, .55]	.50 [.45, .54]
3	.27 [.14, .39]	.47 [.42, .52]	.47 [.42, .52]	.40 [.35, .45]
4	.51 [.40, .60]	.59 [.55, .63]	.51 [.46, .56]	.54 [.49, .58]
5	.38 [.26, .49]	.49 [.44, .54]	.42 [.36, .47]	.43 [.38, .48]
6	.44 [.32, .54]	.57 [.52, .61]	.49 [.44, .54]	.50 [.45, .54]
7	.53 [.43, .62]	.53 [.48, .58]	.47 [.42, .52]	.51 [.47, .55]
8	.23 [.10, .35]	.39 [.33, .45]	.39 [.33, .45]	.34 [.28, .39]
9	.42 [.30, .53]	.47 [.42, .52]	.38 [.32, .44]	.42 [.38, .47]
10	.42 [.30, .53]	.47 [.42, .52]	.43 [.37, .48]	.44 [.39, .49]
<i>SD</i>	.09	.06	.05	
Range	.23 - .53	.39 - .59	.38 - .51	.34 - .54

Note. S = sample. *M* is the mean average across all ten items. Correlations are Pearson's *rs*. Meta-analysis estimate and confidence interval method is unweighted method of Bonett (2008; Equations 1 & 4). All *ts* > 2.00 and *ps* <.05.

Table 6. Item-Level Correlations and 95% Confidence Intervals for the RSES with Perceived Inclusion, Status, Dominance, Submissiveness, Agreeableness, and Quarrelsomeness in Study 2

Item	Inclusion	Status	Dominance	Submissiveness	Agreeableness	Quarrelsomeness
1	.55 [.49, .60]	.60 [.55, .65]	.42 [.35, .48]	-.28 [-.36, -.21]	.23 [.15, .31]	.02 [-.06, .11]
2	.53 [.46, .58]	.52 [.45, .58]	.38 [.31, .45]	-.24 [-.31, -.16]	.34 [.26, .41]	-.05 [-.13, .03]
3	.49 [.42, .55]	.46 [.39, .53]	.20 [.12, .28]	-.45 [-.51, -.38]	.13 [.05, .22]	-.23 [-.31, -.15]
4	.49 [.42, .55]	.49 [.42, .55]	.37 [.29, .44]	-.18 [-.26, -.10]	.24 [.16, .32]	.03 [-.05, .11]
5	.42 [.35, .49]	.42 [.34, .49]	.18 [.10, .26]	-.47 [-.52, -.39]	.10 [.02, .18]	-.20 [-.27, -.12]
6	.54 [.48, .60]	.60 [.55, .65]	.42 [.35, .49]	-.29 [-.36, -.21]	.19 [.11, .27]	-.02 [-.10, .06]
7	.57 [.51, .62]	.62 [.56, .67]	.37 [.30, .44]	-.19 [-.27, -.11]	.20 [.12, .28]	-.01 [-.11, .05]
8	.29 [.22, .37]	.29 [.21, .36]	.10 [.02, .19]	-.39 [-.46, -.32]	-.04 [-.12, .05]	-.19 [-.27, -.11]
9	.36 [.28, .43]	.38 [.31, .45]	.17 [.09, .25]	-.34 [-.42, -.27]	.02 [-.07, .10]	-.18 [-.26, -.10]
10	.40 [.32, .46]	.36 [.29, .43]	.21 [.13, .29]	-.39 [-.46, -.32]	.04 [.04, .12]	-.15 [-.23, -.07]
SD	.09	.11	.12	.10	.12	.10
Range	.29 - .57	.29 - .62	.10 - .42	-.47 - -.18	-.04 - .34	-.23 - .03

Note. All $dfs = 554$. All $ts > 2.00$ and $ps < .05$, except where bold.

Table 7. Pearson's r Correlations Between Attachment Dimensions, as Measured by the Experiences in Close Relationships Scale, and Rosenberg Self-Esteem Scale Average or Sum Scores in 13 Studies (N = 3762)

Study	Anxiety	Avoidance	Measure	N
Baumel & Berant (2015)	-.51	-.45	ECR	124
Dan et al. (2014): Study 2	-.43	-.33	ECR	172
Dan et al. (2014): Study 1	-.36	-.30	ECR	155
Felton & Jowett (2013)	-.16	-.16	ECR-S	430
Frias & Shaver (2014)	-.39	-.47	ECR	345
Gentzler & Kerns (2006): Females	-.45	-.27	ECR	155
Gentzler & Kerns (2006): Males	-.39	-.41	ECR	107
Goodall (2015)	-.57	-.44	ECR-R	174
Hart et al. (2015): Study 1	-.62	-.54	ECR	267
Hart et al. (2015): Study 2	-.60	-.43	ECR	316
Jones (2017)	-.31	-.41	ECR	261
Li & Zheng (2014)	-.22	-.26	ECR	585
McWilliams & Holmberg (2010)	-.62	-.36	ECR-R	148
Shanmugam, Jowett, & Meyer (2012)	-.58*	-.35*	ECR	411
Wei & Ku (2007)	-.38	-.28	ECR	390
Wongpakaran et al. (2012): Men	-.38	-.21	ECR-R	142
Wongpakaran et al. (2012): Women	-.17	-.10	ECR-R	256
Zhang, Chan, & Teng (2011)	-.28	-.12	ECR	147

Note. * indicates Spearman's Rho coefficients, not Pearson's *r*. ECR = Experiences in Close Relationships Scale (Brennan et al. 1998); ECR-R = Experiences in Close Relationships Scale Revised (Fraley et al. 2000); ECR-S = Experiences in Close Relationships Scale Shortened (Wei, Russell, Mallinckrodt, & Vogel, 2007).

Table 8. RSES Item-Level Correlations and 95% Confidence Intervals for Attachment Anxiety and Avoidance (Study 3)

Item	Anxiety	Avoidance
1	-.31 [-.39, -.23]	-.22 [-.31, -.13]
2	-.32 [-.40, -.24]	-.26 [-.34, -.17]
3	-.37 [-.45, -.29]	-.24 [-.32, -.15]
4	-.29 [-.38, -.21]	-.17 [-.25, -.08]
5	-.31 [-.39, -.23]	-.27 [-.35, -.18]
6	-.36 [-.44, -.28]	-.20 [-.29, -.12]
7	-.33 [-.41, -.25]	-.26 [-.34, -.18]
8	-.35 [-.43, -.27]	-.22 [-.31, -.14]
9	-.34 [-.42, -.26]	-.14 [-.23, -.05]
10	-.38 [-.46, -.30]	-.15 [-.24, -.06]
SD	.03	.05
Range	-.29, -.38	-.14, -.27

Note. All $dfs = 471$, all $ps < .001$

Table 9. *Outcomes of Hypothesis Tests and Effect Size Differences Across Samples and Studies*

	H1				H2				H3				H4	
	<i>p</i> < α	<i>r</i> min	<i>r</i> max	<i>p</i> < α	<i>r</i> TE	<i>r</i> GE	<i>P</i> < α	<i>r</i> Pos	<i>r</i> Neg	<i>P</i> < α	<i>r</i> SC	<i>r</i> SL		
Study 1														
<i>Sample 1</i>														
Agency	✓	.23	.53	✗	.45	.44	✓	.51	.36	✗	.44	.44		
Communion	✓	.03	.42	✓	.11	.27	✓	.36	.12	✓	.30	.19		
<i>Sample 2</i>														
Agency	✓	.39	.59	✓	.51	.58	✓	.64	.50	✓	.60	.53		
Communion	✓	.15	.34	✗	.25	.28	✓	.32	.23	✗	.29	.26		
<i>Sample 3</i>														
Agency	✓	.38	.51	✓	.43	.50	✓	.53	.45	✓	.52	.46		
Communion	✓	.12	.29	✓	.17	.22	✓	.23	.18	✓	.26	.16		
Study 2														
Social inclusion	✓	.29	.57	✓	.40	.53	✓	.60	.42	✓	.55	.47		
Social status	✓	.29	.62	✓	.39	.56	✓	.64	.40	✗	.55	.50		
Dominance	✓	.10	.42	✓	.19	.32	✓	.41	.17	✓	.32	.26		
Submissiveness	✓	-.18	-.47	✗	-.38	-.33	✓	-.24	-.43	✗	-.34	-.33		
Agreeableness	✓	-.04	.34	✓	.03	.18	✓	.24	.05	✓	.21	.08		
Quarrelsomeness	✓	.03	-.23	✗	-.17	-.08	✓	-.01	-.19	✗	-.08	-.11		
Study 3														
Anxiety	✗	-.29	-.38	✗	-.34	-.38	✗	-.33	-.37	✗	-.33	-.37		
Avoidance	✗	-.14	-.27	✓	-.14	-.23	✗	-.22	-.21	✗	-.24	-.19		

Note. ✓ = test significant, ✗ = test non-significant, P = positively-worded items, N = negatively-worded items, TE = transient evaluation items, GE = general evaluation items, SC = self-competence items, SL = self-loving items.

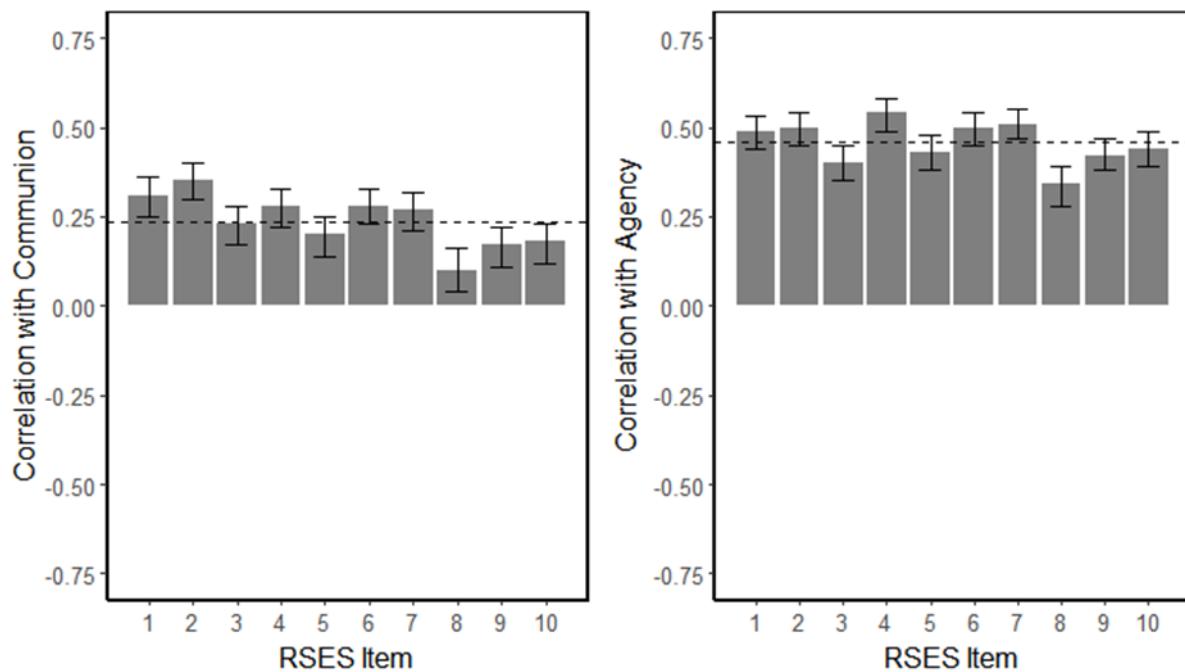


Figure 1. Mini-meta-analysed RSES item-level correlations with perceived communion and agency across the three samples included in Study 1. Error bars are 95% CIs. Dashed lines indicate mean item-level correlation.

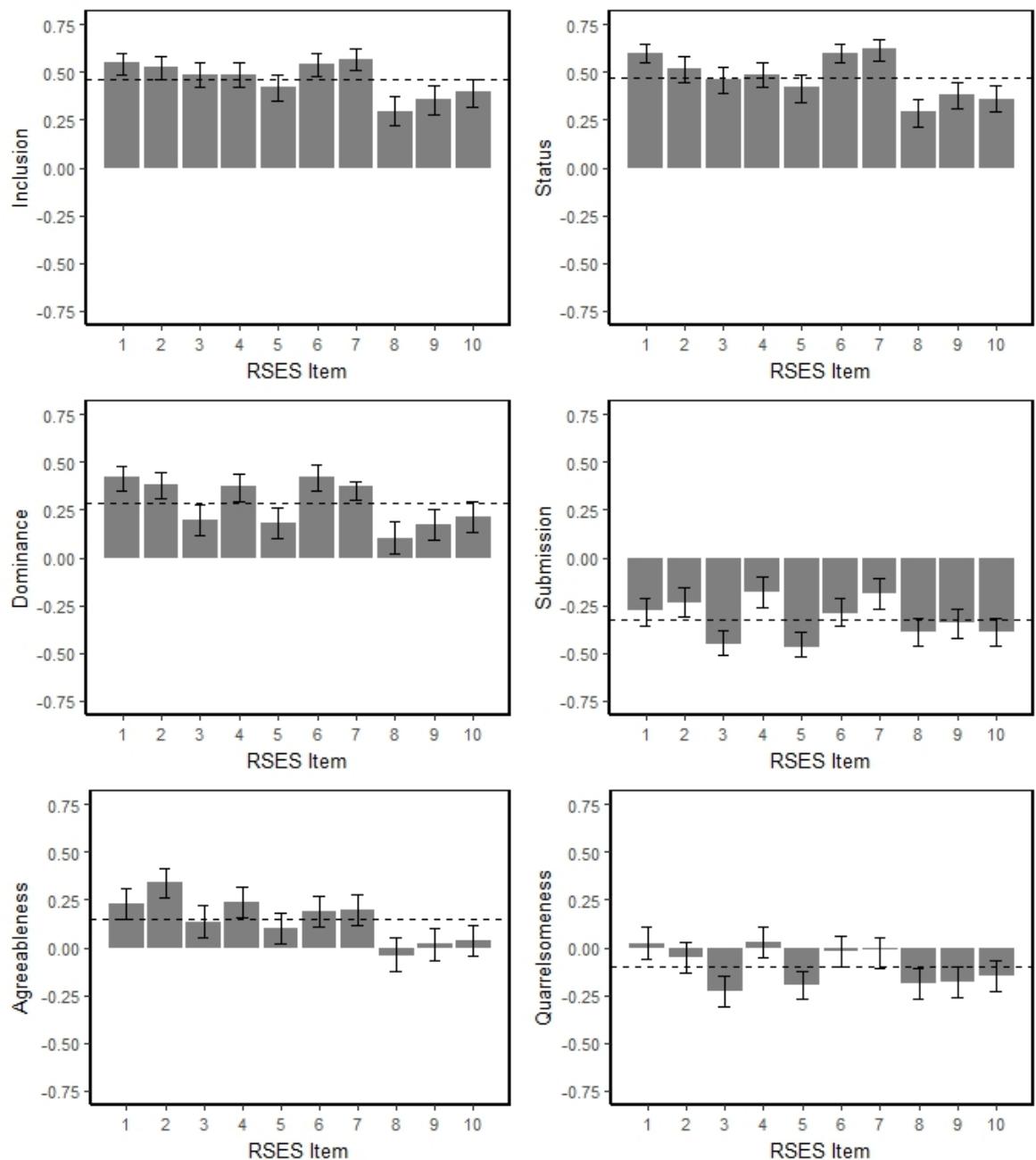


Figure 2. RSES item-level correlations with social measures in Study 2. Error bars are 95% CIs. Dashed lines show mean item-level correlation.

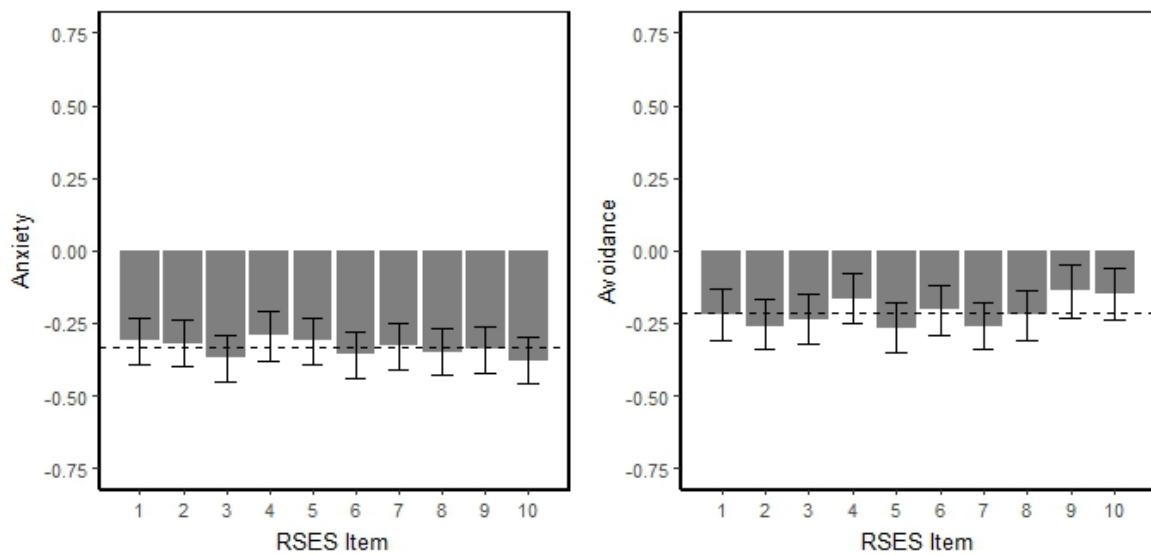


Figure 3. RSES item-level correlations with attachment dimensions in Study 3. Error bars are 95% CIs. Dashed lines show mean item-level correlation.

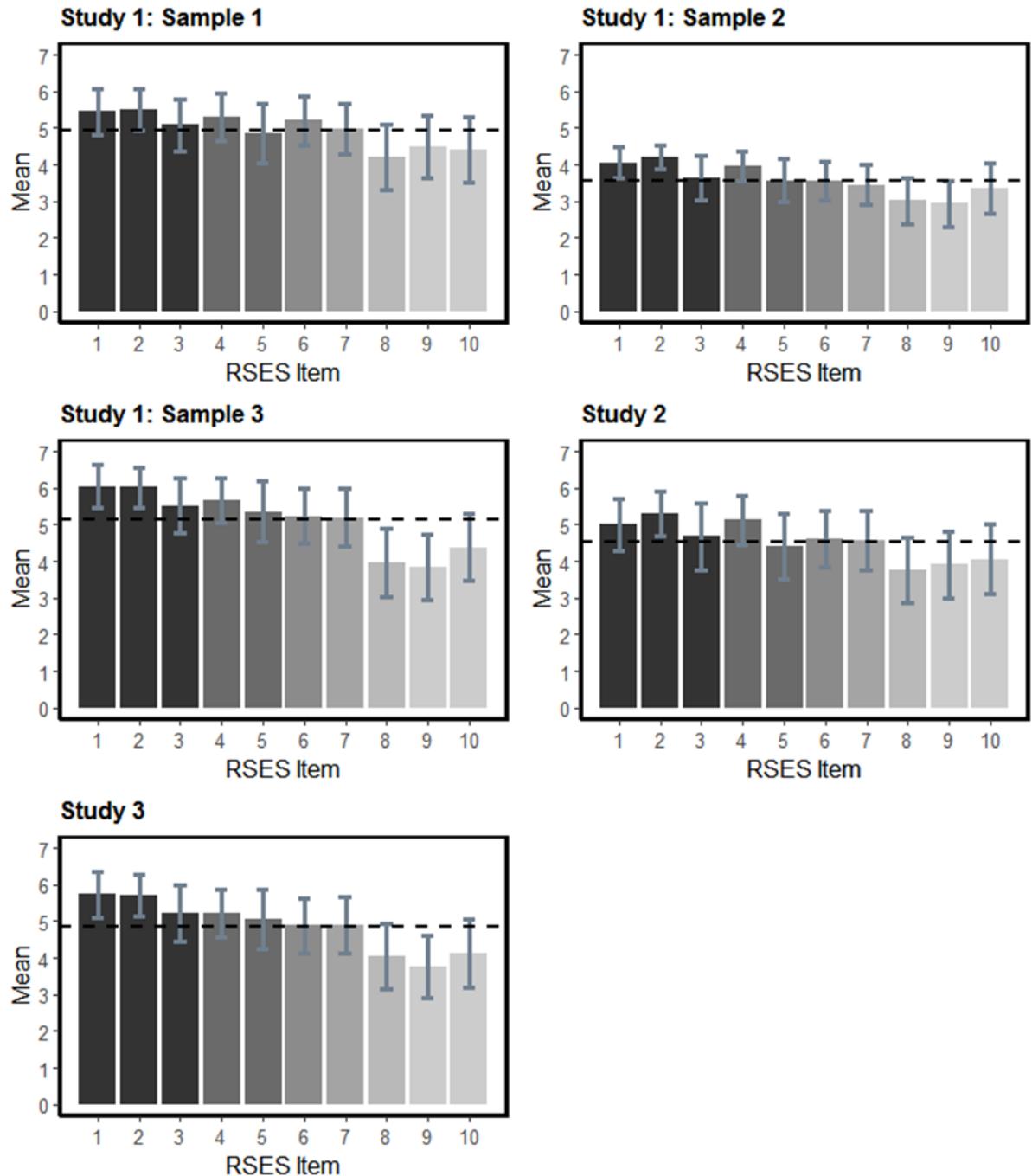


Figure 4. RSES item means and standard deviations. Bars display item means and error bars display size of standard deviation. The colour of the bar shows the item's "strength" in the original Guttman-scale RSES, with darker colours representing "stronger" items. Dashed line shows the mean of item means.

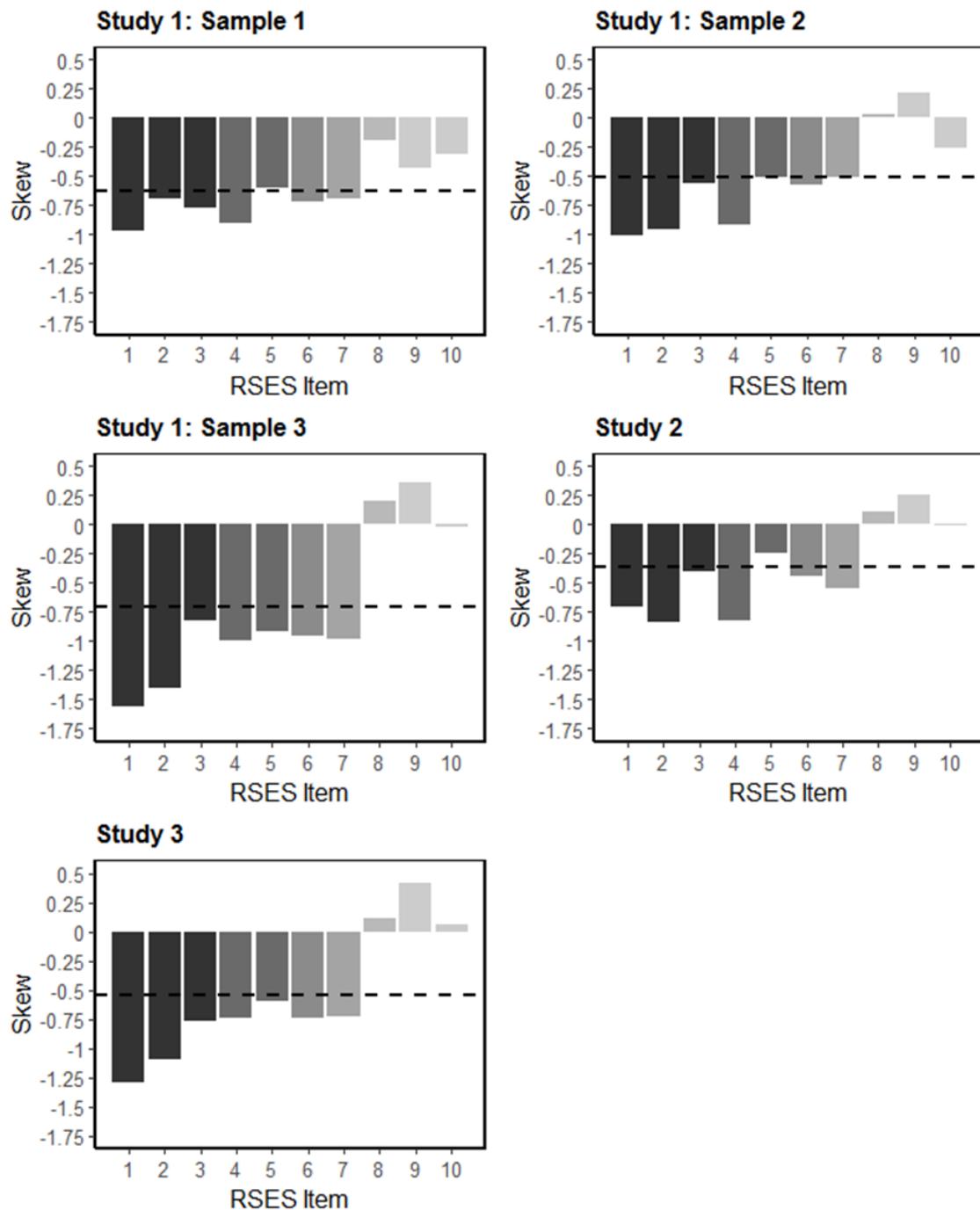


Figure 5. RSES item skew. The colour of the bar shows the item's "strength" in the original Guttman-scale RSES, with darker colours representing "stronger" items (the joint strongest is item 1 = "I feel that I'm a person of worth, at least on an equal plane with others"; and the joint weakest is item 10 = "At times I think I am no good at all"). The dashed line shows the mean skew.

Chapter 5 Development and Initial Validation of a Brief Measure of Self-Esteem: The Worth and Value Self-Esteem Scale (WAVSES)

5.1 Abstract

The Rosenberg Self-Esteem Scale has dominated the measurement of self-esteem in recent personality and social psychological research (RSES; Rosenberg, 1965) (Pegler, Gregg, & Hart, 2018a). However, the measure has at least three flaws: (1) it was initially constructed and validated as a Guttman-type scale but, following a series of little-known ad-hoc modifications, is now used in Likert-type form; (2) it has poor content validity for many modern definitions of self-esteem, and (3) evidence suggests that the scale is not unidimensional. We report here on the construction and initial validation of the Worth and Value Self-Esteem Scale (WAVSES), a brief and unidimensional, non-Guttman-type, measure of self-esteem that is intended, above all else, to be maximally content valid for self-esteem defined narrowly as an individual's overall evaluation of his or her worth and value. In Studies 1 ($N = 261$) and 2 ($N = 294$), regarding convergent validity, we find that participants' scores on the WAVSES were strongly positively correlated with the RSES and the Single-Item Self-Esteem Scale. Regarding concurrent validity, we find that scores on the WAVSES were correlated in predicted directions and strengths with measures of seven psychological variables theoretically or empirically related to self-esteem. In addition, in Study 3 ($N = 108$), we find that the scale had strong test-retest reliability over a two-week period. In Study 4, we find that item-level correlations suggest that the two items of the WAVSES are empirically interchangeable and, as such, researchers may use either item to assess self-esteem. Although further research is needed, we conclude that the initial validity evidence reported here is promising.

Key words: self-esteem, self-worth, scale construction, measurement

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5.2 Introduction

Since William James' (1890/2007) description of self-esteem as a type of "self-feeling" (p. 305), "worthy to be classed as a primitive emotional species as are, for example, rage and pain" (p. 307), psychologists have had a perennial interest in self-esteem (e.g., Donnellan, Trzesniewski, & Robins, 2011; McDonald & Leary, 2012; Ziegler-Hill, 2013). In the 125 years that have passed since James' writings, researchers have defined the construct in several different ways (Leary, 2006; Pegler, Gregg, & Hart, 2018b; Wells & Marwell, 1976), developed many theories to explain its relations with psychological and social functioning (e.g., Leary & Baumeister, 2000; Mahadevan, Gregg, De Waal Andrews, & Sedikides, 2016; Maslow, 1943; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), constructed numerous scales and instruments to measure it (Blascovich & Tomaka, 1991; Donnellan, Trzesniewski, & Robins, 2015; Pegler, Gregg, & Hart, 2018a), and, in so doing, have generated a truly enormous research literature. Indeed, in twelve journals of personality and social psychology between 2004 and 2015 alone, over 350 article titles contained the exact term "self-esteem" (Pegler et al., 2018a). This body of recent research consists of investigations of the construct's links to a vast array of psychological, social, and biological variables—from trait anxiety and resilience (Benetti & Kambouropolous, 2006) to coping strategies (Bain, McGroarty, & Runcie, 2015), from social exclusion (Bernstein, Claypool, Young, Tuscherer, Sacco, & Brown, 2013) to ethnicity, age and gender (Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011), from ideal body standards (Balceris, Cole, Chelberg, & Alicke, 2013) to mate value (Brase & Guy, 2004)—to cite only a small selection of articles with first authors who have surnames that begin with the letter "B". Researchers new to the field, then, have a lot to catch up on.

Amidst this information overload, however, newcomers to the field will likely choose to assess self-esteem with the Rosenberg Self-Esteem Scale (Rosenberg, 1965; RSES)—for at least two reasons. First, the instrument has recently dominated the measurement of the construct. In recent meta-research, Pegler et al. (2018a) found that, in a large corpus of articles published in the field between 2004 and 2015, personality and social psychologists used the full ten-item RSES, shortened, or modified for states form on just under two-thirds of self-esteem measurement occasions. An observation that further emphasises the scale's dominance, the second and third most used self-report self-esteem scales, the State Self-Esteem Scale (Heatherton & Polivy, 1991) and the Single-Item Self-Esteem Scale (Robins, Hedin & Trzesniewski, 2001), accounted for a mere 4% and 2% of measurement occasions, respectively.

Second, the scale generally has a very good reputation in the self-esteem research community (Pegler et al., 2018a). On more than one occasion, the RSES has been described as the "gold standard" in self-esteem measurement (Bleidorn, Arslan, Denissen, Rentfrow, Gebauer, & Gosling, 2015, p. 4; Gebauer, Sedikides, Wagner, Bleidorn, Rentfrow, Potter, & Gosling, 2015, p.

530). Alternatively, it has been described as “the standard by which new measures are evaluated” (Blascovich & Tomaka, 1991, p. 123). Other researchers have given similarly glowing references. The RSES has been said to have “excellent” psychometric properties, despite being “brief and easy to administer” (Koestner & Mageau, 2006, p. 96), and two recent reviewers described the scale as “The Self-Esteem Scale” (Kwan & Mandisodza, 2007, p. 265, emphasis added).

5.2.1 The Problems of the RSES

However, despite its popularity and reputability, our thesis is that the RSES suffers from a number of serious and underappreciated defects. Its first problem is that it was initially constructed and validated as a Guttman scale (see Rosenberg, 1965, p. 16-18, & 305-307), but was transformed into a Likert-type scale through a series of ad-hoc modifications (Pegler, Gregg, Hart, Mahadevan, & Bialobrzeska, 2018). Although a thorough explication of Guttman scaling is beyond the scope of this article (for comprehensive accounts see e.g., Guttman, 1944; McIver & Carmines, 1981), two important facts are worth pointing out. First, the items of a Guttman scale are explicitly intended to differentially (as opposed to interchangeably) represent the construct or attitude of interest and respondents’ scores are determined by the strongest item they endorse. To illustrate this point, imagine a researcher is interested in constructing a Guttman scale that assesses an individual’s desire for the UK to withdraw from the European Union. To do so, she would be required to create items that varied in the extent to which they represented her chosen target of inquiry. For example, she might propose a weak item (Item A) “I am not sure, but I am think I support Brexit”, a middling item (Item B) “I am keen on Brexit”, and a strong item (Item C) “There is nothing I would like more than Brexit”. In a Guttman scale, it is expected that when respondents agree with a given “strong” item, they will agree with all weaker items too. Thus, in our hypothetical example, respondents who agree with Item C will agree with Item B and Item A, but respondents who do not agree with Item A or Item B should not agree with Item C. In this hypothetical 3-item scale, participants would be assigned a score of 0, 1, 2, or 3—with higher scores representing greater desire for Brexit. A score of 0 would represent disagreement with all three items; a score of 1, agreement with (weak) Item A; a score of 2, agreement with (intermediate) Item B in addition; and a score of 3, agreement with (strong) Item C in addition. Each respondent would be assigned the score that corresponds to the strongest item they endorse, and their responses to weaker items disregarded.

The second fact worth pointing out is that the Guttman scaling technique was devised to “afford an adequate basis for quantifying qualitative data... which gave a complete picture of the data not afforded by... other techniques” (Guttman, 1944, p. 139)—other techniques being those “such as critical ratios, biserial correlations, factor analysis” (p. 139). Moreover, the use of Guttman scales in social and personality psychology is now so rare that many textbooks on measurement or scale development in the field do not cover their creation or use (e.g. Furr, 2011; Pedhazur & Pedhazur-

Chapter 5

Schmelkin, 1991). This is perhaps not surprising given that Guttman scales were infrequently constructed even at the time that Rosenberg designed the RSES (Shaw & Wright, 1967) and considering Guttman scaling techniques have been criticised in influential textbooks on psychological testing. For example, Nunnally (1970) described the Guttman scaling approach to psychometrics as “thoroughly illogical” (p. 186). Critically, however, the scale’s little-appreciated genesis as a Guttman scale has had inevitable downstream consequences for its factor-analytic performance and broader psychometric functioning in modern self-esteem research—a topic we return to below.

The RSES’s transformation began shortly after its debut publication, with Rosenberg noting in the late-seventies that his questionnaire was by that point “frequently scored according to the Likert format” (Rosenberg, 1979, p. 295). The first Likert-type use of the RSES, to our knowledge, was as a seven-item revised version of the scale, which appeared in Bachman, Kahn, Mednick, Davidson, and Johnson (1967)—a mere two years after its construction. The Bachman revision of the RSES, a Likert-type version that combined six original items of the RSES with four new ones, was developed by Bachman a few years later (1970, p. 133-134) and then employed in Bachman and O’Malley’s (1977). Although in the following decade researchers acknowledged that they had altered the scale when they used a Likert-type version of it in their research (e.g., Fleming & Courtney, 1984, p. 410; Pelham & Swann, 1989, p. 675), researchers eventually began to report the RSES as a Likert-type scale, with a citation to Rosenberg (1965), but without reference to its original format or recognition of its modified form. Compounding matters, the RSES began to be presented simply as a Likert-type scale in academic texts and more informal publications (see e.g., Fetzer Institute, n.d.; Okada, n.d.; Rosenberg Self-Esteem Scale, n.d.). The RSES’s true psychometric origins have thus largely been forgotten, save for occasional passing comments in review chapters (Blascovich & Tomaka, 1991, p. 121; Donnellan, Trzesniewski, & Robins, 2015, p. 134; Tafarodi & Ho, 2006, p. 111; Wells & Marwell, 1976, p. 102; Wylie, 1974, p. 181). Unfortunately, in these fleeting remarks, the full significance of the scale’s genesis as a Guttman scale has not been recognised before—a topic we return to below.

The RSES’s second, and perhaps most serious, problem is that researchers now most often define self-esteem quite narrowly as an individual’s overall evaluation, or “sense”, of his or her worth and/or value (see Pegler, Gregg, & Hart, 2018b). Examples of this category of definition include “a person’s overall evaluation of his or her worth” (Orth, Robins, & Widaman, 2012, p. 1271), “one’s overall sense of worthiness as a person” (Schmitt & Allik, 2005, p. 623), “the subject evaluation of his or her worth as a person” (Chung, Robins, Trzesniewski, Noftle, Roberts, & Widaman, 2014, p. 469), and “the overall sense of worthiness and value that people place on themselves” (Gebauer, Sedikides, Wagner, Bleidorn, Rentfrow, Potter, & Gosling, 2015, p. 527). Crucially, this definition is different from the attitude-based and multifaceted description of self-esteem that guided the construction of the RSES. Consider the following quotes: “self-esteem... is a

positive or negative attitude toward a particular object, namely the self... high self-esteem, as reflected in our scale items, expresses the feeling that one is ‘good enough’. The individual simply feels that he is a person of worth; he respects himself for what he is, but he does not stand in awe of himself nor does he expect others to stand in awe of him. He does not necessarily consider himself superior to others” (p. 30). In contrast, “low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, self-contempt. The individual lacks respect for the self he observes” (p. 31) (Rosenberg, 1965).

Haynes, Richard, and Kubany (1995) have argued that, given definitions of constructs often change over time, the content validity of a psychological measure is liable to degrade as it ages. We believe that the RSES, fifty years down the line, is a case in point. The items of the RSES poorly reflect the now popular narrow self-worth/value definition of self-esteem. Certainly, the item “I feel that I am a person of worth, at least on an equal plane with others” represents the construct well (although it is problematically double-barrelled). However, the remaining nine items do not appear to directly assess an individual’s overall evaluation of their worth or value. Tafarodi and Milne (2002) have proposed that many of the items of the RSES more specifically assess self-competence. Indeed, we submit that at least two of the items (“I am able to do things as well as others” and “All in all, I am inclined to feel I am a failure”) have a clear focus on self-competence and self-efficacy. Moreover, as Kaufmann, Rasinski, Lee, and West (1991) point out, rather than an individual’s overall evaluation of their worth and value, the two items with time qualifiers, “at times”, assess the individual’s perceptions of the stability of their self-concept, or the extent to which they sometimes think negatively of themselves. In addition, the eighth item, “I wish I could have more respect for myself” has a focus on self-respect, which—although part of Rosenberg’s definition of self-esteem—is only very infrequently explicitly a component of modern definitions of the construct (see Pegler et al., 2018b). We argue, then, that for many researchers, to assess self-esteem with the RSES is to cast the net too wide. Researchers will likely appreciate the development and validation of a more targeted research instrument, which brings greater coordination between the self-worth/value definition of self-esteem and its measurement.

The RSES’s third problem is that it has invariably performed poorly in confirmatory factor analyses in which the single-factor uncorrelated error model has been applied (see Pegler, Gregg, Hart, Mahadevan, & Bialobrezka, 2018, Table 2). These consistent results suggest that scale is not unidimensional. This interpretation of the data is further supported by recent research in which it was found that the items of the RSES are differentially associated with a number of theoretically related variables, including social status, social inclusion, agency and communion (Pegler, Gregg, Hart, Mahadevan, & Bialobrezka, 2018).

In addition, the factor structure of the RSES has been difficult to determine when various other structural models have been tested. Unfortunately, what previous researchers have failed to realise is that the elusive internal structure of the RSES stems naturally if not inevitably from its first

Chapter 5

problem—its genesis as a Guttman scale. The statistical test of the unidimensionality in Guttman scaling is the scale's coefficient of reproducibility (see Guttman, 1944, p. 140; Rosenberg, 1965, p. 16), which indicates the extent to which the scale performs as a Guttman scale ought to. It is computed as one minus the proportion of actual errors to possible errors—where an error is any response that violates the ideal pattern whereby the endorsement of a stronger item guarantees the endorsement of a weaker item. It is important to note that “unidimensionality” here clearly does not mean convergence upon a single latent construct, but rather the degree to which the endorsement of stronger items consistently entails the endorsement of weaker items.

Because the coefficient of reproducibility does not strongly reflect the strength or consistency of inter-item correlations (Guttman, 1944, p. 145), or indeed much else about a set of psychometric indicators (Robinson, 1973), it has no simple relationship with exploratory or confirmatory factor analytic results. Indeed, as noted above, the Guttman scaling technique was developed with the explicit intention of providing an alternative, non-factor analytic, method of scale construction (see e.g., Guttman, 1944; 1947; McIver & Carmines, 1981). The RSES was thus constructed without regard to the nature of the correlations between its items and was not intended to be a single-factor scale. It is perhaps unsurprising, therefore, that the question of its factor structure remains perennially unsettled (Donnellan et al., 2016; Pegler, Gregg, Hart, Mahadevan, & Bialobrezka, 2018).

5.2.2 The Present Research

With the problems of the RSES in mind, we report here on the development and the initial validation of a brief self-report measure of self-esteem—the Worth and Value Self-Esteem Scale (WAVSES). Above all else, the scale is designed to be maximally content valid for the minimal self-worth/value definition of self-esteem currently popular in personality and social psychology. We outline the definition of self-esteem that guided the scale's construction, explain why previously developed instruments are inadequate for the purpose of assessing a narrowly defined self-esteem, and present the scale's items, instructions, and response format. In addition, across three studies (total N = 663) we investigate the scale's concurrent validity (Studies 1 & 2), convergent validity (Studies 1 & 2) test-retest reliability (Study 3), and respondents' comprehension of its items (Studies 1, 2, & 3). Lastly, in Study 4, we combine data from Studies 1 and 2 to examine the consistency of WAVSES item correlations and the heterogeneity of correlations with the items of the RSES. Our overall aim in this research was to determine whether the WAVSES, lacking the flaws of the RSES, shows early promise for use as a measure of self-esteem. The studies conducted here are intended to provide a basis for further, more extensive, validation research.

5.2.3 The Worth and Value Self-Esteem Scale (WAVSES): Approach, Definition, and Format

We developed the WAVSES with primarily a rational-theoretical or deductive rather than empirical (external) or factor-analytic (inductive) approach to scale construction. For a discussion on the distinctions between these psychometric approaches see Burisch (1984) or Simms (2008). What this means, is that, first and foremost, the brief scale was intended to be maximally content valid for the narrow self-worth/value definition of self-esteem popular in personality and social psychology (see Pegler et al., 2018b). The content of the WAVSES is designed to follow straightforwardly from this definition of self-esteem and the WAVSES is intended to directly assess self-esteem defined in this way.

5.2.3.1 What is Self-Esteem?

The first, and crucial, step in the construction of a psychological scale is to define the variable that one is intending to assess (e.g., Clark & Watson, 1995; Loevinger, 1957; Furr, 2011; Simms, 2008). In line with previous definitions (Rosenberg, 1979), we define self-esteem—to reiterate, an individual's overall evaluations of their worth and value—as components of a much larger “self”, where the self is defined as the totality of an individual's cognitive self-knowledge—“one's memory for oneself” (Kihlstrom, Beer, & Klein, 2002). Because the individual is part of a rich cultural and linguistic context, this symbolic, language-based, self-knowledge is ordinarily vast and complex (Marsh & Craven, 1985; Sedikides & Skowronski, 1997). Indeed, personality researchers have documented the many thousands of English language terms that individuals use to describe others (John & Srivastava, 1999). These range from relatively unambiguous descriptors, pertaining to observables such as an individual's physical appearance (e.g., “tall”, “attractive”, “large”), social roles (e.g., “father”, “mother”, “doctor”) and personality traits (e.g., “talkative”, “assertive”, “outgoing”), to those that refer to temporary states (e.g., “afraid”, “rejoicing” and “elated”) and the abstract and evaluative (e.g., “worthy”, “excellent”, and “average”). Just as they can describe and think about others in such varied terms, individuals can describe and think about themselves in a myriad of ways too.

These and other kinds of self-knowledge are theorised to be critical components of an individual's personality, guiding and directing an individual's behaviour (Markus, 1983; Rosenberg, 1965). The entirety of an individual's self-knowledge, however, is not accessible at any one time. Accessible self-knowledge, often referred to as the working self-concept, is limited in capacity and constantly changing (Markus & Kunda, 1986; Markus & Wurf, 1987). We conceptualise one's overall evaluations of one's worth and value (the self-knowledge that comprises self-esteem) as examples of abstract semantic self-knowledge. In line with Sedikides and Skowronski (1997), these aspects of semantic self-knowledge (i.e., self-esteem) are theorised to be species-typical, and evolutionarily adaptive. That is, they do not emerge only in certain specific historical or cultural contexts

Chapter 5

(although it is likely that an individual's historical and cultural context influences the nature of their semantic self-knowledge in general (e.g., Heine, Lehman, Markus, & Kitayama, 1999; Markus & Kitayama, 1991).

Three points are worth pointing out here. First, some researchers will be inclined to call what we have described here global self-esteem—in recent meta-research (Pegler et al., 2018b) we found that three researchers (8%) who defined self-esteem in this way referred to the concept more specifically as “global self-esteem” rather than simply “self-esteem” (see also Perinelli, Alessandri, Donnellan, & Laguna, 2018). Second, by our definition, self-esteem is, as Rosenberg has (1965) put it, “quintessentially phenomenological” (p. 272). Characterised in this way, it is cognition that cannot be fully expressed in observable behaviour. Although this fact may complicate attempts to validate measures of self-esteem (Rosenberg, 1965; Wylie, 1974), it is therefore most appropriately assessed with self-report questionnaires (Harris, Donnellan, & Trzesniewski, 2017; Tafarodi & Ho, 2006; Wylie, 1989). Third, in line with general theory on the self-concept (Marsh & Craven, 1985), we theorise that the extent to which individuals consider themselves to be persons of worth and value tends to remain stable over time.

5.2.3.2 What is Self-Esteem Not?

Psychologists have defined self-esteem in many different ways (e.g., Leary, 2006; Pegler et al., 2018a). It will therefore be useful to explain how the definition of self-esteem that underpins the WAVSES differs from alternative definitions of the construct. First, self-esteem is not defined here as self-related emotion or affection, as characterized elsewhere (e.g., Leary et al., 1995; MacDonald & Leary, 2012, p. 354). Self-esteem may well be “emotional” or “affective”, in so much as abstract semantic self-knowledge pertaining to one’s worth and value may shape emotion or affect (e.g., pride, shame) (Rosenberg, 1979); or, conversely, emotion and affect may influence one’s cognitive representations of one’s worth and value. However, according to our description, emotion and affect do not *constitute* self-esteem. Thus, the WAVSES, like many other self-report self-esteem scales (Leary, 2006) is not intended to directly assess self-feelings. Second, and relatedly, self-esteem is not defined here as both cognitive self-knowledge and emotion (Leary & Baumeister, 2000). Third, we do not define self-esteem as both self-value and the belief that life, or the universe, has meaning, as it has been in writings on terror management theory (e.g., Greenberg et al. 1992). Fourth, self-esteem is not defined here as comprised of both knowledge about one’s competence and the extent to which one likes oneself, as defined by Tafarodi and colleagues (Tafarodi & Milne, 2002; Tafarodi & Swann, 1995; Tafarodi & Swann, 2001). Competence, self-confidence, or self-efficacy may influence an individual’s self-esteem, but we do not consider these things to be a defining feature of it (as in Rosenberg, 1979). Fifth, in line with Rosenberg (1965), according to our formulation, it is not in its essence the belief that one is superior to others—although levels of self-esteem are likely positively correlated with superiority beliefs. This distinction is important because at least one prior definition of self-esteem has sought to equate the

two (see Baumeister, Smart, & Boden, 1996). In summary, while self-feeling, emotion, meaning in life, self-competence, self-loving, and superiority beliefs may be associated with one's overall evaluations of one's worth and value, according to our definition, they do not constitute it. While some are likely to consider this description of self-esteem to be thin, these distinctions allow for the relationships between self-esteem and these likely related psychological variables to be researched further.

5.2.3.3 Scale Format

The two items of the WAVSES, “Overall, I am a person of worth” and “Overall, I am a person of value”, were inspired by the first item of the RSES, “I feel that I am a person of worth, at least on an equal plane with others”. For reasons of simplicity, clarity and relevance, we removed the qualifying second clause, and added “overall” to each item. To avoid any possible confounding with self-esteem defined as self-feelings, we also removed the term “feel”. Although we anticipated that all terms would be familiar to respondents, we checked the frequency of all words by retrieving their Zipf scale values (Van Heuven, Mandera, Keuleers, & Brysbaert, 2014). In descending order they were as follows: I (7.60), a (7.31), of (7.06), am (6.04), person (5.33) worth (5.04), value (4.33), overall (3.51). By this index, all except one of these terms are high-frequency words, appearing more than 100 times per million words. The exception, “overall”, is a medium-frequency word.

The instructions for the WAVSES were adapted from those developed for use with the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985, p. 72). They are as follows: “Below are two statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item”. Responses to the two items are summed to provide an index of an individual's self-esteem, which means that scores can range from two (lowest) to 14 (highest), with higher scores indicating higher self-esteem.

We chose seven response options, a moderate number, and labels for only scale end-points based on the recommendations of Furr (2011) and Krosnick, Judd, and Wittenbrink (2005). For simplicity, we decided not to label every scale point. We initially developed, but chose not to include negatively-worded items (e.g., “Overall, I am not a person of value; “Overall, I am worthless”), in line with general warnings against the inclusion of negatively-worded items (Krosnick et al., 2005) as well as our prior work that suggests that negatively-worded and positively-worded items of the RSES are not empirically interchangeable (Pegler, Gregg, Hart, Mahadevan, & Bialobrezka, 2018).

5.2.3.4 Is a New Scale Needed?

Self-esteem is both a perennial and popular subject of inquiry. Over the years, many researchers have developed self-esteem questionnaires and have adapted instruments that were not originally

designed to measure self-esteem for its assessment (see Pegler et al., 2018a). A question that naturally arises, therefore, is: *Why not use one of those instruments?*

We believe, however, that all of the instruments currently available have considerable limitations. Most importantly, existing popular alternatives to the RSES were not designed to assess self-esteem as it is now commonly defined in personality and social psychology. The Single-Item Self-Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001) was designed to be a useful proxy for the RSES in studies where survey-space is limited and, crucially, relies on the participant's own understanding of self-esteem (Leary, 2006). As such, the SISE does not directly assess an individual's overall worth or value. The Self-Liking and Self-Competence Scale (Tafarodi & Milne, 1995) was developed based on a two-dimensional conceptualisation of self-esteem (reviewed above) that is evidently not popular in personality and social psychology (Pegler et al., 2018b). Lastly, the State Self-Esteem Scale (Heatherton & Polivy, 1991) was not constructed with reference to an explicit definition of self-esteem, but inspection of its content reveals that it assesses not overall worth, but perceptions of physical appearance, performance in school, and social performance. The poor content validity of existing scales in this way is one of the strongest rationales for the construction of a new one (Haynes & Lench, 2003).

5.2.3.5 Are Two Items a Problem?

It is common for self-report measures of self-esteem to contain multiple items. For example, the RSES (Rosenberg, 1965) contains 10, the revised self-liking and self-competence scale contains 16, and the state self-esteem scale (Heatherton & Polivy, 1991) contains 24. The 2-item WAVSES thus represents a break from tradition in the assessment of self-esteem.

Are so few items a problem? We believe the answer is no, for two reasons. First, the primary reason for the break from tradition is the narrow definition of self-esteem that has guided the WAVSES construction—a conceptualisation that is much thinner than those that have guided the construction of predecessor self-esteem self-report scales. Thus, the inclusion of more items would likely only introduce construct-irrelevant content. Although the construction of single-item or brief scales has been cautioned against (e.g., McIver & Carmines, 1981, p. 15; Nunnally, 1978) and self-report measures have classically contained large numbers of items (Krosnick et al., 2005), the appropriate number of scale items depends on how broadly the construct is defined (Furr, 2011, p. 21; Rossiter, 2002). We believe that just two items provide appropriate coverage for self-esteem as it is narrowly defined.

Second, the construction and use of scales consisting only of a small number of items, including only one item, is now common in psychological research (Postmes, Haslam, & Jans, 2012). Flake, Pek, and Hehmann (2017) found that single-item measures accounted for 30% of measurement occasions in JPSP articles published in 2014. Weidman, Streckler, and Tracy (2017) found single-item scales accounted for 58% of measurement occasions in 147 articles published in Emotion.

Moreover, researchers already assess self-esteem with a one item scale (the SISE) and research has found that scores on this scale relate to other psychological variables in a similar manner to the RSES (Robins et al., 2001). These latter findings suggest that brief measures do not necessarily compromise research results.

5.3 Study 1: Item Comprehension, Concurrent Validity, and Convergent Validity

The purpose of Study 1 was to investigate three things about the WAVSES: (1) respondents' comprehension of its items, (2) its concurrent validity, and (3) its convergent validity. Although the scale is based on a narrower definition of self-esteem than the RSES, and the RSES has limitations, in these initial investigations we expected that the WAVSES would correlate with measures of other constructs in similar ways to the RSES. Thus, to assess the concurrent validity of the WAVSES, that is the extent to which the measure correlates with criteria assessed at the same time (Simms, 2008), we targeted seven variables which previous research has shown are consistently associated with RSES scores: (1) perceived social inclusion, (2) perceived social status, (3) attachment anxiety, (4) attachment avoidance, (5) satisfaction with life, (6) the big five personality dimensions, and (7) major depressive disorders symptoms. We discuss the rationales (empirical, theoretical, or both) for targeting these variables below. To assess the convergent validity of the WAVSES, i.e., the extent to which a measure correlates with other indicators of the same or similar constructs (Simms, 2008), we investigated the scales associations with the RSES and the SISE.

5.3.1 Rationales for Concurrent Validity Variables

5.3.1.1 Perceived Social Inclusion and Social Status

We targeted perceived social inclusion and social status for both theoretical and empirical reasons. Self-esteem and the self-concept, more generally, have long been linked in psychological research and theory to an individual's social experiences and behaviour (e.g., Barkow, 1975; Bowlby, 1979; Coopersmith, 1967; Maslow, 1942; Mecca, Smelser, & Vasconcellos, 1989; Rogers, 1959; Rosenberg, 1965; Rosenberg & Pearlin, 1978). More recently, a number of theories have been advanced that posit that self-esteem is the output of an evolved psychological mechanism that functions to regulate an individual's social standing and social behaviour. According to the original version of sociometer theory (Leary et al., 1995), self-esteem is the output an evolved psychological system that functions both as a monitor and a regulator of an individual's *social inclusion*. According to an alternative evolutionary theory, heirometer theory (Mahadevan et al., 2016), self-esteem (and self-regard more broadly) is a component of an evolved psychological system that functions to monitor an individual's *social status*, as well as regulate status-appropriate behaviour within a social hierarchy.

Consistent with the original version of sociometer theory, a number of studies have found that perceived social inclusion is strongly correlated with self-esteem, as measured by the RSES (see Table 1). Similarly, consistent with hierometer theory, other studies have found perceived social status is strongly correlated with average RSES scores (see Table 5). As reported in Table 2, the mean r and confidence intervals across the studies ($k = 7$) contained in those articles for social inclusion is $r = .53$, 95% CI [.49, .57], and for social status ($k = 3$) it is $r = .50$, 95% CI [.48, .53].⁸

5.3.1.2 Attachment Anxiety and Avoidance

We targeted self-reported attachment anxiety and avoidance for both theoretical and empirical reasons. Theoretically, two foundational ideas contained within attachment theory are (a) that experiences with attachment figures determine the nature of a person's working models of self and others, and (b) that working models of self and others provide the basis for an individual's attachment orientation (Bowlby, 1969; Mikulincer & Shaver, 2016). Empirically, a number of studies, guided by these propositions, have examined the link between self-esteem as measured by the RSES and attachment orientation as measured by the Experiences in Close Relationships Scale (ECR; Brennan, Clark, & Shaver, 1998). Attachment anxiety and avoidance have been found to be moderately to strongly negatively correlated with the RSES (see Table 4). As reported in Table 2, the meta-analysed correlation between the RSES and attachment anxiety across those studies ($k = 17$) is $r = -.40$, 95% CI [-.37, -.43], while the meta-analysed correlation for the RSES and attachment avoidance ($k = 17$) is $r = -.33$, 95% CI [-.30, -.36] (See Table 2).

5.3.1.3 Life Satisfaction

We targeted life satisfaction, defined as the individual's "overall evaluation of their life" (Diener, Emmons, Larsen, & Griffin, 1985), for empirical reasons. Satisfaction with life, as measured by the Satisfaction With Life Scale (Diener et al., 1985) has been found to correlate strongly with self-esteem as measured by the RSES in a large number of studies (See Table 1). As reported in Table 6, the meta-analysed correlation between the RSES and life satisfaction across these studies ($k = 33$) was $r = .51$, 95% CI [.49, .52].

⁸ We used the methods presented in Bonnett (2008) to produce all meta-analysed correlation coefficients and confidence intervals. Indices of heterogeneity, I^2 and Q were calculated using the *metafor* R package (Veitchbauer, 2010). We did not target unpublished manuscripts due to time constraints, but future, more extensive, meta-analyses would likely benefit from the inclusion of unpublished data (Rosenthal & DiMatteo, 2001). See supplementary materials for funnel plots for all meta-analyses of correlation coefficients: <https://osf.io/9jzfr/>

5.3.1.4 Big Five Personality Dimensions

As set out by John and Srivastava (1999) the Big Five personality dimensions emerged atheoretically from factor analyses of the terms that individuals use to describe themselves and others. The big five taxonomy of extraversion, agreeableness, conscientiousness, neuroticism (or emotional stability), and openness was not developed to imply that human personality can be adequately described by these five traits, but to represent a broad and useful abstractions—“rough distinctions” (John, Naumann, & Soto, 2008, p. 140) for personality research. Indeed, each dimension is comprised of a host of more specific personality characteristics or facets. For example, agreeableness as measured by the Big Five Inventory (BFI: John, Donahue, & Kentle, 1991) is comprised itself of the five facets of trust, altruism, compliance, modesty, and tender-mindedness (John et al. 2008, p. 130), while extraversion as measured by the NEO Personality Inventory (NEO PI-R, Costa & McCrae, 1992) is comprised itself of the six facets of gregariousness, assertiveness, activity, excitement-seeking, positive emotions, and warmth (John & Srivastava, 1999, Table 4.1).

We targeted the Big Five personality dimensions for empirical reasons. There is a sizeable literature on the relationships between the Big Five dimensions and self-esteem (see Table 3). As reported in Table 6, for agreeableness, the mean r and confidence intervals for those studies ($k = 23$) is $r = -.24$, 95% CI [.22, .27], for conscientiousness ($k = 24$) $r = .37$, 95% CI [.35, .39], for extraversion ($k = 28$) $r = .39$, 95% CI [.36, .41], for openness ($k = 23$) $r = .18$, 95% CI [.15, .20], and for neuroticism ($k = 26$) $r = -.56$, 95% CI [-.58, -.53].

5.3.1.5 Major Depressive Disorder Symptoms

According to *The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013)*, the major diagnostic criteria for major depressive disorder are the five or more of the following over a two-week period: (1) depressed mood, (2) diminished interest or pleasure in activities, (3) significant weight loss or gain, (4) insomnia or hypersomnia, (5) psychomotor agitation, (6) fatigue, (7) worthlessness or excessive or inappropriate guilt, (8) lack of concentration, and (9) thoughts of death or suicide (pp. 160 – 161)—when these things are not caused by medication and cause considerable social and occupational impairment. Although, from this perspective, “major depressive disorder is a clinical diagnosis (either an individual has depression or they do not), researchers commonly assess the symptoms of major depressive disorder with self-report scales that provide continuous depression scores (Fried, 2017). These scales convey the extent to which an individual is experiencing the symptoms that collectively define the disorder.

We targeted major depressive disorder symptoms primarily for empirical reasons. Many correlational studies have found moderate to strong negative correlations between self-esteem, as

measured by the RSES, and depressive symptoms (see Table 2). The mean r and confidence intervals across the studies ($k = 24$) reported in those articles was $r = -.55$, 95% CI [-.57, -.53]. As reviewed by Sowislo and Orth (2013), the nature of the relationship between self-esteem and depressive symptoms is at present not fully understood. According to the *vulnerability model*, low self-esteem makes an individual vulnerable to developing depression. According to the *scar model*, depression makes an individual prone to low self-esteem. Providing support for both theories, Sowislo and Orth not only found in their meta-analysis that levels of self-esteem predicted later depressive symptoms, but also that depressive symptoms predicted later levels of self-esteem.

5.3.2 Hypotheses

We expected that the WAVSES would be correlated with targeted concurrent validity variables in the same direction and roughly the same magnitude as the meta-analysed correlations for the RSES (the strength and direction of meta-analysed correlations are depicted in Figure 1). Hypotheses regarding the concurrent validity of the WAVSES are presented in Table 7. In addition, for convergent validity, we hypothesised that the magnitude of the correlations between WAVSES and the SISE and RSES would be between $r = .70$ and $r = .80$, based on the correlations between the RSES and SISE reported across three studies by Robins et al. (2001, Table 3). All thirteen of these hypotheses were preregistered (<https://osf.io/9jzfr/>).

5.3.3 Method

5.3.3.1 Sample Size

Sample size was determined with a pre-study power analysis. We anticipated that effect sizes would be similar to the effect sizes observed in research with the RSES (see Table 6). We aimed for a sample size that would provide 90% power to detect the weakest meta-analysed correlation observed for the RSES (Openness, $r = .18$). Using the *pwr* R package (Champeley, 2017), the theoretically required sample size for 90% power for a correlation of this magnitude was given as 261.

5.3.3.2 Participants and Exclusions

To obtain a large enough sample size for high statistical power, we recruited participants from an online crowdsourcing platform. Recent research suggests that the results of psychological studies with crowdsourced samples are often comparable to studies with traditional university samples (Stewart, Chandler, & Paolacci, 2017). In total, we recruited 291 participants from Amazon Mechanical Turk. We reached our required sample size after two rounds of recruitment. Participants completed the study in exchange for \$0.50.

Table 8 shows missing data statistics and reasons for participant exclusions for each round of data collection. We excluded participants if they had more than 5% missing data ($n = 7$), if they had any missing data for the WAVSES items ($n = 2$), if they failed either of the two attention checks ($n = 2$), or if they took less than 2 seconds per question on average ($n = 13$). The final sample size was 267 (M age = 36.09, 49.81% female). Detailed demographic characteristics for the sample are presented in Table 9. Average percentage of missing data across participants was low ($M = 0.40\%$) and for participants who has less than 5% missing data, we imputed missing values with the expectation-maximization (EM) maximum likelihood approach, as recommended by Schafer and Graham (2002).

5.3.3.3 Procedure

Participants responded to the WAVSES first and the comprehension statements second. The remaining seven scales and their items appeared in a random order. The WAVSES was presented first due to evidence that overall evaluations can be strongly influenced by preceding survey questions (Strack, Martin, & Schwarz, 1988)⁹.

5.3.3.4 Measures

5.3.3.4.1 WAVSES

Self-esteem, defined as one's overall evaluation of one's own worth and value, was assessed with the two items of the WAVSES: (1) "Overall, I am a person of worth" and (2) "Overall, I am a person of value". Respondents responded to both items on a seven-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

5.3.3.4.2 Respondent Comprehension

To assess respondent's comprehension of the two items of the WAVSES, we asked participants to think about the items and then indicate their agreement with two statements for each item: (1) "I did not understand what was being asked of me" and (2) "I did not understand some of the words used". In addition, for each item, we required participants to indicate how easily they were able to provide responses by responding to two items: "I struggled to provide a response to the statement" and "It took me a while to decide on a response". Lastly, relatedly, we assessed the perceived psychological relevance of both items with one item: "my overall worth/value is something I think

⁹ Strack and colleagues specifically investigated the impact of asking questions on specific components of life satisfaction before assessing overall life satisfaction. It seems plausible that reflecting on granular perceptions of self, for example how extraverted or conscientious one is, may similarly influence an individual's overall evaluation of their worth and/or value.

Chapter 5

about regularly”. Participants responded to each question on a seven-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

5.3.3.4.3 Perceptions of Social Inclusion and Social Status

Participants responded to a ten-item measure of perceived social inclusion (e.g., “people include me in their social activities”, “people like me as a person”), and social status (e.g., “people admire me”, “people think highly of my abilities and talents”). Both scales were originally developed by Huo, Binning, and Molina (2010) and refined by Mahadevan, Gregg, and Sedikides (2016). Both featured a seven-point response format, from 1 (*strongly disagree*) to 7 (*strongly agree*).

5.3.3.4.4 Attachment Anxiety and Avoidance

Attachment anxiety and avoidance were assessed with the shortened version of The Experiences in Close Relationships Questionnaire-Revised (Fraley, Waller, & Brennan, 2000; Wei, Russell, Mallinckrodt, & Vogel, 2007). Both scales featured a seven-point response format, from 1 (*strongly disagree*) to 7 (*strongly agree*).

5.3.3.4.5 Life Satisfaction

Life satisfaction was assessed with the Satisfaction With Life Scale (Diener et al., 1985). The scale featured a seven-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

5.3.3.4.6 Major Depressive Disorder Symptoms

Depression was assessed with the nine-item Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001). Participants indicated how often they had been bothered by an array of major depressive disorder symptoms (e.g., “little interest in doing things”, “poor appetite or overeating”) over the last two weeks. The scale featured a four-point scale: 1 (*not at all*), 2 (*several days*), 3 (*more than half the days*), 4 (*nearly every day*). Major depressive disorder symptoms were assessed with the PHQ-9, rather than more frequently used scales in self-esteem research such as the Beck Depression Inventory (Beck, Steer, & Brown, 1996) because the questionnaire is open access and its items have greater concordance with the DSM-5 definition of major depressive disorder.

5.3.3.4.7 SISE

Participants responded to the single item of the SISE (Robins et al., 2001) “I have high self-esteem” on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

5.3.3.4.8 RSES

Participants responded to a seven-point Likert-type RSES (Rosenberg, 1965) from 1 (*strongly disagree*) to 7 (*strongly agree*).

5.3.4 Results

5.3.4.1 WAVSES

WAVSES scores were, on average, considerably above the scale mid-point of seven ($M = 11.76$, $SD = 2.57$). As Figure 2 shows, like many psychometric indicators (Micceri, 1988), WAVSES scores were skewed—and, specifically, in a negative direction (-1.26). The two items of the WAVSES were very strongly positive correlated, $r = .91$, $t(265) = 35.52$, $p < .001$, 95% CI [.86, .93].

5.3.4.2 Respondent Comprehension of the WAVSES

Table 10 displays the distribution of comprehension, ease of answer, and psychological relevance responses for both of the items of the WAVSES. Few participants reported that they found either of the items difficult to understand. The majority of participants disagreed that they did not understand the item (responses below the scale mid-point: item 1 = 95.51%; item 2 = 92.89%) or did not understand some of the words used (responses below the scale mid-point: item 1 = 96.63%, item 2 = 95.51%). Moreover, few participants indicated that they struggled (responses below the scale mid-point: item 1 = 91.76%, item 2 = 90.26%), or that took a long time to provide a response (responses below the scale mid-point: item 1 = 88.76%, item 2 = 86.52%). Responses were more variable on the perceived psychological relevance of each indicator, “My overall worth (value) is something I think about regularly”. Responses to these items were distributed quite equally above and below the mid-point (responses below the scale mid-point: item 1 = 50.19%, item 2 = 52.06%) (see Table 10 for full details).

5.3.4.3 Concurrent Validity

Table 11 displays correlations between the WAVSES and the concurrent validity variables. As predicted, scores on the WAVSES were strongly positively correlated with perceived social inclusion ($r = .67$, 95% CI [.59, .73]), social status ($r = .65$, 95% CI [.57, .71]), life satisfaction ($r = .57$, 95% CI [.48, .64]), and extraversion ($r = .43$, 95% CI [.33, .53]); were moderately strongly correlated with agreeableness ($r = .38$, 95% CI [.27, .48]); were strongly negatively correlated with neuroticism ($r = -.56$, 95% CI [-.64, -.47]) and major depressive disorder symptoms ($r = -.58$, 95% CI [-.66, -.50]); and were moderately-to-strongly negatively associated with attachment anxiety ($r = -.46$, 95% CI [-.55, -.37]). Not as predicted, however, the WAVSES was moderately, not weakly, correlated with openness ($r = .30$, 95% CI [.18, .40]); was strongly, not moderately, positively

correlated with conscientiousness ($r = .48$, 95% CI [.39, .57]); and was strongly, not moderately, negatively correlated with attachment avoidance ($r = -.52$, 95% CI [-.61, -.43]) (all $dfs = 265$, all $t_s > 5.06$, all $ps < .001$). Thus, where our predictions were not completely accurate, the trend was for the observed correlations to be stronger than we had anticipated.

As Figure 3 shows, correlations for the WAVSES were very similar to the correlations for the RSES. However, the general trend here was that WAVSES correlations were slightly weaker. Ninety-five per cent confidence intervals for WAVSES and RSES correlations did not overlap in the case of four variables: major depressive disorder symptoms ($r = -.58$, 95% CI [-.65, -.49]; $r = -.76$, 95% CI [-.80, -.71]), neuroticism ($r = -.56$, 95% CI [-.64, -.47]; $r = -.72$, 95% CI [-.79, -.66]), conscientiousness ($r = .48$, 95% CI [.39, .57]; $r = .61$, 95% CI [.53, .68]), and attachment anxiety ($r = -.46$, 95% CI [-.55, -.36]; $r = -.62$, 95% CI [-.69, -.54]). In addition, employing the test for the difference of two dependent correlations (Steiger, 1980; Equation 7), as implemented in the R package *psych* (Revelle, 2017), all four of these pairs of correlations were significantly different (all $zs > 3.76$, all $ps < .001$). Where confidence intervals overlapped, only life satisfaction was significantly more strongly correlated with the RSES than the WAVSES ($t = -2.44$, $p = .015$).

WAVSES correlations were more similar to SISE correlations. Ninety-five per cent confidence intervals overlapped in each case. Statistically significant differences between correlations ($t = 2.81$, $p = .005$) only emerged for neuroticism, where the SISE ($r = -.66$, 95% CI [-.72, -.59]) was more strongly negatively correlated than the WAVSES ($r = -.56$, 95% CI [-.64, -.47]).

5.3.4.4 Convergent Validity

In line with hypothesis, participants' WAVSES scores were very strongly positively correlated with their RSES scores ($r = .75$, $t(265) = 18.59$, $p < .001$, 95% CI [.70, .80]) and responses to the SISE ($r = .70$, $t(265) = 15.96$, $p < .001$, 95% CI [.63, .76]). The RSES and SISE were also strongly positively correlated ($r = .77$, $t(265) = 19.92$, $p < .001$, 95% CI [.77, .82]).

5.3.5 Discussion

In Study 1 we found that participants' WAVSES scores were, in the main, correlated with measures of self-esteem-related variables in the directions and with the effect sizes we had expected. Moreover, responses to the WAVSES were strongly positively correlated with their responses to the RSES and SISE. These findings, which speak to the concurrent and convergent validity of the WAVSES, represent initial evidence that the WAVSES can be used to measure self-esteem as narrowly defined as an individual's overall evaluation of his or her worth and value.

5.4 Study 2: Direct Replication of Study 1

The purpose of Study 2 was to conduct a replication of Study 1 with the aim of examining the stability of our initial findings. Study 1 differed from study 2 in only one way: we recruited participants from a different crowdsourcing platform. As we had no strong reason to expect that research findings would be influenced by this methodological inconsistency (e.g., there is evidence that the user demographic profiles of the two sites are similar: Peer, Bradimarte, Samat, Acquisti, 2017), we considered Study 2 to be a direct replication of Study 1 (Zwaan, Etz, Lucas & Donnellan, 2018).

5.4.1 Method

5.4.1.1 Sample Size

We determined our sample size with the same pre-study power analysis as in Study 1. Again, we sought to recruit 261 participants—a number that would provide 90% power to detect the lowest anticipated effect size ($r = .18$) (see Table 6).

5.4.1.2 Participants

In total, we recruited 319 participants from the *CrowdFlower* crowdsourcing platform. As in Study 1, two rounds of recruitment were required to reach the required sample size and participants completed the study in exchange for \$0.50. Table 12 shows missing data statistics and reasons for participant exclusions for each round of data collection. As in Study 1, participants were excluded if they had more than 5% missing data ($n = 9$), if they had any missing data for the WAVSES items ($n = 3$), if they failed either of the two attention checks ($n = 13$), or if they took less than 2 seconds per question ($n = 13$).

As in Study 1, mean percentage of missing data was low for the first and second rounds of data collection: 0.45% and 0.84%, respectively. For the first round of data collection, participants with less than 5% missing data were not excluded. Instead, missing values were imputed using the expectation-maximization (EM) maximum likelihood. For the second round of data collection, the number of observations was too low to estimate parameters required for expectation-maximisation based data imputation. As a result, participants with any missing data were excluded ($n = 4$). Thus, the final sample size was 281 (M age = 35.48, 51.00% female). In line with the findings of Peer et al. (2017), the demographic profile for the Study 2 *CrowdFlower* sample was similar to that of the Study 1 *MTurk* sample (for detailed demographic characteristics see Table 13).

5.4.1.3 Measures

All measures and procedures were identical to Study 1.

5.4.2 Results

5.4.2.1 WAVSES

The mean of participants' WAVSES scores was again above the scale midpoint, yet slightly lower than in Study 1 (11.34). The standard deviation of WAVSES score was slightly higher (2.74) than in Study 1. As in Study 1, WAVSES scores were negatively skewed (-.1.29) (see Figure 4) and the two items of the WAVSES were very strongly positive correlated, $r = .89$, $t(279) = 32.95$, $p < .001$, 95% CI [.87, .91].

5.4.2.2 Comprehension of the WAVSES

Table 14 displays the distribution of comprehension, ease of answer, and psychological relevance responses for both of the items of the WAVSES in Study 2. As in Study 1, few participants reported that they found either of the items difficult to understand (responses below the scale mid-point: item 1 = 86.83%; item 2 = 89.25%), or did not understand some of the words used (responses below the scale mid-point: item 1 = 86.83%; item 2 = 87.18%)—although these figures were less favourable than in Study 1. Participants also, generally, did not indicate that it was difficult (responses below the scale mid-point: item 1 = 76.51%; item 2 = 77.58%), or took a long time (responses below the scale mid-point: item 1 = 77.22%; item 2 = 77.95%) to provide a response—although, again, these figures were less favourable than in Study 1. As in Study 1, agreement with the statement “My overall worth (value) is something I think about regularly” was more variable. As in Study 1, responses to these items were distributed quite equally above and below the mid-point (responses below the scale mid-point: item 1 = 43.42%, item 2 = 46.62%).

5.4.2.3 Concurrent Validity

Table 15 displays Pearson's r correlations between the WAVSES and the variables targeted for the investigation of the scale's concurrent validity. As predicted, participants' WAVSES scores were strongly positively correlated with perceived social inclusion ($r = .64$, 95% CI [.56, .70]), social status ($r = .62$, 95% CI [.54, .69]), life satisfaction ($r = .46$, 95% CI [.37, .55]), and extraversion ($r = .49$, 95% CI [.39, .57]); moderately strongly correlated with agreeableness ($r = .42$, 95% CI [.32, .51]) and conscientiousness ($r = .33$, 95% CI [.23, .43]); strongly negatively correlated with neuroticism ($r = -.47$, 95% CI [-.55, -.37]); and moderately negatively correlated with attachment avoidance ($r = -.37$, 95% CI [-.47, -.27]). However, contrary to prediction, but similar to the findings of Study 1, WAVSES scores were moderately, not weakly, positively correlated with openness ($r = .29$, 95% CI [.18, .39]); moderately, not moderately-to-strongly negatively correlated with attachment anxiety ($r = -.31$, 95% CI [-.41, -.20]); moderately-to-strongly, not strongly, negatively correlated major depressive disorder symptoms ($r = -.40$, 95% CI [= .49, -.30]) (all $dfs = 279$, all $ts > 5.03$, all $ps < .001$).

Chapter 5

The strength of correlations in Study 2 were broadly similar to those in Study 1. As Figure 6 shows, confidence intervals overlapped in all but one case (MDD symptoms). We tested the difference of the two independent correlations with a z -test of the difference of the Fisher's z transformed correlations, as implemented in the R package *Psych* (Revelle, 2017). WAVSES scores were more strongly correlated to a statistically significant degree with attachment, anxiety, attachment avoidance, conscientiousness and MDD symptoms (all $zs > 2.06$, $ps < .04$) (Revelle, 2016) in Study 1 than in Study 2.

As Figure 5 shows, correlations for the WAVSES were broadly similar to correlations for the RSES. However, there was a trend here, as in Study 1, for WAVSES correlations to be lower than RSES correlations. In some instances, effect size differences were large. In fact, on three occasions (in the case of major depressive symptoms, life satisfaction, and attachment anxiety) the effect size difference was $r = .20$ or more. Ninety-five per cent confidence intervals overlapped and correlations were not significantly different only for openness ($t = -0.72$, $p = .48$). The RSES was more strongly correlated with all other variables than the WAVSES (all $ts > -2.70$, all $ps < .007$).

As in Study 1, WAVSES correlations were more similar to SISE correlations. Confidence intervals for each variable overlapped for WAVSES and SISE correlations, except social status, extraversion, neuroticism, and life satisfaction—where, in each case, the SISE was more strongly correlated than the WAVSES (all $ts > 2.89$, all $ps < .005$). Where confidence intervals did overlap, conscientiousness ($t = 2.05$, $p = .041$) and agreeableness ($t = 2.35$, $p = .020$) were more strongly correlated with the WAVSES than the SISE.

5.4.2.4 Convergent Validity

As in Study 1, the WAVSES showed good convergent validity. The WAVSES was very strongly positively correlated with the RSES ($r = .74$, $t(279) = 18.62$, $p < .001$, 95% CI [.69, .79]). This is an almost identical figure to the $r = .75$ observed in Study 1. The WAVSES was also strongly positively correlated with the SISE ($r = .63$, $t(279) = 13.33$, $p < .001$, 95% CI [.55, .69]). This figure was a little lower than $r = .70$ observed in Study 1, but the difference was not statistically significant ($z = 1.46$, $p = .14$). The RSES and SISE were also strongly positively correlated ($r = .75$, $t(279) = 18.90$, $p < .001$, 95% CI [.69, .80]).

5.4.3 Discussion

The purpose of Study 2 was to further investigate the concurrent and convergent validity of the WAVSES by conducting an exact replication of Study 1. We found that 95% confidence intervals for concurrent and convergent validity correlations overlapped for Studies 1 and 2 in each case, except one (for major depressive disorder symptoms). Although several replications may be required before we can conclude that the effects pertaining to the WAVSES concurrent and

convergent validity are replicable, the consistency of the results between Studies 1 and 2 in this way is promising (LeBel, McCarthy, Earp, Elson, & vanpaemel, 2018).

5.5 Study 3: Test-Retest

The purpose of Study 3 was to investigate the test-retest reliability of the WAVSES by administering the scale on two occasions, two-weeks apart.

5.5.1 Hypotheses

We based our hypotheses on a number of studies that have examined the test-retest reliability of the RSES and the SISE. Robins et al. (2001) found a mean test-retest correlation across three time points of $r = .67$ for the RSES and $r = .61$ for the SISE. Ackerman, Brecheen, Corker, Donnellan, and Witt (2013, as cited in Donnellan et al., 2015) found a test-retest correlation of $r = .67$ for the RSES and $r = .53$ for the SISE. Lastly, Ackerman and Donnellan (2013) observed a two-week test-retest correlation of $r = .80$ for the RSES.

Based on these findings, we expected the test re-test correlation for the RSES would fall between $r = .65$ and $r = .80$, and between $r = .53$ and $r = .75$ for the SISE. We expected the test-retest correlation for the WAVSES to be similar to the RSES, between $r = .65$ and $r = .80$. We did not expect to find a statistically significant difference between WAVSES and RSES test-retest correlations.

5.5.2 Method

5.5.2.1 Sample Size

We aimed to collect data on two occasions from 100 participants, a sample size that would allow for $> 99\%$ power to detect a test-retest correlation of .65 (the lowest anticipated coefficient for the WAVSES) for $\alpha = .05$.

5.5.2.2 Participant Recruitment and Payment

We recruited participants for a two-part study on the stability of self-esteem via the online academic research platform callforparticipants.com and the online crowdsourcing platform Prolific Academic. All participants were entered into a draw to win a £50 gift voucher. Participants recruited from Prolific Academic were reimbursed with an additional £1.00 for each part of the study.

5.5.2.3 Procedures and Measures

Participants provided demographic information and then, on two occasions, responded to the WAVSES, RSES and SISE. Following the recommendations of Nunnally and Bernstein (1994, p. 255), we aimed for a two-week period between scale administrations. We contacted participants by email 13 days after they had completed the first part of the study and sent a follow-up reminder a week later. Response formats for the three self-esteem measures were identical to Studies 1 and 2.

5.5.3 Results and Discussion

5.5.3.1 Participants and Data Collection

One-hundred and eight participants completed both parts of the study (M age = 34.07, 68.52% female), while 72 only completed the first (40.00%). As Table 16 shows, participants were primarily British (79.63%) and primarily resided in the United Kingdom (88.89%). The mean length of time between the two parts of the study was 16.88 days.

5.5.3.2 WAVSES

WAVSES scores were very similar at both time points (T1 M = 10.66; T2 M = 10.68), but scores were slightly more variable in the first part of the study than in the second (SD T1 = 3.03, SD T2 = 2.80). As in Studies 1 and 2, WAVSES scores were negatively skewed for the first (-.83) and second (-.82) parts of the study, but the skew was not as pronounced as in our previous studies. Again, as in Studies 1 and 2, the two items of the WAVSES were very strongly positive correlated: both in the first (r = .87, $t(106)$ = 18.12, p < .001, 95% CI [.81, .91]) and second (r = .85, $t(106)$ = 16.78, p < .001, 95% CI [.79, .90]) parts of the study.

5.5.3.3 Test-Retest Correlations

Figure 7 displays, for all three measures, scatterplots of time 1 and time 2 participant WAVSES z-scores. Effect sizes were slightly stronger than anticipated. The test-retest correlation for was very strongly positive for the WAVSES (r = .84 [95% CI .78, .89], $t(106)$ = 16.22 p < .001), RSES (r = .92 [95% CI .89, .95], $t(105)$ = 24.54, p < .001), and the SISE (r = .86, [95% CI .80, .90], $t(106)$ = 12.09, p < .001). Contrary to prediction, and despite overlapping confidence intervals, with alpha at the conventional level of .05, the test-retest correlation for the RSES was significantly stronger than the test-retest correlation for the WAVSES (z = 2.63, p = .01).

5.6 Study 4: Item-Level Analysis

In Studies 1, 2, and 3 we found that the two items of the WAVSES were very strongly positively correlated (r = .89, r = .91, and r = .87, respectively). While, on the positive side, they show that

the WAVSES is internally consistent, the coefficients observed in those studies are close to rules-of-thumb in psychological research for redundancy or collinearity (e.g., $r = .95$, Kline, 2011; $r = .90$, Fiddell & Tabachnick, 2003). Although a composite of both of the items of the WAVSES are consistent with prevailing definitions of self-esteem, the aim of Study 4 was to explore WAVSES item-level correlations to determine whether only one of the two items of the scale might be used in research.

In addition, we explored the heterogeneity of WAVSES correlations with the items of the RSES. In line with previous findings on the heterogeneity of item level correlations for the RSES (Pegler et al., 2018), we expected that WAVSES scores would be heterogeneously positively correlated with the items of the RSES. In addition, we expected the WAVSES scores would be most strongly positively correlated with its first item, “I feel that I am a person of worth, at least on an equal plane with others”—the item that is most similar to the first item of the WAVSES.

5.6.1 Method

To investigate the similarity of item-level correlations with convergent and concurrent validity variables, and the heterogeneity of correlations with the items of the RSES, we combined data from Study 1 and Study 2 ($N = 548$). To investigate item-level test-retest reliability we analysed data from Study 3 ($N = 106$).

5.6.2 Results

Item 1 and item 2, to two decimal places, were identically correlated with the RSES ($r = .73$; $r = .73$) and very similarly correlated with the SISE ($r = .63$, $r = .65$). Turning attention towards concurrent validity, the two items very similarly correlated with every variable: attachment anxiety ($r = .37$; $r = .38$) attachment avoidance ($r = -.44$; $r = -.44$), social inclusion ($r = .61$, $r = .66$), social status ($r = .60$, $r = .63$), openness ($r = .28$; $r = .29$), conscientiousness ($r = .39$, $r = .41$), extraversion ($r = .45$, $r = .44$), agreeableness ($r = .38$, $r = .41$), neuroticism ($r = .51$, $r = -.50$), life satisfaction ($r = .50$, $r = .50$), and major depressive disorder symptoms ($r = -.47$; $r = -.49$) (all $dfs = 546$, $ts > 6.76$, and $ps < .001$). Not surprisingly, confidence intervals overlapped for each variable. Test-retest correlations for item 1 ($r = .74$, $t(106) = 11.12$, $p < .001$, 95% CI [.63, .81]) and item 2 ($r = .77$, $t(106) = 12.35$, $p < .001$, 95% CI [.68, .84]) were very similar in Study 3.

Correlations between WAVSES scores and the items of the RSES are presented in Table 17. As expected, WAVSES scores were heterogeneously correlated with the items of the RSES ($\chi^2(9) = 79.76$, $p < .001$) and were most strongly positively correlated with the first item of the RSES, “I feel that I’m a person of worth, at least on an equal plane with others” ($r = .68$, $t(546) = 21.55$, $p < .001$, 95% CI [.63, .72])—a correlation that is slightly weaker than correlation between WAVSES scores and overall RSES scores in Studies 1 ($r = .75$) and 2 ($r = .74$). The weakest

positive correlation between WAVSES scores and the items of the RSES was with Item 8, “I wish I could have more respect for myself”, ($r = .45$, $t(546) = 11.64$, $p < .001$, 95% CI [.38, .51]).

5.6.3 Discussion

In Studies 1 and 2, we found that the two items of the WAVSES were very strongly positively correlated. In Study 4, we investigated item-level correlations in combined data from Studies 1 and 2. We found that the two items of the WAVSES were very similarly correlated with all targeted variables. The homogenous item-level correlations for the WAVSES are in contrast to the typically heterogeneous item-level correlations observed for the RSES with theoretically related variables (Pegler et al., 2018). While a combined score for both items is consistent with common definitions of self-esteem that reference both worth and value, these results suggest that researchers may use either item as a one-item measure of self-esteem. In addition, in line with previous research, we found that WAVSES scores are heterogeneously correlated with the items of the RSES.

5.7 General Discussion

In this article, we brought together meta-research on the measurement of self-esteem (Pegler et al., 2018a), meta-research on the definition of self-esteem (Pegler et al., 2018b), prior confirmatory factor-analytic findings on the RSES (Pegler, Gregg, Hart, Mahadevan, & Bialobrezka, 2018), and the intriguing history of the RSES. We argued that the construction of a new measure of self-esteem, maximally content valid for the definition of self-esteem now preferred by researchers, would allow for greater coordination between the concept of self-esteem and its measurement. We reported on the development and initial validation of such a measure—the Worth and Value Self-Esteem Scale (WAVSES). Our initial validation attempts were guided by the meta-analyses of previous research results pertaining to the correlations between self-esteem and life-satisfaction, attachment orientation, perceived social status, perceived social inclusion, the big five personality traits, and major depressive disorder symptoms.

Across three studies, we found positive evidence on the convergent validity, concurrent validity and test-retest reliability of the WAVSES. In Studies 1 and 2, we found that participants' scores on the WAVSES were (1) highly positively correlated with scores on the RSES and the SISE, and (2) correlated in predicted ways with measures of seven constructs theoretically and empirically related to self-esteem. Specifically, we found that self-esteem, defined and measured as one's overall evaluation of one's own worth and value, was: (a) moderately to strongly negatively associated with attachment anxiety and avoidance; (b) strongly negatively associated with neuroticism and major depressive disorder symptoms; (c) moderately to strongly positively associated with conscientiousness, extraversion, and agreeableness; and (d) strongly positively associated with social inclusion, social status, and life-satisfaction (see Figure 6). Correlations for the WAVSES

were slightly weaker than comparable correlations for the RSES and more similar to comparable correlations for the SISE. In addition, in Study 3 we found that respondents' responses to the WAVSES at two time points, on average just over two weeks apart, were very strongly positively correlated ($r = .84$).

We believe these findings are promising and suggest that researchers who define self-esteem as an individual's overall evaluation of their worth and value can use the WAVSES to assess self-esteem. Importantly, we found that the scale's brevity (i.e., two items) did not jeopardise finding theoretically anticipated associations—a result that is in line with previous research that has found that brief measures of psychological constructs perform as well as multi-item scales (e.g., Bergkvist & Rossiter, 2007; Burisch, 1984b; Cheung & Lucas, 2014; Sporle & Bekk, 2013) and indeed research that has found that this applies to self-report measures of self-esteem too (Robins et al., 2001).

In Study 4, we found in exploratory analyses that the two items of the WAVSES were almost identically correlated with the measures of seven constructs theoretically and empirically related to self-esteem employed in Studies 1 and 2. This latter finding suggests that it may be possible for researchers to use either item of the WAVSES as a one-item measure of self-esteem.

5.7.1 Limitations

Our research has a number of strengths. The WAVSES was the first self-esteem scale to be developed based on the findings of detailed meta-research on both the measurement and definition of self-esteem in psychology. It was also the first self-esteem scale for which initial validation research was guided by the meta-analyses of previous research results. However, our work has a number of limitations.

First, our initial validation studies included only self-report measures of variables theoretically related to self-esteem. Although research in personality and social psychology is increasingly reliant on self-report measures (Dolinski, 2018), it is important future research examines the WAVSES relationships with non-self-report measures of theoretically related variables—for example, sociometric indexes or peer reports of social inclusion and status. Validity evidence for the WAVSES will be extended if predicted relationships similarly emerge with these measures.

Second, we do not know, at this point, whether the WAVSES is an option for experimental research on self-esteem, as a measure of momentary or “state” self-esteem. An interesting direction for future research are experiments with the WAVSES as the dependent measure. Specific options include manipulations of social rejection that typically influence self-esteem such as relived rejection, future-alone manipulations, and the cyberball procedure (Gerber & Wheeler, 2009).

Third, the participants of the research reported here all lived in the United States or the United Kingdom and were all recruited from online crowdsourcing platforms or other online research communities. Going forward, the psychometric functioning of WAVSES should be examined in large and more diverse samples. Ideally, to reach stronger conclusions on the WAVSES's validity, future validation attempts should feature samples of participants that are very large, representative, and randomly-selected (rather than convenience samples). Another avenue for future research is to examine the validity and of the scale and its interpretability for adolescents and young people—the age group for which Rosenberg initially validated the RSES (Rosenberg, 1965). At present, we do not know whether our findings generalize to samples other than adult, western, educated, industrialized, rich and democratic (WEIRD) individuals.

The fourth limitation of our research is that we have not yet provided evidence for the discriminant validity of the WAVSES—that is “the extent to which a measure does not correlate with indicators of other constructs that are theoretically or empirically distinct” (Simms, 2008, p., see also Messick, 1995). We have not yet investigated whether the WAVSES does *not* correlate with variables that are theoretically or empirically unrelated to self-esteem. It would be instructive to investigate whether, for example, participants’ WAVSES scores, like RSES scores, were only very weakly correlated with indirect measures such as the name liking task or the self-esteem implicit association test (Donnellan et al., 2015; Perinelli et al., 2018). Alternatively, whether WAVSES scores, like RSES scores, are weakly associated ($r = .08$) with socioeconomic status (Twenge & Campbell, 2002).

5.7.2 Anticipated Criticisms

We anticipate that a critical reviewer might argue that the results reported here show that the WAVSES is a brief measure of self-esteem that is redundant with the RSES. He or she might further claim, as such, that, on empirical grounds, researchers will not greatly benefit from using the WAVSES in place of the RSES. We have some sympathy with this position: our research does indeed show that the WAVSES and the RSES are quite similarly correlated with an array of theoretically related variables and, in this sense, the WAVSES does not enjoy incremental concurrent validity (Haynes & Lench, 2003).

However, we would point out a number of things to allay such concerns. First, the strength of the correlations between the WAVSES and the RSES (Study 1: $r = .75$; Study 2: $r = .74$) were not so strong as to be indicative of redundancy. Second, and most importantly, the scale’s chief benefit over the RSES is that, for many, the WAVSES will offer improved coordination between the definition of self-esteem and its measurement. Content validity improvements are strong rationales for the development of new measures and, as such, the incremental content validity of the WAVSES is likely to appeal to researchers, even if evidence for incremental concurrent validity is lacking (Haynes & Lench, 2003).

Chapter 5

In any case, it is possible that strongly divergent research findings may emerge in other research areas and that incremental validity may be observed in some, as yet unexamined, domains.

Nonetheless, we anticipate that many researchers will be able to more cleanly and directly measure self-esteem with the WAVSES, than with the RSES. Researchers will benefit from using the WAVSES for this reason—even if research findings are similar to those with the RSES. We also suggest that, where self-esteem is defined narrowly as an individual's overall evaluation their own worth and/or value, correlations with the WAVSES likely bring us closer to the true correlation between self-esteem and associated social and psychological variables. Moreover, if the research community were to only accept instruments that maximize effect sizes, and reject those that did not, then they risk making positive results inevitable—an eventuality that seems antithetical to scientific inquiry.

5.7.3 Summary and Conclusions

In summary, we designed the WAVSES to be maximally content valid for the narrow self-worth/value definition of self-esteem, which recent meta-research reveals is the most popular definition in personality and social psychology (Pegler et al., 2018b). We found that: (1) American and English adults have little trouble understanding or responding to its two items, (2) it has convergent validity (it is highly correlated with similar measures), (3) concurrent validity (it is correlated in expected directions and strengths with theoretically related variables), and (4) satisfactory test-retest reliability, given that self-esteem is hypothesised to be stable over time.

While future research is required to extend the initial validation evidence gathered here, our promising results suggest that researchers can use the WAVSES to measure self-esteem as narrowly defined as one's overall evaluation of his or her worth and/or value. So far, the evidence suggests that the WAVSES is a sound alternative to the RSES, which does not have the historical baggage, questionable content validity, or complicated internal structure of the RSES.

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5.9 Tables

Table 1. Pearson's r Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Self-Report Measures of Social Inclusion and Social Status

Study	r	Sample characteristics			
		N	M age	Country	% ♀
Social Inclusion					
Galliot & Baumeister (2007; Study 1)	.48	117		U.S.	62
Kirkpatrick, Waugh, Valencia, & Webster (2002; Study 1)	.62	116		U.S.	53
Kirkpatrick, Waugh, Valencia, & Webster (2002; Study 2)	.39	340		U.S.	49
Leary, Cottrell, & Phillips (2001; Study 3)	.58	180		U.S.	50
Mahadevan, Gregg, Sedikides, & de Waal-Andrews (2016; Study 1)	.55	626	34.40	U.S.	63
Mahadevan, Gregg, Sedikides, & de Waal-Andrews (2016; Study 2)	.55	680	32.30	U.S.	61
Webster & Kirkpatrick (2006)	.55	81		U.S.	54
Social Status					
Huo, Binning, & Molina (2010)	.28	1,377	15.75	U.S.	58
Mahadevan, Gregg, Sedikides, & de Waal-Andrews (2016; Study 1)	.63	626	34.40	U.S.	63
Mahadevan, Gregg, Sedikides, & de Waal-Andrews (2016; Study 2)	.61	680	32.30	U.S.	61

Table 2. Pearson's *r* Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale, and Attachment Dimensions

Study	Sample characteristics							Measure
	Anxiety	Avoidance	N	M age	Country	% ♀		
Baumel & Berant (2015)	-.51	-.45	124	24.27	Israel	52		ECR
Dan, Bar Ilan, & Kurman (2014; Study 1) school student group	-.36	-.30	155	16.40	Israel	61		ECR
Dan, Bar Ilan, & Kurman (2014; Study 1) college student group	-.43	-.33	172	23.70	Israel	77		ECR
Felton & Jowett (2013)	-.16	-.16	411	20.40	U.K.	61		ECR-S
Frias & Shaver (2014) men	-.39	-.47	160	19.43	U.S.	0		ECR
Frias & Shaver (2014) women	-.24	-.27	185	19.43	U.S.	100		ECR
Gentzler & Kerns (2004) men	-.39	-.41	107	20.50	U.S.	0		ECR
Gentzler & Kerns (2004) women	-.45	-.27	155	20.50	U.S.	100		ECR
Goodall (2015)	-.57	-.44	174	32.00	U.K.	83		ECR-R
Hart, Nailling, Bizer, & Collins (2015; Study 1)	-.62	-.54	267	32.68	MTurkers	44		ECR

Study	Sample characteristics						Measure
	Anxiety	Avoidance	N	M age	Country	% ♀	
Hart, Nailling, Bizer, & Collins (2015; Study 2)	-.60	-.43	316	32.79	MTurkers	62	ECR
Li & Zheng (2014)	-.22	-.26	585	20.00	China		ECR
McWilliams & Holmberg (2010)	-.62	-.36	148	21.40	Canada	59	ECR-R
Wei & Ku (2007)	-.38	-.28	390	19.38	U.S.	63	ECR
Wongpakaran, Wongpakaran, & Wedding (2012): men	-.38	-.21	142	20.31	Thailand	0	ECR-R
Wongpakaran, Wongpakaran, & Wedding (2012): women	-.17	-.10	256	20.31	Thailand	100	ECR-R
Zhang, Chan, & Teng (2011)	-.28	-.12	147	21.44	China	59	ECR

Note. ECR = Experiences in Close Relationships Scale (Brennan et al. 1998); ECR-R = Experiences in Close Relationships Scale Revised (Fraley et al. 2000); ECR-S = Experiences in Close Relationships Scale Shortened (Wei, Russell, Mallinckrodt, & Vogel, 2007).

Table 3. Pearson's *r* Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Life Satisfaction, as Measured by the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

Study	<i>r</i>	Sample characteristics			
		<i>N</i>	<i>M</i> age	Country	% ♀
Arrindell, van Nieuwenhuizen, & Luteijn (2001)	.58	472	44.00	Netherlands	41
Arslan, Hamarta, & Uslu (2010)	.38	306	20.33	Turkey	52
Chen, Cheung, Bond, & Leung (2006)	.39	359	19.06	China	41
Civitci & Civitci (2009)	.46	439	16.08	Turkey	54
Donellan, Ackerman, & Brecheen (2016)*	.45	1127	18.31	U.S.	45
Du, Bernardo, & Yeung (2015)	.49	1008	19.29	China	70
Furr & Funder (1998)	.63	143		U.S.	
Hu, Hu, Huang, & Zheng (2015), gay, lesbian, and bisexual group	.46	275	24.80	China	30
Hu, Hu, Huang, & Zheng (2015), heterosexual group	.32	275	24.90	China	30
Joshanloo & Afshari (2011)	.50	235	20.56	Iran	74
Judge, Erez, Bono, & Thoresen (2002: Study 2a)	.56	265	20.44	U.S.	54
Judge, Erez, Bono, & Thoresen (2002: Study 2b)	.19	702	20.70	U.S.	58
Judge, Erez, Bono, & Thoresen (2002: Study 3b)	.57	124	21.33	U.S.	43
Judge, Erez, Bono, & Thoresen (2002: Study 4a)	.44	175	42.10	U.S.	25
Kang, Shaver, Sue, Min, & Jing (2002) Euro-American group	.64	164	20.33	U.S.	76
Kang, Shaver, Sue, Min, & Jing (2002) Asian American group	.71	148	20.33	U.S.	77
Kang, Shaver, Sue, Min, & Jing (2002) Korean group	.58	175	20.33	Korea	50
Kang, Shaver, Sue, Min, & Jing (2002) Chinese group	.43	139	20.33	China	56
Kong, Zhao, & You (2012)	.30	489	20.81	China	57

Study	<i>r</i>	Sample characteristics			
		<i>N</i>	<i>M</i> age	Country	% ♀
Kwan, Bond, & Singelis (1997; Study 1)	.38	194	21.84	Honk Kong	69
Hong Kong group					
Kwan, Bond, & Singelis (1997; Study 1)	.54	184	21.84	U.S.	58
U.S. group					
Lonnqvist, Leikas, Mahonen, Jasinskaja-Lahti (2015)	.33 ²	225	45.5	Finland	
Lucas, (1996; Study 1)	.59 ²	212		U.S.	62
Lucas, (1996; Study 2)	.65 ¹²	109		U.S.	63
Martinez-Marti & Ruch (2016)	.61	363	28.34	Switzerland	82
Moksnes & Espnes (2013): Girls	.68	636	15.02	Norway	100
Moksnes & Espnes (2013): Boys	.62	603	15.02	Norway	0
Park & Jeong (2015)	.53	180	20.30	Korea	37
Steger, Frazier, Oishi, & Kaler (2006) Study 3	.55	70	21.10	U.S.	61
Pepping, Donovan, & Davis (2013) Study 1)	.68	329	21.53	Australia	73
Wilt, Grubbs, Exline, & Pargament (2016), MTurkers	.57	418	34.79		62
Wilt, Grubbs, Exline, & Pargament (2016) college student group	.55	965		U.S.	70
Zhang & Leung (2002)	.32	1347	31.88	China	52

Note. When country of residence of participants was not explicitly reported, we assumed participant country of residence was the same country as the lead authors affiliated university. ¹ = correlations with factor scores for single-factor model in SEM, not average scores, ² = time 1 Pearson's *r* in longitudinal study, ³ = 9-item RSES due to accidental deletion. * = correlations with factor scores for single-factor model in structural equation modelling, not item average or sum.

Table 4. Pearson's *r* Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Big Five Personality Dimensions of Agreeableness (A), Conscientiousness (C), Extraversion (E), Neuroticism (N) and Openness (O)

Study	Big Five dimension					Sample characteristics				
	A	C	E	N	O	N	age	Country	% ♀	Measure
Cheng & Furnham (2003)			.39	-.55		234	18.23	UK	68	EPQ-R
Donellan, Ackerman, & Brecheen (2016) ¹	.32	.41	.39	-.56	.15	1127	18.31	U.S.	45	BFI
Francis & James (1996) ²			-.32	.32		802		U.K.	61	JEPI
Furr & Funder (1998)	.24	.28	.45	-.59	.19	143		U.S.		NEO
Gosling, Rentfrow, & Swann (2003)	.21	.31	.38	.29 ³	.12	3503		U.S.		BFI
Grumm & von Collani (2007; Study 2)			.53	-.68		50		German	52	NEO-30
Joshanloo & Afshari (2011)	.25	.45	.35	-.44	.32	235	20.56	Iran	74	BFI
Judge, Erez, Bono, & Thoresen (2002: Study 2b)	.21	.29	.28		.18	702	20.70	U.S.	58	NEO
Judge, Erez, Bono, & Thoresen (2002: Study 3a)	.20	.42	.46	.69 ³	.20	270	20.70	U.S.	57	NEO
Judge, Erez, Bono, & Thoresen (2002: Study 3b)	.33	.36	.44	.56 ³	.15	124	21.33	U.S.	57	NEO

Study	Big Five dimension						Sample characteristics			
							Mean			
	A	C	E	N	O	N	age	Country	% ♀	Measure
Judge, Erez, Bono, & Thoresen (2002: Study 3c)	.08	.15	.33	.50 ³	.35	72	20.50	U.S.	48	NEO
Judge, Erez, Bono, & Thoresen (2002: Study 4a)	.24	.51	.42		.00	175	42.10	U.S.	25	NEO
Judge, Erez, Bono, & Thoresen (2002: Study 4b)		.47	.37			280				NEO
Kwan, Bond, & Singelis (1997)	.13	.32	.47	-.69	.06	194	21.84	China	68	NEO
Meier, Orth, Denissen, & Kuhnel (2011)	.30	.37	.54	-.64	.25	1283	29.10	German	86	BFI
Pullman & Allik (2000)	-.04	.35	.31	-.59	.11	377	32.70	Estonia	59	NEO
Robins, Handin, & Trzesniewski (2001; Study 1)	.23	.28	.41	-.70	.16	498		U.S.	56	NEO
Robinson & Meier (2005; Study 1)				-.46		54		U.S.	57	TEINS
Robinson & Meier (2005; Study 2)				-.46		50		U.S.	68	TWINS
Shi, Liu, Yang, & Wang (2015)	.46	.31	.20	-.25	.35	1738	21.42	China	66	BFI

Study	Big Five dimension					Sample characteristics				
						Mean				
	A	C	E	N	O	N	age	Country	% ♀	Measure
Swickert, Hittner, Kitos, Cox-Fuenzalida (2004)			.34			278		U.S.		EPQ
Watson, Suls, & Haig (2002; Study 1)	.25	.28	.47	-.49	.24	124		U.S.	71	BFI
Watson, Suls, & Haig (2002; Study 2)	.23	.37	.40	-.66	.31	287		U.S.	51	BFI
Watson, Suls, & Haig (2002; Study 3)	.12	.43	.46	-.69	.10	346		U.S.	61	NEO
Wilt, Grubbs, Exline, & Pargament (2016) college sample	.30	.34	.37	-.55	.08	965		U.S.	70	BFI
Wilt, Grubbs, Exline, & Pargament (2016): web sample	.23	.46	.29	-.56	.11	418	34.79		62	BFI
Zeigler-Hill, Holden, Enjaian, Southard, Besser, Li, & Zhang (2015; Study 1)	.25	.32	.31	.45 ³	.00	1069	20.27	U.S., Israel, China		BFI
Zeigler-Hill, Holden, Enjaian, Southard, Besser, Li, & Zhang (2015; Study 2)	.38	.44	.24	.47 ³	.19	276	20.76	U.S.		BFI
Zeigler-Hill, Holden, Enjaian, Southard, Besser, Li, & Zhang (2015; Study 3): MTurk sample	.40	.51	.46	.59 ³	.26	108				BFI
Zhang (2005)	.22	.43	.36	-.55	.15	1347	31.88	China	54	NEO-FFI

Chapter 5

Note. EPQ-R = Eysenck Personality Questionnaire – Revised (Eysenck, Eysenck, & Barret, 1985), EPQ = Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975). BFI = Big Five Inventory (John, Donahue, & Kentle, 1991). JEPI = Junior Eysenck Personality Inventory (Eysenck, 1965). NEO-PI = NEO (Costa & McCrae, 1985). NEO-FFI-30 = German NEO-30 (Korner, Geyer, Roth, & Brahler, 2005). TEINS = Ten-item neuroticism scale (Goldberg, 1999). TWINS = Twenty-item neuroticism scale (Goldberg, 1992). NEO-FFI = Short form NEO-FFI (Costa & McCrae, 1992). ¹ = correlations with factor scores for single-factor model in SEM, not item average or sum score. ² = RSES used in original Guttman form, high scores equal low self-esteem (coefficients reflected for meta-analysis). ³ = neuroticism as emotional stability, higher scores reflect less neuroticism (coefficients reflected for meta-analysis).

Chapter 5

Table 5. Pearson's *r* Correlations Between Self-Esteem, as Measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), and Depressive Symptom Scales

Study	<i>r</i>	<i>N</i>	Sample characteristics			
			age	Country	% ♀	Measure
Abela, Webb, Wagner, Ho, & Adams (2006)	-.44 ¹	102	41.00	Canada	86	BDI
Besser & Zeigler-Hill (2014)	-.55	217	23.62	Israel	66	CES-D
Du, King, & Chu (2016)	-.52	380	14.00	China		CES-D
Hankin, Lakdawalla, Carter, Abela, & Adams (2007)	-.66	431	19.80	U.S.	70	BDI-II
Joiner, Katz, & Lewin (1999)	-.58 ¹	177		U.S.	63	BDI
Kernis, Granneman, & Mathis (1991)	-.29	76		U.S.		CES-D
Kernis, Whisenhunt, Waschull, Greenier	-.48 ¹	98		U.S.	86	CES-D
Berry, Herlocker, & Anderson (1998)						
Krizan & Suls (2009; Study 1)	-.58	277	19.60	U.S.	64	CES-D
Krizan & Suls (2009; Study 2)	-.67	288	20.00	U.S.	74	BDI
Kuster, Orth, & Meier (2012)	-.54 ¹	663	32.40	Switzerland	51	CES-D
Lee & Koo (2015)	-.58	176	32.84	Korea	100	BDI
Li, Chang, Chin, Chiu (2016)	-.53	1883		China	49	CES-D
Lin (2015)	-.55	235	20.04	Taiwan	62	CES-D

Study	<i>r</i>	<i>N</i>	Sample characteristics			
			age	Country	% ♀	Measure
Michalak, Teismann, Heidenreich, Strohle, & Vocks (2011)	-.71	216	24.78	Germany	85	BDI
Orth, Robins, & Roberts (2008 ; Study 1)	-.34 ²	2,094	15.50	U.S.	50	CES-D
Orth, Robins, & Roberts (2008; Study 2)	-.58 ²	270	18.30	U.S.	59	CES-D
Phillips & Hine (2014)	-.62	306	27.00 ³	U.S.	82	ZDS
Roberts & Gamble (2001)	-.36	153	16.10	U.S.	55	IDD
Roberts & Monroe (1992)	-.52	192		U.S.	64	BDI
Shi, Liu, Yang, & Wang (2015)	-.62	1738	21.42	China	66	CES-D
Steinberg, Karpinski, & Alloy (2007)	-.41	181		U.S.	61	BDI-II
Watson, Suls, & Haig (2002; Study 2)	-.74	287		U.S.	49	MASQ
Watson, Suls, & Haig (2002; Study 3)	-.64	346		U.S.	61	MASQ
Whisman & Kwon (1993)	-.77 ¹	53	18.86	U.S.	66	BDI

Chapter 5

Table 6. *Meta-Analysed Pearson's r Correlations Between the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and Self-Reported Social Inclusion and Status, Attachment Dimensions, Satisfaction With Life, Big Five Personality Traits, and Major Depressive Disorder Symptoms*

Variable	<i>k</i>	<i>N</i>	<i>r</i>	95% CI	<i>I</i> ²	<i>Q</i>
Social Inclusion	7	2,168	.53	[.49, .57]	31.67	8.78
Social Status	3	2,683	.50	[.48, .53]	97.41	77.16*
Attachment Anxiety	17	3,894	-.40	[-.37, -.43]	83.76	98.53*
Attachment Avoidance	17	3,894	-.33	[-.30, -.35]	72.55	58.30*
Life Satisfaction	33	13,186	.51	[.49, .52]	85.84	225.99*
Openness	23	15,381	.18	[.15, .20]	84.19	139.18*
Conscientiousness	24	15,661	.37	[.35, .39]	58.76	55.78*
Extraversion	28	17,025	.39	[.36, .41]	77.61	120.60*
Agreeableness	23	15,381	.24	[.22, .27]	84.76	144.37*
Neuroticism	26	15,694	-.56	[-.58, -.53]	93.19	367.37*
Major Depression	24	10,839	-.55	[-.57, -.53]	84.23	145.93*

Note. Meta-analysed rs and confidence intervals for *r* created with Bonett (2008, equation 4). *I*² and *Q* calculated with the *metafor* package. * *p* < .0001

Table 7. *Hypotheses for the Concurrent and Convergent Validity of the WAVSES*

The WAVSES will be:

1. strongly positively associated with self-reported social inclusion
 2. strongly positively associated with self-reported social status
 3. strongly positively associated with life satisfaction
 4. strongly negatively associated with neuroticism
 5. moderately positively associated with conscientiousness
 6. moderately positively associated with agreeableness
 7. moderately to strongly positively associated with extraversion
 8. weakly positively associated with openness
 9. strongly negatively associated with major depressive disorder symptoms
 10. moderately to strongly negatively associated with attachment anxiety
 11. moderately negatively associated with attachment avoidance
 12. strongly positively associated with the Rosenberg Self-Esteem Scale
 13. strongly positively associated with the Single-Item Self-Esteem Scale
-

Note. Strength of correlations based on Cohen's (1992) rules of thumb. Weakly = .10 (small effect size). Moderately = .30 (medium effect size). Strongly = .50 or greater (large effect size).

Chapter 5

Table 8. *Missing Data and Participant Exclusions for Study 1 (N = 267)*

	1 st Data Collection (N = 271)	2 nd Data Collection (N = 20)
Maximum % missing	21.77	0
Mean % missing	.40	0
N missing	134	0
Exclusions		
< 5% missing data	7 (N = 264)	0
missing data for WVSES items	2 (N = 262)	0
fail attention check	2 (N = 260)	0
% less than 2 seconds per question	11 (N = 249)	2 (N = 18)

Chapter 5

Table 9. Sample Demographic Characteristics for Study 1 ($N = 267$)

Gender and Age	
% female	49.81%
<i>M</i> age	36.09
Min age	18.11
Max age	73.96
<i>M</i> time taken (minutes)	8.71
Ethnicity	
American	158 (59.19%)
British	35 (13.10%)
African	14 (5.24%)
Other white background	8 (3.00%)
Hispanic	7 (2.62%)
Irish	7 (2.62%)
Indian	6 (2.25%)
Other black background	5 (1.87%)
Other mixed	4 (1.50%)
background	
White & Asian	4 (1.50%)
Country of Residence	
United States	215
United Kingdom	52

Table 10. *Distribution of Comprehension, Ease of Answer, and Psychological Relevance for WAVSES Items in Study 1*

Item	1 (SD)	2	3	4	5	6	7 (SA)	M (SD)
Overall, I am a person of worth								
I did not understand what was being asked of me	215	26	14	4	6	2	0	1.38 (.92)
I did not understand some of the words used	235	16	7	6	3	0	0	1.23 (.70)
I struggled to provide a response to the statement	197	33	15	9	6	3	4	1.57 (1.23)
It took me a while to decide on a response	182	29	26	13	10	6	1	1.73 (1.30)
My overall worth is something I think about regularly	49	36	49	38	45	37	13	3.59 (1.83)
Overall, I am a person of value								
I did not understand what was being asked of me	218	25	5	12	3	3	1	1.39 (1.01)
I did not understand some of the words used	234	17	4	7	3	2	0	1.26 (.81)
I struggled to provide a response to the statement	203	25	13	10	9	5	2	1.58 (1.26)
It took me a while to decide on a response	187	33	11	15	13	7	1	1.72 (1.36)
My overall value is something I think about regularly	58	31	50	41	39	34	14	3.49 (1.87)

Chapter 5

Table 11. Pearson's *r* Correlations, 95% Confidence Intervals, and Descriptives for Self-Esteem Scales in Study 1 (all *dfs* = 265, all *ps* < .001)

Variable	WVSES	RSES	SISE
Attachment			
Anxiety	-.46 [-.55, -.36]	-.62 [-.69, -.54]	-.49 [-.58, -.39]
Avoidance	-.52 [-.61, -.43]	-.55 [-.63, -.47]	-.46 [-.55, -.36]
Social			
Inclusion	.67 [.59, .73]	.70 [.63, .75]	.65 [.57, .71]
Status	.65 [.57, .71]	.70 [.63, .75]	.71 [.64, .76]
Personality			
Openness	.30 [.18, .40]	.24 [.12, .35]	.26 [.14, .37]
Conscientiousness	.48 [.39, .57]	.61 [.53, .68]	.48 [.38, .57]
Extraversion	.43 [.33, .53]	.43 [.33, .53]	.51 [.41, .59]
Agreeableness	.38 [.27, .48]	.44 [.34, .54]	.31 [.20, .42]
Neuroticism	-.56 [-.64, -.47]	-.72 [-.79, -.66]	-.66 [-.72, -.59]
Life Satisfaction	.57 [.48, .65]	.65 [.57, .71]	.60 [.52, .67]
MDD symptoms	-.58 [-.65, -.49]	-.76 [-.80, -.71)	-.61 [-.68, -.52]
Descriptives			
<i>M</i>	11.76	3.14	3.54
<i>M</i> as % of max score	84.00	78.50	70.80
<i>SD</i>	2.57	0.72	1.17
Skew	-1.26	-0.60	-0.54

Chapter 5

Table 12. *Missing Data and Participant Exclusions for Crowdflower Sample (N = 281)*

	1 st Data Collection (N = 257)	2 nd Data Collection (N = 62)
Maximum % missing	35.48	35.48
Mean % missing	.45	.84
N missing	142	66
Exclusions		
< 5% missing data	5 (N = 252)	4 (N = 58)
missing data for WVSES items	3 (N = 249)	0 (N = 58)
fail attention check	11 (N = 238)	2 (N = 56)
% less than 2 seconds per question	7 (N = 231)	6 (N = 50)

Chapter 5

Table 13. *Sample Characteristics for Crowdflower Sample (N = 281)*

Gender & Age	
% female	51.00%
<i>M</i> age	36.79
Min age	17.55
Max age	77.17
<i>M</i> time taken (minutes)	11.55
Ethnicity	
American	169
British	41
Hispanic	16
Other white background	11
African	9
Caribbean	6
Other Asian	5
background	
Other ethnic group	3
Chinese	2
Irish	2
Country of Residence	
United States	226
United Kingdom	49
Other	6

Table 14. *Distribution of Comprehension, Ease of Answer, and Psychological Relevance for WAVSES Items in Study 2*

Item	1 (Strongly Disagree)	2	3	4	5	6	7 (Strongly Agree)	M(SD)
Overall, I am a person of worth								
I did not understand what was being asked of me	185	36	23	17	11	6	3	1.80 (1.38)
I did not understand some of the words used	200	31	13	16	16	3	2	1.70 (1.33)
I struggled to provide a response to the statement	163	33	19	25	25	8	8	2.19 (1.72)
It took me a while to decide on a response	149	47	21	23	25	11	5	2.22 (1.67)
My overall worth is something I think about regularly	44	35	43	53	47	26	33	3.83 (1.91)
Overall, I am a person of value								
I did not understand what was being asked of me	193	30	26	16	8	5	1	1.71 (1.26)
I did not understand some of the words used	204	27	14	12	16	7	1	1.70 (1.36)
I struggled to provide a response to the statement	165	28	25	24	23	9	7	2.17 (1.69)
It took me a while to decide on a response	155	42	22	28	17	9	8	2.18 (1.67)
My overall value is something I think about regularly	46	47	38	52	36	31	31	3.72 (1.94)

Chapter 5

Table 15. Pearson's r Correlations, 95% Confidence Intervals, and Descriptive Statistics for Self Esteem Scales in Study 2

Variable	WAVSES	RSES	SISE
Attachment			
Anxiety	-.31 [-.41, -.20]	-.53 [-.61, -.44]	-.32 [-.42, -.21]
Avoidance	-.37 [-.47, -.27]	-.49 [-.57, -.40]	-.31 [-.41, -.20]
Social			
Inclusion	.64 [.56, .70]	.73 [.67, .78]	.59 [.51, .66]
Status	.61 [.54, .69]	.74 [.68, .79]	.73 [.66, .77]
Personality			
Openness	.29 [.18, .39]	.32 [.21, .42]	.31 [.20, .41]
Conscientiousness	.33 [.22, .43]	.47 [.38, .56]	.23 [.12, .34]
Extraversion	.49 [.39, .57]	.59 [.51, .66]	.68 [.61, .74]
Agreeableness	.42 [.32, .51]	.52 [.43, .60]	.31 [.20, .41]
Neuroticism	-.47 [-.55, -.37]	-.69 [-.74, -.62]	-.59 [-.66, -.50]
Life Satisfaction	.46 [.37, .55]	.65 [.58, .71]	.69 [.63, .75]
MDD symptoms	-.40 [-.49, -.30]	-.62 [-.69, -.55]	-.40 [-.49, -.30]
Descriptives			
<i>M</i>	11.37	3.01	3.51
<i>M</i> as % of max	81.21	75.25	70.20
score			
<i>SD</i>	2.74	0.72	1.22
Skew	-1.29	-0.50	-0.51

Note. All $dfs = 279$, all $ps < .001$

Table 16. *Sample Characteristics for Study 3 (N = 108)*

Gender & Age	
% female	68.51%
<i>M</i> age	34.07
Min age	17.74
Max age	76.01
<i>M</i> time taken (minutes)	4.73
part 1	
<i>M</i> time taken (minutes)	4.44
part 2	
Ethnicity	
British	86
American	8
White & Black	2
Caribbean	
Irish	2
Other Asian	2
Caribbean	1
Other white background	1
Chinese	1
Indian	1
Pakistani	1
Country of Residence	
United Kingdom	96
United States	11
Ireland	1

Chapter 5

Table 17. WAVSES *r* Correlations with RSES Items

RSES Item	Wording	<i>r</i>
1	I feel that I'm a person of worth, at least on an equal plane with others.	.68 [.63, .72]
2	I feel that I have a number of good qualities.	.64 [.59, .69]
3	All in all, I am inclined to feel I am a failure.	.61 [.56, .66]
4	I am able to do things as well as most other people.	.51 [.45, .57]
5	I feel I do not have much to be proud of.	.60 [.54, .65]
6	I take a positive attitude toward myself.	.60 [.55, .65]
7	On the whole, I am satisfied with myself.	.62 [.56, .67]
8	I wish I could have more respect for myself.	.45 [.38, .51]
9	At times I think I am no good at all.	.59 [.54, .64]
10	I certainly feel useless at times.	.55 [.49, .61]

Note. All *ts* > 11.63, *dfs* = 546, all *ps* < .001

5.10 Figures

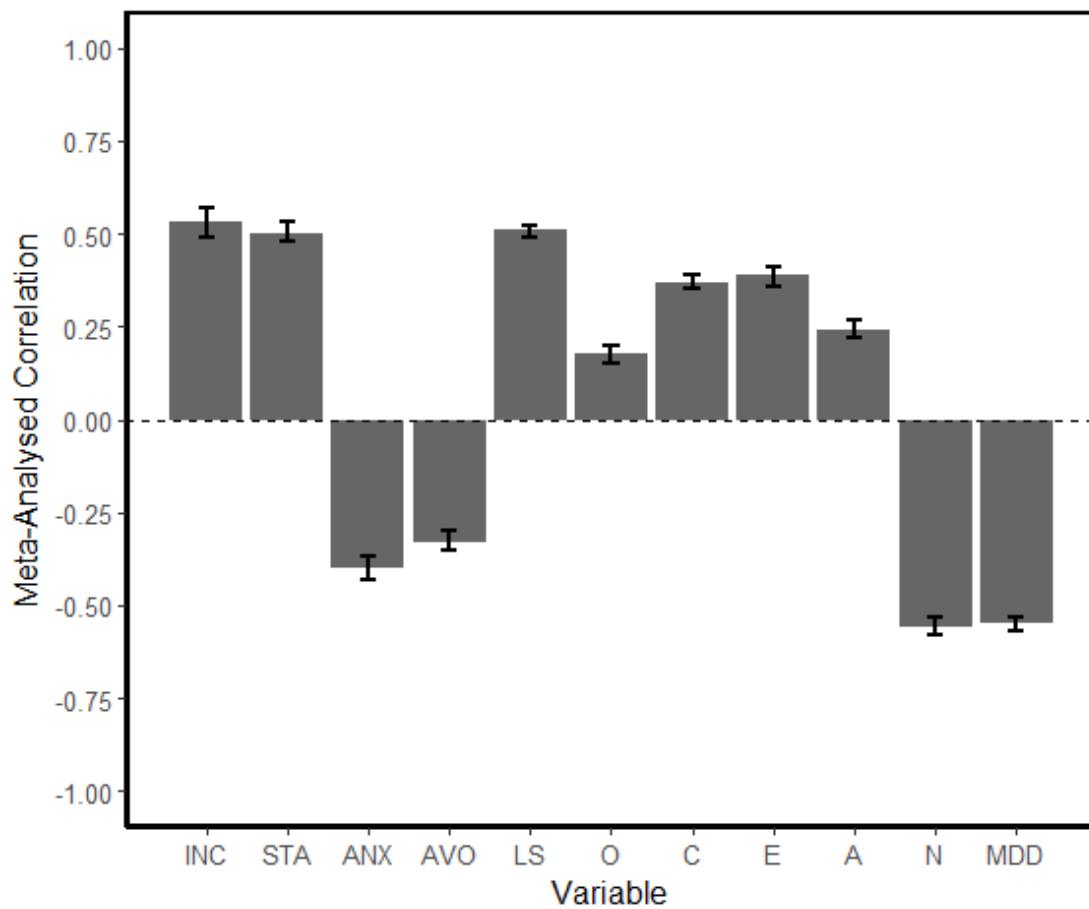


Figure 1. Meta-analysed correlations and 95% confidence intervals for concurrent validity variables and self-esteem, as measured by the RSES. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms.

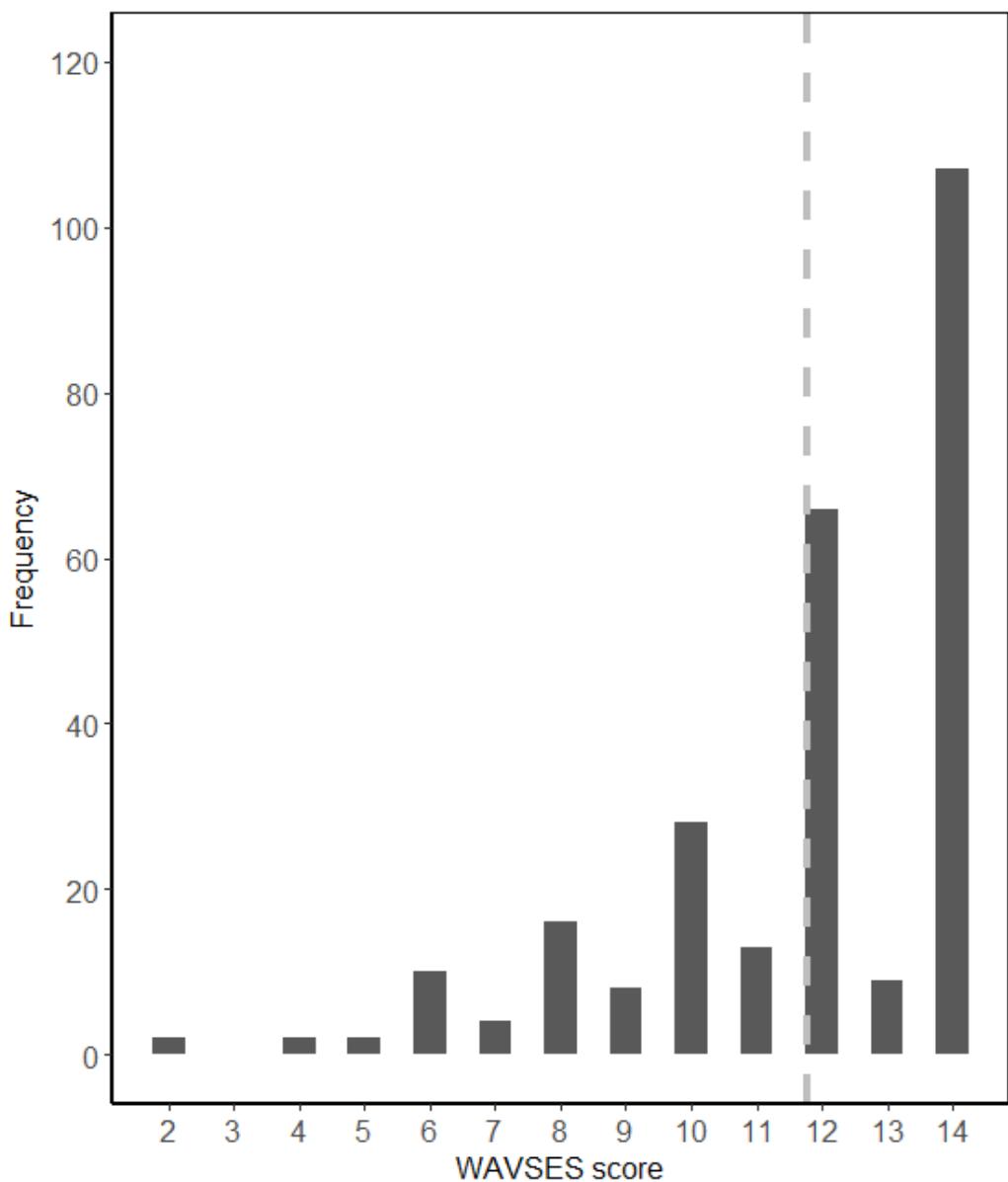


Figure 2. Distribution of participants' WAVSES scores in Study 1. M score = grey dashed vertical line.

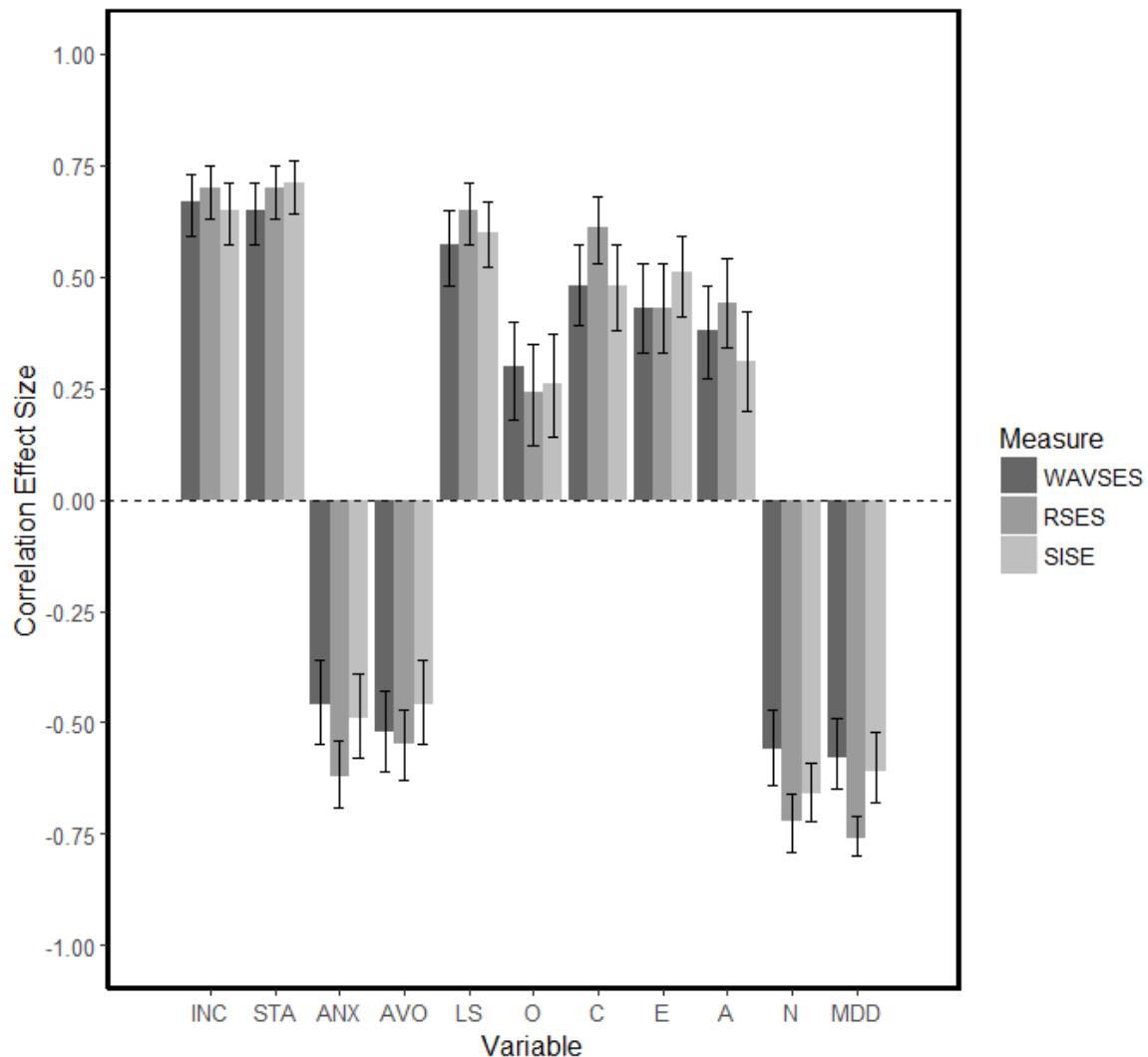


Figure 3. Correlations for the WAVSES, RSES and SISE in Study 1. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms.

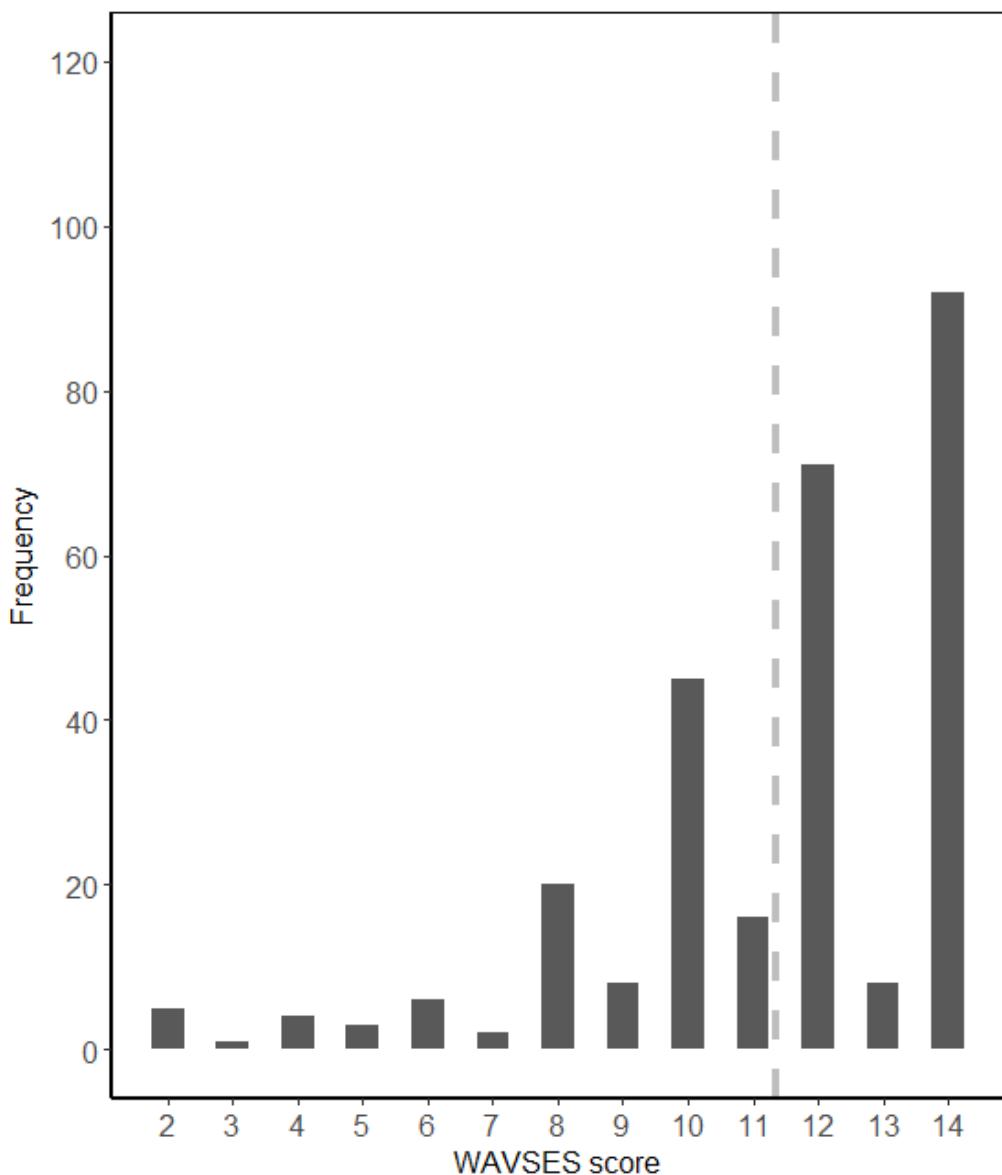


Figure 4. Distribution of participants' WAVSES scores in Study 2. M score = grey dashed vertical line.

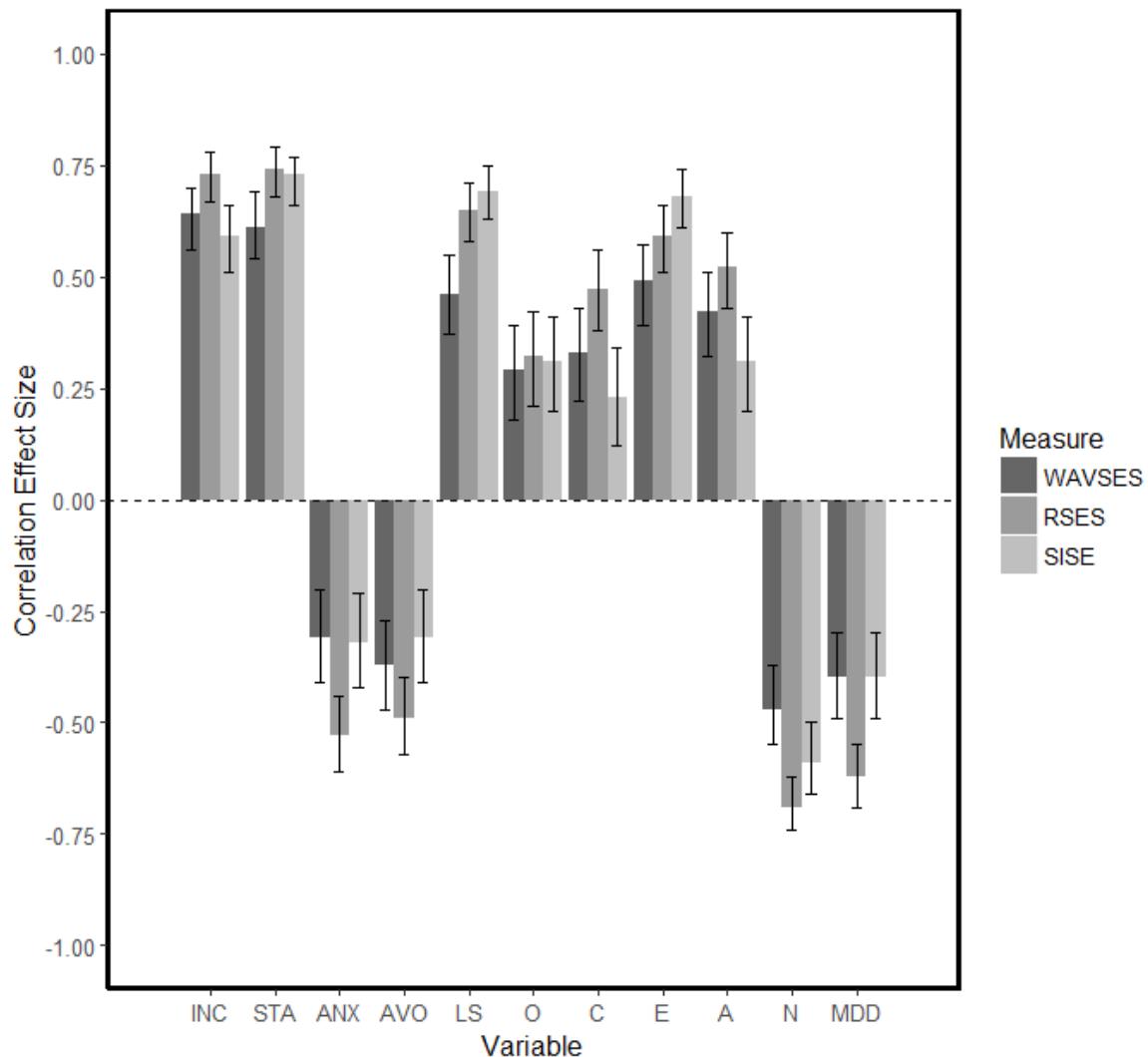


Figure 5. Correlations for the WAVSES, RSES and SISE in Study 2. INC = social inclusion, STA= social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms.

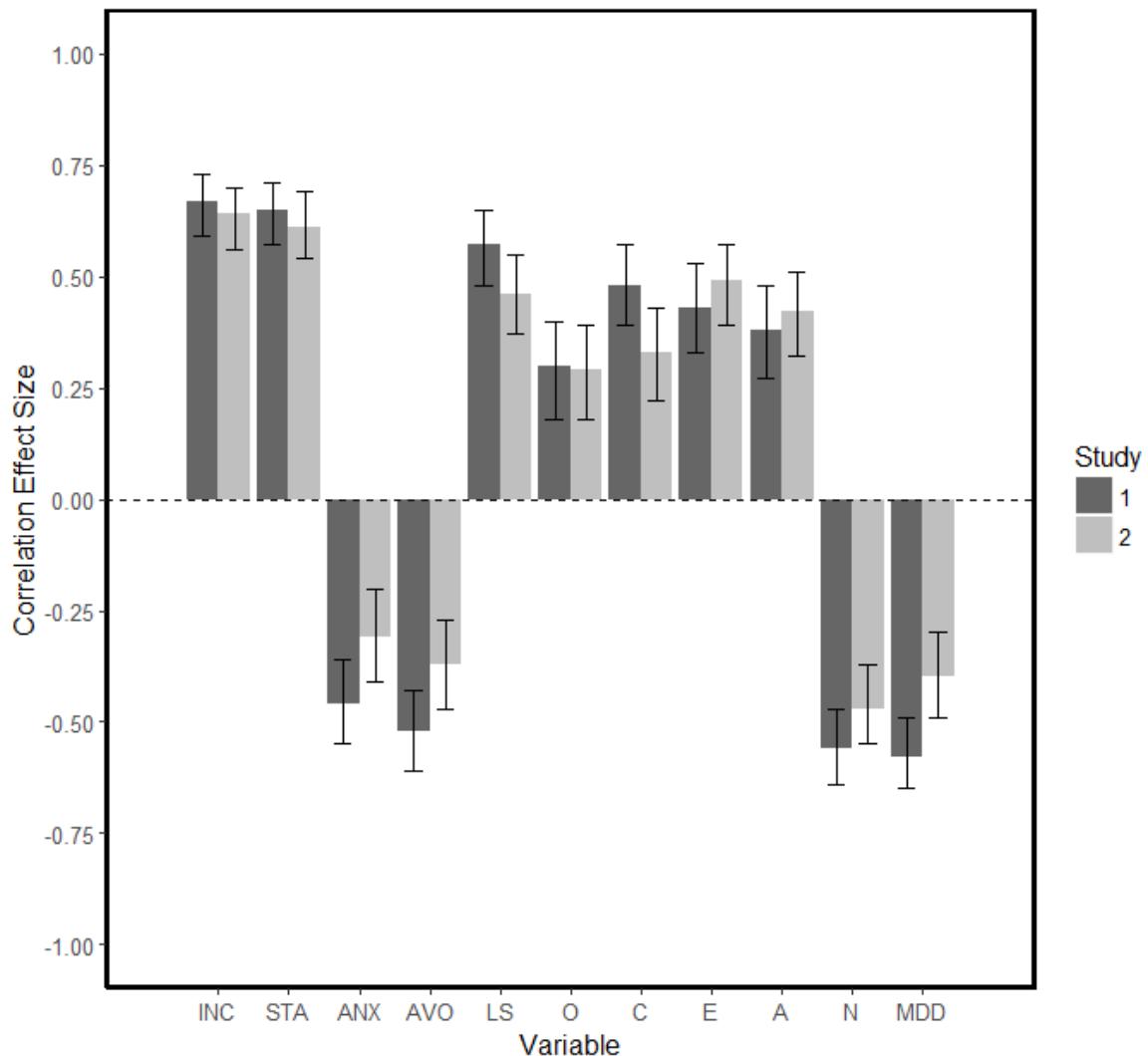


Figure 6. WAVSES correlations with concurrent validity variables in Studies 1 and 2. INC = social inclusion, STA = social status, ANX = attachment anxiety, AVO = attachment avoidance, O = openness, C = conscientiousness, E = extraversion, A = agreeableness, N = neuroticism, LS = life satisfaction, MDD = major depressive disorder symptoms. Error bars are 95% CIs.

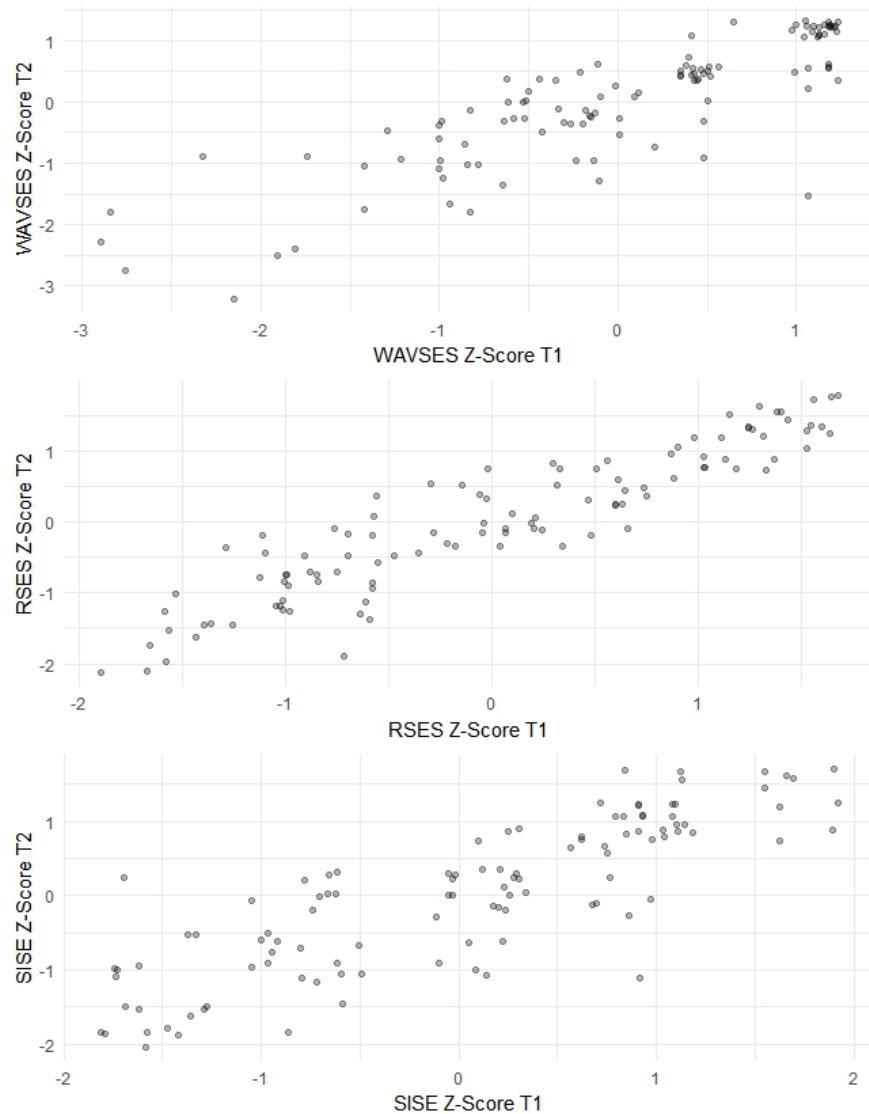


Figure 7. Participant ($N = 108$) z-score at time 1 by participant z-score at time 2 in Study 3 for the WAVSES ($r = .84$), RSES ($r = .92$), and SISE ($r = .86$).

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**The Measurement and Definition of Self-Esteem: Meta-Research and a New Way
Forward**

Volume 2 of 2 (Appendices)

by

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Thesis for the degree of Doctor of Philosophy

September 2018

University of Southampton

Abstract

Faculty of Environmental and Life Sciences

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The Measurement and Definition of Self-Esteem: Meta-Research and a New Way Forward

by

Adam James Pegler

Self-esteem is a central research topic in psychology, but its measurement and definition have long been contentious topics. In this four-paper thesis, I investigate (1) the measurement of self-esteem in personality and social psychology, (2) the definition of self-esteem in personality and social psychology, (3) further explore the dimensionality of the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), and (4) construct and initially validate a new two-item self-esteem scale.

The first two papers of this thesis are meta-research. In the first paper, I extract detailed measurement information from 371 recently published research articles. I find that the RSES dominates the measurement of self-esteem in personality and social psychology. In the second paper, I analyse 117 definitions of self-esteem extracted from the same corpus of articles. I find that, while there is a lack of consensus on the definition of self-esteem, researchers most often define self-esteem narrowly as one's overall evaluation of his or her worth and/or value—a definition that is narrower than that which guided the construction of the RSES. In the third paper, to extend the research on its dimensionality, I recount, for the first time, the RSES's largely unknown transformation from a Guttman-type to Likert-type scale and explore item-level associations with variables theoretically linked to self-esteem. I find that the items of the RSES are heterogeneously correlated with perceptions of agency, communion, social status, inclusion, dominance, submission, agreeableness and quarrelsomeness; but not attachment anxiety or avoidance. In the fourth paper, with the problems of the RSES in mind, I report on the development and initial validation of a new self-esteem scale—the Worth and Value Self-Esteem Scale (WAVSES). This two-item scale is intended, above all, to be maximally content valid for self-esteem as it is narrowly defined in contemporary personality and social psychology.

Table of Contents

Table of Contents	i
Paper 1 The Rosenberg and the Rest: The Measurement of Self-Esteem in Personality and Social Psychology (2004-2015) (https://osf.io/6wfvq/)	3
1.1 Appendix A: URLs for Online Journal Databases	3
1.2 Appendix B: Research Articles Included and Excluded	4
1.3 Appendix C: Measurement Information for 326 Articles on Self-Esteem.....	37
1.4 Appendix D: Measurement Details for the Self-Esteem Implicit Association Test and Name Letter Test	125
1.5 Appendix E: Custom Measure Details	140
Paper 2 What is Self-Esteem? Meta-Research on the Definition of Self-Esteem in Personality and Social Psychology (2004-2015) (https://osf.io/4wvtu/) ...	141
2.1 Appendix A: URLs for Online Journal Databases	141
2.2 Appendix B: Coding Manual	142
2.3 Appendix C: Research Articles Included and Excluded	148
2.4 Appendix D: Definitions of Self-Esteem, Cited Publications, and Word Frequencies	149
2.5 Appendix E: Chronologically Ordered Definitions of Self-Esteem (1890 – Present)	167
Paper 3 Is the Rosenberg Self-Esteem Scale Unidimensional? Exploring Item-Level Correlations with Perceived Agency, Communion, Social Status, Social Inclusion, Social Behaviour, Attachment Anxiety and Attachment Avoidance.....	189
3.1 Appendix A: Inter-Item Correlation Matrices for Study 1	189
3.2 Appendix B: Measures and Correlations for Study 2	192
3.3 Appendix C: Measures and Inter-Item Correlations for Study 3	197
Paper 4 Development and Initial Validation of a Brief Measure of Self-Esteem: The Worth and Value Self-Esteem Scale (WAVSES).....	199
4.1 Appendix A: Items and Response Format for the WAVSES.....	199
4.2 Appendix B: Scales and Measures for Studies 1 and 2.....	200

Table of Contents

The Rosenberg and the Rest: The Measurement of Self-Esteem in Personality and Social Psychology (2004-2015) (<https://osf.io/6wfvq/>)

1.1 Appendix A: URLs for Online Journal Databases

Self and Identity: http://www.tandfonline.com/loi/psai20#.V0ITL_krK00

Journal of Research in Personality: <http://www.sciencedirect.com/science/journal/00926566>

Personality and Social Psychology Bulletin: <http://psp.sagepub.com/>

Journal of Personality and Social Psychology:

<http://web.a.ebscohost.com/ehost/command/detail?sid=c4f04290-f5a2-4f51-90f2-864fb72218fd%40sessionmgr4005&vid=0&hid=4201&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=pbh&jid=PSP>

Social Psychological and Personality Science: <http://spp.sagepub.com/>

Social and Personality Psychology Compass:

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1751-9004](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1751-9004)

Journal of Experimental Social Psychology:

<http://www.sciencedirect.com/science/journal/00221031>

Personality and Individual Differences: <http://www.sciencedirect.com/science/journal/01918869>

Journal of Personality: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1467-6494](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1467-6494)

European Journal of Social Psychology:

[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1099-0992](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0992)

Psychological Science: <http://pss.sagepub.com/>

1.2 Appendix B: Research Articles Included and Excluded

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1.3 Appendix C: Measurement Information for 326 Articles on Self-Esteem

Table 1.

Measurement Information for 326 Articles on Self-Esteem Published in Personality and Social Psychology Journals Between 2004 and 2015

Publication	Measure(s) used	No. response options	Response Anchors	α
Anthony et al. (2007a)				
Study 1	RSES	9	—	—
Anthony et al. (2007b)				
Study 2	RSES	9	—	—
Study 3	RSES	9	—	—
Study 4	RSES	9	—	—
Asgeirsdottir et al. (2010)				
Study 1	RSES	4	—	.90
Baccus et al. (2004)				
Study 1	RSES	—	—	—
	NLT	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Bachman et al. (2011)	SE-IAT	—	—	—
	NLT	—	—	—
	SSES	—	—	—
Study 1	Custom: 8-item Monitoring the Future (MTF) measure of global self-esteem	5	1 (<i>disagree</i>), 2 (<i>mostly disagree</i>), 3 (<i>neither</i>), 4 (<i>mostly agree</i>), 5 (<i>agree</i>);	S1 = .85
				S2 = .87
				S3 = .88
Back et al. (2009)				
Study 1	RSES	4	—	.88
	SE-IAT	—	—	—
	SE affect priming task	—	—	—
Bain et al. (2015)				
Study 1	Culture Free Self-Esteem Inventory for Adults (Battle, 1992)	2	1 (<i>yes</i>) to 2 (<i>no</i>)	.80
Baker & McNulty (2013)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.89
Study 2	RSES	—	—	.90

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	RSES	—	—	.90
Study 4	RSES-S (1 item)	—	—	—
Study 5	RSES	—	—	.93
Study 6	RSES	—	—	.93
Balcetis et al. (2013)				
Study 1	RSES	—	—	.89
Baldwin et al. (2004)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Barnett & Womack (2015)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.91
Barry et al. (2015)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.77
Benetti & Kambouropolous (2006)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.90
Berenson et al. (2005)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	Custom: Four items indexed global self-esteem in each protocol: (1) I feel that I have a number of good qualities; (2) I feel that my life is very useful; (3) I am a useful person to have around; and (4) I feel I do not have much to be proud of (reversed).	4	1 (<i>false</i>) to 4 (<i>true</i>)	.64 (T1) .69 (T2)
Bernstein et al. (2013)				
Study 1a	RSES	7	—	.89
	SE-IAT	—	—	—
Study 1b	SSES	—	—	.91
	SE-IAT	—	—	—
Study 1c	RSES	—	—	.87
	SE-IAT	—	—	—
Study 2	Custom: five-item, mix of RSES and SSES due to technical error.	7	—	.79
	SE-IAT	—	—	—
Besser & Zeigler-Hill (2014)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.84 (T1)

Publication	Measure(s) used	No. response options	Response Anchors	α
Brase & Guy (2004)				.88 (T2)
Study 1	RSES	—	—	—
Bleidorn et al. (2015)				
Study 1	SISE	5	1 (<i>disagree strongly</i>) to 5 (<i>agree strongly</i>)	—
Bongers et al. (2009)				
Study 1	SSES	9	—	.87
Study 2	SSES	5	—	.85
Study 3	SSES	100	—	.83
Study 5	SSES	100	—	.86 (T1)
				.88 (T2)
Borton et al. (2012)				
Study 1	RSES-MFS	10	—	—
Bos et al. (2010)				
Study 1	RSES	4	—	.85
	SE-IAT	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Bourguignon et al. (2006)				
Study 1	RSES	7	—	.75
Study 2	RSES	4	1 (<i>I do not agree at all</i>) to 4 (<i>I totally agree</i>)	.82
Bourguignon et al. (2015)				
Study 1	SSES	7	- 3 (I don't agree at all) to + 3 (I totally agree)	.88
Bradshaw & Hazan (2006)				
Study 1	RSES	—	—	.85
Brookes (2015)				
Study 1	RSES	4	0 (strongly disagree) to 3 (strongly agree).	.87
Brown & Brown (2015)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Buckingham et al. (2012)				
Study 1	SLSC-R	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.87
Study 2	SLSC-R	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Bushman et al. (2009)				
Study 1	Three main subscales (general self-regard, competence, and popularity) from the Fleming and Courtney (1984) Revised Feelings of Inadequacy scale.	7	—	.93
Study 2	Three main subscales (general self-regard, competence, and popularity) from the Fleming and Courtney (1984) Revised Feelings of Inadequacy scale.	—	—	.93
Study 3	RSES	4	—	.87
Bushman et al. (2011)				
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.86
Callan et al. (2014)				
Study 1a	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.85
Study 1b	RSES-MFS	—	—	.94
Study 3b	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—
Study 4	Self-Attributes Questionnaire (Pelham & Swann, 1989)		Bottom 5% to Upper 5%.	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 5	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.94
Study 6	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—
Study 7	RSES	—	—	—
Cambron et al. (2010)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.90
Study 2	RSES	5	—	—
Study 3	RSES-MFS	5	—	.83
Cameron et al. (2011)				
Study 1	RSES	—	—	.87
Study 2	RSES	—	—	.81
Cameron et al. (2009)				
Study 1	RSES	—	—	.87
Cameron & Robinson (2010)				
Study 1	RSES	9	1 (<i>not at all</i>) to 9 (<i>extremely</i>)	.81
Cameron et al. (2010)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	.86
Study 2	RSES	9	—	.81
Study 3	RSES	9	—	.90
Study 4	RSES	9	—	.79
Study 5	RSES	9	—	.84
Cameron et al. (2013)				
Study 1	RSES	—	—	.90
Study 2	RSES	—	—	.76
Canavello & Crocker (2011)				
Study 1	RSES	—	—	.88
Caprara et al. (2013)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.86 (T1)
				.86 (T2)
				.88 (T3)
				.89 (T4)

Publication	Measure(s) used	No. response options	Response Anchors	α
Cardi et al. (2007)				
Study 1	RSES	—	—	.93
Cavallo et al. (2012)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.84
Study 2	RSES	—	—	.73
Study 3	RSES	—	—	.88
Study 4	RSES	—	—	.92
Cheng et al. (2012)				
Study 1	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.85
	SE-IAT	—	—	—
Choma et al. (2014)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.86
Chung et al. (2014)				
Study 1	RSES	5	1 (<i>not very true of me</i>) to 4 (<i>very true of me</i>)	.89 - .91
Ciarrochi et al. (2007)				
Study 1	RSES	—	—	.86

Publication	Measure(s) used	No. response options	Response Anchors	α
Civitci & Civitci (2009)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.83
DeRuiter et al. (2015)				
Study 1	Custom: Responses to item “ <i>In general I like myself</i> ”	8.5	0.0 (<i>I disagree</i>) to 8.5 (<i>I agree</i>)	—
	RSES	5	1 (<i>very true</i>) to 5 (<i>not at all true</i>)	—
DeHart & Pelham (2007)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.91
	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
	RSES-MFS	—	—	—
DeHart et al. (2006)				
Study 1	RSES	7	1 (<i>completely true</i>) to 7 (<i>not at all true</i>)	.90
	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
Study 2	RSES	7	1 (<i>completely true</i>) to 7 (<i>not at all true</i>)	.89

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
	Birthday number preferences			
	RSES	7	1 (<i>completely true</i>) to 7 (<i>not at all true</i>)	.91
DeHart et al. (2009)	RSES-MFS	7	1 (<i>disagree very much</i>) to 7 (<i>agree very much</i>)	—
	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.91
DeHart et al. (2008)	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.88
	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	—
DeMarree & Rios (2014)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	Custom: "Using the scale below, please indicate the extent to which you like yourself"	7	1 (<i>dislike strongly</i>) to 7 (<i>like strongly</i>)	—
Study 2	Custom: "What is the ACTUAL opinion you have of yourself?"	9	1 (<i>dislike extremely</i>) to 9 (<i>like extremely</i>)	—
Study 3	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.93
DeMarree et al. (2010)				
Study 1	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.90
Study 3	RSES	—	—	.94
Denissen et al. (2008)				
Study 1a	RSES-S (4 items)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Study 1b	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.93
Study 2	RSES	4	—	—
Dentale et al. (2010)				
Study 1	RSES	—	—	.84
	Custom: feeling thermometer. Participants indicated how warm they felt toward themselves on a vertical	100	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
scale anchored at the bottom and top by 0 and 99				
Dentale et al. (2012)				
Study 1	SE-IAT	—	—	—
Dijksterhuis (2004)				
Study 1	RSES	—	—	.82
Study 2	SE-IAT	—	—	—
Study 3	NLT	7	1 (<i>not at all beautiful</i>) to 7 (<i>extremely beautiful</i>)	—
Study 4	NLT	7	1 (<i>not at all beautiful</i>) to 7 (<i>extremely beautiful</i>)	—
Donnellan et al. (2012)				
Study 1	SE-IAT	—	—	—
Donnellan et al. (2005)				
Study 1	RSES	5	1 (<i>strongly agree</i>) to 5 (<i>strongly disagree</i>)	.84 - .91
		—	—	.81

Publication	Measure(s) used	No. response options	Response Anchors	α
	6-item Global subscale of the Harter (1985) Self-Perception Profile for Children	—	—	.75
Study 2	RSES	2	1 (<i>yes</i>) to 2 (<i>no</i>)	T1 = .64 T2 = .60
Study 3	RSES	—	—	.90
Doron et al. (2013)				
Study 1	RSES	4	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>)	.86
Du et al. (2015)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.80
Du et al. (2013)				
Study 1	RSES	4	—	.78 ¹ .86 ²
Study 2	RSES	4	—	.73
Study 3a	RSES	—	—	.84
Study 3b	RSES	—	—	.94
Dunkley et al. (2012)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1 Eaton et al. (2007)	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.92
Study 1 Eaton et al. (2006)	RSES	7	1 (<i>disagree strongly</i>) to 7 (<i>agree strongly</i>)	.87
	NLT	9	1 (<i>not at all attractive</i>) to 9 (<i>extremely attractive</i>); 1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
Study 1 Erdle et al. (2009)	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88
Study 1 Erdle et al. (2010)	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Erdle & Rushton (2010)	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Study 1 Erdle & Rushton (2011)	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Study 1	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Study 3	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Study 4	SISE	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Erol & Orth (2013)				
Study 1	RSES-S (8 items)	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.79 ♂
				.80 ♀
Study 2	RSES-S (3 items)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.63 ♂
				.60 ♀
Study 3	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.81 ♂
				.84 ♀
Study 4	RSES-S (2 items)	5	1 (<i>never</i>) to 5 (<i>very often</i>)	.66 ♂
				.59 ♀
Study 5	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89 ♂
				.92 ♀
Erol & Orth (2011)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.85 - .88

Publication	Measure(s) used	No. response options	Response Anchors	α
Esposito et al. (2005)				
Study 1	Custom: Three self-esteem items: “Overall, how much do you like the kind of person you are today?”, “How happy are you with yourself today?”, and “How happy are you with the way you do things today?”	5	—	.81
Falkenbach et al. (2013)				
Study 1	RSES	4	1 (<i>strongly agree</i>) to 5 (<i>strongly disagree</i>)	.91
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Falomir-Pichastor et al. (2009)				
Study 1	Custom: three items “Overall, what esteem do you have of yourself?” “Overall, what degree of pride do you have in yourself?”, and “Overall, what is your degree of satisfaction with yourself?”	7	1 (<i>very low</i>) to 7 (<i>very high</i>)	.79
Study 2	RSES	—	—	.77

Publication	Measure(s) used	No. response options	Response Anchors	α
Falomir-Pichastor et al. (2013)				
Study 1	RSES	—	—	.85
Study 2	Custom: 1 item, “In general, I have a positive opinion of myself”	—	—	—
Ford & Collins (2013)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.89
Forest & Wood (2011)				
Study 1	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	—
Study 2	RSES	—	—	—
Foster et al. (2007)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Frey & Scorobia (2012)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
	SSES	5	1 (<i>not at all like me</i>) to 4 (<i>extremely like me</i>)	—
Gailliot & Baumeister (2007)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88
Study 2	RSES-MFS	—	—	—
Study 3	RSES-MFS	—	—	—
Gailliot et al. (2007)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.90
Study 2	RSES	—	—	.93
Gana et al. (2015)				
Study 1	RSES	4	—	.83 (T1) .77 (T2) .78 (T3) .82 (T4)
Gaucher et al. (2012)				
Study 1	RSES	9	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	RSES	7	—	—
Study 3	RSES	9	—	—
Study 4	RSES	9	—	—
Gebauer et al. (2015)				
Study 1	SISE	5	1 (<i>disagree</i>) to 5 (<i>agree</i>)	—
Study 2	SISE	5	1 (<i>disagree</i>) to 5 (<i>agree</i>)	—
Gebauer et al. (2013)				
Study 1	12-item eDarling Trait Self-Esteem Scale (Gebauer, Leary, & Neberich, 2012)	7	1 (<i>not at all</i>) to 7 (<i>very much</i>)	.83
Goldenberg & Schackelford (2005)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.84
Gomillion & Murray (2014)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Graham & Clark (2006)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Study 3a	RSES	—	—	.88
Study 3b	RSES	—	—	.89
Study 3c	RSES	—	—	.86
Study 4	RSES	—	—	.88
Gramzow & Gaertner (2005)				
Study 1	RSES	4	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>)	.87
Study 2	RSES	—	—	.83
Study 3	RSES	—	—	.84
Study 4	RSES	—	—	.83
Gregg & Sedikides (2010)				
Study 1	RSES	4	4 (<i>strongly agree</i>), 3 (<i>agree</i>), 2 (<i>disagree</i>), 1 (<i>strongly disagree</i>)	—
SE-IAT				

Publication	Measure(s) used	No. response options	Response Anchors	α
Grumm et al. (2009)	SE-Go No-go Association Test (SE-GNAT)	—	—	—
	NLT	7	1 (<i>strongly dislike</i>) to 7 (<i>strongly like</i>)	—
Study 1	SE-IAT	—	—	—
	Custom: six pairs of polar-opposite adjectives (i.e., pleasant–unpleasant, valuable–useless, nice–awful, high–low, good–bad and successful–unsuccessful). Participants describe themselves on each adjective pair by checking one of the points on a 7-point response scale between the adjectives that would resemble their self-evaluation.	7	—	.75
	SSES	5	1 (<i>completely false</i>) to 5 (<i>completely true</i>)	.81
Study 2	SE-IAT	—	—	—
	Custom (from Study 1)	7	—	.69
	SSES	5	1 (<i>completely false</i>) to 5 (<i>completely true</i>)	.85
Study 3	SE-IAT	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Grumm & von Collani (2007)	Custom (from Study 1)	7	—	.59
	SSES	5	1 (<i>completely false</i>) to 5 (<i>completely true</i>)	.83
Study 2	RSES	7	—	—
Guan et al. (2015)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Gyurak & Ayduk (2007)				
Study 1	RSES	6	1 (<i>does not describe me at all</i>) to 6 (<i>describes me very well</i>)	.87
Haddock & Gebauer (2011)				
Study 1	SINL	9	1 (<i>not at all</i>) to 9 (<i>very much</i>)	—
	SISE	9	1 (<i>does not apply at all</i>) to 9 (<i>applies completely</i>)	—
Study 2	SINL	9	1 (<i>not at all</i>) to 9 (<i>very much</i>)	—
	SISE	9	1 (<i>does not apply at all</i>) to 9 (<i>applies completely</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	SINL	9	1 (<i>not at all</i>) to 9 (<i>very much</i>)	—
	SISE	9	1 (<i>does not apply at all</i>) to 9 (<i>applies completely</i>)	—
Hannover et al. (2006)				
Study 1	SSES	—	—	—
Study 2	NLT	—	1 (<i>I dislike it very much</i>) to 7 (<i>I like it very much</i>)	—
Study 3	NLT	—	—	—
Harber (2005)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Study 3	RSES	—	—	—
Hart et al. (2005)				
Study 1	RSES	—	—	.88
Heimpel et al. (2006)				
Study 1	SISE	5	1 (<i>not very true of me</i>) to 5 (<i>very true of me</i>)	—
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.92

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3 Heinonen et al. (2005)	RSES	4	—	.91
Study 1 Heppner et al. (2008)	Shortened version of the Coopersmith Self-Esteem Inventory (Coopersmith, 1967; Keltikangas-Jarvinen, 1990)	3 (T1) 5 (T2)	—	.69 (T1) .86 (T2)
Study 1 Hill & Durante (2009)	Custom: 2 items, “that I had many positive qualities” and “quite satisfied with who I am”	9	1 (<i>strongly disagree</i>) to 9 (<i>strongly agree</i>)	—
Study 1 Hodgins et al. (2007)	RSES Unspecified	— —	— —	.93 —
Study 1 Study 2 Hodgins et al. (2007)	SSES Spalding and Hardin's (1999) implicit measure SSES	5 — 5	— — —	.87 .90 .91

Publication	Measure(s) used	No. response options	Response Anchors	α
	Spalding and Hardin's (1999) implicit measure	—	—	.93
Horvath & Morf (2010)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.92
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.86
Huis in 't Veld et al. (2011)				
Study 1	RSES	4	0 (<i>strongly disagree</i>) to 3 (<i>strongly agree</i>)	.89
Hutteman et al. (2015)				
Study 1	32 Items of the Fleming and Courtney (1984) Revised Feelings of Inadequacy scale.	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.77
	SSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.83
Jiang et al. (2015)				
Study 2	SE-IAT	—	—	—
Jones & Fernyhough (2007)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1 Jordan et al. (2005)	RSES	4	1 (<i>strongly agree</i>), 2 (<i>agree</i>), 3 (<i>disagree</i>), 4 (<i>strongly disagree</i>)	—
Study 1 Jordan et al. (2007)	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	—
	SE-IAT	—	—	—
Study 2 Jordan et al. (2007)	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	—
	SE-IAT	—	—	—
Study 1 Jordan et al. (2007)	SE-IAT	—	—	—
	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.87
	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	.92
Study 2	Implicit Self-Evaluation Survey (ISES; Pelham & Hetts, 1999)	7	1 (<i>not at all true</i>) to 7 (<i>very true</i>)	.47
	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.83

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	Custom: 10 positive adjectives (e.g., confident, likable, good, and secure) and 10 negative adjectives (e.g., incompetent, flawed, useless, and insecure) derived from a measure of state SE (McFarland & Ross, 1982).	4	—	.82
	SE-IAT	—	—	—
Study 4	RSES	9	—	—
	SE-IAT	—	—	—
	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	—
Kamakura et al. (2007)				
Study 1	RSES-S (9-item)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	T1 = .86
				T2 = .87
Kashima et al. (2004)				
Study 1	RSES-S (8-item)	5	—	.88 ³ , .79 ⁴
Kernis et al. (2005)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.86
Study 2	RSES	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Kernis et al. (2008)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.86
	NLT	9	1 (<i>not at all beautiful</i>) to 9 (<i>extremely beautiful</i>)	—
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Killianski (2008)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.92
Kim et al. (2008)				
Study 1	RSES (positive first)	7	—	.89 ⁵ , .80 ¹
	RSES (negative first)	7	—	.87 ⁵ , .80 ¹
	Custom: RSES positive version	7	—	.94 ⁵ , .95 ¹
	Custom: RSES negative version	7	—	.89 ⁵ , .80 ¹
Kinnunen et al. (2008)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.75 (T1) .83 (T2)
Knee et al. (2008)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.86 - .90
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88
Study 3	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.90
Koch & Sheppard (2008)				
Study 1	RSES	—	—	—
	Custom : participants completed a 12-adjective (e.g., confident, worthless) State Self-esteem Scale (McFarland & Ross, 1982). Participants responded to each adjective according to how they felt “right now”.	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.86
Study 2	Custom: As Study 1	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	—
Study 4	RSES	—	—	—
Kong, D. T., (2015)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.88
Kong, F., et al. (2012)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.83
Koole et al. (2009)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	NLT	7	1 (<i>dislike very much</i>) to 7 (<i>like very much</i>)	—
	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	> .80
Study 2	NLT	5	1 (<i>not at all beautiful</i>) to 5 (<i>very beautiful</i>)	—
	RSES	9	—	> .80
Krieger et al. (2015)				
Study 1	RSES	4	0 (<i>strongly disagree</i>) to 3 (<i>strongly agree</i>)	.87
Krizan (2008)				
Study 1	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—
	SLSC	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
Krizan & Suls (2009)				
Study 1	NLT	—	—	—
	RSES	—	—	—
Study 2	NLT	—	—	—
	SE-IAT	—	—	—
	RSES	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Kuster & Orth (2013)				
Study 1	RSES-S (8-item)	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.79 (T1) .84 (T2) .80 (T3) .83 (T4) .83 (T5) .84 (T6)
Kuster et al. (2012)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88 (T1) .89 (T2) .90 (T3) .90 (T4) .90 (T5)
Kuster et al. (2013)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88 - .90
Kwan et al. (2009)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	4	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>)	.88
Study 2	RSES	—	—	.84
Lachowicz-Tabaczek & Śniecińska (2014)				
Study 1	RSES	4	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>)	.85
Study 2	RSES	—	—	.81
Lafrenière et al. (2011)				
Study 1	RSES	7	1 (<i>not agree at all</i>) to 7 (<i>very strongly agree</i>)	.88
	SE-IAT			
Lakey & Scoboria (2005)				
Study 1	SSES	4	1 (<i>not at all</i>) to 4 (<i>very much</i>)	P = .80
				S = .80
				A = .83
Lamarche & Murray (2014)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Lambird & Mann (2006)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	Three main subscales (general self-regard, competence, and popularity) from the Fleming and Courtney (1984) Revised Feelings of Inadequacy scale.	7	—	—
Study 2	RSES	—	—	—
	SE-IAT	—	—	—
Lamer et al. (2015)				
Study 1	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.90
	RSES	4	0 (<i>strongly disagree</i>) to 3 (<i>strongly agree</i>)	.91
Study 2	SSES	—	—	.88
	RSES-MFS	—	—	.87
Laws & Rivera (2012)				
Study 1a	SE-IAT	—	—	—
	RSES-S (6-items)	5	1 (<i>disagree very much</i>) to 5 (<i>agree very much</i>)	.83
Study 1b	SE-IAT	—	—	—
	RSES	5	1 (<i>disagree very much</i>) to 5 (<i>agree very much</i>)	.88

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	SE-IAT	—	—	—
	RSES	5	1 (<i>disagree very much</i>) to 5 (<i>agree very much</i>)	.88
Study 3	SE-IAT	—	—	—
	RSES	5	1 (<i>disagree very much</i>) to 5 (<i>agree very much</i>)	.88
LeBel (2010)				
Study 1	NLT	5	Like: 1 (<i>not at all</i>) to 5 (<i>very much</i>)	—
	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.87
	SE-IAT	—	—	—
Lee & Koo (2015)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.78
Lee-Flynn et al. (2011)				
Study 1	RSES	5	1 (<i>not at all descriptive of me</i>); 3 (<i>perhaps descriptive of me</i>); 5 (<i>very descriptive of me</i>)	.88
Leitner et al. (2014)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.82
Study 3	RSES	—	—	.90
	Custom from Zadro et al. (2004) e.g.“During the Cyberball game, I felt good about myself” (3 items)	5	1 (<i>not at all</i>) to 5 (<i>very much so</i>)	.86
Study 4	RSES	—	—	.89
	RSES-MFS	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.89
Lemay & Ashmore (2006)				
Study 1	RSES	4	1 (<i>strongly disagree</i>), 2 (<i>disagree</i>), 3 (<i>agree</i>), 4 (<i>strongly agree</i>)	.88
LeMay & Clark (2009)				
Study 1	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.87
Study 2	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.91
Study 3	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.91
Li, J. et al. (2015)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.84 ¹ , .81 ¹⁹ , .76 ²⁰
Li, H. et al. (2012a)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES-S (9-items)	—	—	.87
Li, H. et al. (2012b)				
Study 1	RSES-S (9-items)	—	—	.87
Libby et al. (2011)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Study 3	RSES	—	—	—
Study 4	RSES	—	—	—
Study 5	RSES	—	—	—
Lin (2015)				
Study 1	RSES	6	1 (<i>strongly disagree</i>) to 6 (<i>strongly agree</i>)	.87
Lin & Yamaguchi (2011)				
Study 1	RSES	4	1 (<i>not at all</i>) to 4 (<i>very much</i>)	.89
	SSES	4	1 (<i>not at all</i>) to 4 (<i>very much</i>)	.77
Lisjak et al. (2012)				
Study 1a	RSES	—	—	.87

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1b	SINL	9	Like: 1 (<i>not at all</i>) to 9 (<i>very much</i>)	—
	RSES	—	—	.86
Study 1c	SINL	9	—	—
	SE-IAT	—	—	—
Study 2	RSES	—	—	.90
	RSES	—	—	.83
Liu et al. (2014)	SINL	—	—	—
	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.79
Locke (2009)	RSES	7	-3 (<i>disagree strongly</i>) to +3 (<i>agree strongly</i>)	.86
Lomore et al. (2007)	RSES	9	—	.83
Lönnqvist et al. (2015)	RSES-S (4-items)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	T1 = .70

Publication	Measure(s) used	No. response options	Response Anchors	α
Lönnqvist et al. (2009)				T2 = .77
Study 1	RSES	4	—	.66 - .85
Lupien et al. (2010)				T3 = .74
Study 1	RSES	—	—	.92
	SE-IAT	—	—	—
Lupien et al. (2012)				—
Study 1	RSES	—	—	—
	RSES-MFS	—	—	—
Luyckx et al. (2013)				
Study 1	RSES	4	1 (<i>does not apply to me at all</i>) to 4 (<i>applies to me very well</i>)	T1 = .90 T2 = .91
Study 2	RSES	—	—	T1 = .91 T2 = .91

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	RSES	—	—	T3 = .92
				T4 = .92
				T1 = .92
				T2 = .92
				T3 = .93
MacGregor & Holmes (2011)	RSES-MFS	—	—	—
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.91
Study 2	RSES	—	—	.90
Mageau et al. (2011)				
Study 1	RSES	7	1 (<i>do not agree</i>) to 7 (<i>very strongly agree</i>)	.74
	Custom: State measure based on McFarland and Ross (1982) and Leary, Tambor, Terdal, and Downs (1995). Participants indicated the extent to which they felt proud, worthless (recoded), valuable, insignificant (recoded), confident,	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.75

Publication	Measure(s) used	No. response options	Response Anchors	α
Major et al. (2007)	and ashamed (recoded) at the present moment (6 items)			
Study 1	Custom: mix of ten item RSES and social and performance subscales of SSES (24 items)	7	0 (<i>not at all</i>) to 6 (<i>very much</i>)	.93
Study 2	Custom: As Study 1 (24 items)	7	0 (<i>not at all</i>) to 6 (<i>very much</i>)	.89
Study 3	Custom: RSES and social subscale of SSES (17 items)	—	—	.92
Makikangas et al. (2004)				
Study 1	RSES	5	1 (<i>totally disagree</i>) to 5 (<i>totally agree</i>)	T1 = .87♂, .86♀ T2 = .88♂, .87♀
Malka & Miller (2007)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.87
Maples et al. (2010)				
Study 1	RSES	5	1 (<i>not very true of me</i>) to 5 (<i>very true of me</i>)	S1 = .89 S2 = .88
Marigold et al. (2014)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.91
Study 2	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.93
Study 3	RSES	—	—	—
Study 5	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.85
Marigold et al. (2010)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.93
	Custom: bipolar adjective scales adapted from McFarland & Ross (1982) (10 items)	7	—	.87
Study 2	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.84
Marigold et al. (2007)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.93
	Custom: bipolar adjective scales adapted from McFarland & Ross (1982) (10 items)	7	—	.94
Study 2	RSES	—	—	.92
	Custom: As study 1	7	—	.93

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	RSES	—	—	—
	Custom: As study 1	7	—	—
Marsh & O'Mara (2008)				
Study 1	Unspecified 10-item scale	—	—	—
Marshall, T. C., et al. (2015)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.92
Marshall, S. L., et al. (2015)				
Study 1	RSES	Yes/No	—	.86
Martens et al. (2010)				
Study 3	SISE	10	1 (<i>not very true of me</i>) to 10 (<i>very true of me</i>)	—
Study 4	SISE	10	1 (<i>not very true of me</i>) to 10 (<i>very true of me</i>)	—
McCoy et al. (2013)				
Study 1	RSES	—	—	.89

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	Custom: mix of RSES and performance and social subscales of SSES	—	—	RSES = .89 P = .84 S = .90
McCrea (2008)				
Study 1	RSES	7	1 (<i>strongly agree</i>) to 5 (<i>strongly disagree</i>)	.90
	Custom: Participants indicated to what extent they felt each of 30 mood and self-esteem adjectives (adapted from McFarland & Ross, 1982): worthless, depressed, incompetent, stupid, inadequate, shame	7	1 (<i>not at all</i>) to (very much)	.96
Study 2	RSES	—	—	.93
	Custom: As study 1	5	1 (<i>not at all</i>) to 5 (<i>very much</i>)	.84
Study 3	RSES	5	1 (<i>not at all</i>) to 5 (<i>very much</i>)	.85
	Custom: As study 1	7	1 (<i>not at all</i>) to 7 (<i>very much</i>)	.70
Study 4	RSES	—	—	.81
	Custom: As study 1	—	—	.69
Study 5	RSES	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
McGregor et al. (2007)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.80
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.81
Study 3	RSES	—	—	.88
McGregor & Jordan (2007)				
Study 1	SE-IAT	—	—	—
McGregor et al. (2013)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.87
	Custom implicit (see p. 656)	—	—	—
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.92
	SE-IAT	—	—	—
McGregor et al. (2009)				
Study 1	RSES	—	—	—
McGroarty & Baxter (2009)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.87
Meier et al. (2009)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.82
	RSES-MFS	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.86
Meier et al. (2011)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
	RSES-MFS	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.86
Mendoza-Denton et al. (2010)				
Study 1	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	Pre/post manipulation
				P = .86/.80
				S = .80/.78
				A = .80/.70
Michalak et al. (2011)				
Study 1	RSES	—	—	.90
Miklikowska et al. (2012)				
Study 1	Custom: mix of items derived from RSES and SLSC (12 items)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.90

Publication	Measure(s) used	No. response options	Response Anchors	α
Moksnes et al. (2010)				
Study 1	RSES	4	0 (<i>strongly disagree</i>) to 3 (<i>strongly agree</i>)	.86
Moroz & Dunkley (2015)				
Study 1	RSES	—	—	—
Murray et al. (2006)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.88
	Custom: two items that tapped how positively people evaluated themselves each day (i.e., “good about myself” and “unsure of myself”).	7	1 (<i>not at all</i>) to 7 (<i>especially</i>)	.52
Murray et al. (2009)				
Study 1	RSES	—	—	.91
Study 2	RSES	—	—	—
Study 3	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.89
Myers & Zeigler-Hill (2012)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1 Myers & Zeigler-Hill (2008)	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.91
	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.84
Study 1 Nario-Redmond et al. (2013)	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.83
	RSES-MFS	10	0 (<i>strongly disagree</i>) to 9 (<i>strongly agree</i>)	—
Study 1 Neff & Vonk (2009)	RSES	—	—	.91
Study 1 Custom: 10 brief statements, for example, “I have confidence in myself,” “I wish I were different” (Vonk et al., 2008)	—	—	—	.92
Study 2	SSES	—	—	.86 - .89
	RSES	—	—	.88

Publication	Measure(s) used	No. response options	Response Anchors	α
Neiss et al. (2006)				
Study 1	RSES	4	—	T1 = .86 T2 = .88
Neiss et al. (2009)				
Study 1	Piers-Harris Children's Self-Concept scale (Piers, 1984)	2	1 (<i>yes</i>), 2 (<i>no</i>)	—
Neiss et al. (2005)				
Study 1	Custom: 4 items, three items from the Personal Acceptance subscale of Ryff (1989) and one item measuring satisfaction with self.	—	—	—
Study 2	RSES	9	0 (<i>do not agree at all</i>) to 8 (<i>agree completely</i>)	T1 = .89 T2 = .89 T3 = .90
Study 3	Custom: as Study 1	—	—	—
Newby-Clark (2004)				
Study 1	RSES	—	—	—
Niiya et al. (2010)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.91
Study 2	RSES	—	—	.90
Study 3	RSES	—	—	.85
Noser & Zeigler-Hill (2014)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Novin et al. (2015)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.82
Nussbaum & Dweck (2008)				
Study 3	SSES	7	—	—
Orth & Luciano (2015)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	T1 = .91
				T2 = .90
				T3 = .91
				T4 = .92

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	T1 = .91 T2 = .91
Orth et al. (2009)				
Study 1	RSES	5	1 (<i>not very true of me</i>) to 5 (<i>very true of me</i>)	T1 = .89 T2 = .91 T3 = .90 T4 = .90
Study 2	RSES	6	0 (<i>not very true of me</i>) to 5 (<i>very true of me</i>)	T1 = .86 T3 = .89
Study 3	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	T1 = .84 T2 = .87 T3 = .88 T4 = .88
Orth et al. (2008)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	T1 = .84 T2 = .87

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	RSES	5	1 (<i>not very true of me</i>) to 5 (<i>very true of me</i>)	T3 = .88
				T4 = .88
				T1 = .89
				T2 = .91
				T3 = .90
Orth et al. (2012)	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	T4 = .90
				T1= .86
				T2 = .83
				T3 = .86
				T4 = .86
Orth et al. (2010)	RSES-S (3 items)	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	T5 = .86
				T1 = .57
				T2 = .60
				T3 = .58

Publication	Measure(s) used	No. response options	Response Anchors	α
Osborne et al. (2015)				T4 = .58
Study 1	RSES-S (3 items)	7	1 (<i>very inaccurate</i>) to 7 (<i>very accurate</i>)	.77
Oswald & Chapleau (2010)				
Study 1	SSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	P = .85
				S = .85
				A = .86
Park & Crocker (2005)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.73
Park et al. (2010)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.82
Park & Jeong (2015)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.88
Park & Maner (2009)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.90
Study 2	RSES	—	—	.90

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	RSES	—	—	.88
Study 4	RSES	—	—	.88
Study 5	RSES	—	—	.90
Study 6	RSES	—	—	.89
Pelham et al. (2005)				
Study 1	RSES	—	—	—
	ISES	—	—	—
	NLT	—	—	—
Penke & Denissen (2008)				
Study 1	RSES	4	—	.88♂ .90♀
Peterson & DeHart (2013)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.88
	NLT	7	1 (<i>dislike very much</i>) to 7 (<i>like very much</i>)	.41
Study 2	RSES	—	—	.89

Publication	Measure(s) used	No. response options	Response Anchors	α
	NLT	—	—	.44
Peterson et al. (2008)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—
Study 2	RSES	—	—	—
Phillips & Hine (2014)				
Study 1	NLT	9	1 (<i>not at all attractive</i>) to 9 (<i>very attractive</i>)	.84
	RSES	4	1 (<i>totally agree</i>) to 4 (<i>totally disagree</i>)	.91
Pillemer et al. (2007)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—
Platow et al. (2005)				
Study 1	Custom: 8 items of SSES	—	—	.81
Pritchard (2010)				
Study 1	RSES	4	0 (<i>strongly disagree</i>) to 3 (<i>strongly agree</i>)	.86
Pullman & Allik (2008)				
Study 1	RSES	5	0 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	$S1 = .81$

Publication	Measure(s) used	No. response options	Response Anchors	α
Raes & Van Gucht (2009)	Custom: Modified RSES, simplified wording and 3-point response scale	3	1 (<i>disagree</i>), 2 (<i>sometimes</i>), 3 (<i>agree</i>)	.71
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.86
Ratliff & Oishi (2013)				
Study 1	SE-IAT	—	—	—
	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.77
Study 2	SE-IAT	—	—	—
	Custom: “Overall, how bad or good do you feel about yourself”	7	-3 (<i>very bad</i>) to +3 (<i>very good</i>)	—
Study 3	SE-IAT (single-category)	—	—	—
	Custom: As Study 2	7	-3 (<i>very bad</i>) to +3 (<i>very good</i>)	—
Study 4	SE-IAT	—	—	—
	Custom: As Study 2	7	-3 (<i>very bad</i>) to +3 (<i>very good</i>)	—
Study 5	SE-IAT	—	—	—
	RSES	4	—	.88

Publication	Measure(s) used	No. response options	Response Anchors	α
Reijntes et al. (2011)				
Study 1	Custom: 6-item scale including “I feel good about who I am right now” and “I am dissatisfied with myself right now”	5	0 (<i>not at all</i>) to 4 (<i>very much</i>)	.72
Renaud & McConnell (2007)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.89
Study 2	RSES	—	—	.90
Richter & Ridout (2011)				
Study 1	RSES	—	—	.85
Rios et al. (2012)				
Study 1	SINL	5	1 (not at all) to 5 (very much)	—
Study 2	NLT	5	1 (not at all attractive) to 5 (<i>extremely attractive</i>)	—
Study 3	SINL	5	—	—
Study 4	RSES	—	—	.88
	NLT	5	1 (not at all attractive) to 5 (<i>extremely attractive</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Robinson, M. D., & Barrett (2010)				
Study 1	RSES	—	—	.85
Study 2	RSES	—	—	.83
Study 3	RSES	—	—	.82
Robinson, K. J., & Cameron (2012)				
Study 1	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	.85♀ .85♂
Robinson, M. D., & Cervone (2006)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.87
Study 2	RSES	—	—	.86
Study 3	RSES	—	—	.85
Robinson, M. D., & Wilkowski (2006)				
Study 1	Custom: Implicit measure based on incidental priming procedures (see p. 944)	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	SE-IAT	—	—	—
Study 3	SE-IAT	—	—	—
Rosenthal & Hooley (2010)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.88
Study 2	RSES	4	—	.89
Routledge et al. (2010)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.81
Study 2	RSES	—	—	.91
Study 4	RSES	—	—	.85
Study 5	RSES	—	—	.77
Study 6	RSES	—	—	.88
Study 7	RSES	—	—	.74
Study 8	Custom: Participants rated themselves on the following four dimensions: (a) very negative versus very positive, (b) a failure versus a success, (c) very bad versus very good, and (d) very unpleasant versus very pleasant. (4 items)	11	—	.91

Publication	Measure(s) used	No. response options	Response Anchors	α
Rudich et al. (2007)				
Study 1	TSBI	5	—	.86
Study 2	TSBI	5	—	.73
Rudman et al. (2007)				
Study 1	SE-IAT	—	—	—
	SSES (performance and social subscales only)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
Study 2	SE-IAT	—	—	—
	Custom: Participants reported how warm they felt toward self and others. Difference between self and others made up the self-esteem score.	10	1 (<i>very cold</i>) to 10 (<i>very warm</i>)	—
Study 3	SE-IAT	—	—	—
	Custom: As study 2	10	1 (<i>very cold</i>) to 10 (<i>very warm</i>)	—
Study 4	Custom: participants rated how warm they felt towards themselves.	10	1 (<i>very cold</i>) to 10 (<i>very warm</i>)	—
Sakellaropoulou & Baldwin (2007)				
Study 1	NLT	9	1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 2	NLT	9	OR 1 (not at all attractive) to 9 (<i>extremely attractive</i>)	—
			1 (<i>dislike very much</i>) to 9 (like very much)	
Sandstrom & Jordan (2008)			OR 1 (not at all attractive) to 9 (<i>extremely attractive</i>)	
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	—
	SE-IAT	—	—	—
Sariyska et al. (2014)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.84 ⁶ , .88 ⁷ ,
	NLT	7	1 (<i>I don't like it</i>) to 7 (<i>I really like it</i>)	.93 ⁸ , .83 ⁹
Schaffhuser et al. (2014)				
Study 1	RSES	4	1 (<i>applies not at all</i>) to 4 (<i>applies totally</i>)	T1 = .86
				T2 = .84
Schmeichel et al. (2009)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	NLT	7	1 (<i>not at all beautiful</i>) to 7 (<i>extremely beautiful</i>)	—
Study 2	NLT	7	1 (<i>not at all beautiful</i>) to 7 (<i>extremely beautiful</i>)	—
Study 3	SE-IAT	—	—	—
	RSES	—	—	—
Schmitt, D. P., & Allik (2005)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	Nation $M = .81$
Schmitt, M. T., et al. (2010)				
Study 2	SSES	5	1 (<i>not at all</i>) to (<i>extremely</i>)	P = .83
				S = .83
				A = .86
Schoel et al. (2011)				
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.90
	Custom: Labile Self-Esteem Scale (from Dykman, 1998)	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.91
Study 3	RSES	—	—	.93

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 4	Custom: Labile Self-Esteem Scale (Dykman, 1998)	—	—	.92
	RSES	—	—	.85
	Custom: Labile Self-Esteem Scale (Dykman, 1998)	—	—	.92
Sedikides et al. (2004)				
Study 1	RSES	—	—	.88
Study 2	RSES	—	—	.82
Study 3	RSES	9	0 (<i>do not agree at all</i>) to 8 (<i>agree completely</i>)	.90
Study 4	RSES	7	1 (<i>do not agree at all</i>) to 7 (<i>agree completely</i>)	.85
Study 5	RSES	4	1 (<i>strongly disagree</i>), 2 (<i>disagree</i>), 3 (<i>agree</i>), 4 (<i>strongly agree</i>)	T1 = .91 T2 = .93
	SLSC	—	—	SL = .95 SC = .92
	Custom: Full Fleming & Courtney (1984) revision of Feelings of	7	1 (<i>never/not at all</i>) to 7 (<i>always</i>)	.96

Publication	Measure(s) used	No. response options	Response Anchors	α
	Inadequacy Scale with appended 6-item body esteem scale (42 items)			
Seery et al. (2004)				
Study 1	RSES-MFS	9	1 (<i>strongly disagree</i>) to 9 (<i>strongly agree</i>)	.90 - .92
Study 2	RSES	5	—	.88
	RSES-MFS	5	—	.90 - .94
Seery & Quinton (2015)				
Study 1	RSES	7	0 (<i>not at all</i>) to 6 (<i>very much</i>)	.88
Shackelford & Michalski (2011)				
Study 1	California Self-Evaluation Scales (Phinney & Gough, 1984)	9	—	General = .91 Physical = .90 Social = .87 Intellectual = .83
Shahar & Henrich (2010)				
Study 1	Custom: six statements adapted from the RSES: I have lots of good qualities, have a lot to be proud of, like myself as I am, do everything	5	<i>strongly agree</i> to <i>strongly disagree</i>	T1 = .85 T2 = .85

Publication	Measure(s) used	No. response options	Response Anchors	α
Shea & Pritchard (2007)				
Study 1	RSES	4	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>)	.87
Shi et al. (2015)				
Study 1	RSES	4	—	.83
Shim et al. (2013)				
Study 1	RSES	5	1 (<i>not at all true of me</i>) to 5 (<i>very true of me</i>)	—
Shimizu & Pelham (2011)				
Study 1	Sample 1: Custom: adaptation of SISE. “How would you generally describe your self-esteem?”	9	1 (<i>extremely low</i>) to 9 (<i>extremely high</i>)	—
	Other samples: RSES	7	1 (<i>disagree very much</i>) to 7 (<i>agree very much</i>)	S2 = .91
				S3 = .90
				S4 = .90
	NLT & Birthday-Number Preferences	9	S1, 2, 4: 1 (<i>dislike very much</i>) to 9 (<i>like very much</i>)	S1 = .52
			S3: 0 (<i>not at all</i>) to 6 (<i>extremely</i>)	S2 = .61

Publication	Measure(s) used	No. response options	Response Anchors	α
		7		S3 = .57
				S4 = .34
Study 2	RSES	—	—	.92
	NLT & Birthday-number preferences	—	—	.66
Simsek (2012)				
Study 1	RSES	5	—	.86
Sinclair & Lentz (2010)				
Study 1	RSES	11	-5 (<i>strongly disagree</i>) to +5 (<i>strongly agree</i>)	—
Study 2	RSES	—	—	—
Soenens & Duriez (2012)				
Study 1	RSES	5	1 (<i>not at all like me</i>) to 5 (<i>very much like me</i>)	.80
Spencer-Rodgers et al. (2004)				
Study 1	Custom: six items adapted from RSES	7	1 (<i>not at all</i>) to 7 (<i>very much</i>)	.79 ¹ , .85 ¹⁰ , .83 ¹¹ , .85 ¹² , .73 ¹³

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3	Custom: As Study 1	7	1 (<i>not at all</i>) to 7 (<i>very much</i>)	.69, .87, .88
Study 4	Custom: As Study 1	7	1 (<i>not at all</i>) to 7 (<i>very much</i>)	.83, .90
Steiger et al. (2014)				
Study 1	RSES-S (8 items)	2	0 (<i>disagree</i>) to 1 (<i>agree</i>)	—
Steinberg et al. (2007)				
Study 1	SE-IAT	—	—	—
	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.89
	NLT	6	1 (<i>extremely ugly</i>) to 6 (<i>extremely beautiful</i>)	—
Stieger et al. (2011)				
Study 1	RSES	4	0 (<i>totally disagree</i>) to 3 (<i>totally agree</i>)	.78
	NLT	7	1 (<i>I don't like at all</i>) to 7 (<i>I like</i>)	—
Stieger et al. (2012)				
Study 1	RSES	4	0 (<i>totally disagree</i>) to 3 (<i>totally agree</i>)	.86
	NLT	7	1 (<i>I don't like</i>) to 7 (<i>I like</i>)	—
	SE-IAT	—	—	—
Stinson et al. (2015)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	9	—	—
Study 2	RSES	—	—	—
	Custom : Adapted from McFarland & Ross (1982) participants reported their state self-esteem by rating the extent to which 16 adjectives (e.g., confidence, pride, shame, worthless, stupid, nervous) described their current feelings	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.84
Stinson et al. (2012)				
Study 1	RSES	—	—	—
Stinson et al. (2010)				
Study 1	RSES	—	—	—
Study 2	RSES	—	—	—
Study 3	RSES	—	—	—
	Custom: 12 items adapted from McFarland & Ross (1982), participants rated themselves on self-related affect words (e.g., proud, confident ashamed, incompetent)	9	1 (<i>not at all</i>) to 9 (<i>extremely</i>)	.90
Study 4	RSES	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
	Custom: Modified 7-item PANAS to include worthless, inadequate, humiliated, successful, and confident.	7	1 (<i>not at all</i>), 3 (<i>moderately</i>), 5 (<i>very or extremely</i>)	.72
Study 5	RSES	—	—	—
Study 6	RSES	—	—	—
	Custom: 8 items adapted from McFarland & Ross (1982), participants asked to rate how they felt at that moment in relation to eight adjectives: proud, ashamed, worthless, inadequate, successful, confident, competent, unattractive	5	1 (<i>not at all</i>) to 5 (<i>very/extremely</i>)	.70
Stinson et al. (2008a)				
Study 1	RSES-S (4 items)	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.75 (T1) .76 (T2)
Study 2	RSES	9	1 (<i>strongly disagree</i>) to 9 (<i>strongly agree</i>)	.94 (T1) .93 (T2)
Stinson et al. (2008b)				
Study 1	RSES	9	—	—
Study 2	RSES	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3a Strelan (2007)	RSES	—	—	—
Study 1 Strelan & Zdaniuk (2015)	Bachman & Malley (1977) Revision of RSES	5	1 (<i>never true</i>) to 5 (<i>always true</i>)	.87
Study 1	Custom: 5 item scale, four taken from SSES (I feel that others respect and admire me, I feel self-conscious, I feel displeased with myself, and I feel inferior to others at this point) and one from RSES (On the whole, I am satisfied with myself)	7	1 (<i>not at all</i>) to 7 (<i>very much</i>)	.72
Study 2	Custom: 4-item “How do you feel about yourself right now? I feel . . . pleased; disappointed; positive; satisfied with myself.	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.89
Study 3	Custom: 5-items: I feel like a failure (reverse-coded); I feel I am no good at all (reverse-coded); I feel inferior to others (reverse-coded); I am satisfied with myself; I feel positive about myself.	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.88

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 4 Swickert et al. (2004)	Custom: As Study 2	7	1 (<i>completely disagree</i>) to 7 (<i>completely agree</i>)	.82
Study 1 Teng & Chen (2012)	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.90
Study 1 Thomaes et al. (2009)	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.83
Study 1 Tolpin et al. (2004)	5-item Global Self-Worth subscale of the Self-Perception Profile for Adolescents (Harter, 1988) Pictorial state self-esteem scale from Self-Assessment Manikin (Bradley & Lang, 1994).	4 9	0 (<i>not at all</i>) to 3 (<i>exactly</i>) —	.76 —
Study 1 Tong et al. (2007)	Custom: 10 items from the Quick Self-Description Form (QSDF). Butler et al. (1994)	5	1 (<i>very much</i>), 2 (<i>somewhat</i>); 3 (<i>neither</i>); 4 (<i>somewhat</i>), 5 (<i>very much</i>)	.87
Study 1	RSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.84

Publication	Measure(s) used	No. response options	Response Anchors	α
Tougas et al. (2005)				
Study 1	RSES	5	1 (<i>not at all</i>) to 5 (<i>absolutely</i>)	.81
Study 2	RSES	—	—	.86
Study 3	RSES	—	—	.85
Tracy et al. (2009)				
Study 1	RSES	—	—	.90
Trautwein et al. (2006)				
Study 1	RSES-S (4 items)	4	<i>agree to disagree</i>	T1 = .73 T2 = .80 T3 = .81
Trumpeter et al. (2006)				
Study 1	RSES	4	0 (<i>strongly disagree</i>) to 3 (<i>strongly agree</i>)	.88
Turner & White (2015)				
Study 1	RSES	4	—	.91
Updegraff et al. (2010)				
Study 1	RSES	5	—	.83

Publication	Measure(s) used	No. response options	Response Anchors	α
	RSES-MFS	—	—	.92
Study 2	RSES	4	—	.94
Usborne & Taylor (2010)				
Study 1	RSES	—	—	.91
Study 2	RSES	—	—	.89
	Custom: 10 items from Janis-Field Feelings of Inadequacy Scale	—	—	.80
Study 3	RSES	—	—	.86
Study 4	RSES	—	—	.91
Van Hiel & Brebels (2011)				
Study 1	SLSC	—	—	.77
Vandromme et al. (2011)				
Study 1	Affective priming tasks	—	—	—
	RSES	4	—	—
Verkuyten (2009)				
Study 1	RSES	5	1 (<i>disagree strongly</i>) to 5 (<i>agree strongly</i>)	.80
Study 2	SISE	7	1 (<i>not very true of me</i>) to 7 (<i>very true of me</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 3 Verkuyten (2005)	SISE	—	—	—
Study 1 Custom: 8 items of RSES modified for children	NLT	5	1 (<i>the least nice letter</i>) to (<i>the nicest letter</i>)	—
		4	1 (<i>no, certainly not</i>) to 4 (<i>yes, certainly</i>)	.78 ¹⁴ , .77 ¹⁵ , .74 ¹⁶
Vess et al. (2011)				
Study 1	RSES	7	1 (<i>not at all true of me</i>) to 7 (<i>very true of me</i>)	.93
	RSES-MFS	7	1 (<i>not at all true of me</i>) to 7 (<i>very true of me</i>)	.87
Study 2	RSES	—	—	.87
	RSES-MFS	—	—	.90
Von Soest et al. (2015)				
Study 1	Self-Perception Profile for Adolescents (Harter, 1988)	4	1 (<i>describes me poorly</i>) to 4 (<i>describes me very well</i>)	Global = .78 - .81 Appearance = .86 - .90 Friendship = .78 - .83 Scholastic = .69 - .72

Publication	Measure(s) used	No. response options	Response Anchors	α
Vorauer & Quesnel (2013)				Romantic = .75
Study 1	RSES	9	—	.92
Study 2	RSES	9	—	.90
Wade et al. (2004)				Athletic = .79 - .82
Study 1	RSES	5	—	.88
Wagner et al. (2013a)				
Study 1	Bachman revision of RSES (Bachman, 1970)	4	1 (<i>applies not at all</i>) to 4 (<i>applies totally</i>)	.75 - .83
Wagner et al. (2013b)				
Study 1	Bachman revision of RSES (Bachman, 1970)	5	1 (<i>almost always true</i>) to 5 (<i>never true</i>)	> .78
Wagner et al. (2015)				
Study 1	Custom: 3-items from Self-Descriptive Questionnaire (a) “Overall, I have pretty positive feelings about myself”; (b) “All things considered, I really like	4	1 (<i>applies not at all</i>) to 4 (<i>applies totally</i>)	.79 -.83

Publication	Measure(s) used	No. response options	Response Anchors	α
	myself"; (c) "Overall, I don't have much respect for myself"			
Waller & McDonald (2010)				
Study 1	RSES	9	1 (<i>very strongly disagree</i>) to 9 (<i>very strongly agree</i>)	.89
Study 2	RSES	7	1 (<i>very strongly disagree</i>) to 7 (<i>very strongly agree</i>)	.87
	SSES	5	1 (<i>not at all</i>) to 5 (<i>extremely</i>)	.94
Webster (2007)				
Study 1	RSES-S (4 items)	10	1 (<i>extremely uncharacteristic of me</i>) to 10 (<i>extremely characteristic of me</i>)	.82
Webster et al. (2007)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.90
	RSES-MFS (4 items)	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	—
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
	RSES-MFS (3 items)	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	—
Study 3	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.87
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Weisbuch et al. (2009)				
Study 1	SE-IAT (paper and pencil version)	—	—	—
Wentura et al. (2005)				
Study 1	RSES	—	—	.88
Wisman et al. (2015)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.92
Study 3	RSES	—	—	.84
Study 4	RSES	—	—	.84
Study 5	RSES	—	—	.80
Wojcizke et al. (2011)				
Study 1	RSES	5	—	—
Study 2	S1: SLSC	—	—	SL = .92
				SC = .82
	S2: NLT	—	—	
	S3: SSES	—	—	.79

Publication	Measure(s) used	No. response options	Response Anchors	α
	S4: NPI (Raskin & Hall, 1979)	—	—	.91
	S5: RSES	—	—	.83
Study 3	RSES	—	—	.88
Wood et al. (2009)				
Study 1	RSES	9	—	—
Study 2	RSES	—	—	—
Study 3	RSES	—	—	—
	Custom: 3 items. Right now, I have some bad feelings about myself, I feel good about myself right now & right now, & I have high self-esteem.	—	—	.88
Study 4	RSES	—	—	—
Wood et al. (2005)				
Study 1	RSES	9	—	—
Study 2	RSES	—	—	—
Study 3	RSES	—	—	—
Wouters et al. (2014)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1 Wouters et al. (2013)	RSES	5	1 (<i>completely disagree</i>) to 5 (<i>completely agree</i>)	.92 - .93
Study 1 Wu (2009)	RSES	5	1 (<i>completely disagree</i>) to 5 (<i>completely agree</i>)	T1 = .92 T2 = .92 T3 = .93
Study 2 Xu et al. (2015)	RSES	7	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.93
Study 1 Study 2 Study 3 Yamaguchi et al. (2007)	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.88 ¹⁷ , .89 ¹⁸
	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.88 ⁵ , .87 ²¹ , .88 ¹⁰ , .91 ¹⁸ T1 ⁵ = .88
	—	—	—	T2 ⁵ = .85
	—	—	—	T1 ¹⁰ = .89
	—	—	—	T2 ¹⁰ = .89
Study 1	SE-IAT	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Yang et al. (2014)	RSES	—	—	—
	SLSC	—	—	—
	Custom: Feeling thermometer	—	—	—
	Custom: Semantic differential items	—	—	—
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.77
Study 2	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.81
Ye et al. (2012)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.80 (T1) .83 (T2)
Yeagley et al. (2007)				
Study 1	SISE	5	1 (<i>I do not have this trait</i>) to 5 (<i>I show this trait very much</i>)	—
Yuki et al. (2013)				
Study 1	RSES	—	—	.95 ⁵ , .87 ⁴
Study 2	Custom: 3 items, “I feel that I am a desirable person,” “I feel that I am a	5	1 (<i>agree</i>) to 5 (<i>disagree</i>)	.70 - .85

Publication	Measure(s) used	No. response options	Response Anchors	α
	person of worth, at least on an equal plane with others,” and “I am able to do most things as well as others can.”			
Study 3 Zadro et al. (2004)	RSES-S (4 items)	—	—	.82
Study 1	Custom: 3 items, “During the Cyberball game, I felt good about myself,” “I felt that the other participants failed to perceive me as a worthy and likeable person,” “I felt somewhat inadequate during the Cyberball game”),	9	1 (<i>not at all</i>) to 9 (<i>very much so</i>)	.70
Study 2 Zeigler-Hill (2006a)	Custom: As Study 1	9	1 (<i>not at all</i>) to 9 (<i>very much so</i>)	.76
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.82
	SE-IAT	—	—	—
	NLT	7	1 (<i>I dislike this letter very much</i>) to 7 (<i>I like this letter very much</i>)	—
	ISES	7	1 (<i>not at all true</i>) to 7 (<i>very true</i>)	—
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Zeigler-Hill & Besser (2011)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.85
Zeigler-Hill & Besser (2014)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.83
Zeigler-Hill et al. (2013)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.87
Study 2	RSES	—	—	.90
Zeigler-Hill et al. (2015)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Zeigler-Hill, Chadha et al. (2008)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.83
	RSES-MFS	10	0 (<i>strongly disagree</i>) to 9 (<i>strongly agree</i>)	—
Zeigler-Hill et al. (2011)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.85
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.82
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.84
	NLT	7	1 (<i>I dislike this letter very much</i>) to 7 (<i>I like this letter very much</i>)	—
Study 3	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.82
Zeigler-Hill, Clark et al. (2008)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.78
Zeigler-Hill et al. (2014)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.91
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Zeigler-Hill et al. (2011)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.90
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.88
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.89

Publication	Measure(s) used	No. response options	Response Anchors	α
Zeigler-Hill et al. (2015)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.89
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.92
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.89
Study 3	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.87
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Zeigler-Hill et al. (2013)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.88
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Zeigler-Hill et al. (2010)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.86
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	.81
Zeigler-Hill & Showers (2007)				

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.85
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Study 2	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	—
	RSES-MFS	10	1 (<i>strongly disagree</i>) to 10 (<i>strongly agree</i>)	—
Zeigler-Hill & Terry (2007)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.86
	NLT	7	1 (<i>I dislike this letter very much</i>) to 7 (<i>I like this letter very much</i>)	—
Zeigler-Hill et al. (2012)				
Study 1	RSES	5	1 (<i>strongly disagree</i>) to 5 (<i>strongly agree</i>)	.87
Zhang, L., & Baumeister (2006)				
Study 1	Three main subscales (general self-regard, competence, and popularity) from the Fleming and Courtney (1984) Revised Feelings of Inadequacy scale.	—	—	—
Study 2	As Study 1	—	—	—
Study 3	As Study 1	—	—	—

Publication	Measure(s) used	No. response options	Response Anchors	α
Study 4	As Study 1	—	—	—
Zhang, H., & Chan (2009)				
Study 1	SE-IAT	—	—	—
	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.88
Zhang, A., et al. (2012)				
Study 1	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.70
Study 2	RSES	7	1 (<i>strongly disagree</i>) to 7 (<i>strongly agree</i>)	.65
Zhao et al. (2013)				
Study 1	RSES	4	—	.82
Zhao et al. (2012)				
Study 1	RSES	4	—	.84
Zhao et al. (2014)				
Study 1	RSES	4	1 (<i>strongly agree</i>) to 4 (<i>strongly disagree</i>)	.83
Zuffiano, Allesandri et al. (2014a)				
Study 1	RSES	4	1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.85 (T1)
				.87 (T2)

Publication	Measure(s) used	No. response options	Response Anchors	α
Zuffiano, Eisenberg et al. (2014b)				.87 (T3)
	Study 1	RSES	4 1 (<i>strongly disagree</i>) to 4 (<i>strongly agree</i>)	.86 (T4)
				.83 (T5)

Note. For measures column: RSES = ten-item Rosenberg Self-Esteem Scale, RSES-S = shortened Rosenberg Self-Esteem Scale, RSES-MFS = Rosenberg Self-Esteem Scale modified for states, SSES = State Self-Esteem Scale, SISE = Single Item Self-Esteem Scale, SLSC = Self Liking and Self-Competence Scale (original or revised), TSBI = Texas Social Behaviour Inventory, SE-IAT = self-esteem Implicit Association Test, NLT = Name Letter Task, SINL = Single Item Name Liking measure, ISES = Implicit Self-Evaluation Survey. For Cronbach's alpha column: ♂ = male, ♀ = female, ¹ = Chinese sample, ² = Austrian sample, ³ = Australian sample, ⁴ = Japanese sample, ⁵ = North American sample, ⁶ = Bulgarian sample, ⁷ = German sample, ⁸ = Spanish sample, ⁹ = Colombian sample, ¹⁰ = Asian American sample, ¹¹ = European American sample, ¹² = Latino sample, ¹³ = African American sample, ¹⁴ = Dutch sample, ¹⁵ = Turkish-Dutch sample, ¹⁶ = Turkish sample, ¹⁷ = Californian Asian American, ¹⁸ = Hawaiian Asian American, ¹⁹ = Italian sample, ²⁰ = Costa Rican sample, ²¹ Hawaiian European Americans. T1 = time 1, T2 = time 2, T3 = time 3, T4 = time 4, T5 = time 5, T6 = time 6, S1 = sample 1, S2 = sample 2, S3 = sample 3. '-' in alpha column indicates that range of alphas was reported, undifferentiated by nationality, gender or time-point. The lowest and highest coefficients are recorded.

1.4 Appendix D: Measurement Details for the Self-Esteem Implicit Association Test and Name Letter Test

Table 1. *Measurement Details and Reliability for Self-Esteem Implicit Association Measurement Occasions (N = 53)*

Study	Scoring procedure*	Attributes category labels and items	Concepts category labels and items	Reliability estimate	No. blocks
Baccus, Baldwin & Packer (2004)	—	Pleasant: <i>rainbow</i> Unpleasant: <i>vomit</i>	Self: <i>me</i> Other: —	—	—
Back et al. (2009)	D1	Positive: <i>cheerful, active, gifted, evenhanded, human</i> Negative: <i>vain, brutal, weary, dishonest, inertial</i>	Me: <i>me, my, own, I, self</i> Others: <i>they, your, them, you, others</i>	SB = .76.	5
Bernstein et al. (2013; Study 1a)	Mean	Pleasant: <i>happy laughter, peace</i>	Self: <i>me, my, I</i> Other:—	—	—
Bernstein et al. (2013; Study 1b)	Mean	Pleasant: <i>happy, laughter, peace</i>	Self: <i>me, my, I</i> Other:—	—	—
Bernstein et al. (2013; Study 1c)	Mean	Pleasant: <i>happy, laughter, peace</i>	Self: <i>me, my, I</i> Other:—	—	—

Bernstein et al. (2013; Study 2)	Mean	Pleasant: <i>happy, laughter, peace</i>	Self: <i>me, my, I</i> Other—	—	—
Bortont et al. (2012)	“based on” D	Positive: <i>worthy, loveable, valuable, admirable</i> Negative: <i>inferior, unlovable, inadequate, undesirable</i>	I am: <i>me, self, my, mine</i> I am not: <i>others, them, they, theirs</i>	—	—
Bortont et al. (2010)	D4	Positive: <i>nice, good smart</i> Negative: <i>stupid, dumb, bad</i>	Self: <i>self, me, my</i> Other: <i>other, they, them</i>	SB = .49	7
Cheng et al. (2012)	D	Pleasant: <i>good, palace</i> Unpleasant: <i>poor, war</i>	Self: <i>I, me</i> Other: <i>they, theirs</i>	—	5
Dentale et al. (2010)	D	Pleasant: <i>luck, joy, positive, good</i> Unpleasant: <i>vomit, agony, negative, bad</i>	Me: <i>me, self</i> Not me: <i>it, that</i>	SH = .61 (1st form) SH = .59 (2nd form)	7
Dentale et al. (2012)	D	Pleasant: <i>luck, joy</i> Unpleasant: <i>vomit, agony</i>	Me: <i>me, self</i> Not me: <i>it, that</i>	SH = .56 (1st form) SH = .55 (2nd form)	7

Dijksterhuis (2004; Study 3)	—	Positive: <i>happiness, summer, beach, free, sun</i> Negative: <i>cancer, coma, mean, hell, pest</i>	Self-Related: <i>I, me, myself, mine, self, my own</i> Non-Self-Related: <i>they, others, their, his, her</i>	—	5
Gregg & Sedikides (2010)	D and penalties from specific Ds	Nice: <i>excellent</i> Nasty: <i>filth</i>	Me: <i>me, myself, first name</i> Not-Me: <i>they, them, those</i>	SB = .60	2
Grumm & von Collani (2007; Study 2)	D1	Positive: <i>precious, good, satisfied, pleasant, sunny, happy</i> Negative: <i>useless, bad, greedy, unpleasant, unjust, sad</i>	Self: <i>Christian name, month of birth, place of birth, gender, zodiac sign</i> Other: <i>different family name, different Christian name etc.</i>	—	—
Grumm et al. (2009; Study 1)	D1	Positive: <i>precious, satisfied, pleasant, sunny, happy, good</i> Negative: <i>useless, bad, greedy, unpleasant, unjust, sad</i>	Self: <i>Christian name, month of birth, place of birth, gender, zodiac sign</i> Other: <i>different family name, different Christian name</i>	SB = .74	7

Grumm et al. (2009; Study 2)	D1	Positive: <i>precious, satisfied, pleasant, sunny, happy, good.</i> Negative: <i>useless, bad, greedy, unpleasant, unjust, sad</i>	Self: <i>Christian name, month of birth, place of birth, gender, zodiac sign</i> Other: <i>different family name, different Christian name</i>	SB = .74	7
Grumm et al. (2009; Study 3)	D1	Positive: <i>precious, satisfied, pleasant, sunny, happy, good.</i> Negative: <i>useless, bad, greedy, unpleasant, unjust, sad</i>	Self: <i>Christian name, month of birth, place of birth, gender, zodiac sign</i> Other: <i>different family name, different Christian name</i>	SB = .74	7
Jiang et al. (2015; Study 2)	—	—	Self Other	—	7
Jordan et al. (2005; Study 1)	Mean	Pleasant: <i>holiday, warmth, friend, smile, sunshine, gift, love, happy, party, joy</i> Unpleasant: <i>agony, death, disease, vomit, evil,</i>	Self: <i>me, myself</i> Not-Self: <i>it, that</i>	—	5

			<i>cockroach, pain, stink, disaster, garbage</i>		
Jordan et al. (2005; Study 2)	Mean	Pleasant: <i>holiday, warmth,</i> Self: <i>me, myself</i> <i>friend, smile, sunshine,</i> Not-Self: <i>it, that</i> <i>gift, love, happy, party, joy</i> Unpleasant: <i>agony, death,</i> <i>disease, vomit, evil,</i> <i>cockroach, pain, stink,</i> <i>disaster, garbage</i>	—	—	5
Jordan et al. (2007; Study 1)	—	Pleasant: <i>holiday, warmth,</i> Self: <i>me, myself</i> <i>friend, smile, sunshine,</i> Object: <i>it, that</i> <i>gift, love, happy, party, joy</i> Unpleasant: <i>agony, death,</i> <i>disease, vomit, evil,</i> <i>cockroach, pain, stink,</i> <i>disaster, garbage</i>	SB = .62	—	7
Jordan et al. (2007; Study 3)	—	—	—	SB = .73	—
Jordan et al. (2007; Study 4)	—	—	—	SB = .62	—
Krizan & Suls (2009; Study 2)	D	Positive Negative	—	—	—

Lafreniere et al. (2011)	Mix of D and C1	Pleasant Unpleasant	Self Other	SB = .63	—
Lambird & Mann (2006; Study 2)	Mean	Good: <i>heaven, diamond</i> Bad: <i>rotten, vomit</i>	Self Not-Self	—	—
Laws & Rivera (2012; Study 1a)	—	Good bad	Self Others	$\alpha = .71^1$	—
Laws & Rivera (2012; Study 1b)	—	—	—	$\alpha = .85^1$	—
Laws & Rivera (2012; Study 2)	—	—	—	$\alpha = .63^1$	—
Laws & Rivera (2012; Study 3)	—	—	—	$\alpha = .73^1$	—
LeBel (2010)	D	Pleasant: <i>summer, peace, harmony, freedom, heaven, pleasure, vacation, paradise, lucky, sunrise</i> Unpleasant: <i>poison, disaster, death, virus, evil, rotten, vomit, bomb, cockroach, stink</i>	Self: <i>I, my, me, mine, self, it</i> Object: <i>it, those, that, these, this</i>	$\alpha = .72^2$	—

Lisjak et al. (2012; Study 1c)	D4	Pleasant: <i>beautiful</i> Unpleasant: <i>angry</i>	(Single Concept Category IAT) Self: <i>me</i>	$\alpha = .69^2$	—
Lupien et al. (2010)	—	As Jordan, Whitfield & Zeigler-Hill (2007)	As Jordan, Whitfield & Zeigler-Hill (2007)	—	—
		Pleasant: <i>holiday, warmth,</i> <i>friend, smile, sunshine,</i> <i>gift, love, happy, party, joy</i>	Self: <i>me, myself</i> Object: <i>it, that</i>		
		Unpleasant: <i>agony, death,</i> <i>disease, vomit, evil,</i> <i>cockroach, pain, stink,</i> <i>disaster, garbage</i>			
McGregor & Jordan (2007)	Mean	Pleasant: <i>sunshine, gift,</i> <i>smile, joy</i>	Self: <i>me, myself</i> Object: <i>it, that</i>	—	—
		Unpleasant: <i>garbage,</i> <i>vomit, cockroach, evil</i>			
McGregor et al. (2013; Study 2)	Mean	Pleasant: <i>sunshine</i>	Self: <i>me, myself</i>	—	5
		Unpleasant: <i>garbage</i>	Not Self		
Ratliff & Oishi (2013; Study 1)	D2	Good	Self	SH = .68	—

		Bad	Other			
Ratliff & Oishi (2013; Study 2)	D2	Good	Self	SH = .59	—	—
		Bad	Other			
Ratliff & Oishi (2013; Study 3)	Log	Good	(Single Concept Category	—	—	—
		Bad	IAT)			
			Self			
Ratliff & Oishi (2013; Study 4)	D2	Good	Self	SH = .61	—	—
		Bad	Other			
Ratliff & Oishi (2013; Study 5)	D2	Good	Self	SH = .64	—	—
		Bad	Other			
Robinson & Wilkowski (2006; Study 2)	—	Pleasant: <i>candy, child,</i> <i>clown, flower, kiss, mother,</i> <i>palace, silk, smile, and</i> <i>sunset</i>	Me: <i>I, me, mine, my, self</i> Not Me: <i>it, other, their,</i> <i>them, they</i>	$\alpha = .94^3$	7	7
		Unpleasant: <i>army, cancer,</i> <i>coffin, dirt, jail, pimple,</i> <i>skull, snake, spider, and</i> <i>trash</i>				

Robinson & Wilkowski (2006; Study 3)	—	Pleasant: <i>charm, dream, health, humor, idea, life, praise, pride, safety, soul, trust, and victory.</i>	Me: <i>I, me, mine, my, self</i> Not Me: <i>it, other, their, them, they</i>	$\alpha = .98^3$	7
Rudman et al. (2007; Study 1)	D	Pleasant: <i>smile, vacation</i> Unpleasant: <i>pain, disaster</i>	Self: <i>I, me, mine</i> Others: <i>they, them, theirs</i>	—	—
Rudman et al. (2007; Study 2)	D	Pleasant: <i>smile, vacation</i> Unpleasant: <i>pain, disaster</i>	Self: <i>I, me, mine</i> Others: <i>they, them, theirs</i>	—	—
Rudman et al. (2007; Study 3)	D	Pleasant: <i>smile, vacation</i> Unpleasant: <i>pain, disaster</i>	Self: <i>I, me, mine</i> Others: <i>they, them, theirs</i>	—	—
Sandstrom & Jordan (2008)	Mean	Good: <i>smile, happy, joy</i> Bad: <i>disaster, pain, death</i>	Self: <i>I, me, myself</i> Not Self: <i>it, that, they</i>	—	5
Schmeichel et al. (2009; Study 3)	—	Pleasant Unpleasant	Self Not Self	—	—

Steinberg et al. (2007)	D	Pleasant: <i>smart, bright, success, splendid, valued</i> Unpleasant: <i>stupid, ugly, failure, awful, useless</i>	Self: <i>participant's first name, last name, me, I, myself</i> Other: <i>him, her, their, them, they</i>	SH = .72	5
Stieger et al. (2012)	—	—	I Other	SH = .76	—
Weisbuch et al. (2009)	Paper and pencil IAT: Incorrect- correct 4 th and 5 th pages	Pleasant Unpleasant	Me: <i>me, mine, self</i> Not Me: <i>them, theirs, others</i>	—	—
Yamaguchi et al. (2007)	D	Pleasant Unpleasant	Self: <i>I, me, mine, myself</i> Best Friend: <i>best friend's family name, first name, hometown, and birthday</i> In-Group: <i>we, our, us, ours</i>	—	—

Zeigler-Hill (2006a)	—	Pleasant: <i>sunshine, smile, happy, paradise, pleasure, joy</i>	Self: <i>myself, mine, me, my, myself, self</i>	—	7	
		Unpleasant: <i>grief, tragedy, sickness, pain, agony, death</i>	Not-Self: <i>other, them,</i>			Note. SH = split-half
Zhang & Chan (2009)	D	I like	Self: <i>name, birthday, city of residence</i>	—	5	correlation, SB = Spearman-
		I don't like	Other: <i>name, birthday, city of residence</i>			Brown

adjusted split-half correlation, α = Cronbach's alpha. *See Greenwald, Nosek, & Banaji (2003) for details of scoring procedures. ¹ = α calculated "by submitting difference scores between compatible and incompatible block latencies to a Cronbach's alpha analysis" (p. 1456), as in Bosson, Swann, & Pennebaker (2000). ² = no information provided on method of calculation for α . ³ = α calculated by subtracting the individual's average latency from each trial latency, reverse-scoring trials where faster responses would indicate higher levels of implicit self-esteem (i.e. self/pleasant block), and computing α on resultant latencies. On a number of occasions researchers stated that items and labels were taken from Greenwald & Farnham (2000). Because a number of different SE-IATs were used in that publication, we judged this citation too imprecise to determine exact stimuli.

Table 2. *Measurement Details and Reliability for the Name Letter Test Measurement Occasions (N = 43)*

Study	Ratings	Focal letters	Response options	Scoring procedure	Reliability
Baccus, Baldwin & Packer (2004)	Liking	Initials	—	I	—
DeHart et al. (2006; Study 1)	Liking	Initials	9	B	TR = .60
DeHart et al. (2006; Study 2)	Liking	Initials	9	B	—
DeHart et al. (2006; Study 3)	—	Initials	—	—	—
DeHart & Pelham (2007)	Liking	Initials	9	B	$\alpha > .58^1$
Dehart et al. (2009)	Liking	Initials	9	B	$\alpha = .60^1$
Dijksterhus (2004; Study 1)	Beauty	Initials	7	B	—
Dijksterhus (2004; Study 2)	Beauty	Initials	7	B	—
Dijksterhus (2004; Study 4)	Beauty	Initials	7	B	—
Eaton et al. (2007)	Liking & attractiveness	Initials	9	S	—
Gregg & Sedikides (2010)	Liking	Name letters	7	B	FLC = .68
Hannover et al. (2006; Study 2)	Liking	Initials	7	B	—
Hannover et al. (2006; Study 3)	—	Initials	—	—	—
Kernis, Lakey, & Heppner (2008)	Beauty	Initials	9	B	FLC = .52

Koole et al. (2009; Study 1)	Liking	Initials	7	B	—
Koole et al. (2009; Study 2)	Beauty	Initials	5	—	—
Krizan & Suls (2009; Study 1)	Liking	Initials	—	B	FLC = .36
Krizan & Suls (2009; Study 2)	Liking	Initials	—	B	FLC = .32
Krizan (2008)	Liking	Initials	9	—	—
LeBel (2010)	Liking	Initials	5	B	$\alpha = .57^3$
Lemay & Clark (2009; Study 3)	Liking	Name Letters	9	S	—
Pelham et al. (2005)	Liking	Name Letters	—	B	—
Peterson & DeHart (2013; Study 1)	Liking	Initials	7	B	$\alpha = .41^3$
Peterson & DeHart (2013; Study 2)	Liking	Initials	7	B	$\alpha = .44^3$
Philips & Hine (2014)	Attractiveness	Initials	—	Z	$\alpha = .84^2$
Rios, Wheeler, & Miller (2012; Study 2)	Attractiveness	Initials	5	B	—
Rios, Wheeler, & Miller (2012; Study 4)	Attractiveness	Initials	5	B	—
Sakellaropoulou & Baldwin (2007; Study 1)	Liking & attractiveness	Initials	9	B	—
Sakellaropoulou & Baldwin (2007; Study 2)	Liking & attractiveness	Initials	9	B	—
Sariskya et al. (2014)	Liking	Initials	7	B	—

Schmeichel et al. (2009; Study 1)	Beauty	Initials	7	B	—	
Schmeichel et al. (2009; Study 2)	Beauty	Initials	7	B	—	
Shimizu & Pelham (2011; Study 1)	Liking	Initials	9	B	$\alpha = .52$ (FNI) ³	
					$\alpha = .61$ (LNI) ³	
Shimizu & Pelham (2011; Study 2)	—	—	—	—	$\alpha = .66^3$	<i>Note.</i> FLC
Steinberg, Karpinski, & Alloy (2007)	Beauty	Initials	6	Mean Z-score for first and last name initials	FLC = .28	= first and last initial
Stieger, Formann, & Burger (2011)	Liking	Initials	7	I	TR = .82 (FNI) TR = .77 (LNI)	correlation,
Stieger, Preyss, & Voracek (2012)	Liking	Initials	7	I	TR = .71 (FNI) TR = .55 (LNI)	TR = test-retest, $\alpha =$
Tracy et al. (2009)	Liking & attractiveness	Initials	—	B	—	Cronbach's alpha, FNI
Verkuyten (2005)	Niceness	First-name initial	5	B	—	= first-name
Wojciszke et al. (2011; Study 2)	Liking	Initials	—	I	—	
Zeigler-Hill (2006a)	Liking	Initials	7	B	FLC = .42	initial, LNI
Zeigler-Hill et al. (2011; Study 2)	Liking	Initials	7	B	FLC = .56	= last-name
Zeigler-Hill & Terry (2007)	Liking	Initials	7	B	FLC = .51	initial. I =

ipsatized double-correction, B = baseline-corrected algorithm, S = self-corrected algorithm, Z = Z-transformed double-corrected (see LeBel & Gawronski, 2009).¹ = α calculated by treating preferences for initials as a two-item scale.² = α calculated from “all letter scores after replacing each participant’s scores for his or her own initials with the sample mean for those letters” (Philips & Hine, 2014, p. 4).³ = no information provided for calculation of α

1.5 Appendix E: Custom Measure Details

Please see <https://osf.io/6wfvq/> for Appendix E file for custom measure details, which is a .xlsx file.

What is Self-Esteem? Meta-Research on the Definition of Self-Esteem in Personality and Social Psychology (2004-2015) (<https://osf.io/4wvtu/>)

1.6 Appendix A: URLs for Online Journal Databases

Self and Identity: http://www.tandfonline.com/loi/psai20#.V0ITL_krK00

Journal of Research in Personality: <http://www.sciencedirect.com/science/journal/00926566>

Personality and Social Psychology Bulletin: <http://psp.sagepub.com/>

Journal of Personality and Social Psychology:

<http://web.a.ebscohost.com/ehost/command/detail?sid=c4f04290-f5a2-4f51-90f2-864fb72218fd%40sessionmgr4005&vid=0&hid=4201&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=pdh&jid=PSP>

Social Psychological and Personality Science: <http://spp.sagepub.com/>

Social and Personality Psychology Compass:

[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1751-9004](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1751-9004)

Journal of Experimental Social Psychology:

<http://www.sciencedirect.com/science/journal/00221031>

Personality and Individual Differences: <http://www.sciencedirect.com/science/journal/01918869>

Journal of Personality: [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1467-6494](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1467-6494)

European Journal of Social Psychology:

[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1099-0992](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0992)

Psychological Science: <http://pss.sagepub.com/>

1.7 Appendix B: Coding Manual

Coding Manual for Definitions of Self-Esteem

Please identify each of the definitions of self-esteem provided as belonging to one of the following eleven categories of definition: (1) Worth/Value, (2) Self-Attitude, (3) Explicit/Implicit, (4) Self-Evaluations, (5) Self-Feelings, (6) Global/Overall, (7) Self-Worth Plus Competence/Capability, (8) Value and Meaning, (9) Self-Liking/Acceptance, (10) Mixed and (11) Atypical. Descriptions and examples of each category of definition are provided in the table below.

Note that while the definitions are sometimes complex, and may be interpreted as containing aspects of one or more category of definition (e.g. the definition main contain references to feelings *and* worth/value), when making a coding judgement consider the definition's primary focus. If the primary focus is unclear, and the definition contains elements of more than one category of definition in equal measure, consider coding it as Mixed (10). If the definitions appears not to meet criteria for any category of definition, consider coding it as Atypical (11).

Category	Description	Examples
(1) Worth/value	<p>Self-esteem is the individual's overall/global/general evaluation/appraisal/sense of <i>worth or value</i></p> <p>And</p> <ul style="list-style-type: none"> • Is not just an overall evaluation of self (with no mention of worth); see definition 6 	<p>“one's overall sense of worthiness as a person”</p> <p>“global evaluation of one's self-worth”</p> <p>“a person's appraisal of his or her value”</p>
(2) Self-attitude	<p>Self-esteem is an attitude toward the self. It may vary in positivity or favourability.</p> <p>“Orientation” accepted also as probable synonym for attitude.</p>	<p>“a positive or negative attitude towards oneself”</p> <p>“refers to individuals' positive or negative attitude toward the self”</p>
(3) Explicit/implicit	<p>Self-esteem is both an implicit and explicit phenomenon. The implicit aspect of self-esteem is often described in terms of self-evaluations.</p> <p>And,</p> <ul style="list-style-type: none"> • Is not only about worth/value (1), • Not many self-evaluations (4) 	<p>“Whereas explicit self-esteem (ESE) refers to a conscious self-evaluation, implicit self-esteem (ISE) refers to automatic, over-learned, and non-conscious self-evaluations”</p> <p>“explicit self-esteem (conscious, self-reported self-evaluations) and implicit self-</p>

Category	Description	Examples
	<p>Key terms:</p> <p><i>Explicit, implicit, unconscious, conscious</i></p>	esteem (self-evaluations that occur outside of conscious awareness)”
(4) Many self-evaluations	<p>Self-esteem is a multiplicity of self-evaluations, views, or perceptions. Important: Plural terms are used in the definition.</p> <p>And,</p> <ul style="list-style-type: none"> • Is not only about worth/value (1), • Is not about an attitude toward the self (2), • Does not contain references to an implicit self-esteem (3) 	<p>“the sum of his or her self-evaluative thoughts and feelings”</p> <p>“a hierarchical set of evaluations that form an enduring attitude about the self”</p> <p>“the extent to which one holds favourable views of oneself”</p>
	<p>Key terms:</p> <p><i>Plural terms</i></p>	
(5) Self-feeling	<p>Self-esteem is defined in terms of feeling or affect</p> <p>And:</p> <ul style="list-style-type: none"> • Is not about worth or value (1) • Is not about self-evaluations (4) • Does not contain reference to implicit self-esteem (3) 	<p>“how one feels about oneself”</p> <p>“a personality dimension that captures how good we feel about ourselves”</p> <p>“affective evaluation of the self that can range anywhere from very negative to positive”</p>
	<p>Key terms:</p> <p><i>Feeling, affect, emotion</i></p>	
(6) Global/overall	<p>Self-esteem is a global or overall component of self.</p> <p>And,</p> <ul style="list-style-type: none"> • Is not specifically a global, overall 	<p>“global component of self-concept”</p> <p>“global perception of the self as a person”</p>

Category	Description	Examples
	<ul style="list-style-type: none"> evaluation of <i>worth or value</i> (1) • Is not global <i>feelings</i> (5) • Contains no reference to implicit self-esteem (3) 	<p>“an individual’s overall evaluation of the self”</p> <p>“to judge oneself as a whole; this global self-evaluation is commonly referred to as self-esteem”</p>
	Key terms:	
	<p>Self-esteem is about <i>two things</i>.</p> <p>Worth and competence/capability</p> <p>And,</p> <ul style="list-style-type: none"> • Is not just about worth/value (1) • Contains no reference to implicit self-esteem (3) 	<p>“people’s evaluations of self-worth and competence”</p> <p>“indicates the degree to which one experiences oneself as worthy and capable”</p>
	Key terms:	
	<p>Self-esteem is about two things.</p> <p>The belief that one is valued or valuable and perceptions of meaningfulness</p> <p>And,</p> <ul style="list-style-type: none"> • Is not just about worth or value (1) • No reference to implicit self-esteem • No reference to feelings (5). 	<p>“the belief that one is a valuable member of a meaningful cultural worldview”</p>
	Key terms:	
	<p>Self-esteem is the acceptance and/or liking the individual has for the self.</p> <p>And,</p>	<p>“the overall evaluation of the self... reflecting how much individuals accept and like themselves”</p>

Category	Description	Examples
	<ul style="list-style-type: none"> • not worth or value (1), • not attitude (2), • not implicit/explicit (3), • not self-evaluations (4), • not self-feelings (5). 	<p>“self-esteem is the aspect of self-knowledge that reflects how much individuals like themselves”</p>
Key terms:		
<i>Acceptance, like, liking</i>		
(10) Mixed	<p>Two or more categories above appear in combination, and in somewhat equal measure.</p> <p>Definition is likely to contain <i>and</i> or <i>or</i>, resulting in ambiguity in classification.</p>	<p>“the extent to which an individual likes or values the self”</p> <p>“the individual's general attitude, or evaluation of the self and it reflects people's beliefs about how worthy they are as persons”</p>
Key terms:		
<i>And, or</i>		
<p>“Self-esteem is an attitude toward oneself....or the overall positive or negative sense of how we feel about the self”</p>		
(11) Atypical	<p>Self-esteem is defined as something other than the above. The definition may be somewhat consonant with major definitions outlined, but contain anomalous content.</p>	<p>“differences in the tendency to evaluate the self positively”</p> <p>“a top-down tendency toward positive or negative affect in appraisal, experience, and behavior”</p>
<p>And (but may contain some of these words),</p> <ul style="list-style-type: none"> • not just worth or value (1), • not just attitude (2), • not just implicit/explicit (3), • not just self-evaluations (4), 		

Category	Description	Examples
	<ul style="list-style-type: none"> • not just self-feelings (5), • not just global/overall (6) 	And,

• Is not a clear mixture of two or more above definitions (see category 11: Mixed)

Key terms:

Unusual, infrequent words

1.8 Appendix C: Research Articles Included and Excluded

Please see <https://osf.io/4wvtu/> for included and excluded articles. The full corpus of articles is the same as in Appendix C of Paper 1.

1.9 Appendix D: Definitions of Self-Esteem, Cited Publications, and Word Frequencies

Table 1. 117 Definitions of Self-Esteem in Twelve Journals of Personality and Social Psychology (2004-2015)

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1. “the sum of his or her conscious self-evaluative thoughts and feelings”
 2. “an individual's overall evaluation of self”
 3. “intimate perceptions of self-worth”
 4. “a hierarchical set of evaluations that form an enduring attitude about the self”
 5. “attitude toward oneself or the overall positive or negative sense of how we feel about the self”
 6. “an individual's subjective evaluation of his or her worth as a person”
 7. “overall evaluation of one's worth or value as a person”
 8. “a global, affective evaluation of the self that can range from anywhere from very negative to very positive”
 9. “the view people have of themselves; whether they view themselves to be a good and valuable person or not”
 10. “refers to feelings of self-worth or the global evaluation of the self”
 11. “global evaluations of self-worth and if they merit respect”
 12. “people's evaluations of self-worth and competence”
 13. “one's conscious or explicit evaluations of oneself”
 14. “generalized beliefs concerning their personal self-worth”
 15. “subjective evaluation of his or her worth as a person”
 16. “an individual's perceptions and evaluations of himself or herself”
 17. “an attitude or summary evaluation of the self”
 18. “an attitude toward the self”
 19. “a person's overall evaluation of personal value or adequacy”
 20. “whether the individual considers himself adequate a person of worth—not whether he considers himself superior to others”
 21. “how individuals perceive themselves and the person attributes, such as competence and talent”
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- 22. “how much value people place on themselves”
 - 23. “a person's appraisal of his or her value”
 - 24. “the extent to which one prizes, values, approves of, or likes oneself”
 - 25. “typical or general feelings of self-worth”
 - 26. “both of these aspects of self-esteem... people differ in the degree to which they value what they can do (e.g., abilities) and who they are (e.g., social worth)”
 - 27. “global self-views (i.e. thoughts, feelings and self-evaluations about the self)”
 - 28. “a positive or negative orientation toward oneself”
 - 29. “one's global feeling of self-worth”
 - 30. “the overall sense of worthiness and value that people place on themselves”
 - 31. “the perception of oneself as a valued, significant member of a meaningful cultural reality”
 - 32. “global self-evaluations (referring to how worthwhile and confident an individual feels him or herself to be) as well as aggregated domain specific self-evaluations, and we use the term self-esteem for both types of evaluation”
 - 33. “individual differences in the tendency to evaluate the self positively”
 - 34. “a positive or negative attitude towards oneself”
 - 35. “the global evaluation of the own self and the association of the own person with positive or negative attributes”
 - 36. “the belief that one is a valuable member of a meaningful cultural worldview”
 - 37. “to judge oneself as a whole; this global self-evaluation is commonly referred to as self-esteem”
 - 38. “one's evaluative judgement about oneself evaluative judgement of oneself, or overall feelings of worth or value as a person”
 - 39. “a person's appraisal or evaluation of his or her value”
 - 40. “perceptions of one's own value”
 - 41. “one's perceived self-worth”
 - 42. “implicit self-esteem refers to highly efficient self-evaluations that may exist largely outside of awareness... Self-esteem as traditionally conceptualized, in contrast, can be considered to be explicit; that is, deliberately reasoned and controlled.”
 - 43. “people's representations of their typical, or general, global feelings of self-worth”
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- 44. “explicit self-esteem represents feelings of self-worth that are within conscious awareness.
In contrast, implicit self-esteem reflects automatic, overlearned, and nonconscious
'affective associations about the self'"
 - 45. “how in the broadest sense they evaluate themselves and their worth”
 - 46. “positive or negative evaluation toward oneself indicates the degree to which one
experiences oneself as worthy and capable”
 - 47. “one's general appraisal of self-worth”
 - 48. “an individual's general sense of his or her value or worth”
 - 49. “people's evaluations of their own person as intrinsically positive or negative”
 - 50. “a general positive or negative orientation toward the self”
 - 51. “a person's appraisal of his or her value”
 - 52. “a person's appraisal of his or her value”
 - 53. “a person's appraisal of his or her value”
 - 54. “a certain average tone of self-feeling”
 - 55. “an evaluation or attitude toward oneself... Individuals possess self-esteem not only in
explicit (i.e. conscious and reflective) mode but also in an implicit (i.e. unconscious and
impulsive) mode”
 - 56. “global feelings of self-worth”
 - 57. “a positive/negative concept of self”
 - 58. “an evaluative component of the self”
 - 59. “one's general sense of worthiness”
 - 60. “an aspect of the self-concept that captures people's global self-evaluations”
 - 61. “positive or negative attitude toward the self”
 - 62. “implicit self-esteem refers to the automatic evaluation people have about themselves,
assessed through implicit measures... explicit self-esteem refers to the conscious and
reasoned evaluation people have of the self”
 - 63. “a secure and stable sense of individual worth”
 - 64. “a stable sense of personal worth or worthiness”
 - 65. “a global evaluation of one's self-worth”
 - 66. “an individual's emotional relation towards the self”
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- 67. “the way that people feel about themselves”
 - 68. “the global component of self-concept”
 - 69. “positive or negative attitude toward the self”
 - 70. “relatively enduring favorable or unfavorable attitudes toward the self”
 - 71. “evaluation of our worthiness as individuals, a judgement that we are good, valuable people”
 - 72. “the extent to which an individual likes or values the self”
 - 73. “the overall evaluation of the self... reflecting how much individuals accept and like themselves”
 - 74. “overall evaluation of the self reflecting how much individuals accept and like themselves”
 - 75. “an individual's subjective evaluation of his or her worth as a person... importantly, self-esteem does not necessarily reflect the persons objective talents, competencies, or social status. Moreover, self-esteem has been described by the feelings of self-acceptance, self-respect, and the feeling that one is good enough, but high self-esteem does not necessarily imply that the individual believes he or she is superior to others”
 - 76. “a person's overall evaluation or appraisal of his or her worth”
 - 77. “implicit self-esteem refers to people s automatic, and presumably unconscious, affective associations about the self.... thus, implicit self-esteem stands in sharp contrast to explicit self-esteem”
 - 78. “individuals' evaluations of their personal worth and is a central component of the self”
 - 79. “explicit self-esteem is defined as consciously held attitudes toward the self, and implicit self-esteem reflects automatic associations between self-concept and positivity or negativity that are formed through experiential learning”
 - 80. “a one-dimensional construct, in which feeling good an feeling bad about the self occupy opposite ends of a single continuum”
 - 81. “explicit self-esteem (conscious, self-reported self-evaluations)... implicit self-esteem (self-evaluations that occur outside of conscious awareness)”
 - 82. “one's attitude or global affective orientation toward oneself”
 - 83. “a top-down tendency toward positive or negative affect in appraisal, experience, and behavior”
 - 84. “a sense of personal significance and value”
 - 85. “attitude toward the self”
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- 86. “from implicit SE, reflecting a more automatic and reflexive appraisal that may not be voluntarily accessible... explicit SE, reflecting an individual's conscious, deliberative, and assessable view of self”
 - 87. “whereas explicit self-esteem is defined as a conscious evaluation of the self.... implicit self-esteem is described as an automatic self-evaluation that often occurs outside of one's awareness”
 - 88. “the extent to which one holds favorable views of oneself”
 - 89. “one's overall sense of worthiness as a person”
 - 90. “the value that one places on the self”
 - 91. “the evaluation of one's own internal attributes and capabilities”
 - 92. “a personality dimension that captures how good we feel about ourselves”
 - 93. “a person's positive or negative attitude toward himself or herself”
 - 94. “a person's overall evaluation of their self-worth”
 - 95. “whereas explicit self-esteem refers to conscious self-evaluation, implicit self-esteem refers to automatic, overlearned, and non-conscious self-evaluations”
 - 96. “an individual's global evaluation of his or her overall worth as a person”
 - 97. “whether a person considers himself adequate, a person of worth--not whether he considers himself superior”
 - 98. “global evaluations of the self”
 - 99. “the individual's general attitude, or evaluation of the self and it reflects people's beliefs about how worthy they are as persons”
 - 100. “general evaluation and appraisal of one's worth”
 - 101. “evaluation and appraisal of or attitude toward the self”
 - 102. “the general evaluation of the self”
 - 103. “the degree to which an individual chronically evaluates him- or herself positively”
 - 104. “a favorable (or unfavorable) attitude toward oneself”
 - 105. “self-related affect”
 - 106. “how one feels about oneself”
 - 107. “the evaluative component of the self-concept”
 - 108. “a person's private self-evaluation of one's goodness or worth”
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109. “the perception of positive internal self-attributes”
 110. “an individual's general sense of his or her value or worth”
 111. “whereas explicit self-esteem is often defined as conscious feelings of self-loving, self-worth, and acceptance... implicit self-esteem is typically believed to consist of nonconscious, automatic, and overlearned self evaluations”
 112. “the aspect of self-knowledge that reflects how much individuals like themselves”
 113. “implicit self-esteem (i.e., self-evaluations that may be non-conscious, automatic, and overlearned).... explicit self-esteem (i.e. conscious feelings of self-loving, self-worth, and acceptance)”
 114. “relatively enduring favourable or unfavourable attitudes toward the self”
 115. “explicit self-esteem is often defined as conscious feelings of self-loving, self-worth, and acceptance.... In contrast, implicit self-esteem is believed to consist of nonconscious, automatic, and over learned self-evaluations”
 116. “the degree to which people judge themselves as worthy of value”
 117. “how favorably persons evaluate themselves”
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Table 2. Alphabetically Ordered Publications and Their Citation Frequency in 117 Definitions of Self-Esteem from Personality and Social Psychology

Publication	Frequency
Bandura (1986)	1
Baumeister (1993)	2
Baumeister (1998)	3
Baumeister, Campbell, Krueger, and Vohs (2003)	3
Blascovich and Tomaka (1991)	5
Bosson and Swann (2009)	1
Bracken (1996)	1
Branden (1994)	1
Brown (1993)	3
Brown (1998)	1
Brown and Marshall (2006)	1
Conner, Christensen, Wood, and Barrett (2003)	1
Coopersmith (1967)	1
DeHart, Pelham, and Tennen (2006)	1
Donnellan, Trzesniewski, and Robins (2011)	1
DuBois, Felner, Brand, Phillips, and Lease (1996)	1
Epstein (1973)	1
Epstein and Morling (1995)	1
Greenwald and Banaji (1995)	11
Greenwald, Bellezza, and Banaji (1988)	2
Greenwald and Farnham (2000)	1
Harter (1993)	1
Harter (2003)	1
Harter (2006)	1
Hetts, Sakuma, and Pelham (1999)	1
James (1890)	4
Kernis (2003)	4
Koole and DeHart (2007)	1
Koole, Dijsterhuis, and van Knippenberg (2001)	1
Leary and Baumeister (2000)	9

Leary and MacDonald (2003)	2
Leary, Tambor, Terdal, and Downs (1995)	1
MacDonald, Saltzman, and Leary (2003)	1
Makikangas and Kinnunen (2003)	2
Matthews, Deary, and Whiteman (2003)	1
O'Brien, Bartolleti, Leitzel, an O'Brien (2006)	1
Orth and Robins (2014)	1
Orth, Robins, and Widaman (2011)	1
Pelham et al., (2005)	1
Pelham and Hetts (1999)	2
Rosenberg (1965)	26
Rosenberg (1979)	3
Rosenberg (1990)	1
Rosenberg, Schooler, Schoenbach, and Rosenberg (1995)	2
Sedikides and Gregg (2003)	2
Sedikides and Gregg (2008)	3
Sedikides and Strube (1997)	1
Shavelson, Hubner, and Stanton (1976)	2
Smith and Mackie (2007)	1
Spalding and Hardin (1999)	2
Tafarodi and Milne (2002)	1
Tesser (2001)	1
Von Collani and Herzberg (2003)	1

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Table 3. *Frequency of 238 Words Used to Define Self-Esteem in 117 Definitions of Self-Esteem
(Ordered From Most Used to Least Used and Alphabetically When Tied)*

Word	Count
self	113
worth	35
evaluation	33
esteem	30
person	24
one	23
evaluations	19
toward	17
value	17
global	16
individual	16
oneself	16
conscious	15
implicit	15
people	15
attitude	14
explicit	14
positive	14
negative	13
feelings	12
overall	12
appraisal	11
automatic	10
general	10
sense	10
individuals	7
refers	7
concept	5
evaluative	5
feeling	5
good	5
personal	5
whether	5
worthiness	5
acceptance	4
affective	4
attributes	4
awareness	4

Word	Count
component	4
considers	4
contrast	4
defined	4
degree	4
much	4
overlearned	4
reflecting	4
reflects	4
associations	3
attitudes	3
enduring	3
evaluate	3
extent	3
favorable	3
feel	3
judgement	3
like	3
liking	3
may	3
nonconscious	3
often	3
orientation	3
outside	3
perceptions	3
persons	3
subjective	3
superior	3
valuable	3
view	3
whereas	3
worthy	3
accept	2
adequate	2
affect	2
aspect	2
beliefs	2
believed	2
captures	2
competence	2
consist	2

Word	Count
cultural	2
described	2
feels	2
internal	2
judge	2
likes	2
meaningful	2
member	2
mode	2
necessarily	2
non	2
others	2
perception	2
place	2
positively	2
reasoned	2
relatively	2
respect	2
se	2
social	2
stable	2
tendency	2
thoughts	2
towards	2
typical	2
unconscious	2
unfavorable	2
values	2
views	2
abilities	1
accessible	1
adequacy	1
aggregated	1
also	1
anywhere	1
approves	1
aspects	1
assessable	1
assessed	1
association	1
average	1

Word	Count
bad	1
behavior	1
belief	1
believes	1
broadest	1
capabilities	1
capable	1
central	1
certain	1
chronically	1
commonly	1
competencies	1
conceptualized	1
concerning	1
confident	1
consciously	1
considered	1
construct	1
continuum	1
controlled	1
deliberately	1
deliberative	1
differ	1
differences	1
dimension	1
dimensional	1
domain	1
efficient	1
emotional	1
ends	1
enough	1
evaluates	1
exist	1
experience	1
experiences	1
experiential	1
favorably	1
favourable	1
form	1
formed	1
generalized	1

Word	Count
goodness	1
held	1
hierarchical	1
high	1
highly	1
holds	1
imply	1
importantly	1
impulsive	1
indicates	1
individuals'	1
intimate	1
intrinsically	1
knowledge	1
largely	1
learned	1
learning	1
measures	1
merit	1
moreover	1
negativity	1
objective	1
occupy	1
occur	1
occurs	1
opposite	1
perceive	1
perceived	1
personality	1
places	1
positivity	1
possess	1
presumably	1
private	1
prizes	1
range	1
reality	1
referred	1
referring	1
reflect	1
reflective	1

Word	Count
reflexive	1
related	1
relation	1
reported	1
representations	1
represents	1
secure	1
set	1
sharp	1
significance	1
significant	1
single	1
specific	1
stands	1
status	1
sum	1
summary	1
talent	1
talents	1
term	1
thus	1
tone	1
top	1
traditionally	1
types	1
typically	1
unfavourable	1
use	1
valued	1
voluntarily	1
way	1
well	1
whole	1
within	1
worldview	1

1.10 Appendix E: Chronologically Ordered Definitions of Self-Esteem (1890 – Present)

1. “Farther than this we cannot go clearly in our analysis of the Self’s constituents. So let us proceed to the emotions of the self that they arouse.

2. SELF-FEELING

These are primarily self-complacency and self-satisfaction. Of what is called self-love, I will treat a little farther on. Language has synonyms for both primary feelings. Thus pride, conceit, vanity, self-esteem, arrogance, vainglory, on the one hand; and on the other modesty, humility, confusion, diffidence, shame, mortification, contrition, the sense of obloquy and personal despair. These two opposite classes of affection seem to be direct and elementary endowments of our nature” (James, 1890, p. 305-306)

2. “Dominance-feeling (or self-esteem), is an evaluation of the self; operationally defined, it is what the subject says about herself in an intensive interview after a good rapport has been established” (Maslow, 1942, p. 260)

3. “The esteem needs.—All people in our society (with a few pathological exceptions) have a need or desire for a stable, firmly based, (usually) high evaluation of themselves, for self-respect, or self-esteem, and for the esteem of others... Satisfaction of the self-esteem need leads to feelings of self-confidence, worth, strength, capability and adequacy of being useful and necessary in the world. But thwarting of these needs produces feelings of inferiority, of weakness and of helplessness” (Maslow, 1943, p. 381-382)

4. “Rating behavior on this inventory appears to be essentially a reflection of the general level of self-esteem, the degree to which the individual accepts and values himself” (Brownfain, 1952, p. 598)

5. “Self-esteem—positive cathexis for the self” (Jourard, 1957, p. 380)

6. “Two major impressions regarding the definition of self-esteem emerge from the present study. The first is that a clarification and definition of what is meant by self-esteem is essential, and the second, intimately related to the first, is that self-esteem is an ephemeral subject difficult to deal with empirically. Thus when self-esteem is defined solely by subjective evaluation, defensive processes render measures so based ambiguous, whereas a definition solely from the perspective of the observer overlooks a vital component. When both self- and observer evaluations are used, the result is a series of types based upon level of evaluation and extent of agreement between evaluations. Which of all the foregoing is self-esteem? In the final analysis it must be admitted that

they all are. There is thus the self-esteem the individual purports to have, the self-esteem which he subjectively holds, the self-esteem he displays (or attempts to display), and the self-esteem behavior that is observed and reported by others" (Coopersmith, 1959, p. 93)

7. 'Self-esteem, then, may be defined as the degree of correspondence between an individual's ideal and actual concepts of himself' (Cohen, 1959, p. 103)
8. "Self-esteem is regarded as a general sense of self-assurance or of adequacy, depending on a variety of internal and external stimuli (including the approval of others, achievements, and reassuring self verbalizations), all of which are designated here as sources of self-esteem" (Dittes, 1959, p. 348)
9. 'Self-esteem was defined in terms of the value an individual places upon himself' (Hovland & Janis, 1959, p. 230).
10. "Self-esteem" is here defined as the discrepancy between the ideal model one sets for himself and his actual self-conception (Cohen, 1959, p. 103)" (Zimbardo & Formica, 1963)
11. "Beyond this, what is the relationship between such parental interest or indifference and the child's feeling of self-worth, his level of self-esteem" (Rosenberg, 1963, p. 35)
12. "Self-esteem, as noted, is a positive or negative attitude toward a particular object, namely, the self" (Rosenberg, 1965, p. 18)
13. "High self-esteem, as reflected in our scale items, expresses the feeling that one is 'good enough'. The individual simply feels that he is a person of worth; he respects himself for what he is, but he does not stand in awe of himself nor does he expect others to stand in awe of him. He does not necessarily consider himself superior to others" (p. 30). In contrast, "low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, self-contempt. The individual lacks respect for the self he observes. " (Rosenberg, 1965, p. 30-31).
14. "By self-esteem we refer to the evaluation which the individual makes and customarily maintains with regard to himself: it expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful, and worthy. In short, self-esteem is a *personal* judgement of worthiness that is expressed in the attitudes that an individual holds toward himself. It is a subjective experience which the individual conveys to others by verbal reports and other overt expressive behaviour." (Coopersmith, 1967, p. 4-5)
15. "Self-esteem is defined as the individual's perception of his worth relative to that of significant others" (Mossman & Ziller, 1968, p. 364)

16. "Like any other attitudinal structure, the self-concept includes not only elements of sheer perceptual recognition but also evaluative components. Beyond the fact that a person may misperceive and distort his conception of himself, he may either like or dislike what he does recognize about himself. This evaluative aspect of self-perception which might be thought of as the degree to which one likes himself, is referred to as self-regard or self-esteem" (McDavid & Harari, 1968, p. 222)
17. "Self-esteem has two interrelated aspects: it entails a sense of personal efficacy and a sense of personal worth. It is the integrated sum of self-confidence and self-respect. It is the conviction that one is competent to live and worthy of living" (Branden, 1969, p. 110).
18. "Self-esteem is usually defined as the individual's perception of his worth" (Ziller, Hagey, & Smith, 1969, p. 84).
19. "Self-esteem was defined in terms of a self-ideal discrepancy on a Q-sort task" (Hendrick & Page, 1970, p. 580).
20. "Social scientists have long viewed self-esteem, the evaluative component of the self, as a central psychological concept. What we think of ourselves and how we feel about ourselves affects our behavior" (Gecas, 1972, p. 332)
21. "On this test self-esteem is defined as the degree to which the individual has confidence in his ability, real or fancied, to be successful" (Youngleson, 1973, p. 281)
22. "Our own approach has been heavily influenced by the work of Rosenberg and also that of Coopersmith. Like these authors, (a) we use the term self-esteem to refer to an individual's self-evaluation or judgment of his/her own worth, (b) we treat it as a global dimension rather than as a number of more specific ones, and (c) we view it as a relatively enduring characteristic rather than something which shifts abruptly from one situation to another... Given this conceptualization of self-esteem as an individual's judgment of his/her own worth" (Bachman & O'Malley, 1976, p. 366)
23. "...self-esteem, the evaluative component of the self-concept..." (Gray-Little & Appelbaum, 1979, p. 1221)
24. "Self-esteem is defined here as an individual's global positive or negative attitude toward him- or herself. In this usage the individual with high self-esteem considers her/himself to be a person of worth, though not necessarily superior to others. Low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, or self-contempt" (Simmons, Byth, Van Cleave, & Bush, 1979, p. 951).
25. "Most psychologists would probably agree on a general definition of self-esteem as a personal judgment of one's own worth." (Fleming & Watts, 1980, p. 921)

26. "Self-esteem is one of the most, important and heuristic concepts for the study of personality. Despite much research, however, the ways in which self-esteem influences behavior are not fully understood. Two components of self-esteem have been delineated (cf. by Dipboye, 1977; Leonard & Weitz, 1971). One, global or chronic self-esteem, involves the relatively enduring perception of overall worth or competence that an individual has of his or her self. The second, situational self-esteem, involves an individual's perception of worth or competence within the context of a specific task or setting." (McFarlin & Blascovich, 1981, p. 521)
27. "Let us see how the social looking glass can shape a particular aspect of self-concept, namely, self-esteem. Self-esteem refers to an individual's perceptions of his or her own adequacy, competence, or goodness as a person" (Gergen & Gergen, 1981)
28. "A commonly accepted definition of self-esteem is Rosenberg's (1965, 1979) conception of a global self-esteem: "the evaluation which the individual makes and customarily maintains with regard to himself; it expresses an attitude of approval or disapproval" (1965, p. 5). To best assess these attitudes of self-regard he developed the self-report Rosenberg Self-Esteem Scale, one of the most frequently used measures of self-esteem (Wells & Marwell, 1976). Similarly, Coopersmith (1967) defines self-esteem as a "personal judgment of worthiness that is expressed in the attitude the individual holds toward himself (p. 5)." (Savin-Williams & Jaquish, 1981, p. 325)
29. "Within the domain of self-concept, we focused specifically on self-esteem, often called "global self-esteem," which has been viewed as the degree to which persons in general feel positive about themselves (e.g., Gergen, 1971; Rosenberg, 1979)" (Marayuma, Rubin, & Kingsbury, 1981, p. 963)
30. "Self-esteem may be defined as the evaluation of the various attributes that an individual considers to be indexed by the self-conception" (Klugel, Clements, & Powell, 1983, p. 202)
31. "In addition to the methodological problems described above, problems basic to the conceptualization of self-esteem and its measurement have slowed the progress of self-esteem research. Until recently, most self-esteem researchers have considered self-esteem to be a unidimensional, global self-attitude, and they have attempted to find a correspondence between measures of general feelings of self-worth and measures specific to a content domain (e.g., reactions to achievement success and failure). Several theorists have criticized this global approach to the measurement of self-esteem (Gecas, 1982, Marsh & Shavelson, 1983, Rosenberg, 1979). They argue that self-esteem is multi-faceted and that successful prediction from self-esteem measures is better attained when self-esteem measures are specific to the domain of interest. A number of researchers have attempted to identify specific factors of self-esteem. Although the number and type of factors have varied across studies, most investigations have yielded at least one factor associated with the achievement domain (i.e., feelings of competence) and one associated with the communal domain (i.e., feelings of likeability/sociability, Flaherty & Dusek, 1980,

Fleming & Watts, 1980, Franks & Maroua, 1976, Harter, 1982, Marsh & Shavelson, 1983, Marsh, Smith, Barnes, & Butler, 1983, Piers & Harris, 1964, Stake & Orlofsky, 1981)" (Stake, 1985 p. 531).

32. "Self-esteem is viewed as a fluctuating self-attitude that most often resembles a baseline or standard self-evaluation, but that also encounters situational fluctuations from this baseline as a function of changing roles, expectations, performances, responses from others, and other situational characteristics. In this manner, individuals may have generally favorable attitudes toward themselves, possess self-respect, and consider themselves persons of worth, but on certain days and in particular situations they may feel better or worse about themselves than is typically the case" (Demo, 1985, p. 1491)

33. "Self-esteem means a global evaluation of the self" (Baumeister & Tice, 1985, p. 450).

34. "Here, a new method of conceptualizing and measuring self-esteem was used. Self-evaluation was viewed as the active, ongoing process of appraisal, and self-esteem was viewed as the evaluative feelings and attitudes people hold of themselves." (Wells, 1988, p. 662)

35. "We suggest that stability of self-esteem can be conceptualized in terms of the magnitude of short-term fluctuations in one's global self-evaluation, and that level of self-esteem can be conceptualized as a baseline self-view from which such fluctuations emerge (for similar views, see Demo, 1985; Rosenberg, 1986; Savin-Williams & Demo, 1983)." (Kernis, Granneman, & Barclay, 1989, p. 1013)

36. "An intuitive matter—based on our own personal experiences and our observation of others—we know what it means to experience high self-esteem. It means, fundamentally, that we appreciate ourselves and our inherent worth. It also means that we have a positive attitude to our own qualities; that we evaluate them highly; that we are imbued with a sense of our own ability, competence, and power to do what we want; that we compare ourselves favourably with others; and that we can organise our daily round of activities and performances in keeping with these feelings of self-worth. We also know what it means to experience diminished self-esteem; it means the opposite of all these positive elements just described, and it results in self-deprecation, helplessness, powerlessness, and depression" (Smelser, 1989, p. 6)

37. "The term self-esteem denotes an intrapsychic structure: an attitude about the self. Numerous scales have been designed to measure this cognition (e.g., Coopersmith, 1967; Fitts, 1964; Fleming & Courtney, 1984; Helmreich & Stapp, 1974; Janis & Field, 1959; Rosenberg, 1965; see Wylie, 1974). (Baumeister, Tice, & Hutton, 1989, p. 548).

38. "We are particularly concerned with the effects of social stigma on global feelings of self-worth, or a generalized feeling of self-acceptance, goodness, worthiness, and self-respect (cf. Rosenberg, 1965, 1979; Wylie, 1979). Global self-esteem can be distinguished from a number of

related concepts, including dimension-specific self-evaluation, self-confidence, and racial or collective self-esteem. Although evaluations of the self on dimensions such as academic ability, social skills, physical appearance, and so on tend to be correlated with global feelings of self-worth, they are neither conceptually nor empirically identical (cf. Marsh, 1986; Rosenberg, 1979)” (Crocker & Major, 1989, p. 609)

39. “Appreciating my own worth and importance and having the character to be accountable for myself and to act responsibly toward others” (California State Department of Education, 1990, p. 18)

40. “Self-esteem is often considered as self-evaluation, or an evaluation of one’s self-worth or self-acceptance (Rosenberg, 1986; Tashakkori & Thompson, 1989). Just as attitudes can be considered as evaluations of objects and persons, self-evaluation can be considered as a self attitude, or as a rating of oneself on a bipolar positive-negative scale. Further, the self can be treated as a central attitude object, with the self-attitude derived from beliefs about the degree to which, or the probability that, the self possesses positively and negatively valued characteristics.” (Tashakkori, Thompson, Wadsworth & Valente, 1990, p. 885).

41. “The self is explicitly viewed here as having both an evaluative component and a knowledge component. I conceptualize the evaluative component as trait self-esteem, a global self-reflexive attitude addressing how one feels about the self when it is viewed as an object of evaluation. This conceptualization does not deny the fact that feelings of self-worth can vary over time and roles and that different roles are differentially important in affecting self-regard (eg., Burke, 1980; Campbell & Tesser, 1985; Wells & Marwell, 1976). However, it is important to distinguish (a) outer self-esteem (Rosenberg, 1979) or self-evaluation (Tesser & Campbell, 1983)—temporary feelings of self-regard that vary over situations, roles, feedback, events, and the reflected appraisals of others (Cooley, 1912; Coopersmith, 1967; Rosenberg, 1979; Tesser & Campbell, 1983)—from (b) inner or self-esteem—a global personal judgment of worthiness that appears to form relatively early in the course of development, remains fairly constant over time, and is resistant to change (Epstein, 1983)”. (Campbell, 1990, p. 539)

42. “The popular notion of self-esteem is straightforward. According to the dictionary definition, “To esteem a thing is to prize it, to set a high mental valuation upon it; when applied to persons, esteem carries also the warmer interest of approval, cordiality and affection (Williams, 1979, p. 309). In common parlance, then, self-esteem is the extent to which one prizes, values, approves, or likes oneself... in the social sciences, self-esteem is a hypothetical construct... it is the overall affective evaluation of one’s own worth, value, or importance” (Blascovich & Tomaka, 1991, p. 115).

43. “Self-esteem is the feeling that one is an object of primary value in a meaningful universe” (Greenberg et al. 1992, p. 913)

44. "Self-esteem—a person's global orientation toward the self—plays a critical role in psychological life" (Brown & Mankowski, 1993, p. 421)
45. "The measurement of self-esteem is inextricably linked to its conceptualization. Not uniquely, we view self-esteem as the extent to which one perceives oneself as relatively close to being the person one wants to be and/or as relatively distant from being the kind of person one does not want to be, with respect to person-qualities one positively and negatively values" (Block & Robins, 1993, p. 911)
46. "People do differ in their relatively stable tendencies to feel good or bad about themselves (i.e., level of self-esteem)." (Kernis, Cornell, Sun, Berry, & Harlow, 1993, p. 1190).
47. "The evaluative component of the self-schema is conceptualized here as self-esteem; a self-reflexive attitude that is the product of viewing the self as an object of evaluation" (Campbell & Lavalee, 1993, p. 4)
48. "Self-esteem is best viewed as a multiple and differentiated construct, not a unitary and global dimension (Griffin, Chassin & Young, 1981)... Self-esteem refers to the image people hold of themselves after conducting a broad appraisal of their personal assets and liabilities (Chrzanowski, 1981)" (Overholser, 1993, p. 640)
49. "Self-esteem or self-worth, within our framework, has been conceptualised as the level of global regard that one has for the self as a person, a definition that has much in common with Rosenberg's conception of self-esteem" (Harter, 1993, p. 88)
50. "Self-esteem (SE) is defined as a global, relatively enduring evaluation of the self and it is typically measured by the degree to which the person endorses various evaluative statements about the self." (Lobel & Teiber, 1994, p. 315)
51. "Self-esteem represents a sense of self-worth, which carries the implication that one will be accepted rather than rejected by others, and that one is not a failure in one's life" (Scheier, Carver, & Bridges, 1994, p. 1064)
52. "Before offering an alternative explanation of the self-esteem motive that we believe parsimoniously explains the properties of the self-esteem system, we must clarify precisely what we mean by the term self-esteem. Self-esteem has often been described as an attitude, specifically an attitude toward oneself (Coopersmith, 1967; Rosenberg, 1965). Like all attitudes, self-esteem has cognitive and affective components. A distinction can be drawn between the self-concept (beliefs about the self) and self-esteem (evaluation of oneself in light of those beliefs). Although self-esteem is often based on self-relevant cognitions, not all cognitions about the self, even evaluatively laden ones, are relevant to a person's self-esteem. Each person has many self-beliefs that have no affective quality. People may believe firmly that they are very good or very bad at

certain mundane tasks, for example, yet experience no corresponding increase or decrease in their self-esteem. Self-esteem includes an essential affective quality that "cold" cognitions about the self do not. Brown (1993) persuasively argued that self-esteem is fundamentally based in affective processes, specifically positive and negative feelings about oneself. People do not simply think favorable or unfavorable self-relevant thoughts; they feel good or bad about themselves." (Leary, Tambor, Terdal, & Downs, 1995, p. 519).

53. "Self-esteem can generally be defined as "a personal judgement of worthiness that is expressed in the attitudes the individual holds toward himself" (Coopersmith, 1967). There are different opinions about the constitution of this perceived worthiness, but one thing is common: phenomenologically self-esteem is, apart from its determinants, and conceptual contents, considered as a unit. This paper presents an approach to quite a different view. The assumption of two types of self-esteem, having different origins and generating different self-attitudes, has given rise to the constructs "basic self-esteem" and "earning self-esteem by competence and others' approval'" (Johnson & Forsman, 1995, p. 417)

54. "Life satisfaction and self-esteem are variables that both represent global evaluations: in the former case an evaluation of a person's entire life and in the latter case a judgment of oneself." (Diener & Diener, 1995, p. 654)

55. "Implicit self-esteem is the introspectively unidentified (or inaccurately identified) effect of the self-attitude on evaluation of self-associated and self-dissociated objects." (Greenwald & Banaji, 1995, p. 11)

56. "Numerous theorists have attempted to define self-esteem. These attempts have ranged from an emphasis on primitive libidinal impulses (Kernberg, 1975) to feelings of existential security in a meaningful universe (Solomon, Greenberg, & Pyszczynski, 1991). We take a less exotic approach and define self-esteem in terms of feelings of affection for oneself, no different, in kind, than the feelings of affection one has for others." (Brown & Dutton, 1995, p. 713)

57. "Self-esteem (SE), as an element of the self-concept, has been defined in a variety of ways (Rosenberg, 1979; Wylie, 1974). Whereas some theorists view SE as an individual's global evaluation (e.g., Brown & Mankowski, 1993), others have suggested that SE is determined by the combination of one's evaluations of self-worth, based on perceived ability to achieve desired goals, and the feelings resulting from these evaluations (Burke, 1983)." (Smith & Petty, 1995, p. 1093)

58. "What is self-esteem? Is a person's global sense of self-worth simply the sum total of his or her specific self-views in many different areas?" (Pelham, 1995, p. 1141)

59. "This point applies equally to self-esteem, which can be viewed as an attitude toward an object, even though the holder of the attitude and the object toward which the attitude is held-the self-are the same (Rosenberg 1979)" (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995, p. 142)

61. "Self-esteem has been postulated to be a fundamental human motive (Maslow, 1970; Swann, 1987). Self-esteem has been conceptualized in several ways. Block and Robins (1993) have viewed self-esteem as a global entity: "Not uniquely, we view self-esteem as the extent to which one perceives oneself as relatively close to being the person one wants to be and/or as relatively distant from being the kind of person one does not want to be, with respect to person-qualities one positively and negatively values" (p. 911). Self concept theory has stressed that self-esteem is an attitude about oneself as a whole (global self-esteem) as well as one's functioning in specific areas of concern to oneself (specific self-esteem, cf. Harter, 1985; Marsh, 1990; Rosenberg, Schooler, Schoenbach & Rosenberg, 1995). Rosenberg et al. (1995) demonstrated that specific self-esteem is a better predictor of observed behavior than global self-esteem." (Frankel & Myatt, 1996, p. 401)
62. "Although some researchers prefer narrow and precise concepts of self-esteem, we shall use the term in a broad and inclusive sense. By self-esteem we mean a favourable global evaluation of oneself. The term self-esteem has acquired highly positive connotations, but it has ample synonyms the connotations of which are more mixed, including pride, egotism, arrogance, honor, conceitedness, narcissism, and sense of superiority, which share the fundamental meaning of favourable self-evaluation... Of particular importance for the present review is that our deliberately broad usage of the term self-esteem is not limited to the direct results of validated trait measures of self-esteem (although we pay close attention to such measures when available). To reduce confusion, we shall favor the term egotism to refer both to favorable appraisals of self and to the motivated preference for such favorable appraisals, regardless of whether they are valid or inflated. Any assumption or belief that one is a superior being, or any broadly favorable assessment of self (especially in comparison with other people), is relevant. Thus, in brief, the purpose of this article is to understand how self-appraisals are related to interpersonal violence (p. 5)... To be sure, definitions of self-esteem may vary. We have used the term in a broad and inclusive sense to encompass all favorable self-appraisals, including confidence and self-respect as arrogance and narcissism" (Baumeister, Smart, & Boden, 1996, p. 27)
63. "Self-esteem is defined as one's belief regarding how well one is living up to the standards of value prescribed by the worldview" (Harmon-Jones, Simon, Greenberg, Pyszczynski, Solomon, & McGregor, 1997, p. 24)
64. "The term self-esteem has been used in multiple ways. Global self-esteem refers to the way people generally feel about themselves; attribute-specific self-esteem refers to the way people evaluate their specific attributes and abilities (e.g., people who believe they are good in math are said to have HSE in that domain of life)" (Dutton & Brown, 1997, p. 146)
65. "Most recently, Tafarodi and Swann (1995) have labeled the two dimensions self-competence and selfliking, suggesting that they are best considered two interdependent but distinct attitudinal dimensions making up global self-esteem. Self-competence refers to the generalized sense of one's

own efficacy or power; self-loving, to the generalized sense of one's own worth as a social object, according to internalized values. Self-competence is the evaluative experience of overall agency, the inherently positive awareness of oneself as effective that results from self-consciously imposing one's will on the environment. Self-loving, in contrast, is the valuation of personhood: one's worth as a social entity with reference to internalized standards of good and bad. Self-competence is a relatively autonomous valuation, in that it is determined by the chronic correspondence of goals or intentions with the outcomes of actions aimed at realizing those goals or intentions. Self-loving, in contrast, requires reference to socially transmitted values: It is dependent on normative criteria for worth, whereas self competence need not be" (Tafarodi, 1997, p.

66. "Self-esteem may be defined as the positivity of the person's evaluation of self. Thus, self-esteem is the evaluative aspect of reflexive consciousness: It makes a value judgment based on self-knowledge" (Baumeister, 1998, p
67. "Self-esteem refers to personal and global feelings of self-worth, self-regard, or self-acceptance (Rosenberg, 1979). It is a central aspect of psychological wellbeing and colors the affective tone of one's daily experience" (Crocker, 1999, p. 90)
68. "Implicit self-esteem is defined as an automatic, overlearned, and nonconscious evaluation of the self that guides spontaneous reactions to self-relevant stimuli (Greenwald & Banaji, 1995; Pelham & Hetts, 1999). Although the ontological bases of implicit self-esteem are not yet fully understood, Epstein's (1994) cognitive-experiential self-theory provides a useful framework for understanding the operation of implicit beliefs about the self. Epstein assumed that human thought is characterized by two modes of information processing: One is rational, deliberative, and conscious, whereas the other is automatic, affective, and nonconscious. These two modes of information processing correspond to two broad "theories" about the world—one cognitive and the other experiential—both of which contain schemas about the self. Schemas in the experiential system are "generalizations about what the self and the world are like," based on "synthesis of emotionally significant experiences" (Teglas & Epstein, 1998, p. 543). Thus, the experiential belief "I am a lovable (or unlovable) person" reflects an automatic, affective evaluation of the self that exists outside of awareness—in other words, implicit self-esteem" (Bosson, Swann, & Pennebaker, 2000, p. 631)
69. "This research developed from the assumption that distinct implicit and explicit self-esteem constructs require different measurement strategies. In particular, the research pursued implications of Greenwald and Banaji's (1995) definition of implicit self-esteem as "the introspectively unidentified (or inaccurately identified) effect of the self-attitude on evaluation of self-associated and self-dissociated objects" (p. 11)" (Greenwald & Farnham, 2000, p. 1022)
70. "As we use the term, self-esteem refers to a person's appraisal of his or

her value. Global self-esteem denotes a global value judgment about the self, whereas domain-specific self-esteem involves appraisals of one's value in a particular area (such as on social, intellectual, or athletic dimensions). Self-esteem is, by definition, a subjective judgment and, thus, may or may not directly reflect one's objective talents or accomplishments. Indeed, self-esteem is related more strongly to perceptions of others' evaluations of oneself than to seemingly objective indicators of one's ability or goodness, for reasons we explain later.

Importantly, self-esteem is an affectively laden self-evaluation. Self-evaluations are assessments of one's behavior or attributes along evaluative dimensions (e.g., good-bad, positive-negative, valuable-worthless). Some self-evaluations are dispassionate (i.e., they have no emotional concomitants), whereas others are affectively laden. For example, people not only evaluate themselves as having behaved well or poorly, but they often feel good or bad about how they have acted. They not only know that they possess certain desirable or undesirable characteristics, but they also experience accompanying positive or negative emotions when they think about them. When people succeed, they not only know they performed well and evaluate themselves positively, but they feel good about themselves. In contrast, when they fail, people not only comprehend their deficiencies at a cognitive and coldly evaluative level, but experience an affectively based decrease in self-esteem. Many previous writers have equated self-evaluation with self-esteem, which ignores the essential difference between merely evaluating oneself positively or negatively and evaluating oneself in a way that has potent affective concomitants. At its core, self-esteem refers to how we feel about ourselves (Scheff, Retzinger, & Ryan, 1989), and Brown (1993) persuasively argued that self-esteem is inherently rooted in affective processes. Rather than being based solely on cognitive self-evaluations, self-esteem involves affective processes that may or may not be related to specific, conscious self-evaluations." (Leary & Baumeister, 2000, p. 2-3)

71. "Self-esteem is most commonly used to refer to the way people characteristically feel about themselves. Many psychologists call this form of self-esteem, *global* self-esteem or *trait* self-esteem, as it is relatively enduring, both across time and situations. In the remainder of this paper, we will use the term "self-esteem" (without any qualifiers) when referring to this variable. Attempts to define self-esteem have ranged from an emphasis on primitive libidinal impulses (Kernberg, 1975), to the perception that one is a valuable member of a meaningful universe (Solomon, Greenberg, & Pyszczynski, 1991). We take a decidedly less exotic approach and define self-esteem in terms of feelings of affection for oneself (Brown, 1993, 1998; Brown & Dutton, 1995). High self-esteem is characterised by a general fondness or love for oneself; low self-esteem is characterised by mildly positive or ambivalent feelings toward oneself. In extreme cases, low self-esteem people hate themselves, but this kind of self-loathing occurs in clinical populations, not in normal populations" (Brown, Dutton, & Cook, 2001, p. 616)

72. "The degree to which one values oneself. Note that although the word esteem carries the connotation of high worth or value, the combined form, self-esteem, refers to the full dimension

and the degree of self-esteem (high or low) is usually specified" (Reber & Reber, 2001: Penguin Dictionary of Psychology 3rd Edition)

73. "...they considered self-esteem to be the most fundamental manifestation of core self-evaluations as it represents the overall value that one places on oneself as a person" (Judge & Bono, 2001, p. 80)

74. "Self-esteem has been defined as a global affective orientation toward the self" (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001, p. 465).

75. "Many researchers have highlighted the role that self-esteem— one's global evaluation of or liking for the self—plays in people's responses to negative experiences" (Heimpel, Wood, Marshall, & Brown, 2002, p. 128)

76. "The present review focuses on measures of global self-esteem, defined as "the level of global regard that one has for the self as a person" (Harter, 1993, p. 88). Global self-esteem is conceived of as an evaluative judgment, ranging from negative to positive, that is applied at the broadest level of self-knowledge (Brodbar, 1980)." (Kling, Hyde, Showers, & Buswell, 2002)

77. "There is general agreement that self-esteem involves the favorability of an individual's self-evaluation, but, beyond that, research approaches have been many and varied. Self-esteem has been studied as a state or as a trait (James, 1890; Heatherton & Polivy, 1991; Kernis, 1993), as primarily cognitive (i.e., as centering around differences in self-knowledge; Markus, 1977) or affective (i.e., with an emphasis on the extent to which the individual likes himself or herself; Brown, 1993), and as a series of domain specific evaluations (e.g., academic self-esteem, social self esteem; Marsh, 1986) versus a global feeling of self-worth (Rosenberg, 1965). The focus of the present investigations is on global self-esteem, which has tended to be treated as a free-standing construct, in relative isolation from other important dimensions of individual differences" (Watson, Suls, & Haig, 2002, p. 185)

78. "Despite this overlap, the distinction is worth maintaining for the purpose of discussing the duality of self-esteem. Namely, we assign two distinct types of value to ourselves just as we do to others. Consistent with this, the competence and social worth aspects of self-esteem have been distinguished by a range of theorists over the past half-century (Bandura, 1986; Brissett, 1972; Brown, 1998; Diggory, 1966; Franks & Marolla, 1976; Gecas, 1971; Silverberg, 1952; White, 1963). The most explicit treatment was offered by Tafarodi and Swann (1995, 2001), who labeled the two aspects self-competence (SC) and self-loving (SL)... SC is defined as the evaluative experience of oneself as a causal agent, an intentional being that can bring about desired outcomes. As a generalized trait, it refers to the overall positive or negative conception of oneself as a source of power and efficacy... The moral-aesthetic significance of one's characteristics and actions reflects the social side of value. This is represented in self-esteem as SL, defined as the evaluative

experience of oneself as a social object, a good or bad person. As a generalized trait, it reduces to one's chronic, overall sense of social worth. Social worth refers to our value as persons, where value is defined within the particular moral framework of the society in which we live." (Tafarodi, Marshall & Milne, 2003, p. 29-30)

79. "Self-theorists have recently begun exploring the possibility that self-evaluations can affect behavior in a nondeclarative, automatic manner (e.g., Greenwald & Banaji, 1995). In contrast to explicit SE—the conscious and deliberately reasoned evaluations of self that are elicited by self-report scales—implicit SE is generally defined as highly efficient evaluations of self that occur unintentionally and outside of awareness." (Jordan, Spencer, Zanna, Hosino-Browne, & Correll, 2003, p. 970)

80. "Self-esteem is literally defined by how much value people place on themselves. It is the evaluative component of self-knowledge. High self-esteem refers to a highly favorable global evaluation of the self. Low self-esteem, by definition, refers to an unfavorable definition of the self. (Whether this signifies an absolutely unfavorable or relatively unfavorable evaluation is a problematic distinction, which we discuss later in connection with the distribution of self-esteem scores.) Self-esteem does not carry any definitional requirement of accuracy whatsoever. Thus, high self-esteem may refer to an accurate, justified, balanced appreciation of one's worth as a person and one's successes and competencies, but it can also refer to an inflated, arrogant, grandiose, unwarranted sense of conceited superiority over others. By the same token, low self-esteem can be either an accurate, well-founded understanding of one's shortcomings as a person or a distorted, even pathological sense of insecurity and inferiority. Self-esteem is thus perception rather than reality. It refers to a person's belief about whether he or she is intelligent and attractive, for example, and it does not necessarily say anything about whether the person actually is intelligent and attractive.'(Baumeister, Campbell, Krueger, & Vohs, 2003, p. 2)

81. "Self-esteem is the evaluation we make of ourselves. That is, we are concerned not only with what we are like but also how we value these qualities" (Taylor, Peplau, & Sears, 2006, p. 97).

82. "Self-esteem is usually broadly defined as a person's overall evaluation of, or attitude toward, her- or himself (James, 1980; Leary & McDonald, 2003; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004)" (McDonald, 2007, p. 233)

83. "Self-esteem: A person's overall self-evaluation or sense of self-worth" (Myers, 2008, p. 51)

84. "The degree to which one's attitude toward, opinions about, and evaluation of one's own body, history, mental processes, and behaviour are positive" (The Cambridge Dictionary of Psychology, 2009).

85. "Self-esteem is considered to be one of the most important pillars of healthy personality development (Harter, 1999). Harter (1999, p. 5) distinguishes between self-evaluations that

represent global characteristics of the individual (e.g., “I am a worthwhile person”) and those that reflect the individual’s sense of adequacy across particular domains, such as cognitive competence (e.g., “I am smart”) and athletic competence (e.g., “I am good in sports”). According to Harter (1999), global self-evaluations have been referred to as “self-esteem,” “self-worth,” or “general self-concept.” In each case, the focus is on the overall evaluation of one’s worth or value as a person (Harter, 1999)... In this meta-analysis we focus on global self-evaluations (referring to how worthwhile and confident an individual feels him- or herself to be) as well as on aggregated domain-specific self-evaluations, and we use the term self-esteem for both types of self-evaluations” (Juffer & van IJzendoorn, 2007, p. 1068).

86. “The distinction between global and specific self-views offers an alternative means of conceptualizing self-esteem. Instead of conceptualizing self-esteem as primarily affective (i.e., how people feel about the self) and self-concepts as primarily cognitive (i.e., what people believe about the self), as have some theorists (Baumeister, Campbell, Krueger, & Vohs, 2003), it is possible to think of self-esteem as a global belief about the self and self-concepts as relatively specific beliefs about the self (Marsh & Craven, 2006; Shavelson, Hubner, & Stanton, 1976; Swann et al., 2007)... self-esteem as a global representation of the self” (Swann & Bosson, 2010, p. 594)

87. “The present article is not intended as a critical survey of present-day conceptions of self-esteem; only a book-length treatment could hope to address them all. But several of the tendencies and oppositions in the field can be typified in two definitions. First, a practicing clinician’s definition: Branden states that “self-esteem is the disposition to experience oneself as being competent to cope with the basic challenges of life and of being worthy of happiness” (1994, p. 168). Second, from an academic social psychologist: Baumeister has defined self-esteem as “a favorable global interpretation of oneself” (Baumeister, Smart, & Boden, 1996, p. 5)” (Campbell, Eisner, & Riggs, 2010, p. 339)

88. “Dispositional self-esteem—one’s overall evaluation of and liking for oneself—also seems to be intimately tied to the health of one’s relationships” (Wood & Forest, 2011, p. 258)

89. “More recent definitions of self-esteem emphasize the fact that self-esteem should be distinguished from other components of the self-concept (such as self-knowledge and self-efficacy), in so far as self-esteem represents the affective, or evaluative, component of the self-concept; it signifies how people feel about themselves (Leary & Baumeister, 2000). This affective self-evaluation is subjective at its core and is not based on specific behaviors (Robins, Handin, & Trzesniewski, 2001). According to Rosenberg (1989), high self-esteem “expresses the feeling that one is ‘good enough.’ The individual simply feels that he is a person of worth. . . . He does not necessarily consider himself superior to others” (p. 31). Although Baumeister and his colleagues share the view of self-esteem as self-appraisal with an affective component, they expand the definition of self-esteem to include feelings of superiority, arrogance, and pride (e.g., Baumeister,

1998; Baumeister, Smart, & Boden, 1996). In the literature, it is debated whether self-esteem is best conceptualized as a global evaluation of the self (i.e., global self-esteem) or as an evaluation in specific self-relevant domains such as intellectual abilities, physical appearance, and social competence (i.e., domain-specific self-esteem; Swann & Bosson, 2010)" (Sowislo & Orth, 2012, p. 214)

90. "It is this global evaluation of one's own worth that is usually referred to as self-esteem" (Bee & Boyd, 2012, p. 253)

91. "Self-esteem is an affectively laden self-evaluation. It is, at heart, how a person feels about him or herself. Just as positive versus negative feelings about other people and inanimate objects, they also have valenced feelings about themselves. State self-esteem refers to how a person feels about him or herself and a particular moment in time, whereas trait self-esteem refers to how a person generally or most typically feels about him or herself" (McDonald & Leary, 2012, p. 354)

92. "As a judgement of the value and worth of the self, self-esteem powerfully relates to emotional experience..." (Crocker & Park, 2012, p. 309).

93. "More than a century later, the definition of self-esteem that was offered by James continues to be relevant such that self-esteem is generally considered to be the evaluative aspect of self-knowledge that reflects the extent to which people like themselves and believe they are competent (e.g., Brown, 1998; Tafarodi & Swann, 1995). High self-esteem refers to a highly favorable view of the self, whereas low self-esteem refers to evaluations of the self that are either uncertain or outright negative (Campbell et al., 1996). Self-esteem is not necessarily accurate or inaccurate. Rather, high levels of self-esteem may be commensurate with an individual's attributes and accomplishments or these feelings of self-worth may have little to do with any sort of objective appraisal of the individual. This is important because self-esteem reflects perception rather than reality". (Ziegler-Hill, 2013, p. 2).

94. "The degree to which the qualities and characteristics contained in one's self-concept are perceived to be positive. It reflects a person's physical self-image, view of his or her accomplishments and capabilities, and values and perceived success in living up to them, as well as ways in which others view and respond to that person. The more positive the cumulative perception of these qualities and characteristics, the higher one's self-esteem" (APA Dictionary of Clinical Psychology, 2013)

95. "The degree to which the qualities and characteristics contained in one's self-concept are perceived to be positive. It reflects a person's physical self-image, view of his or her accomplishments and capabilities, and values and perceived success in living up to them, as well as ways in which others view and respond to that person. The more positive the cumulative perception

of these qualities and characteristics, the higher one's self-esteem" (APA Dictionary of Psychology 2nd Edition, 2015)

96. Self-worth defined as "an individual's evaluation of him or herself as a worthwhile human being" (APA Dictionary of Psychology 2nd Edition, 2015)

97. "One's attitude toward oneself or one's opinion or evaluation of oneself, which may be positive (favourable or high), neutral, or negative (unfavourable or low). Also called self-evaluation" (Oxford Dictionary of Psychology 4th Edition, 2015)

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Is the Rosenberg Self-Esteem Scale Unidimensional?

Exploring Item-Level Correlations with Perceived Agency, Communion, Social Status, Social Inclusion, Social Behaviour, Attachment Anxiety and Attachment Avoidance

1.11 Appendix A: Inter-Item Correlation Matrices for Study 1

Table 1. *Inter-Item Correlations, Item-Total Correlations, Descriptive Statistics, Skew and Kurtosis for RSES Items in Study 1 (Sample 1)*

Item	1	2	3	4	5	6	7	8	9	10
1	—									
2	.67	—								
3	.47	.34	—							
4	.66	.46	.53	—						
5	.45	.39	.69	.49	—					
6	.60	.55	.48	.58	.49	—				
7	.62	.53	.49	.58	.58	.75	—			
8	.24	.16	.30	.28	.45	.27	.28	—		
9	.33	.24	.51	.39	.57	.41	.46	.46	—	
10	.26	.16	.52	.40	.56	.42	.43	.46	.79	—
<i>M</i>	5.45	5.51	5.10	5.30	4.85	5.21	4.98	4.21	4.49	4.40
<i>SD</i>	1.25	1.14	1.42	1.33	1.60	1.33	1.36	1.75	1.73	1.79
Skew	-.97	-.69	-.78	-.90	-.60	-.72	-.70	-.20	-.43	-.31
Kurtosis	.96	.60	.30	.73	-.44	.38	.22	-.106	-.74	-.97
Item-total	.70	.58	.74	.73	.80	.75	.78	.58	.75	.74

Table 2. *Inter-Item Correlations, Item-Total Correlations, Descriptive Statistics, Skew and Kurtosis for RSES Items in Study 1 (Sample 2)*

Item	1	2	3	4	5	6	7	8	9	10
1	—									
2	.65	—								
3	.51	.43	—							
4	.49	.44	.35	—						
5	.49	.43	.67	.34	—					
6	.57	.48	.60	.47	.53	—				
7	.52	.44	.59	.44	.57	.77	—			
8	.36	.27	.51	.29	.47	.54	.50	—		
9	.45	.36	.57	.37	.54	.58	.57	.59	—	
10	.47	.42	.65	.36	.59	.61	.59	.62	.78	—
<i>M</i>	4.06	4.21	3.64	3.95	3.57	3.56	3.44	3.02	2.93	3.35
<i>SD</i>	.85	.68	1.19	.81	1.19	1.04	1.09	1.24	1.29	1.36
Skew	-1.01	-.96	-.57	-.92	-.51	-.58	-.51	.03	.21	-.26
Kurtosis	.96	2.52	-.72	1.11	-.77	-.41	-.64	-1.11	-1.14	-1.26
Item-total	.70	.61	.80	.57	.77	.82	.80	.72	.81	.84

Table 3. *Inter-Item Correlations, Item-Total Correlations, Descriptive Statistics, Skew and Kurtosis for RSES Items in Study 1 (Sample 3)*

Item	1	2	3	4	5	6	7	8	9	10
1	—									
2	.77	—								
3	.53	.60	—							
4	.62	.63	.47	—						
5	.51	.57	.58	.52	—					
6	.55	.61	.63	.54	.54	—				
7	.54	.59	.61	.51	.59	.79	—			
8	.33	.33	.41	.34	.35	.50	.49	—		
9	.31	.37	.47	.35	.38	.48	.51	.51	—	
10	.43	.49	.56	.43	.49	.57	.56	.49	.75	—
<i>M</i>	6.05	6.02	5.52	5.67	5.36	5.24	5.20	3.95	3.85	4.39
<i>SD</i>	1.16	1.09	1.52	1.19	1.66	1.52	1.55	1.86	1.79	1.91
Skew	-1.56	-1.40	-.82	-1.00	-.91	-.96	-.98	.20	.36	-.02
Kurtosis	2.62	2.24	-.46	.86	-.16	.32	.22	-1.15	-1.01	-1.31
Item-total	.70	.76	.77	.69	.73	.82	.82	.66	.72	.80

1.12 Appendix B: Measures and Correlations for Study 2

Table 1. *Item wording for Dominance, Submissiveness, Agreeableness and Quarrelsomeness Scales (Adapted from Moskowitz, 1994) Used in Study 2*

Dominance

- I set goals for others or for us.
- I give information.
- I express an opinion.
- I criticize others.
- I take the lead in planning/organizing a project or activity.
- I ask for a volunteer.
- I speak in a clear firm voice.
- I ask others to do something.
- I get immediately to the point.
- I try to get others to do something else.
- I make suggestions.
- I assign someone to a task.

Submissiveness

- I wait for the other person to act or talk first.
- I go along with the others.
- I do not express disagreement when I think it.
- I speak softly.
- I let others make plans or decisions.
- I give in.
- I speak only when spoken to.
- I do not say what I want directly.
- I do not state my own views.
- I do not say how I feel.
- I avoid taking the lead or being responsible.
- I do not say what is on my mind.

Agreeableness

- I listen attentively to others.
- I go along with others.
- I speak favourably of someone who is not present.
- I compromise about a decision.
- I compliment or praise people.
- I smile and laugh with others.
- I show sympathy.
- I exchange pleasantries.
- I point out where there is agreement.

I express affection with words and gestures.

I make concessions to avoid unpleasantness.

I express reassurance.

Quarrelsomeness

I do not respond to others questions or comments.

I criticize others.

I raise my voice.

I make sarcastic comments.

I demand that others do what I want.

I discredit what someone says.

I confront others about something I do not like.

I give incorrect information.

I state strongly that I do not like or that I would not do something.

I ignore others comments.

I withhold useful information.

I show impatience.

Table 2. *Wording of Perceived Social Status and Perceived Social Inclusion Questionnaires Used in Study 2*

Perceived social status
People respect my achievements.
People value my opinions and ideas.
People approve of the way I live my life
People think well of how I conduct myself.
People think highly of my abilities and talents.
People admire me.
People consider me a success.
People look up to me.
People see me as an important person.
People consider me a high status individual.
Perceived social inclusion
People like me as a person.
People feel warmly towards me.
People consider me a nice person to have around.
People do not like me.
People include me in their social activities.
People are happy for me to belong to their social groups.
People accept me.
People see me as fitting in.
People approve of my behaviour.
<u>People would be willing to be friends with me.</u>

Table 3. Pearson's *r* Correlations, Descriptive Statistics, Skew and Kurtosis for all Scales in Study 2

	RSES	Social Status	Social Inclusion	Dominance	Submissiveness	Agreeableness	Quarrelsomeness
RSES							
Social status	.62 [.56, .66]						
Social inclusion	.60 [.55, .65]	.72 [.67, .75]					
Dominance	.36 [.28, .43]	.54 [.48, .60]	.41 [.34, .48]				
Submissiveness	-.44 [-.50, -.37]	-.19 [-.27, -.10]	-.24 [-.31, -.16]	-.22 [-.29, -.14]			
Agreeableness	.18 [.09, .26]	.26 [.18, .33]	.44 [.37, .51]	.32 [.24, .39]	.08 [.00, .16]		
Quarrelsomeness	-.15 [-.23, -.06]	.09 [.01, .17]	-.11 [-.19, -.03]	.35 [.28, .42]	.19 [.11, .28]	-.13 [-.21, -.04]	
Mean	4.54	4.31	4.90	4.33	3.94	5.09	3.49
SD	1.22	1.14	1.10	0.76	0.99	0.75	0.87
Skew	-.23	-.52	-.78	-.07	.04	-.70	.31
Kurtosis	-.26	.46	.78	.73	-.05	2.11	.43

Table 4. Inter-Item Correlations and Descriptive Statistics for RSES Items in Study 2

Item	1	2	3	4	5	6	7	8	9	10
1	—									
2	.64									
3	.53	.46								
4	.63	.56	.43							
5	.46	.40	.69	.33						
6	.65	.57	.54	.51	.50					
7	.62	.58	.59	.51	.46	.74				
8	.39	.35	.64	.32	.55	.48	.50			
9	.38	.30	.60	.35	.56	.48	.44	.59		
10	.44	.37	.70	.39	.57	.55	.56	.72	.64	
<i>M</i>	5.00	5.30	4.68	5.13	4.41	4.62	4.57	3.76	3.91	4.06
<i>SD</i>	1.43	1.22	1.83	1.33	1.75	1.55	1.59	1.79	1.82	1.88
Skew	-.71	-.84	-.40	-.82	-.24	-.44	-.55	.11	.25	-.01
Kurtosis	.05	1.10	-.93	.59	-.95	-.44	-.47	-1.03	-.99	-1.10

Note. Median inter-item correlation, $r = .54$.

1.13 Appendix C: Measures and Inter-Item Correlations for Study 3

*Table 1. Items of Attachment Anxiety and Attachment Avoidance Questionnaires Used in Study 3
(Six Items for Each Dimension from Brennan et al. 1998)*

Attachment Anxiety

- I need a lot of reassurance that I am loved by my partner
- I find that my partners don't want to get as close as I would like
- My desire to be close sometimes scares people away
- I do not often worry about being abandoned
- I get frustrated if romantic partners are not available when I need them
- I worry that romantic partners won't care about me as much as I care about them

Attachment Avoidance

- It helps to turn to my romantic partner in times of need
 - I want to get close to my partner, but I keep pulling back
 - I turn to my partner for many things, including comfort and reassurance
 - I try to avoid getting too close to my partner
 - I usually discuss my problems and concerns with my partner
 - I am nervous when partners get too close to me
-

Table 2. Inter-Item Correlations, Item-Total Correlations, Descriptive Statistics, Skew and Kurtosis for RSES Items in Study 3 (N = 473)

Item	1	2	3	4	5	6	7	8	9	10
1	—									
2	.78	—								
3	.57	.57	—							
4	.57	.60	.44	—						
5	.47	.56	.57	.42	—					
6	.61	.63	.56	.50	.48	—				
7	.59	.64	.56	.53	.51	.80	—			
8	.34	.36	.48	.26	.42	.42	.39	—		
9	.37	.37	.49	.34	.36	.47	.45	.48	—	
10	.43	.43	.55	.40	.48	.55	.50	.49	.74	—
<i>M</i>	5.73	5.71	5.22	5.22	5.06	4.89	4.90	4.05	3.75	4.13
<i>SD</i>	1.29	1.12	1.55	1.30	1.66	1.50	1.52	1.79	1.71	1.90
Skew	-1.29	-1.10	-.76	-.74	-.60	-.74	-.73	.11	.42	.06
Kurtosis	1.63	1.68	-.17	.37	-.65	.00	-.10	-1.11	-.05	-1.20

Note. Median inter-item correlation, $r = .49$.

Development and Initial Validation of a Brief Measure of Self-Esteem: The Worth and Value Self-Esteem Scale (WAVSES)

1.14 Appendix A: Items and Response Format for the WAVSES

Below are two statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item.

Overall, I am a person of worth

<i>Strongly</i>	<i>Strongly</i>					
<i>Disagree</i>	<i>Agree</i>					
1	2	3	4	5	6	7

Overall, I am a person of value

<i>Strongly</i>	<i>Strongly</i>					
<i>Disagree</i>	<i>Agree</i>					
1	2	3	4	5	6	7

1.15 Appendix B: Scales and Measures for Studies 1 and 2

The Worth and Value Self-Esteem Scale

WVSE1	Overall, I am a person of worth
WVSE2	Overall, I am a person of value

Comprehension Checks

C01	I did not understand what was being asked of me
C02	I did not understand some of the words used
C03	I struggled to provide a response to the statement
C04	It took me a while to decide on a response
C05	My overall worth is something I think about regularly

C11	I did not understand what was being asked of me
C12	I did not understand some of the words used
C13	I struggled to provide a response to the statement
C14	It took me a while to decide on a response
C15	My overall value is something I think about regularly

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

SE1	I feel that I'm a person of worth, at least on an equal plane with others.
SE2	I feel that I have a number of good qualities.
SE3	All in all, I am inclined to feel I am a failure.
SE4	I am able to do things as well as most other people.
SE5	I feel I do not have much to be proud of.
SE6	I take a positive attitude toward myself.
SE7	On the whole, I am satisfied with myself.
SE8	I wish I could have more respect for myself.
SE9	I certainly feel useless at times.
SE10	At times I think I am no good at all.

Rosenberg, M. (1965). *Society and adolescent self-image*. Princeton, NJ: Princeton University Press.

Single-Item Self-Esteem Scale (Robins, Handin, & Trzesniweski, 2001)

SISE	I have high self-esteem.
------	--------------------------

Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). 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

The Experiences in Close Relationships Questionnaire—Revised, Anxiety Subscale (Fraley, Waller, & Brennan, 2000) – six with highest discrimination values

ANX1	I'm afraid I will lose my partner's love
ANX2	I often worry that my partner will not want to stay with me
ANX3	I often worry that my partner doesn't really love me
ANX4	I worry that romantic partners won't care about me as much as I care about them
ANX5	I often wish that my partner's feelings for me were as strong as my feelings for him or her
ANX6	I worry a lot about my relationships

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78(2), 350-365.

The Experiences in Close Relationships Questionnaire—Revised, Avoidance Subscale (Fraley, Waller, & Brennan, 2000) – six with highest discrimination values

AVO1	I prefer not to show a partner how I feel deep down
AVO2	I feel comfortable sharing my private thoughts and feelings with my partner
AVO3	I find it difficult to allow myself to depend on romantic partners
AVO4	I am very comfortable being close to romantic partners
AVO5	I don't feel comfortable opening up to romantic partners
AVO6	I prefer not to be too close to romantic partners

Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78(2), 350-365.

Perceived Social Status and Social Inclusion Scales: Huo, Binning, and Molina (2010) and modified by Mahadevan, Gregg, Sedikides, & de Waal-Andrews (2016).

Perceived social status

SS1	People respect my achievements.
SS2	People value my opinions and ideas.
SS3	People approve of the way I live my life
SS4	People think well of how I conduct myself.
SS5	People think highly of my abilities and talents.
SS6	People admire me.
SS7	People consider me a success.
SS8	People look up to me.
SS9	People see me as an important person.
SS10	People consider me a high status individual.

Perceived social inclusion

SI1	People like me as a person.
SI2	People feel warmly towards me.
SI3	People consider me a nice person to have around.
SI4(R)	People do not like me.
SI5	People include me in their social activities.
SI6	People are happy for me to belong to their social groups.
SI7	People accept me.
SI8	People see me as fitting in.
SI9	People approve of my behaviour.
SI10	People would be willing to be friends with me.

Huo Y. J., Binning K. R., Molina L. E. (2010). Testing an integrative model of respect: implications for social engagement and well-being. *Personality and Social Psychological Bulletin*, 36, 200–212. doi: 10.1177/0146167209356787

Mahadevan, N., Gregg, A. P., Sedikides, C., & de Waal-Andrews, W. G. (2016). Winners, losers, insiders, and outsiders: Comparing hierometer and sociometer theories of self-regard. *Frontiers in Psychology*, 7. doi:10.3389/fpsyg.2016.00334

Big Five Inventory (BFI; John & Srivastava, 1999)

I see myself as someone who... 1 (disagree strongly) to 5 (agree strongly)

Extraversion (8 items)

- EX1 Is talkative
- EX2(R) Is reserved
- EX3 Is full of energy
- EX4 Generates a lot of enthusiasm
- EX5 Has an assertive personality
- EX6(R) Is sometimes shy, inhibited
- EX7 Is outgoing, sociable
- EX8(R) Tends to be quiet

Agreeableness (9 items)

- A1(R) Tends to find fault with others
- A2 Is helpful and unselfish with others
- A3(R) Starts quarrels with others
- A4 Has a forgiving nature
- A5(R) Can be cold and aloof
- A6 Is considerate and kind to almost everyone
- A7(R) Is sometimes rude to others
- A8 Is generally trusting
- A9 Likes to cooperate with others

Conscientiousness (9 items)

- C1 Does a thorough job
- C2(R) Can be somewhat careless
- C3 Is a reliable worker
- C4(R) Tends to be disorganized
- C5(R) Tends to be lazy
- C6 Perseveres until the task is finished
- C7 Does things efficiently
- C8 Makes plans and follows through with them
- C9(R) Is easily distracted

Neuroticism (8 items)

- N1 Is depressed, blue.
 - N2(R) Is relaxed, handles stress well.
 - N3 Can be tense
 - N4 Worries a lot.
 - N5(R) Is emotionally stable, not easily upset.
 - N6 Can be moody.
-

N7(R)	Remains calm in tense situations.
N8	Gets nervous easily.
Openness (10 items)	
O1	Is original, comes up with new ideas.
O2	Is curious about many different things.
O3	Is ingenious, a deep thinker.
O4	Has an active imagination.
O5	Is inventive
O6	Values artistic, aesthetic experiences.
O7(R)	Prefers work that is routine.
O8	Likes to reflect, play with ideas.
O9(R)	Has few artistic interests.
O10	Is sophisticated in art, music, or literature.

John, O. P., & Srivastava, S. (1999). *The Big-Five trait taxonomy: History, measurement, and theoretical perspectives*. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (Vol. 2, pp. 102–138). New York: Guilford Press.

The Patient Health Questionnaire (PHQ-9) – Depression (Kroenke, Spitzer, & Williams, 2001)

Over the past 2 weeks, how often have you been bothered by any of the following problems?

		More			
		Not at all	Several days	half the days	Nearly every day
MDS1	Little interest or pleasure in doing things				
MDS2	Feeling down, depressed or hopeless				
MDS3	Trouble falling asleep, staying asleep, or sleeping too much				
MDS4	Feeling tired or having little energy				
MDS5	Poor appetite or overeating				
MDS6	Feeling bad about yourself – or that you’re a failure or have let yourself or your family down				
MDS7	Trouble concentrating on things, such as reading the newspaper or watching television				
MDS8	Moving or speaking so slowly that other people could have noticed. Or, the opposite – being so fidgety or restless that you have been moving around a lot more than usual.				
MDS9	Thoughts that you would be better off dead or of hurting yourself in some way				

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606-613.

Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

-
- | | |
|-----|--|
| LS1 | In most ways my life is close to my ideal. |
| LS2 | The conditions of my life are excellent. |
| LS3 | I am satisfied with my life. |
| LS4 | So far I have gotten the important things I want in life. |
| LS5 | If I could live my life over, I would change almost nothing. |
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