PSYCHOMETRIC PROPERTIES OF THE DUTCH ROSENBERG SELF-ESTEEM SCALE

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Interest in self-esteem has been fuelled by the suggestion that level of self-esteem is associated with psychological well-being. In the present study, we translated the Rosenberg Self-Esteem Scale (RSES) into the Dutch language and evaluated its psychometric properties in a sample of 442 adults. The results of both exploratory and confirmatory factor analyses confirmed that a single-factor solution provides the best fit. In addition, the Dutch RSES showed high internal consistency as well as high congruent validity. Overall, these findings support the usefulness of the Dutch RSES as a measure for global self-esteem.

Self-esteem refers to a person’s global evaluation or liking of him/herself in (negative or positive) affective terms (Rosenberg, 1979). Many theorists have linked self-esteem to a wide range of (mal)adaptive processes (Trzesniewski, Donnellan, & Robins, 2003). High self-esteem is associated with global feelings of self-liking and self-worth, respect, and acceptance (Kernis, Cornell, Sun, Berry, & Harlow, 1993). Conversely, low self-esteem is associated with unhappiness and is assumed to have detrimental effects (Roberts, Gotlib, & Kassel, 1996).

The most widely used instrument for assessing global self-esteem, defined as a person’s overall evaluation of his or her worthiness as a human being, is the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1979). The RSES is a 10-question scale, designed to represent a continuum of self-worth statements. Whereas, in recent literature, a distinction is made between a ‘state’ versus a ‘trait’ form of self-esteem, the original RSES was designed to assess a person’s global trait-like self-esteem. The RSES, containing five positively worded and five negatively worded items, is scored using four response
choices, ranging from strongly agree to strongly disagree. Although the original RSES was designed to be a single factor scale measuring global self-esteem, its factor structure has been the subject of a substantial debate (Corwyn, 2000). Whereas several researchers have supported the one-dimensionality of the scale, others suggest that the scale reflects a two-dimension- al construct of negative and positive images about the self. In the literature, it is generally agreed that questionnaires are susceptible to different kinds of biases. These biases can arise from response biases or method artefacts. As such, these method effects may contribute to Type I or Type II errors by inflating or suppressing relations between variables. In an attempt to overcome acquiescence, questionnaires with both positively and negatively worded items were constructed. However, factor analysis of questionnaires using this strategy frequently reveals different factors reflecting positively and negatively worded items. Consequently, the question can be raised whether these method artefacts simply reflect noise, or whether they are substantively meaningful (Tomás & Oliver, 1999). However, there is a consensus that the original RSES represents a one-dimensional construct of self-esteem based on a solid theoretical rationale, although contaminated by method artefacts primarily associated with negatively worded items (Corwyn, 2000; Greenberger, Chen, Dmitrieva, & Farruggia, 2003; Marsh, 1996; Tomás & Oliver, 1999).

The RSES has been translated into a number of different languages (e.g., Estonian: Pullmann & Allik, 2000; French: Vallieres & Vallerand, 1990), and its reliability has been confirmed throughout a number of studies across a variety of cultures reporting alpha reliabilities ranging from .72 up to .90 (Gray-Little, Williams, & Hancock, 1997). Studies investigating the validity of the RSES often examined the relationship between self-esteem and the Big Five personality dimensions, because self-esteem and personality share a common underlying etiology and are assumed to directly influence each other (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001). They have found strong negative correlations between self-esteem and Neuroticism, moderate positive correlations with Extraversion and Conscientiousness, and weak positive correlations with Agreeableness and Openness (Pullmann & Allik, 2000; Robins et al., 2001).

In the present study, our aims were twofold. First, we wanted to develop a Dutch version of the RSES to test the stability of the factor structure using both exploratory and confirmatory factor analysis. Second, we wanted to evaluate the internal consistency and validity of the Dutch version of the RSES.
Method

Participants

The total sample comprised 460 invited volunteers who were tested in the context of two other studies investigating hurt feelings (Barbez, Buysse, Verhofstadt, & Delespaul, 2007). Eighteen participants were excluded because of missing data. Therefore, the final sample comprised 442 participants. 66% were female and they ranged in age from 15 to 82 ($M = 36.1$, $SD = 14.4$). 30% was married, 15% was living together with their partner and 17% was not living together but in a steady relationship. 16% was single and from 21% data on their marital status was missing. 10% had a master degree, 24% followed higher education, 42% had a college degree, and 2 subjects had no degree. From 22% of the sample we have no data on their degree. As for their profession, 26% were employees, 7% were workman, 3% were workless, 6% were houseman/wife, 20% were students, and 5% were retired. From 23% of the sample, data on their profession was missing.

Measures

Rosenberg Self-Esteem Scale, Dutch translation (Rosenberg, 1979)

To construct this Dutch version, three translators (bilingual and native target language speakers) independently translated the 10 items from the original language (English) into the target language (Dutch). These three separate versions were then compared and inconsistencies were discussed. Once agreement on a final Dutch translation was reached, another party (bilingual and native English language speaker) translated this Dutch version back into English. Then, the original English version and the ‘back translation’ (new English version) were compared and inconsistencies were corrected. All items were coded on a four-point scale ranging from 0 (strongly disagree) to 3 (strongly agree). Items 2, 5, 6, 8 and 9 had to be reversed. Total scores range from 0 up to 30, with higher scores indicating a higher global self-esteem.

NEO-FFI-NL (Hoekstra, Ormel, & de Fruyt, 1996)

Eighty-five participants completed the Dutch NEO-FFI-NL. The NEO-FFI-NL is a 60-item self-report questionnaire that measures the five major domains of personality: Neuroticism (N), Extraversion (E), Openness to experience (O), Conscientiousness (C) and Altruism (A). All items were coded on a 5-point Likert-type scale, ranging from 1 (totally disagree) to 5 (totally agree).
Procedure

The sample was derived from two studies on hurt feelings. In both studies, participants were solicited by using a snowball sampling method. In one study ($N = 371$), research assistants recruited participants in different social contexts (e.g., family, friends and colleagues). When participants agreed to participate, they signed an informed consent form and filled in a set of questionnaires including a demographical checklist, the Hurt Feelings recall form (Barbez, Buysse, Verhofstadt, & Delespaul, 2008), the Rosenberg Self-esteem scale and the Adult Attachment Scale (Collins & Read, 1990). The order of questionnaires was counterbalanced across participants. In the other study ($N = 89$), participants were recruited through media advertisements and invited to participate in a diary study on hurt feelings. They were told that the study investigated emotions in daily life. Before the first initial briefing, they received a bundle of questionnaires including an informed consent form, a demographical checklist, the Rosenberg Self-esteem Scale, a questionnaire on attachment, recent life events (LifeEvent Questionnaire, Norbeck, 1984) and the personality inventory NEO FFI. Afterwards, all results were processed anonymously.

Results

Descriptive statistics

Global self-esteem scores as measured with the Dutch RSES ranged from 5 up to 30 ($M = 20.9$, $SD = 4.4$). An independent sample $t$-test was used to compare global self-esteem scores between the male and female participants. This analysis yielded a significant effect, $t(440) = 2.47$, $p < .05$, with an effect size of Cohen $d = .25$, indicating that male participants reported a significantly higher global self-esteem score. In addition, we found a small, though significant, positive correlation between global self-esteem and age, $r(442) = .15$, $p < .001$, indicating that global self-esteem scores increased with age. Means and standard deviations for each item are provided in Table 1.

Factor structure of the Dutch RSES

A Principal Axis factor analysis of the 10 Dutch Rosenberg items resulted in one factor as indicated by parallel analysis (Hayton, Allen, & Scarpello, 2004; Reise, Waller, & Comrey, 2000), accounting for 44.7% of the total variance, respectively. Table 1 shows the items and their factor loadings.
Furthermore, we also examined the factor structure of the Dutch version of the RSES with a confirmatory factor analysis (CFA). Using the 8.72 LISREL software, the one-factor model (model 1a) was compared to a two-factor model (model 2), in which the first factor was defined by all negatively worded items and the second factor by all positively worded items. As presented in Table 2, the chi-square statistic was significant for both models, indicating a less-than-perfect fit. However, because the chi-square statistic is highly sensitive to sample size and may overstate the lack of fit (Bollen, 1989), we will supplement it with both absolute and incremental fit indices (Hu & Bentler, 1998).

Absolute fit indices evaluate how well an a priori model reproduces the sample data. We will report the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993), for which a value of 0.06 or lower indicates a good fit, and the Standardised Root Mean Square Residual (SRMR; see e.g., Hu & Bentler, 1999), for which a value of 0.08 or lower indicates a good fit (Hu & Bentler, 1998).

Incremental fit indices evaluate model fit by comparing a target model to a baseline model. Typically, the null model, in which all the observed variables are uncorrelated, is used as a baseline model. We will report the Comparative Fit Index (CFI; Bentler, 1990), and the Non-normed Fit Index (NNFI; Bentler & Bonett, 1980), also known as the Tucker-Lewis Index (TLI). For both indices, values of 0.90 and 0.95 or higher indicate a reason-
able fit and a good fit, respectively (Hu & Bentler, 1999). Because inspection of the univariate skewness and kurtosis measures revealed that the multivariate normality assumption did not hold for this data, the distribution of the test statistics to evaluate model fit might be distorted. Therefore, we used the Satorra and Bentler (1994) scaled test statistic to correct the normal theory statistics.

As observed in Table 2, a comparison of the goodness of fit indexes of the one- and two-factor models revealed that these were comparable to those obtained in similar studies (Corwyn, 2000; Marsh, 1996; Tomás & Oliver, 1999). In line with previous studies, the two-factor model was only slightly superior to the one-factor model. However, relatively high correlations, varying from .71 up to .95, between the factors in the two-factor model indicate that separate orthogonal factors are not represented and suggest a high degree of conceptual overlap. Furthermore, modification indices in the one-factor model suggested that the model fit could be much improved when we would allow the error variances of some individual items to correlate. Based on the two latter findings, and in line with several other studies (Corwyn, 2000; Marsh, 1996; Tomás & Oliver, 1999), we evaluated a one-factor model with a maximum of two allowed error correlations (model 1b). Error correlations were allowed between items NEG1, NEG3 and POS2, POS3. With this adjustment, approximate fit indices rose up to those of the two-factor model and even better (Table 2). This might indicate that a method artefact is present in these item pairs meaning that the slightly superior fit of the two factor structure is meaningless. Based on these findings, it is reasonable to conclude that the Dutch RSES has a one-dimensional factor structure similar to that of the original RSES.

<table>
<thead>
<tr>
<th>Model 1a (df = 35)</th>
<th>Model 1b (df = 33)</th>
<th>Model 2 (df = 34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \chi^2 )</td>
<td>CFI</td>
<td>TLI</td>
</tr>
<tr>
<td>Total sample</td>
<td>157.0 ***</td>
<td>.87</td>
</tr>
</tbody>
</table>

Note. df = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square error of Approximation; SRMR = Standardized Root Mean Square Residual; *** \( p < .001 \), ** \( p < .01 \), * \( p < .05 \)

**Internal consistency and validity of the Dutch RSES**

The RSES-NL showed a high homogeneity. The Cronbach alpha was .86 for the total sample, indicating a high internal consistency. The NEO-FFI-NL was used to study the construct validity of the Dutch RSES. The correlations
between the Dutch RSES and the five sub-scales of the NEO-FFI are presented in Table 3. Global self-esteem exhibited strong negative correlations with the NEO-FFI domain Neuroticism, \( r(75) = -0.69, p < .001 \), indicating that higher global self-esteem is associated with emotional stability. Furthermore, global self-esteem showed positive correlations with NEO-FFI sub-scales Extraversion, \( r(76) = 0.32, p < .01 \), and Conscientiousness, \( r(74) = 0.35, p < .01 \), meaning that high global self-esteem is associated with high extraversion and conscientiousness.

### Table 3

*Pearson product moment correlations between the Dutch Rosenberg Self-esteem Scale and the NEO-FFI*

<table>
<thead>
<tr>
<th>NEO-FFI factors</th>
<th>RSES</th>
<th>Belgium</th>
<th>United States</th>
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<tbody>
<tr>
<td>Neuroticism</td>
<td>-0.69**</td>
<td>-0.69**</td>
<td></td>
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<tr>
<td>Extraversion</td>
<td>0.32**</td>
<td>0.47**</td>
<td></td>
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<tr>
<td>Openness</td>
<td>-0.12</td>
<td>0.06</td>
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<tr>
<td>Conscientiousness</td>
<td>0.35**</td>
<td>0.32**</td>
<td></td>
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<tr>
<td>Agreeableness</td>
<td>0.17</td>
<td>0.13</td>
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</table>

*Note.* *** \( p < .001 \), ** \( p < .01 \), * \( p < .05 \); US data are adapted from Kwan, Bond, and Singelis (1997, Table 2, p. 1038-1051). Adapted with permission of the authors.

### Discussion

In the present study, the mean level and standard deviation of global self-esteem reported by our participants is in line with the findings of previous studies (with a mean value of 20.85 (\( SD = 4.82 \)) across 53 nations; Schmitt & Allik, 2005, p. 629). Furthermore, we found a positive association between age and self-esteem. Recently, a consensus has emerged regarding the development of self-esteem across lifespan. Several longitudinal studies, starting in adolescence, have demonstrated that self-esteem increases with age. In fact, self-esteem starts out high in childhood, drops during adolescence, increases gradually throughout adulthood, and then decreases strongly in old age (Robins & Trzesniewski, 2005). This might explain the significant association between age and level of self-esteem. Moreover, the fact that younger participants reported lower global self-esteem can also be attributed to maturational changes (Robins & Trzesniewski, 2005).

We also found specific gender differences (although with a small effect size (Cohen, 1992)) in self-reported global self-esteem scores favouring males. This is in line with the findings of several previous studies reporting
higher self-esteem in men (Kling, Hyde, Showers, & Buswell, 1999). A number of factors have been proposed to account for this difference, including gender roles, peer interactions, schools and cultural emphasis on girls’ and women’s physical appearance.

We examined the dimensionality of the Dutch RSES using both exploratory and confirmatory factor analysis. The exploratory factor analysis resulted in a single factor solution. Using confirmatory factor analysis, we found results similar to those in previous studies. Both the one- and two-factor models were rejected by the chi-square global model test. However, this is a common finding in studies using large N models. When comparing the approximate fit indices, the two-factor model (model 2) showed a slightly superior fit as compared to the one-factor model (model 1a). However, accumulated evidence suggests that the somewhat better fit of the two-factor solution is due to a method artefact primarily associated with negatively worded items and that the RSES appears to represent a one-dimensional construct of self-esteem (Corwyn, 2000; Marsh, 1996; Pullman & Allik, 2000; Tomás & Oliver, 1999). The difference between the one- and two-factor models is usually not that large, and models positing method artefacts (e.g., one or more permitted residual co-variances) generally fit better than models without method artefacts. Moreover, several studies have reported high correlations between the two factors in the two-factor model, indicating that the two factors are not independent (Pullman & Allik, 2000). In the present study, we found that the two-factor model in combination with a high content overlap between the two factors as revealed by the estimated correlations shows a slightly better fit. Therefore, we also evaluated a one-factor model, testing for method artefacts by permitting a maximum of two residual co-variances between two pairs of items. Based on these findings, we can report that the one-factor solution with maximum two permitted error correlations showed the best fit. Consequently, the Dutch RSES appears to represent a one-dimensional construct of self-esteem, contaminated by a method artefact primarily associated with the specific nature of the items.

The coefficient Cronbach alpha indicated good internal consistency, similar to the findings of other studies (Pullmann & Allik, 2000). Construct validity was examined by correlating the global self-esteem scores with the five NEO-FFI sub-scales. The fact that we found a strong negative relationship with Neuroticism is in line with previous research findings (Schmitz, Kugler, & Rollnik, 2003). Furthermore, previous studies have demonstrated that self-esteem is strongly related with Neuroticism and Extraversion, moderately to Conscientiousness, and weakly to Openness (Chan & Joseph, 2000). Our findings are similar to the findings reported in other studies (see Pullmann & Allik, 2000; Schmitt & Allik, 2005).

In the present study, we did not test the temporal stability of global self-
esteem. Yet, future studies will have to test the temporal stability of the Dutch RSES over time.

In sum, the results of the present study lend support to the conclusion that the psychometric properties of the Dutch RSES are in many ways similar to the original version, and thus the Dutch version of the instrument can be recommended for assessing global self-esteem.

References


Appendix

ROSENBERG SELFWAARDEESCHAAL

Instructions: Hierin volgen 10 beweringen over je algemene gevoelens ten opzichte van jezelf. Als je helemaal akkoord gaat, omcirkel je HA. Als je akkoord gaat met de uitspraak, omcirkel dan A. Als je niet akkoord gaat, omcirkel dan NA. Als je helemaal niet akkoord gaat, omcirkel dan HNA.

<table>
<thead>
<tr>
<th></th>
<th>HA</th>
<th>A</th>
<th>NA</th>
<th>HNA</th>
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<tbody>
<tr>
<td>1. Over het algemeen ben ik tevreden met mezelf</td>
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<td>2. Bij momenten denk ik dat ik helemaal niet deug</td>
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<tr>
<td>3. Ik heb het gevoel dat ik een aantal goede kwaliteiten heb</td>
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<td>4. Ik ben in staat dingen even goed te doen als de meeste andere mensen</td>
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<td>5. Ik heb het gevoel dat ik niet veel heb om trots op te zijn</td>
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<td>6. Het is ongewijfdaal zo dat ik me bij momenten nitteloos voel</td>
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<td>7. Ik heb het gevoel dat ik een waardevol iemand ben, minstens evenwaardig aan anderen</td>
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<td>8. Ik zou dat ik meer respect voor mezelf kon opbrengen</td>
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<td>9. Al bij al ben ik geneigd mezelf een mislukking te voelen</td>
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<tr>
<td>10. Ik neem een positieve houding aan ten opzichte van mezelf</td>
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