The Role of Self-Perceived Usefulness and Competence in the Self-Esteem of Elderly Adults: Confirmatory Factor Analyses of the Bachman Revision of Rosenberg’s Self-Esteem Scale

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SELF-ESTEEM has a well-recognized relationship to psychological well-being (Blascovich & Tomaka, 1991). Self-esteem can be conceptualized as self-regard, an evaluation of one’s worthiness (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). A number of scales have been designed to measure self-esteem (Blascovich & Tomaka, 1991), but there has been little research into the psychometric properties of these scales, particularly using data from elderly people. The aim of this research was to assess the psychometric properties and factor structure of a self-esteem scale suitable for the study of elderly adults, the Bachman revision (Bachman, 1970) of Rosenberg’s Self-Esteem Scale (RSE; Rosenberg, 1965).

Rosenberg’s Self-Esteem Scale (Rosenberg, 1965) is the most widely used measure of self-esteem (Blascovich & Tomaka, 1991). It was designed for research into adolescent self-esteem (Rosenberg, 1965). However, it has been used in well-being research on all age groups, and is considered to be an appropriate measure of self-esteem in the elderly (Breytspraak & George, 1979). Recent studies that have used it with older adults include those of Duffy and MacDonald (1990) and Krause (1987).

Rosenberg (1965) designed the Self-Esteem Scale as a unidimensional measure of global self-esteem. Other researchers, building on his work, subsequently designed scales to measure different dimensions of self-esteem and in some cases domain-specific self-esteem (Blascovich & Tomaka, 1991). A number of principal components factor analyses performed in the 1970s supported Rosenberg’s view that the RSE was unidimensional. However, some investigators identified two highly correlated factors, positive and negative self-esteem (reviews in Blascovich & Tomaka, 1991; Carmines & Zeller, 1979). In some studies, such as research into the psychological impact of unemployment, positive self-esteem and negative self-esteem have been used as separate variables (Feather & Bond, 1983; Warr & Jackson, 1983). However, Carmines and Zeller (1979) claimed that the putative two-factor structure was likely to be a statistical artifact due to response set, since some items are positively worded while others are negatively worded. They concluded that, instead of positive and negative self-esteem, the two factors indicated by principal components analysis represented a global self-esteem factor and systematic error variance due to the valence of the item wording. The negatively worded items in the Self-Esteem Scale seem to describe the opposite poles, on the same continuum, to the positively worded ones rather than a conceptually different dimension. For instance, a positively worded item (“I take a positive attitude towards myself”) is at the opposite pole to a negatively worded item (“At times I think I am no good at all”), both items referring to evaluation of worthiness. This could explain the high correlation between the two putative factors.

In the last few years there have been major developments in factor analysis. Confirmatory factor analysis (CFA), in which a theoretically derived factor structure is tested for its fit to the data, is now commonly used. Shahani, Dipboye, and Phillips (1990) used confirmatory factor analysis on the original RSE and reported that a structure with two first-order factors, self-derejection and self-enhancement (their terms for negative and positive self-esteem), was superior to a unidimensional one. Recently, Rosenberg seemed to have departed from his earlier unidimensional views concerning his scale and to have accepted the two-factor model ascribed to by Shahani et al. (Rosenberg et al., 1995). A recent CFA study of the RSE was conducted by Marsh (1996), who used a modified seven-item version. He argued that his results supported the reasoning of Carmines.
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and Zeller (1979), that the second putative factor was a statistical artifact due to response set. Therefore, the evidence is equivocal and the structure of the Self-Esteem Scale has remained unclear.

The present study does not examine the original Self-Esteem Scale (Rosenberg, 1965) but the Bachman revision, a scale that arose from a large set of personality items used in the Youth in Transition project (Bachman, 1970). The items of the revised scale are shown in Table 1. To date, the Bachman revision has not been subjected to confirmatory factor analysis. The revision is similar to Rosenberg's Self-Esteem Scale, both consisting of 10 items. However, the revision is an abbreviated composite of two measures, the Self-Esteem Scale and a 10-item attitude scale devised by Cobb, Brooks, Kasl, and Connelly (1966, in Bachman & O'Malley, 1977) for a study of adult workers who had changed jobs. In the process of reducing the composite scale to 10 items, four items from the Self-Esteem Scale and six from the scale of Cobb et al. were eliminated. The Cobb et al. items that were retained (items 7, 8, 9, and 10 in Table 1) were said to be “similar in content” to the Self-Esteem Scale items that were replaced (Bachman & O'Malley, 1977, p. 368). Bachman (1970) regarded the revised scale as a unidimensional measure of global self-esteem. This view has been accepted in subsequent research that has used the revision (Bachman & O'Malley, 1986; Bynner, O'Malley, & Bachman, 1981; Rosenberg & Rosenberg, 1978). However, the wording of the four replacement scale items emphasizes usefulness and competence, while the four that were replaced (scale of Rosenberg, 1965) describe positive self-regard. Hence, there is reason to suppose the factor structure of the Bachman revision is different from that of the original RSE.

The Bachman revision (called RSE-B subsequently for the sake of brevity) has been used extensively in research (e.g., Bachman & O'Malley, 1977, 1984, 1986; Bachman & Schulenberg, 1993; Bynner et al., 1981; O'Malley & Bachman, 1979, 1983; Rosenberg & Rosenberg, 1978; Rosenberg et al., 1995; Wells & Sweeney, 1986). It has a reported reliability of 0.75 (Cronbach's α) and good construct validity (Bachman & O'Malley, 1977).

It was noted above that the four replacement items contain references to usefulness and competence. Specifically, items 8 and 9 in the RSE-B (see Table 1) contain words related to competence, whereas items 7 and 10 explicitly refer to usefulness. Of the six items retained from the RSE, item 3 seems to refer to competence and item 4 to achievement, a concept related to usefulness and competence. The references to usefulness could make the revised scale especially applicable to the assessment of self-esteem in the elderly, since to feel useful is thought to be important to the psychological well-being of this group (Butler, 1985; Ryff, 1989). The four items not yet discussed (items 1, 2, 5, and 6) refer to positive self-regard, the essence of self-esteem (Rosenberg et al., 1995). We therefore argue that the RSE-B may contain a usefulness/competence factor as well as a self-esteem factor.

To summarize the argument so far, two possible factor analytic models for the RSE-B could be derived from the published literature to date, which has assumed that the RSE-B represents the same construct as the RSE. The first possible model comprises a unidimensional structure, measuring only self-esteem (Bachman & O'Malley, 1986; Bynner et al., 1981; Rosenberg & Rosenberg, 1978). The second model comprises two first-order factors, self-derogation and self-enhancement (following Shahani et al., 1990). A third model, derived from the history of the scale, in which an attitude scale designed for adult workers was imported into the existing self-esteem scale, and from an inspection of the wording of the items, comprises two first-order factors, positive self-regard and usefulness/competence.

When performing confirmatory factor analysis, it is considered good practice to develop a number of competing models and see which best fits the data (Hertzog, 1990; Liang & Bollen, 1983; Marsh, 1996), and this approach was used in this research. The first two competing hypotheses were as follows.

**Hypothesis 1.** The RSE-B is unidimensional and measures a factor called global self-esteem. The factor structure to test this hypothesis was labeled model 1. All 10 items were specified to load on the global self-esteem factor.

**Hypothesis 2.** The RSE-B has a two-factor structure, the factors being self-enhancement and self-derogation. The factor structure to test this hypothesis was labeled model 2. Items 1, 2, 3, 5, 7,* and 9* were specified to load on the self-enhancement factor, and items 4, 6, 8,* and 10* on the self-derogation factor (* refers to items added by Bachman, 1970).

Model 3 was derived from the history of the scale and from inspection of the wording of the scale items. The next competing hypothesis was:

**Hypothesis 3.** The RSE-B has a two-factor structure, the factors being positive self-regard and usefulness/competence. The first factor was labeled positive self-regard rather than self-esteem to distinguish it from the general self-esteem factor of models 4 and 5 (see below), but positive self-regard is conceptualized in this article as equivalent to self-esteem. Items 1, 2, 5, and 6 were specified to load on the positive self-regard factor, and items 3, 4, 7,* 8,* 9,* and 10* on the usefulness/competence factor.

We also tested two models, each of which included a second-order factor. Second-order factors have been identified in addition to first-order factors in confirmatory factor anal-

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Table 1. Bachman Revision (1970) of Rosenberg's Self-Esteem Scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I feel that I'm a person of worth, at least on an equal plane with others.</td>
</tr>
<tr>
<td>2</td>
<td>I feel that I have a number of good qualities.</td>
</tr>
<tr>
<td>3</td>
<td>I am able to do things as well as most other people.</td>
</tr>
<tr>
<td>4</td>
<td>I feel that I do not have much to be proud of.</td>
</tr>
<tr>
<td>5</td>
<td>I take a positive attitude towards myself.</td>
</tr>
<tr>
<td>6</td>
<td>I think that I am no good at all.</td>
</tr>
<tr>
<td>*7</td>
<td>I am a useful person to have around.</td>
</tr>
<tr>
<td>*8</td>
<td>I feel I can't do anything right.</td>
</tr>
<tr>
<td>*9</td>
<td>When I do a job, I do it well.</td>
</tr>
<tr>
<td>10</td>
<td>I feel that my life is not very useful.</td>
</tr>
</tbody>
</table>

*Note:* Scale items marked * were added by Bachman (1970).
yses of a number of personality scales in recent years. The second-order factor is usually considered to be superordinate to the first-order factors—in other words, to represent a construct common to the first-order factors. For this reason, models with second-order factors are often described as hierarchical. For instance, Liang and Bollen (1983) found that Lawton's (1975) Philadelphia Geriatric Center Morale Scale had a second-order "subjective well-being" factor, and McCallum, Mackinnon, Simons, and Simons (1995) found a scale factor "depression" in Radloff's (1977) Center for Epidemiological Studies—Depression Scale. However, a second-order factor could also be non-superordinate but simply the factor common to all the items of the scale. It is reasonable to state that any particular scale is designed primarily to measure one major construct, and so all the items of the scale should be related to this construct. If this were not the case, researchers would use two or more different scales rather than one. Therefore, it may be the case that scales with at least two first-order factors contain a general factor shared by all the items in addition to more specific factors each related only to some items.

The last two models tested were similar to models 2 and 3, with the addition of the second-order factor. The hypotheses therefore were:

**Hypothesis 4.** The RSE-B has a nested structure, with two first-order factors (self-derogation and self-enhancement) and one second-order factor (general self-esteem). The use of the term *nested* rather than *hierarchical* will be explained later. The factor structure to test Hypothesis 4 was labeled model 4. It differed from model 2 in that all 10 items were specified to load on the general self-esteem factor in addition to their loading on the specific first-order factors.

**Hypothesis 5.** The RSE-B has a nested structure, with two first-order factors (positive self-regard and usefulness/competence) and one second-order factor (general self-esteem). The factor structure to test Hypothesis 5 was labeled model 5. It differed from model 3 in that all items were also specified to load onto the general self-esteem factor.

These models are structurally similar to one tested by Gustaffson and Balke (1993), who suggested the term *nested* because the statistical procedure to test a nested model involves the extraction of the first-order factors from the residuals produced by extracting the second-order factor from the covariance matrix. However, whereas the first-order factors of Gustaffson and Balke's study were specified to be orthogonal, in the present study they were modeled as correlated. This is because we theorized that the first-order factors would be related, possibly in a causal sense, to each other, with usefulness/competence influencing positive self-regard. A recent article by Mutran, Reitzes, Bratton, and Fernandez (1997) concluded that competence has a strong influence on self-esteem, which provides support for such a causal relationship among the factors in the RSE-B. In spite of the difference between our model specification and that of Gustaffson and Balke (1993), we feel that the term *nested* is appropriate for our models because the analytical procedure used is basically the same.

In similar analyses previously reported, the term *hierarchical* has sometimes been used (e.g., Liang & Bollen, 1983; McCallum et al., 1995). In a true hierarchical structure the first-order factors are correlated with the second-order factor and the individual items do not load directly onto the second-order factor. A hierarchical structure was rejected in this case for two reasons. First, the second-order factor, general self-esteem, could not be superordinate to positive self-regard because these two constructs are conceptually equivalent. Second, we thought that general self-esteem was common to all the scale items, and therefore each item was specified to load onto the second-order factor as well as one of the first-order factors.

In summary, five competing models were constructed for the Bachman revision (1970) of the Self-Esteem Scale (Rosenberg, 1965). Two of the models contained a factor, usefulness/competence, that had not previously been associated with this scale. The first three models contained single-order factors and the final two were nested models that also contained a second-order factor. The data were derived from a longitudinal study of ageing, and the models were validated with data collected 2 years after the first wave of the survey. It was expected that model 5 would provide the best fit to the data.

**Method**

**Participants and Procedure**

Data for this study were provided by 1,087 elderly people (mean age 77.43, range 70–103 years) who comprised a subsample of the Australian Longitudinal Study of Ageing (ALSA; Centre for Ageing Studies, 1992). The ALSA is a multidimensional, multidisciplinary research project that aims to increase understanding of how social, biomedical, behavioral, economic, and environmental factors are related to age-related changes in the health and well-being of elderly Australians. From late 1992 to early 1993, comprehensive baseline interviews, covering a broad range of demographic, health, social, and psychological issues, were conducted with 2,087 elderly adults living in the Adelaide metropolitan area. The ALSA also included a series of self-complete questionnaires, filled in by the participants after the interviews, which included the self-esteem scale. Longitudinal follow-up occurred 2 years later. Details of the ALSA have been published elsewhere (Centre for Ageing Studies, 1992; Clark & Bond, 1995; Mawby, Clark, Kalucy, Hobbin, & Andrews, 1996; Ranzijn & Luszcz, 1994).

The target sample for the ALSA (N = 3,623) was randomly generated from the South Australian Electoral Roll and was stratified by sex and 5-year age cohorts from 70 up to the age of 85 years and over. Older males were oversampled, as were the oldest groups, in an attempt to obtain reasonable numbers of each of these in subsequent waves of the study. It could be argued that the stratified nature of the sampling plan should have been taken into account so as to minimize biases in subsequent analyses. However, it has been found by Mawby et al. (1996), who used the same sample of 1,799 people, that there were no significant differences in income, ADLS, IADLS, hospitalizations or self-rated health between analyses using raw data and those weighted to adjust for stratification. To test for possible biases in self-esteem scores, both weighted and unweighted
data were used to analyze the differences in the mean scores for the four age groups and for men and women (see Results). The values of mean scores for each cell were virtually identical. However, the very small differences between age groups became significant because of the very large number of cases estimated through the weighting procedure. Therefore, unweighted data were used for the factor analyses and subsequent analyses.

Of the 3,263 people approached for the first wave of the ALSA, 558 were ineligible for reasons such as death, incorrect age or address, being outside the geographic region, and language difficulties. Of the nonrespondents, 780 (28.8%) refused outright, the 2-hour length of the interview and the long-term involvement sought by the ALSA designers being the major deterrents to participation. The other major reason for nonparticipation was illness of self or spouse (16.2%). Spouses older than 65 and other household residents over the age of 70 were also invited to participate, resulting in another 610 participants and hence a total ALSA sample of 2,087. This number included people living in institutional care as well as in the community. However, we were interested only in community-dwelling people aged 70 years or more (N = 1,799). Full details of the sampling frame and response statistics have been published by the Centre for Ageing Studies (1992). Of the first-wave pool of 2,087 people, 241 were deceased and 42 had moved or could not be contacted at the 2-year follow-up, leaving 1,804 people. One hundred twenty-five refused to participate again, resulting in a retention rate of 93% (N = 1,679).

The self-esteem data used in this report were obtained from the optional self-complete questionnaire. Consequently, fewer people answered items from this questionnaire (N = 1,297 at the first wave and 957 at the 2-year follow-up) compared to those who took part in the interview (N = 1,799 and 1,331, respectively). There were 1,087 people (84% of those attempting the self-complete questionnaire) who fully completed all the self-esteem items at the baseline survey of the ALSA and 875 at the follow-up (91%), and they comprised the subsamples for the analyses reported here.

Descriptive statistics from the baseline data collection on demographic data and health and function for the full sample, for the sample that completed the full self-esteem scale, and for those who completed only some optional questionnaire items are shown in Table 2. In addition to the variables shown, there were no differences in the proportions of male respondents, the percentages being 54.2%, 54.9%, and 50.5% respectively.

Table 2 shows there were few differences between the groups. The full self-esteem group was younger, had higher income, more education, fewer ADLs and IADLs, better self-rated health, less depression, and better cognitive function than the other two groups. The differences between the full sample and full self-esteem samples were less than those between the full self-esteem and partial optional questionnaire samples. However, the differences in every case were small.

Materials

The Bachman revision (1970) of the Self-Esteem Scale (Rosenberg, 1965) used in this research comprised the 10 items listed in Table 1. Participants were asked to report how often each statement was true for them. The response categories were "almost always true" (1), "often true" (2), "sometimes true" (3), "not often true" (4), and "never true" (5). Items 1, 2, 3, 5, 7, and 9 were reverse-scored in the process of data entry. Scores were summed and the total score divided by 10, and subscale scores divided by their number of items, to give a possible range from 1 to 5. Higher scores indicate higher self-esteem. A reliability analysis of the full scale showed that the RSE-B had good reliability, Cronbach’s α = 0.80.

The following variables were assessed to confirm the independence of the first-order factors, using the method of Carmines and Zeller (1979). Depression was measured by the Center for Epidemiological Studies–Depression Scale (Radloff, 1977), morale was measured by 15 items from the Philadelphia Geriatric Center Morale Scale (Lawton, 1975), and perceived control by items from the Expectancy of Control subscale of the Desired Control Measure (Reid & Zeigler, 1981). Further details of the adapted scales used in the ALSA can be found in Luszcz (1996). It was found during data analysis that depression and morale had skewed distributions, so transformed scores were used in subsequent analyses. For depression, the scores underwent a logarithmic transformation, and for morale reflected and square root scores were used. Finally, two subscales of the Adelaide Activities Profile (Clark & Bond, 1995), namely, the Domestic Chores and Home Maintenance subscales, were used to measure functional ability to participate in everyday activities.

The participants completed the interview and other scales in their own homes. The initial data preparation was performed with SPSS-X (SPSS/Norusis, 1993) and the confi-
matory factor analysis using LISREL for Windows (Jöreskog & Sörbom, 1993).

Analysis
PRELIS2, the preprocessor for LISREL8 (Jöreskog & Sörbom, 1993), was used to generate the matrices for subsequent analysis by LISREL8. All RSE-B items were declared to be ordinal, because there were only a small number of response categories and the intervals between adjacent categories could not be assumed to be equal. Accordingly, the correlation matrix generated consisted of polychoric correlations (Jöreskog & Sörbom, 1993). The evaluation of goodness of fit was performed by LISREL8 with the generally weighted least-squares method, using the asymptotic covariance matrix.

RESULTS
The mean total self-esteem score was 4.14 (SD .55). Individual item means ranged from 3.74 (item 4) to 4.50 (item 6), with standard deviations between 0.73 (item 2) and 1.20 (item 4). There were statistically significant differences between different age groups, F(3,1083) = 4.73, p < .01. Post-hoc Scheffé analyses showed that people aged 85 years or more had a lower mean self-esteem score (4.01, SD .57) than the 70–74 (M 4.19, SD .52) and 75–79 year age groups (M 4.16, SD .56), but the differences were very small. There were no significant differences in the mean scores of men compared to women. As mentioned earlier, analyses using weighted data produced results virtually identical to those using unweighted data (the equivalent mean scores to those mentioned above were 4.01, 4.19, and 4.18) so unweighted data have been used for all subsequent analyses.

The polychoric correlation matrix is shown in Table 3.

Confirmatory Factor Analyses
In CFA, the assessment of the fit of a model is based on the relative importance attached to the various indices produced by the program used, a debate that is at present unresolved (for some points of view, see Bentler, 1990; Bollen, 1990; Jöreskog & Sörbom, 1993; McDonald & Marsh, 1996; Wade et al., 1996). Some authorities consider that the best indicators are the root-mean-square error of approximation (RMSEA), which should be below .05 and as low as possible, and the probability that the RMSEA is less than .05, this probability being as close as possible to 1.00 (Gustaffson & Stahl, 1996). A lower RMSEA and a higher p value indicate that one model is superior to another. One model is also considered better than another if its χ² value is lower, the probability of this χ² value is higher, the χ² df ratio is lower, the root-mean-square residuals index (RMR) is lower, and the goodness-of-fit indices are higher, preferably close to 1.00 (Jöreskog & Sörbom, 1993), than the values of the other model. However, the final determination of best fit should be theoretically based as well as statistically driven (Bollen, 1990; Breckler, 1990; Browne & Cudeck, 1989; Hertzog, 1990). In the analyses reported here, no modifications were performed on the models in the interests of achieving a better fit. This decision was taken because it was thought more important to maintain theoretical consistency than to use the results of model testing to adjust the models in order to improve the fit, the latter being a statistically driven rather than theoretically driven approach. The results of the confirmatory factor analyses are summarized in Table 4.

Table 4. Results of Model Testing of RSE-B

<table>
<thead>
<tr>
<th>Model</th>
<th>χ²</th>
<th>df</th>
<th>χ²/df</th>
<th>RMSEA (p)</th>
<th>RMR</th>
<th>GFI</th>
<th>AGFI</th>
<th>PGFI</th>
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<td>Testing with Wave 1 ALSA data</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>274.63</td>
<td>35</td>
<td>7.85</td>
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<td>.61</td>
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<tr>
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<td>143.41</td>
<td>34</td>
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<td>.98</td>
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<td>.61</td>
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<tr>
<td>3</td>
<td>230.82</td>
<td>34</td>
<td>6.79</td>
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<td>.60</td>
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<td>2.32</td>
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<td>.43</td>
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<tr>
<td>5</td>
<td>70.38</td>
<td>24</td>
<td>2.93</td>
<td>.042 (.86)</td>
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<td>.98</td>
<td>.43</td>
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<td>Validation with Wave 3 ALSA data</td>
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<tr>
<td>4</td>
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<td>.043 (.79)</td>
<td>.051</td>
<td>.99</td>
<td>.98</td>
<td>.43</td>
</tr>
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</table>

Note: RMSEA = root-mean-square error of approximation; RMR = root-mean-square of residuals; GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness of Fit (goodness of fit adjusted to take into account the degrees of freedom); PGFI = Parsimony Goodness of Fit (goodness of fit adjusted to take into account the complexity of the model).
(Jöreskog & Sörbom, 1993). On balance, model 5 was thought to be the best-fitting model. In most cases the first-order loadings were high, and in all cases they were significant. The sum of the first-order factor variances exceeded the variance of the second-order factor. In other words, the contribution of the first-order factors to the factor structure was greater than that of the second-order factor. This means that the first-order factors are clearly identified by the analysis, given that the second-order factor has already been extracted. The phi coefficient (the correlation between the first-order factors) for model 5 was .84 ($p < .001$).

**Cross-Validation**

The factor structures of models 4 and 5, the models that provided the best fits to the baseline ALSA data, were validated with the follow-up data obtained 2 years later. The results of cross-validation are shown in Table 4. Model 5 was superior on all the criteria except RMR, where model 4 was marginally superior. A number of the factor loadings for model 4 were again unstable, whereas all the loadings for model 5 were meaningful (see Table 5). It was concluded from the analyses of both data sets that model 5 provided the best fit to the data.

**Table 5. Factor Loadings for Models 4 and 5: \( \lambda \) Weights**

<table>
<thead>
<tr>
<th>Item</th>
<th>SE</th>
<th>SD</th>
<th>GSE</th>
<th>SE</th>
<th>SD</th>
<th>GSE</th>
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<td>.88***</td>
<td>.11</td>
<td>.80***</td>
<td>.04</td>
<td>.81***</td>
<td>.03</td>
</tr>
<tr>
<td>2</td>
<td>.62***</td>
<td>.09</td>
<td>.72***</td>
<td>.06</td>
<td>.73***</td>
<td>.11</td>
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<td>.11</td>
<td>.56***</td>
<td>.14</td>
<td>.73***</td>
<td>.09</td>
</tr>
<tr>
<td>4</td>
<td>.59***</td>
<td>.13</td>
<td>.74***</td>
<td>.08</td>
<td>.75***</td>
<td>.01</td>
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<td>.46***</td>
<td>.11</td>
<td>.56***</td>
<td>.11</td>
<td>.69***</td>
<td>.09</td>
</tr>
<tr>
<td>9</td>
<td>.65***</td>
<td>.12</td>
<td>.65***</td>
<td>.15</td>
<td>.75***</td>
<td>.09</td>
</tr>
<tr>
<td>10</td>
<td>.65***</td>
<td>.11</td>
<td>.65***</td>
<td>.11</td>
<td>.75***</td>
<td>.11</td>
</tr>
</tbody>
</table>

Variance \((\Sigma \lambda^2)\): 2.71, 1.68, 1.17, 3.57, 2.23, 0.45

**Analyses Using Subscales**

The positive self-regard subscale was computed by using scores on items 1, 2, 5, and 6, and the usefulness/competence subscale consisted of items 3, 4, 7, 8, 9, and 10. Higher scores indicate more positive self-regard and a stronger sense of usefulness/competence, respectively. Subscale scores were divided by their number of items, to give a possible range from 1 to 5. This was done to enable comparisons to be made with the full scale scores. The reliability of the positive self-regard subscale was 0.67, and that of the usefulness/competence subscale was 0.69 (Cronbach’s \( \alpha \)), values that are quite adequate for scales with only a few items (Nunnally, 1978). The subscale score for positive self-regard was 4.34 (SD 0.57), and that for usefulness/competence was 4.09 (0.59), mean scores being high in both cases (range 1-5).

As a final test of the construct validity of the first-order factors, the subscales were correlated with three variables that have been associated with self-esteem, namely depression, morale, and personal control (Andrews & Robinson, 1991), and also with functional ability. The resulting correlations of the full self-esteem scale with these variables were all significant, $p < .001$ (see Table 6).

If two factors are truly distinct, it would be expected that they would be differentially related to relevant variables (Carmines & Zeller, 1979). Following the procedure used by Carmines and Zeller in their factor analysis of the Self-Esteem Scale (Rosenberg, 1965), correlations were computed between each subscale and the variables mentioned above. These correlations are also shown in Table 6. Analyses of the differences between the correlations, using the method for determining the significance of the difference between dependent correlations described by Cohen and Cohen (1983), showed there were no differences on depression and control for the first-wave subsample or on domestic chores for the third-wave subsample, but there were differences between all the other correlations. Because some of the correlations were noticeably larger in the third-wave

**Table 6. Matrix of Pearson Correlations of Full Self-Esteem Scale and Subscales with Well-Being, Control, and Functional Ability Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dep</th>
<th>Mor</th>
<th>Cont</th>
<th>DC</th>
<th>HM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem</td>
<td>-25</td>
<td>.39</td>
<td>.53</td>
<td>.14</td>
<td>.20</td>
</tr>
<tr>
<td>Positive self-regard</td>
<td>-20</td>
<td>.30</td>
<td>.46</td>
<td>.09**</td>
<td>.11</td>
</tr>
<tr>
<td>Usefulness/competence</td>
<td>-25</td>
<td>.38</td>
<td>.48</td>
<td>.15</td>
<td>.22</td>
</tr>
</tbody>
</table>

**First-Wave Subsample**

<table>
<thead>
<tr>
<th>Difference</th>
<th>$p &lt; .01$</th>
<th>$p &lt; .001$</th>
</tr>
</thead>
</table>
| Note: Dep = depression, Mor = morale, Cont = personal control, DC = domestic chores subscale, and HM = household maintenance subscale of Adelaide Activities Profile; Difference = difference between correlations with subscales. \( * p < .05; ** p < .01; *** p < .001 \).
subsample than in the first-wave subsample, the first-wave correlations were repeated using only those people who had full self-esteem data at both waves of the study \(N = 875\). However, the results were virtually identical, the values of the correlations differing only between 0 and .02.

**Discussion**

This study has shown that the Bachman revision (1970) of the Rosenberg Self-Esteem Scale (1965) (RSE-B) is a multidimensional scale with two first-order factors, labeled positive self-regard and usefulness/competence, and an orthogonal second-order factor, general self-esteem.

The original Self-Esteem Scale of Rosenberg (1965) was conceptualized as unidimensional, and this has been verified recently by Marsh (1996). However, the Bachman revision (1970) is a different scale, with four items not in the original scale, all construed as referring to self-perceived usefulness or competence. In this study, the unidimensional model (model 1) was the worst fitting of all five models tested.

The model based on the division of the scale into self-derejection and self-enhancement (model 2) provided a better fit to the data than the unidimensional model, but not as good as later models. If one model demonstrates a better fit than another, the superior model is the only one that can be accepted as valid. We therefore agree with Carmine and Zeller (1979) and Marsh (1996) that self-derejection and self-enhancement are not separate factors.

The fit of the third model, with two first-order factors, positive self-regard and usefulness/competence, was about the same as model 1 but not as good as either model 2, 4, or 5, and was therefore rejected. The fourth model tested, a nested model with a second-order general self-esteem factor in addition to the first-order factors self-derejection and self-enhancement, provided a better fit than the previous three models, but not as good as model 5, so it too was rejected. Furthermore, model 4 was also unacceptable because the factor loadings were not meaningful. Cross-validation verified that model 5 was superior to model 4.

Model 5 was a nested model, with positive self-regard and usefulness/competence as first-order factors and a second-order factor, general self-esteem. The finding that a nested model with a second-order factor provides the best fit is consistent with previous studies of other scales in which a general factor has been found (e.g., Liang & Bollen, 1983; McCallum et al., 1995). We conclude that the RSE-B contains a factor common to all items as well as their specific first-order factors. It could generally be argued that all scales that are not unidimensional should contain such a common core, and therefore a nested model is the most appropriate one to test with CFA.

The people in this study had high scores on both the positive self-regard and usefulness/competence subscales. It seems that perceived usefulness is not necessarily a function of economic productivity, since the people in this study had been retired for an average of 12 years. It may be misguided to link usefulness with economic productivity when discussing elderly people. On the other hand, the respondents may have adjusted psychologically to any negative effects of retirement (see Lazarus & DeLongis, 1983, for a discussion of adjustment mechanisms in the elderly). These high scores, however, may not accurately reflect the wider population of elderly Adelaide people, given that the response rate was not as high as would have been wished. Nevertheless, outright refusals comprised just over a quarter of those people initially approached, and this was likely to have been due to the long-term time commitment requested and the length of the interview and other aspects of the questionnaire. Therefore, we concluded that the data are a reasonable reflection of the population from which the sample was drawn.

The usefulness/competence factor has not previously been identified in studies of self-esteem. However, the concepts of usefulness, competence, achievement, and productive activity have lately received increasing attention in the gerontological literature. For example, Stevens (1993) found that involvement with others was significantly related to feeling useful. McIntosh and Danigelis (1995) found an association between informal volunteering (such as performing chores for friends) and well-being in adults over the age of 60 years. Furthermore, Mutran et al. (1997) found a strong association between competence, measured by a single item of self-assessment, and self-esteem. Research on younger adults has also shown a relationship of self-esteem with competence (Feather, 1991a, 1991b) and sense of structure and purpose in the use of time (Bond & Feather, 1988; Feather & Bond, 1983), which may be related to usefulness. The relationships among usefulness, competence, purpose, and self-esteem in older people deserves further exploration. The possible utility of the usefulness/competence subscale for future research is indicated by its reliability, which is quite high for a scale with so few items. The scale could be further developed by the addition of other relevant items reflecting different aspects of usefulness, competence, and achievement.

As a further test of the robustness of the factor structure, the differences in the correlations of the factors with other variables relevant to self-esteem were tested for significance. These variables were depression, morale, personal control, and functional ability. Functional ability was assessed by two subscales, measuring the extent to which people carried out normal domestic chores and home maintenance. The findings indicated that the factors were conceptually distinct. Usefulness/competence had a stronger relationship to the indicator variables than did positive self-regard. The possible causal pathways here also deserve further investigation. Usefulness/competence may be a good predictor of both well-being and personal control. More work could also be done on the association between usefulness/competence and functional ability. There could be a causal pathway from functional ability to well-being via usefulness/competence and/or positive self-regard.

One puzzling finding was that some of the correlations referred to in the previous paragraph were substantially higher in the third-wave subsample than in the first wave. One possible explanation was that the subsamples were not the same, since the first wave contained over 200 people who were not in the third wave. However, even when the correlations were recalculated for only those first wave respondents who were also in the third wave, the results were virtually identical to those using the full subsample. Two details should be noted.
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The trends are the same for both waves, and the relationships with functional activity are more stable than those with wellbeing and control. Perhaps the strengthened correlations had something to do with the respondents being 2 years older and more familiar with the inventories. It is not clear why the factors appear to become more differentiated. Overall, the validation analyses strengthen support for the conceptual distinctness of the two factors.

In summary, this study has demonstrated that the Bachman revision (1970) of the Self-Esteem Scale (Rosenberg, 1965) has a nested structure, with a second-order scale factor in addition to two first-order factors, usefulness/competence and positive self-regard. The newly identified usefulness/competence subscale, a six-item scale with adequate reliability, could be further developed and gainfully employed in future research on elderly people. Little work has been done so far into the importance of feeling useful and competent to the well-being of elderly people. This study supports the view that feeling useful and competent may be related in important ways to the self-esteem of older adults (McIntosh & Danigelis, 1995; Mutran et al., 1997; Ryff, 1989). Preliminary results also indicate that usefulness/competence may be an important predictor of well-being. Further research is required to clarify the relationships among usefulness, competence, and self-esteem in elderly people and the ways in which they affect well-being.

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REFERENCES


Luszcz, M. (1996). Beliefs about control in later life: Implications of per-


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