Quality of Life in Alzheimer's Disease (QoL-AD) Scale:

Factor Solutions in Non-Demented Elders

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Poster presented at the 55th Annual Scientific Meeting of the Gerontological Society of America, Boston, MA, November 24, 2002. This research was supported by a grant from the National Institute on Aging (R37 AG08055) to K. Warner Schaie and by a National Institute on Mental Health training grant, Training in Research and Mental Health and Aging (MH18904). We gratefully acknowledge the enthusiastic cooperation of the members and staff of the Group Health Cooperative of Puget Sound. Correspondence concerning this article should be addressed to: Andrew J. Revell, Laboratory of Adult Cognitive Development, Department of Human Development and Family Studies, The Pennsylvania State University, 113 Henderson South Building, University Park, PA 16802-6504. Email: revell@psu.edu.

Abstract

The Quality of Life in Alzheimer's Disease (QoL-AD) scale, a 13-item measure designed to assess changes in mood, physical and cognitive functioning, and quality of relationships in older adults with probable Alzheimer's disease (Logsdon, Gibbons, McCurry, & Teri, 1999), is also available in a 26-item version. After rating the 13 items for current status (4-point scale), older adults rated the importance of each item (3-point scale) providing a weight for the rating of current status. We explored the factor structure of the weighted and unweighted items in a sample of 499 non-demented, community-dwelling older adults, ages 57-95 (M=73.07, SD=8.30), from the Seattle Longitudinal Study (SLS). A principal axis factor analysis of QoL item-level data with weighted and unweighted items indicated either a two-factor or three-factor structure. Factor 1 included items on health and self, whereas Factor 2 captured indicators of relationships, such as family and marriage. Confirmatory factor analyses indicated a better fit for a three-factor solution separating the health or well-being items from those on awareness of self and relationships. Factorial invariance for the three-factor solution across age and gender groups is presented.

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Clinical research has established the importance of assessment of quality of life in populations with Alzheimer's Disease (AD) and early cognitive impairment (Almkvist & Winblad, 1999; Logsdon, Gibbons, McCurry, & Teri, 1999). Diagnostic criteria (DSM-IV; American Psychiatric Association, 1994) for AD includes, in addition to the presence of cognitive deficits, the presence of functional impairments that represent a significant decline in relation to previous functioning. These functional impairments are often characterized by declines in activities of daily living, such as being able to perform instrumental task (e.g., shopping, managing finances, ability to do chores), as well as basic activities (e.g., bathing, dressing), and bodily functions (e.g., ambulation, speaking, swallowing; Ashford, Schmitt, & Kumar, 1998; Reisberg et al., 1997).

Impairments in physical functioning can occur in individuals without dementia as well. Such impairments can be the result of any number of medical conditions such as arthritis, hip fracture, stroke, thyroid disorders, diseases of the central nervous system and so forth (Reisberg et al., 1997). Thus, these functional impairments while central to AD diagnosis, can also affect functional health in nondemented populations.

Physical functioning is one of the many components included under the term quality of life. There are many definitions of quality of life, most of which are multidimensional in nature, and many are based largely on the theoretical framework devised by Lawton (1983, 1991). Lawton's framework includes four dimensions of quality of life in older adults which include behavioral competence (i.e., functioning in adaptive and socially appropriate ways), objective environment (all factors external to the individual), psychological well-being (mental and emotional status), and one's subjective satisfaction with overall quality of life (as cited by Logsdon and Albert, 1999).

Individuals with dementia or other cognitive impairments are more difficult to assess as their quality of life likely limited by their cognitive performance (Whitehouse, 1999). It may also be that the individual's subjective assessment of quality of life domains changes as the disease progresses and the importance ratings on particular domains varies as functioning becomes more limited (e.g., ability to do chores versus ability to bathe or toilet without assistance; Logsdon, Gibbons, McCurry, & Teri, 2001). These changes in quality of life as an individual progresses from normative cognitive functioning to early cognitive impairment was a central reason for including this measure in a study initially composed of non-demented older adults. As assessments of quality of life have become important measures of multidimensional indicators of subjective well-being, it seems to behoove study investigators to include such a quality of life measure in their testing batteries. While previous research has investigated the use of the QoL-AD in cognitively impaired populations with patient and caregiver reports (Logsdon, Gibbons, McCurry, & Teri, 1999), this measure's factorial structure has not been documented. The objectives then for this study are to: 1) Explore the factor structure of the QoL-AD with a larger sample of non-demented older adults; 2) Conduct a confirmatory factor analysis with the sample to identify the best fit solution; and 3) To test the invariance of the obtained factor structure with respect to age and gender groups.

Method

Participants

The sample for this investigation is comprised of community-dwelling older adults ($\underline{N}$=499) ages 57-95 ($\underline{M}$=73.07, $\underline{SD}$=8.30) from the larger Seattle Longitudinal Study (SLS; Schaie, 1996) who volunteered to complete a series of neuropsychological assessments in addition to their participation in at least one wave of SLS. The neuropsychological assessments were administered in order to study cognitive change in later adulthood with specific interest in detecting the early precursors to cognitive impairment. In this investigation, the sample includes individuals with one time point of data between 1997 and 2000, who completed the Quality of Life in Alzheimer's (QoL-AD) Scale (Logsdon, Gibbons, McCurry, & Teri, 1999).

<u>Measures</u>

The measure of interest in this investigation is the Quality of Life in Alzheimer's Disease (QoL-AD; Logsdon, Gibbons, McCurry, & Teri, 1999) Scale, a 13-item self-report measure of current overall quality of life. Participants are asked to rate each item based on their current state. Each item has four response choices (poor, fair, good, excellent), which are coded as 1 to 4 and summed to produce a total current score. The items, from one to thirteen, include: physical health, energy, mood, living situation, memory, family, marriage, friends, self, ability to do chores around the house, ability to do things for fun, money, and life as a whole. A 26-item measure is also available which includes these same 13 items, which the participant is also asked to rate on how important each is to their current quality of life. The importance response choices (not, somewhat, very) are coded from 0 to 2 and are summed to produce a total importance score.

In this investigation the total scores were not used. Instead, a weighted and unweighted set of items was utilized. The unweighted items are those from the original 13-item scale, not including the total current score. The weighted items are created by cross-multiplying the value of the importance rating (0-2) by the value of the current rating (1-4) for each item, thereby creating weighted scores ranging from 0 to 8. The calculation of the weighted item-level scores, while not yet published, was suggested by the first author of the original measure (R.G. Logsdon, personal communication, March 25, 2002).

The initial research conducted with the QoL-AD measure by Logsdon et al. (1997) included procedures to maximize construct validity by requesting measure-specific feedback from gerontology health professionals and conducting a pilot study with participants from a university-affiliated geriatric and family services clinic. Like the original administration of the measure, the QoL-AD was administered in the present study by a trained test examiner, where the participant marks their response in a questionnaire-like manner or can instruct the examiner to record each response for them.

Previous research has found that the QoL-AD measure is internally consistent with an overall alpha coefficient at an acceptable level ($\alpha = .88$) for the original 13-item current status assessment by the AD participants (Logsdon, Gibbons, McCurry, & Teri, 1999). Not only was there a well-integrated dimension present among the items, but the correlations of the final item, "life as a whole," with each of the 13 items was also referenced as good ($r = .24$ to $r = .59$), as statistical significance was not provided in the table (but was provided in subsequent tables where $r = .24$ was statistically significant at $p < .05$). This research has also found the AD participant-report QoL-AD to be correlated with other measures, such as the MMSE ($r = .24$, $p < .05$; higher QoL-AD scores were associated with higher MMSE scores), the ADL score from the Physical and Instrumental-Self Maintenance Scale (Lawton & Brody, 1969; $r = -.33$, $p < .01$; lower ratings were associated with higher levels of ADL impairment), a variety of depression measures (Hamilton Depression Rating Scale, $r = -.43$, $p < .001$; Geriatric Depression Scale – Patient report of self, $r = -.56$, $p < .001$), and the short form of the Pleasant Events Schedule-AD which asks AD caregivers to rate the care receiver on enjoyment of various activities (PES-AD; Logsdon & Teri, 1997; Teri & Logsdon, 1991; $r = .30$, $p < .01$).

Statistical Analyses

Exploratory factor analysis was conducted for the total sample using principal axis factoring of QoL-AD item-level data with Promax rotation. No previous work had identified the factor analytic structure. Preliminary analyses with a subset of this dataset (n=367) found that both a two and three factor solution was acceptable, given criterion salient standardized regression loadings (greater than or equal to .3). Thus, both the two and three factor solutions were explored in the larger (N=499) dataset with both weighted and unweighted items. Both solutions indicated a relatively simple structure, though the three factor solutions were a bit clearer with fewer loadings split between the factors (see Tables 1-4). Each solution was further tested with confirmatory factor analysis. These results indicated that the three factor solution with unweighted items had the best fit (see Table 5). The overall chi square for the three factor model was statistically significant, yet the relative fit indices indicated a good fit (RMSEA=.053; NFI=.994, CFI=.997, RFI=.991) and therefore the unweighted three factor solution was retained for all further analyses.

Factorial invariance was assessed in the unweighted three factor solution using the Amos statistical package (Arbuckle, 1994; Arbuckle & Wothke, 1999) to further test whether the three factors (Well-being, Relationships, and Awareness of Self & Others) were comparable with respect to age and gender groups. The age groups were Young-old (n=270, 57-74 years of age) and Old-old (n=229, 75-95 years of age); gender groups were Male (n=211) and Female (n=288).

The evaluation of factorial invariance between the groups involves a nested sequence of increasingly stringent models. For example, a more stringent model would have the same free parameters as the model before it, but also have a subset of parameters that were fixed or constrained. The nested sequence allows the models to be compared for overall fit.

In accordance with the research of Meredith (1993), a hierarchy of factorial invariance constraints was applied to test a nested sequence of models. The lowest or least stringent form of invariance is aptly called weak factorial invariance where constraints are equal on the factor-variable regressions between the three groups and where the factor variances and covariances are free to vary. Meeting the condition of weak factorial invariance is necessary for establishing evidence for invariant measurement operations between groups (Hofer, 1999). The second and more stringent form of factorial invariance is called strong factorial invariance and requires the added equality constraints between corresponding mean intercepts and between the groups. In this analysis, the factor mean in the reference group outcome was set to zero, so that the mean differences are expressed at the factor level for the unconstrained factor means. If group differences in unique means are found at the factor level, then the presence of bias, above and beyond the weak model, are indicated. The third and most stringent form of factorial invariance is called strict factorial invariance, which requires invariance among unique variances, in addition to the constraints added in prior steps of the hierarchy (i.e., unique means and factor loadings). This additional constraint assesses possible differences in the proportion of residual to true variance by forcing equivalence of random and specific error variances between the three groups. Differences in variance are then expressed at the factor level. Configural variance allows a qualitative assessment of the similarity between groups with the use of relaxed constraints, with the same number and pattern of factor loadings and is used as a baseline model.

<u>Evaluating Goodness of Fit.</u>

The sequence of nested models was first assessed with the chi square statistic. A difference between each of the models was then computed, as was the difference in degrees of freedom. A comparison of these difference chi square statistics allowed direct comparison of model fit. Since the chi square statistic will likely be affected by our moderately-sized sample (<u>N</u>=499), the differences between alternative models are better assessed by comparing the models' fit indices (Hu & Bentler, 1995). Four fit indices were calculated for each full model (i.e., configural, weak, strong, strict) and also for each difference model (i.e., weak, strong, strict). Fit indices, as discussed extensively by Hu and Bentler (1995), were designed to quantify variations in the data for a particular model and further reduce some degree of interpretation difficulty of the chi square statistic. While Amos does provide fit indices with the model output, those indices are based on the default independence model, which does not include the means. In order to compare the results from all the models, the means must be included in the independence model, allowing a more appropriate null hypothesis comparison, without constraints on the parameters of the independence model.

For this set of analyses, the incremental fit indices include the Normed Fit Index (NFI; Bentler & Bonett, 1980), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), the Comparative Fit Index (CFI; Bentler, 1990), and the root mean square error of approximation (RMSEA; Steiger, 1990). The first and third of these indices are on a 0 to 1 scale, such that values above .90 in comparison to the null model are considered a good fit, though the higher the better. The second, the TLI, while considered robust to variations in sample size, is not scaled between 0 and 1, making it more difficult to interpret (Maruyama, 1998). The fourth, the RMSEA, is considered good if below .05 and acceptable up to .10. Hu and Bentler (1995) discuss the advantages and disadvantages of the various incremental and absolute fit indices using the types discussed by Marsh, Balla, and McDonald (1988). Given the moderately-sized sample in these analyses (N=499), any of the incremental fit indices should provide valid indications of model fit. However, past research has indicated that Type 2 and Type 3 indices (i.e.,TLI, CFI, respectively) tend to be less biased (Hu & Bentler, 1995; Marsh et al., 1988; Maruyama, 1998).

Model Evaluation.

There was also an evaluation of the regression weights for the parameters or specified relations for each model of invariance. Unstandardized parameter estimates, standard errors, and standardized parameter weights were assessed in the model to determine the best fitting model, though the standardized weights were presented in the Tables as these are most appropriate for equal comparison across groups. Meredith and Horn (2001) state that when factors are correlated, as they often are, and invariance is evaluated among groups, such that the standardized weights of a factor in one group should be proportional to the standardized weights of that factor in another group. By exploring the three factors, patterns among the unweighted items were assessed between the groups. If the same pattern, in terms of weights, variances, and covariances were found among each of the groups, then factorial invariance for the three factor solution would be supported in this population.

Results

Exploratory factor analyses of the two and three factor solutions with weighted and unweighted items indicated that both solutions were acceptable according to the criterion salient standardized regression loadings (greater than or equal to .3; see Tables 1-4). When each was run as a confirmatory factor analysis model, the three factor unweighted solution provided the most optimal relative fit indices and the lowest of the statistically significant overall chi square values. Given the size of the sample, the chi square value is less reliable as the sole determinant of fit, however the high relative fit indices indicate the three factor solution with unweighted items had the best fit across the two models with weighted and unweighted items (see Table 5). The factors were named based on the content of the items loading on each indicator. The three factors are: Well-being (factor 1), Relationships (factor 2), and Awareness of Self & Others (factor 3).

The evaluation of factorial invariance provided chi square values and corresponding degrees of freedom for each of the models tested between the groups of age and gender. The age groups were Young-old ($\underline{n}$=270, 57-74 years of age) and Old-old ($\underline{n}$=229, 75-95 years of age); gender groups were Male ($\underline{n}$=211) and Female ($\underline{n}$=288). Missing data is assumed to be missing at random (MAR). The chi square statistics, differences in degrees of freedom and difference chi squares, as well as fit indices are presented for all the groups and models in Table 6. The model is displayed pictorially in Figure 1 with standardized regression weights and covariances.

For age groups, the overall chi square statistic was statistically significant for the configural, weak, strong, and strict models of factorial invariance ($\underline{p}$ < .001). The difference in chi square statistics between the four models was statistically significant in all cases. However, the weak model had a chi square difference which, while statistically significant, was less so than the strong and strict models ($p < .05$ versus $p < .001$).The difference was minimal between the configural and weak models based on relative fit indices. The gap between weak and strong, while minimal in terms of relative fit, was much more statistically significant in terms of chi square difference. Also of note, is that the relative fit indices for the strong model decrease in value (RMSEA increases, which is also not optimal) in comparison to the weak model. For these reasons, the weak factorial invariance model appeared most acceptable for age groups.

For gender groups, the overall chi square statistic was statistically significant for the configural, weak, strong, and strict models of factorial invariance ($p < .001$). The difference chi square statistic was statistically significant in only the strong and strict models. However, difference chi square for the weak model reached near statistical significance with a p value between .05 and .10 and relative fit indices comparable to those of the strong and strict models, yet the fit indices for the weak model were more optimal. For these reasons, weak factorial invariance was most acceptable for gender.

Factor correlations for both age groups and both gender groups indicated a similar pattern of statistically significant associations between each of the three factors with unweighted items (see Tables 7 and 8, and Tables 9 and 10, respectively). While all correlations are statistically significant at $p < .001$, the values for both pairs of groups are slightly higher for the association between well-being and awareness of self & others and between relationships and awareness of than between well-being and relationships.

As a further comparison between the results by the original test measure authors (Logsdon, Gibbons, McCurry, & Teri, 1999) and our results, Table 11 provides a comparison between their item correlations with the total score and the overall construct item of "life as a whole" with our obtained results. All the correlations in the Table are statistically significant at the $p < .001$ level. Their item correlations with total QoL-AD current score are comparable to our correlations. The correlations for "life as a whole" with our items in comparison to theirs are slightly more discrepant, but still similar in overall pattern.

Across age and gender groups, the items under the Well-being factor had the highest standardized regression estimates, followed by the items under the Relationships factor. Similar to the split of the life as a whole item in the exploratory factor analyses, this item was also split in the standardized regression weights of the three factor model in the factorial invariance analyses between Well-being and Relationships factors. For both males and females, the lowest standardized regression weights were found on the life as a whole item for both factors (as previously indicated), the item on money (from Relationships factor), and the item on friends (Awareness of Self & Others). Interestingly, the life as a whole weight was somewhat higher for the Old-old group than the same item weight for Young-old group – for both Well-Being and Relationships factors where it had split. The items on money and friends were similarly low for both age groups as the items had been for gender.

Discussion

Previous research by Logsdon, Gibbons, McCurry, and Teri (1999) found that the QoL-AD was a reliable self-report measure when administered to probable AD patients (n=77) and their caregivers. However, no information was available as to the factor structure of the measure, nor had research explored how weighting may affect the structure.

The objectives of this study were to investigate explore the factor structure of the QoL-AD with a larger sample of non-demented older adults ages 57-95, conduct a confirmatory factor analysis with the sample to identify the best fit solution, and test the invariance of the obtained factor structure with respect to age and gender groups.

To summarize, following exploratory factor analysis, two and three factor solutions with weighted and unweighted items separated the items in different ways. These analyses suggested that both two and three factor solutions with weighted and unweighted items were acceptable, though the three factor solutions were cleaner than the two factor solutions in terms of simple structure. Confirmatory factor analysis revealed a better fit, based on the absolute and relative fit indices, for the three factor solution with unweighted items. Therefore the three factor solution was investigated further with for factorial invariance by age and gender groups. Weak factorial invariance was then found for both age and gender groups for the unweighted three factor solution. Across both pairs of groups, the factor correlations were similar both in level of statistical significance and in value pattern between the factors, such that the correlation between Awareness of Self & Other had a higher correlation with Relationships and with Well-being, than did the correlation between Relationships and Well-being. The correlations between the test author's items with total current score and the correlations of our test items with total current score are similar (see Table 11), suggesting that the items maintain a relatively similar association in the larger sample of nondemented older adults.

The limitations of these findings are also noteworthy. First, given the lack of sufficient numbers of participants with Time 2 data, stability of the factors was not assessed in this investigation and will be warranted. Second, using the rough determinant of factor number with eigenvalues alone (or in addition to the high factor correlations), one might argue for a single factor solution with a higher-order factor model to account for the remaining factors. This has yet to be explored, but is certainly worth investigation. Future investigations might also compare the test measure authors' obtained correlations between other cognitive or functional assessment measures with those in our neuropsychological assessment battery. This step would add additional support for the utilization of this measure in nondemented and probable AD populations.

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Author Note

This research was supported by a grant from the National Institute on Aging (R37 AG08055) to K. Warner Schaie and by a National Institute on Mental Health training grant, Training in Research and Mental Health and Aging (MH18904). The data from which this study was prepared was obtained with permission from The Seattle Longitudinal Study (SLS) for this purpose. We gratefully acknowledge the enthusiastic cooperation of the members and staff of the Group Health Cooperative of Puget Sound. I would also like to thank the co-authors of mine who reviewed prior drafts of this paper.

Table 1

Quality of Life in Alzheimer's Disease Scale Item Factor Loadings (N=499): Promax Rotation on Two Factors without weighting

	Factor	
Item	Well-being	Relationships
	Factor Loadings	
1. Physical Health	.77	
2. Energy	.78	
3. Mood		.45
4. Living Situation		.64
5. Memory		
6. Family		.66
7. Marriage		.59
8. Friends		.37
9. Self	.43	.35
10. Ability to do chores around house	.69	
11. Ability to do things for fun	.55	
12. Money		.35
13. Life as a whole	.36	.43
	Factor Intercorrelations	
Well-being	--	
Relationships	.54***	--

Note. The model includes only the items from the "Current" side of the scale; items are unweighted. The factor loadings are standardized regression coefficients as reported in the Factor Pattern Matrix. Only salient loadings (≥ .30) are shown. Item 5 (Memory) did not have a salient loading.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2

Quality of Life in Alzheimer's Disease Scale Item Factor Loadings (N=499): Promax Rotation on Two Factors with weighting

Item	Factor: Well-being	Factor: Relationships
	Factor Loadings	
1. Physical Health	.71	
2. Energy	.77	
3. Mood	.44	
4. Living Situation		.49
5. Memory	.38	
6. Family		.59
7. Marriage		.53
8. Friends		.32
9. Self	.49	
10. Ability to do chores around house	.51	
11. Ability to do things for fun	.54	
12. Money		
13. Life as a whole	.47	.30
	Factor Intercorrelations	
Well-being	--	
Relationships	.54***	--

Note. Weights were produced by multiplying the importance rating by the current rating for each item. The factor loadings are standardized regression coefficients as reported in the Factor Pattern Matrix. Only salient loadings (≥ .30) are shown. Item 12 (Money) did not have a salient loading.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3

Quality of Life in Alzheimer's Disease Scale Item Factor Loadings (N=499): Promax Rotation on Three Factors without weighting

Item	Factor		
	Well-being	Relationships	Awareness of Self & Others
	Factor Loadings		
1. Physical Health	.75		
2. Energy	.71		
3. Mood			.53
4. Living Situation		.65	
5. Memory			
6. Family		.54	
7. Marriage		.55	
8. Friends			.42
9. Self			.41
10. Ability to do chores around house	.72		
11. Ability to do things for fun	.48		
12. Money		.40	
13. Life as a whole	.30	.32	
	Factor Intercorrelations		
Well-being	--		
Relationships	.45***	--	
Awareness of Self & Others	.59***	.67***	--

Note. The model includes only the items from the "Current" side of the scale; items are unweighted. The factor loadings are standardized regression coefficients as reported in the Factor Pattern Matrix. Only salient loadings (≥ .30) are shown. Item 5 (Memory) did not have a salient loading.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 4

Quality of Life in Alzheimer's Disease Scale Item Factor Loadings (N=499): Promax Rotation on Three Factors with weighting

Item	Factor: Well-being	Factor: Personal Situation	Factor: Relationships
		Factor Loadings	
1. Physical Health	.74		
2. Energy	.78		
3. Mood		.36	
4. Living Situation		.32	.32
5. Memory		.38	
6. Family			.56
7. Marriage			.62
8. Friends		.37	
9. Self	.34	.34	
10. Ability to do chores around house	.47		
11. Ability to do things for fun	.44		
12. Money		.48	
13. Life as a whole	.43		
		Factor Intercorrelations	
Well-being	--		
Personal Situation	.63***	--	
Relationships	.49***	.61***	--

Note. Weights were produced by multiplying the importance rating by the current rating for each item. The factor loadings are standardized regression coefficients as reported in the Factor Pattern Matrix. Only salient loadings (≥ .30) are shown.

*p < .05. **p < .01. ***p < .001.

Table 5

Confirmatory Factor Analyses for the Two and Three Factor Models with and without weighting

Factors	Weighted/ Unweighted	df	χ^2	NFI	TLI	CFI	RMSEA
Two							
	Weighted	53	176.912	0.987	0.981	0.991	0.069
	Unweighted	51	160.806	0.992	0.988	0.995	0.066
Three							
	Weighted	50	140.764	0.990	0.984	0.993	0.060
	Unweighted	50	120.446	0.994	0.991	0.997	0.053

Note. Null is the independence model with the means. NFI=normed fit index (Bentler & Bonett, 1980). TLI=Tucker-Lewis Index (Tucker & Lewis, 1973). CFI=comparative fit index (Bentler, 1990). RMSEA=root mean square error of approximation (Steiger, 1990). The chi square values (χ^2) above are all statistically significant at the $p < .001$ level.

Table 6

Fit Indices for the 3-Factor Nested Sequence of Models (N=499): Age and Gender Groups

Group	Model	df	χ^2	df_{diff}	χ^2_{diff}	NFI	TLI	CFI	RMSEA
Age									
	Null	156	20581.859	--	--	--	--	--	--
	Configural	102	195.334	--	--	0.991	0.993	0.995	0.043
	Weak	112	217.280	10	21.946*	0.989	0.993	0.995	0.043
	Strong	121	245.559	9	28.279***	0.988	0.992	0.994	0.046
	Strict	133	319.391	12	73.832***	0.984	0.989	0.991	0.053
Gender									
	Null	156	20594.311	--	--	--	--	--	--
	Configural	102	217.324	--	--	0.989	0.991	0.994	0.048
	Weak	112	234.510	10	17.186	0.989	0.992	0.994	0.047
	Strong	121	275.269	9	40.759***	0.987	0.990	0.992	0.051
	Strict	133	335.543	12	60.274***	0.984	0.988	0.990	0.055

Note. Null is the independence model with the means. NFI=normed fit index (Bentler & Bonett, 1980). TLI=Tucker-Lewis Index (Tucker & Lewis, 1973). CFI=comparative fit index (Bentler, 1990). RMSEA=root mean square error of approximation (Steiger, 1990). The chi square values (χ^2) above are all statistically significant at the $p < .001$ level. The difference chi square values (χ^2_{diff}) are nearly all statistically significant, as indicated, with the exception of the weak model for gender (which has p value between .05 and .10.)

Table 7

Quality of Life in Alzheimer's Disease Scale Factor Correlations (N=499): Three Factors without weighting

Group	Factor	Factor: Well-being	Factor: Relationships	Factor: Awareness of Self & Others
Young-old (n=270)		Factor Correlations		
	Factor 1	--		
	Factor 2	.45***	--	
	Factor 3	.76***	.77***	--

*p < .05. **p < .01. ***p < .001.

Table 8

Quality of Life in Alzheimer's Disease Scale Factor Correlations (N=499): Three Factors without weighting

Group	Factor	Factor: Well-being	Factor: Relationships	Factor: Awareness of Self & Others
Old-old (n=229)		Factor Correlations		
	Factor 1	--		
	Factor 2	.46***	--	
	Factor 3	.73***	.76***	--

*p < .05. **p < .01. ***p < .001.

Table 9

Quality of Life in Alzheimer's Disease Scale Factor Correlations (N=499): Three Factors without weighting

Group	Factor	Factor		
		Well-being	Relationships	Awareness of Self & Others
Males (n=211)		Factor Correlations		
	Factor 1	--		
	Factor 2	.52***	--	
	Factor 3	.75***	.77***	--

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 10

Quality of Life in Alzheimer's Disease Scale Factor Correlations (N=499): Three Factors without weighting

Group	Factor	Factor		
		Well-being	Relationships	Awareness of Self & Others
Females (n=288)		Factor Correlations		
	Factor 1	--		
	Factor 2	.42***	--	
	Factor 3	.79***	.71***	--

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 11

Item Correlations with Total QoL-AD Score and with Overall Construct: Our Results versus the Test Authors' Results

Item	Our Results (N=499)		Results from Logsdon et al. (1999; N=77)	
	Total QoL-AD Score	"Life as a Whole"	Total QoL-AD Score	"Life as a Whole"
1. Physical Health	.60	.44	.58	.53
2. Energy	.62	.44	.67	.39
3. Mood	.62	.44	.61	.52
4. Living Situation	.55	.40	.65	.59
5. Memory	.42	.19	.42	.24
6. Family	.51	.38	.41	.29
7. Marriage	.51	.36	.58	.41
8. Friends	.47	.33	.46	.43
9. Self	.66	.49	.60	.35
10. Ability to do chores	.63	.38	.56	.56
11. Ability to do things for fun	.64	.42	.54	.54
12. Money	.46	.26	.53	.43
13. Life as a Whole	.69	--	.67	--

Note. All correlations are statistically significant at the $p < .001$ level. Correlations and formatting from Logsdon, Gibbons, McCurry, & Teri (1999) reprinted with permission.

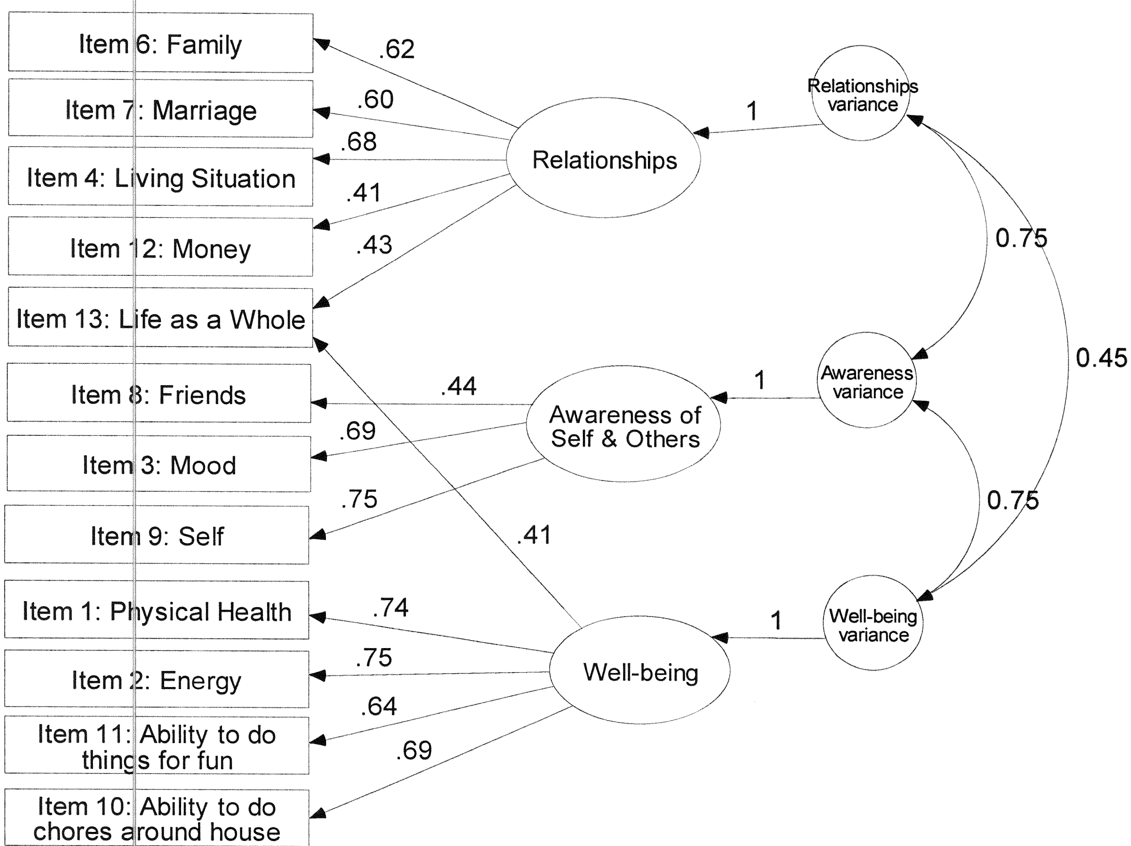

Figure 1. Confirmatory Factor Analysis of the Unweighted Three Factor Solution with Standardized regression weights.