Valuation of Life: A Concept and a Scale

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Objectives: The objective was to derive and test the psychometric characteristics of a scale to measure Valuation of Life (VOL). **Methods:** Four samples were used in successive phases of exploratory factor analysis, confirmatory factor analysis, reliability and validity testing, and exploration of response-error effects. Estimates of Years of Desired Life were obtained under a variety of hypothetical quality-of-life (QOL)-compromising conditions of poor health. **Results:** Confirmed 13-item (Positive VOL) and 6-item (Negative VOL) factors were obtained. A significant relationship between VOL and most Years of Desired Life estimates remained when demographic, health, quality of life, and mental health measures were controlled. Analysis of Negative VOL revealed that some respondents misunderstand the meaning of an *agree* response to negatively phrased items. **Discussion:** VOL is a cognitive-affective schema whose function as a mediator and moderator between health and end-of-life decisions deserves further research.

Concern for the quality of life (QOL) of chronically ill persons begins with the goal of adding quality to years, a social-humanitarian goal. It

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has been demonstrated that many forms of chronic illness are associated with decrements in various measures of life quality (Stewart, Greenfield, & Hays, 1989). Simultaneously, we have been preoccupied with the costs of chronic illness. If we are to pay for care of the longer lived frail aged population, must we justify the extra costs by accounting for quality as well as quantity of the remaining years of life? Inevitably, cost concerns are also political. The high cost of life extension, extreme measures for life prolongation, and all that goes with care for the dying have led to the question of whether there is a point of life support beyond which the quality of life bought by expensive services is no longer worth the investment. Health-related quality of life (HRQOL) has thus become a major topic of research both because of humanitarian concerns about minimizing distress and because the risk of lowered quality of life may be used as a justification for withholding some expensive forms of treatment.

A great deal of research that relates QOL to health has been designed to determine the tipping point beyond which a gain in longevity is no longer worth the losses to the affected person's quality of life. Two major streams of research have been designed to obtain a metric for this point, often referred to as *health utility*, the quality-adjusted years approach (QALYS) (Fanshel & Bush, 1970; Kaplan & Anderson, 1996) and the time-tradeoff (TTO) (Sackett & Torrance, 1978) approach. Both pose participants with the task of estimating the length of life they would prefer under a series of conditions, with anchoring points on the scale of perfect health (1.00) and death (.00), or occasionally a fate worse than death. The conditions provided to the participant are always decrements from normal quality of life, such as depression, pain, disability, and specific conditions that accompany particular illnesses.

The causal sequence thus moves from a negatively valued health condition to the subjective utility judgment: Fewer years preferred, if only they could be better years. One limitation of the HRQOL approach is that the utility judgment is limited to the area of health. There are clearly other areas of life that provide material relevant to a judgment of QOL and these areas may be relevant to the way the person judges health utility. A second limitation is that only negative conditions and decrements to QOL are considered. The long and still-active stream of research in affect and mental health (Bradburn, 1969;

Diener & Emmons, 1984) has demonstrated conclusively the separate (though sometimes related) influences that positive and negative experiences have on behavioral and mental health outcomes. By analogy, why should the positive aspects of life not also contribute independently to the estimate of how long one wishes to live?

The research reported here sought to specify an intervening psychological mechanism between health and utility judgment that takes adequate account of many possible factors that might operate in determining whether a person wishes to continue to live. *Valuation of life* (VOL) is the term for the subjectively experienced worth of a person's life, weighted by the multitude of positive and negative features whose locus may be either within the person or in the environment. VOL is thus greater when one anticipates a future in positive terms.

Valuation of Life

Searches for positive aspects of mental health have been frequent but always dwarfed in prevalence by the general emphasis that psychology has placed on poor mental health. Jahoda (1958), Rogers (1951), and many others have written about positive forces in psychological functioning, and Ryff (1989) has operationalized well-being in a set of scales measuring separately constructs of autonomy, environmental mastery, personal growth, positive relationships, purpose in life, and self-acceptance. VOL, however, composes a limited sector of the more inclusive positive mental health concept. One limiting boundary distinguishes VOL from health utility because VOL excludes explicit judgments with regard to one's desired length of life and other content with regard to physical health. A second boundary to the definition of VOL is that most scales measuring positive mental health operationalize it partly in terms of its opposite, psychopathology. VOL excludes definition in terms of whether or not psycho- pathology is present. The third boundary specifies that the items should refer to generalized judgments rather than content related to satisfactions with specific domains of perceived QOL (Campbell, Converse, & Rodgers, 1976). Thus, our intent was to avoid overt physical health, psychopathological content, and content-specific domains such as family, activities, or economic state. Rather, we

sought to derive from the literature a small set of relatively global constructs that express the active embrace of life.

In successive stages of literature review and research staff discussion, a number of constructs and scales generally representing positive mental health were considered for representing VOL. These scales were judged as lacking because they were over or underinclusive with respect to how well they represented attachment to life or because they contained items with frankly psychopathological content: Hope (Gottschalk, 1974; Herth, 1990; Miller & Powers, 1988; Obayuama et al., 1982; Snyder et al., 1991; Staats, 1989), Hopelessness (Beck, Weissman, Lester, & Trexler, 1974), Purpose in Life (Crumbaugh, 1972), Meaning in Life (Warner & Williams, 1987), Mastery (Pearlin & Schooler, 1978), and Optimism (Scheier & Carver, 1985). We thus decided to construct a scale more closely targeted to the VOL construct than any existing scale.

This article consists of four sections, using different respondent samples for different purposes. Study 1 describes the construction of an item pool for the VOL scale. Study 2 describes the factor analysis that defined two VOL scales. Study 3 tested the scales' validity. The fourth section analyzes further two Valuation of Life subscales and uses this analysis to raise questions about possible error introduced when physically frail and poorly educated older people are called on to respond to research questions that pose cognitive challenges for an appropriate response.

Method

The four separate studies that contributed data on Valuation of Life were The Affect Study (Study 1), the Quality of Life Study (Study 2), the Positive Mental Health study (Study 3), and the Assets and Health Dynamics Among the Oldest Old (AHEAD) study (Study 4).

Study 1: Operationalizing VOL

The Affect Study constituted the beginning of the effort to assemble and test an item set representing VOL. The data-analytic task was

to perform exploratory factor analysis of VOL and to identify items that could be deleted.

PARTICIPANTS

A group of 616 participants was recruited from 18 senior centers and 9 retirement housing communities in the Philadelphia area. All were volunteers who responded to posted announcements and personal invitations from staff members at each location. Because the people had to approach the researchers at their own initiative, it is not known how the assessed group may have differed from eligibles who did not volunteer. Most people were living independently or in the independent sections of continuing care retirement communities (CCRCs); in general, they represented a more than typically healthy sample.

MEASURES

The questionnaire as a whole consisted of 236 items, including a variety of measures of health, behavioral competence, perceived quality of life, mental health, and affect frequency (see Lawton, Kleban, Rajagopal, & Dean, 1992), for a more complete description. Only the measures used in the present report are described here.

Valuation of life. Assembly of a first item set began with a search of the existing scales noted earlier and staff discussion of each candidate item from the joint perspectives of the several item-exclusion criteria (psychopathology, health and longevity, domain-specific QOL) and inclusion criteria representing five core constructs. *Futurity* is the outlook that sees what might happen in the future as worth anticipating and planning for. *Hope* is the expectation that what occurs now and in the future will be positive. *Self-Efficacy* is a judgment that one will behave competently in the future. *Persistence* is the conviction that one's effort to solve a problem is worthwhile and likely to succeed. *Purpose* represents espousal of goals that guide one's life. Several hundred items were considered originally in research staff meetings, most of them easily discarded because they represented one of the

excluded categories. A few items from existing scales were retained, but most items still needed to be created for the present purpose. Application of the inclusion criteria, together with the decision to weight most heavily the purpose construct and the wish to represent negatively phrased items, was accomplished by research staff consensus. A pool of 23 items resulted, whose content was judged by us to represent purpose (nine items), persistence (five items), and futurity, hope, and self-efficacy (three items each). It should be noted that the content in no way sought to balance the number of items across content areas or to systematically sample items to construct facets. Our intent was to choose the best items to represent the single construct, VOL. Although this content overlapped greatly with measures of positive mental health (see Study 3), no existing measure of positive mental health possessed all the desired characteristics. These 23 items were rated on a 5-point scale ranging from 5 = *agree very strongly* to 1 = *disagree very strongly.*

PROCEDURE

Staff members at senior centers and CCRCs assisted in recruiting volunteers to assemble on the site. Volunteers gathered in groups ranging from 3 to 25 and were given oral instructions by a researcher for completing a self-administered questionnaire. There were usually three research staff present at every session to be available to answer questions raised by the participants. Completion time ranged from 45 to 90 minutes. Where necessary, the entire interview schedule or parts of it were read to the respondent and answered orally. The researchers scanned completed questionnaires as they were handed in; errors and omissions were thus minimized.

Results

Table 1 shows the background characteristics of respondents in all the studies. As seen in the leftmost column, the Affect Study respondents' mean age was 77.34 and they were predominantly female and widowed, with a mean education of about 1 year past high school; 17% were African Americans.

Table 1
Background Characteristics of Four Samples

	Affect	*QOL*	*Positive Mental Health*	*AHEAD*
Age (*SD*)	77.34 (7.72)	76.89 (5.55)	80.64 (6.02)	75.65 (6.84)
Gender (% female)	77	61	72	65
Race (% African American)	17	51	0	19
Education (*SD*)	12.81 (3.65)	11.82 (3.54)	15.72 (3.12)	11.14 (3.64)
Marital status (%)				
Married	27	34	30	55
Widowed	57	45	50	37
Divorced or separated	8	15	1	5
Never married	8	5	15	3
N	602[a]	462	138	850

Note. QOL = quality of life and AHEAD = Survey of Asset and Health Dynamics Among the Oldest Old.
a. Includes the 138 participants in the Positive Mental Health Study.

An exploratory principal components analysis was performed with the 23-item pool. This analysis produced two factors but also led to the exclusion of four items. One item proved difficult for respondents to comprehend, whereas three other items did not show loadings as high as .50 on either factor. With 19 VOL items grouped into two factors, the next step was to test the replicability of the factor structure and determine other psychometric characteristics of the scale.

Study 2: Confirmatory Analysis and Internal Consistency

The Quality of Life Study provided data for confirmatory factor analysis, following which the Affect Study provided data for analyzing validity.

PARTICIPANTS

For this study of QOL in chronic illness, people ages 70 and older were recruited, targeting both healthy elders and those with chronic illnesses. They were volunteers recruited from hospital-based clinics and a geriatric practice, acute-hospital discharges, a long-term care screening assessment unit, and community groups, such as a senior health information network and churches. All were interviewed face-to-face in their homes by a trained interviewer. The interview inquired

in detail about the respondent's health, mental health, quality of life in several domains, and their daily life. The VOL questions appeared in the last quarter of an interview whose length was about 1.5 hours.

MEASURES

The 19 VOL items surviving the exploratory analysis of the affect data were administered.

Results

Equal-sized cells by gender, race, and socioeconomic status were sought. In the data analyzed here, the 462 participants (Table 1, second column) comprised 51% African Americans, 61% females, and 46% in lower-income categories.

Exploratory analysis of the 19-item set in the QOL sample resulted in a solution virtually identical to that for the 19-item version of the Affect sample. The QOL sample factor structure was first tested for its fit with a single-factor solution and the two-factor solution from the Affect sample. The improvement in chi-square for the two-factor solution was highly significant (^{2} = 176.11 *df*, $p < .001$). To maximize the heterogeneity of the sample, 921 members with no missing item data from the Affect and QOL samples were combined and then divided randomly into samples of 460 and 461, respectively. Sample A duplicated the results of the exploratory analyses in yielding one factor of 13 items and another of 6 items. This structure was used as the model for a confirmatory two-factor, correlated-factors solution of the data from Sample B, whose parameters were hypothesized to be identical to those of the exploratory sample. The analysis was performed using the Analysis of Moment Structures (AMOS) (Arbuckle, 1994, 1996).

With such large *N*s the chi-squares were expectedly large (1,284 and 1,342; 360 *df*, respectively, for Samples A and B). The fit indices were excellent, however (adjusted goodness of fit index [AGFI] = .929 and .921). The pattern showed the clear presence of two factors (critical ratios for all loadings associated with $p < .001$), but there was a minimal correlation between the two factors ($r = .05$ and .01).

Table 2
Maximum-Likelihood Factor Loadings, Valuation of Life (Samples A & B from the Affect and QOL Samples)

		Factor I		Factor II	
Item Number	*Item*	*A*	*B*	*A*[a]	*B*
Positive VOL (high score denotes high valuation)					
1.	I feel hopeful right now.[b]	.73	.75		
2.	Each new day I have much to look forward to.[b]	.77	.80		
3.	My life these days is a useful life.	.77	.74		
4.	My life is guided by strong religious or ethical beliefs.	.57	.56		
5.	I have a strong will to live right now.	.76	.78		
6.	Life has meaning for me.	.80	.78		
7.	I feel able to accomplish my life goals.	.74	.76		
8.	My personal beliefs allow me to maintain a hopeful attitude.	.80	.79		
9.	I intend to make the most of my life.	.78	.79		
10.	I can think of many ways to get out of a jam.	.66	.70		
11.	I can think of many ways to get the things in life that are most important to me.	.76	.75		
12.	Even when others get discouraged, I know I can find a way to solve the problem.	.72	.79		
13.	I meet the goals that I set for myself.	.74	.75		
Negative VOL (high score denotes low valuation)					
14.	It is hard to find much meaning in my everyday life.			–.65	–.71
15.	I have very few goals in my life, today.[b]			–.69	–.66
16.	I'm just putting in time for the rest of my life.[b]			–.77	–.72
17.	I spend very little time planning for the future.			–.66	–.65
18.	The real enjoyments of my life are in the past.[b]			–.71	–.69
19.	There are very few ways around any problem.			–.59	–.61
Comparative fit index: Bentler-Bonett = .980					

Note. QOL = quality of life and VOL = valuation of life.
a. Simple-Structure hypothesis set loadings on opposite factor at .00
b. These items used in the Survey of Asset and Health Dynamics Among the Oldest Old (AHEAD), as well as a deleted item, "It wouldn't bother me if my life ended soon."

Constraining Sample B to equality with Sample A resulted in an increase in chi-square of 57.63, 58 *df*, which was not significant. Table 2 shows the loadings for samples A and B and the Bentler-Bonett fit index for the combined sample. The content of the two factors is very clear. The first factor, with 13 items, expresses Positive Valuation of Life and the second factor, with 6 items, expresses Negative Valuation of Life. The implication of the division of VOL items into two factors of opposite valence will be considered later in this article.

Internal consistency. Item composites created by summing item ratings for the 921 respondents resulted in a 13-item positive VOL score with mean of 43.87 ($SD = 9.55$) and a 6-item negative VOL score with mean of 14.17 ($SD = 4.97$). Internal consistency of positive VOL (alpha) was .94; alpha for negative VOL was .83. The average inter-item r was .55 for positive VOL, and the range was .37 to .73. For negative VOL, average r was .44, range .38 to .55.

Study 3: Validity

The Affect Study and the Positive Mental Health Study provided data by which to assess the concurrent validity of the VOL. Discriminant validity was also assessed using data from the Affect and QOL studies. It should be noted first that construct validity was built into the scale by its inclusion of items representing the core constructs: Hope (Items 1, 8), futurity (Items 2, 9, 17), purpose (Items 3, 4, 6, 13, 14, 15, 16, 18), persistence (Items 5, 11, 12, 19), and self-efficacy (Items 7, 10). Although the set as a whole was weighted toward purpose and persistence, this occurred because of our consensus that these items best represented the level or intensity of attachment to life.

PARTICIPANTS

A subset of 138 housing residents from among the 602 Affect Study respondents were also participants in the Positive Mental Health Study. These people volunteered to complete by mail an additional set of standard psychological scales that assess personality and positive mental health, after having completed the Affect questionnaire in person. These continuing-care retirement community residents may be considered an elite group in that they were from high educational and socioeconomic backgrounds (see Table 1) and volunteered to complete a long set of questions after the full Affect questionnaire.

MEASURES

It is difficult to identify an external criterion against which a highly subjective construct such as VOL may be validated. Although existing

measures of positive mental health were found wanting in their ability to represent VOL, such measures share enough conceptually with VOL to make them usable indicators of concurrent validity. One would expect moderate but not high correlations between such measures and VOL. The Positive Mental Health Study utilized five measures of positive mental health: the 7-item Mastery Scale (Pearlin & Schooler, 1978), the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965), the 6-item Life Orientation (Optimism) Test (Scheier & Carver, 1985), the 36-item Dispositional Hardiness scales (Hull, Van Treuren, & Virnelli, 1987; Kobasa, 1979; subscales of Commitment, 10 items; Challenge, 13 items; and Control, 13 items, were used), and the six 9-item Well-Being Scales (Ryff, 1989) measuring Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self-Acceptance. To probe the relationships of related variables to VOL and their effects on validity estimates, measures of quality of life were utilized in the Positive Mental Health Sample. Three measures of external engagement from the Philadelphia Geriatric Center Multilevel Assessment Instrument (MAI) (Lawton, Moss, Fulcomer, & Kleban, 1982) were used: Activity Participation (summed frequencies of 21 activities), Friends Interaction (summed frequencies of contacts with all named friends), and Family Interaction (summed frequencies of contacts with named family members). Analogous estimates of subjective quality in the same three domains were obtained from seven-item measures of judged quality, Time Quality, Friends Quality, and Family Quality. Further information on these scales may be found in Lawton et al. (1982) and Lawton et al. (1999). Finally, although VOL is acknowledged to have a built-in relationship to Positive Affect, it also is asserted to contribute to the wish to live independently of Positive Affect. Therefore, the 15-item Positive Affect Scale from the Philadelphia Geriatric Center Affect Scales (Lawton, Kleban, & Dean, 1993) was used, whose items are rated on 5-point scales ranging from 1 (*very frequently*) to 5 (*never*).

Because the indicators of VOL excluded psychopathology and physical health content, VOL would be expected to exhibit low correlations with such measures. To test this aim, physical health was assessed in both the Affect Sample and the QOL Sample with the Health Conditions subscale of the MAI (Lawton et al., 1982), a

21-item checklist of conditions reported to be present or absent by the respondent. The QOL sample was also assessed with the Physical Self-Maintenance Scale and Instrumental Activities of Daily Living (together referred to as ADL, from the MAI, Lawton et al., 1982). These consisted of 15 self-report assessments of ADL functions as 3 = *does without help*, 2 = *does with assistance*, 1 = *cannot do without assistance*. Depression in the Affect Study was measured by the Philadelphia Geriatric Center Depressive Affect Scale (Lawton et al., 1993), a 5-item scale with each item rated on a scale ranging from 1 = *very frequently* to 5 = *never.* In the QOL Study, the Center of Epidemiological Studies Depression Scale (CESD) (Radloff, 1977) was used. This is a 20-item set of 4-point ratings ranging from 3 = *most of the time* to 0 = *rarely or none*. Because we wished to distinguish positive affect as a separate outcome, four items constituting the frequently replicated (e.g., Aneshensel & Yokopenic, 1985) positive affect factor of the CESD were removed. This 16-item measure of depression will be referred to as *CESD-Depression* or *CESDD*.

Various possibilities were considered for a concurrent validity criterion that would assess health utility. Both existing QALYS scales (Fanshel & Bush, 1970) and time-tradeoff techniques (Torrance, 1987) were either too long, too complex, or otherwise not suitable for geriatric respondents. Therefore, a related construct, Years of Desired Life, was used as a validity criterion in the Affect Study. Based on the Quality of Life Scale (Schneiderman, Pearlman, Kaplan, Anderson, & Rosenberg, 1992), this method presented respondents with nine brief scenarios depicting combinations of good health, poor health, pain, cognitive impairment, and institutional residence, asking people to state how long they would like to live under those specific circumstances (the conditions will be displayed later in Table 4).

Results

VALUATION OF LIFE AND POSITIVE MENTAL HEALTH: CONCURRENT VALIDITY

Table 3 shows descriptive data for the measures of positive mental health and the zero-order correlations between these measures and the

Table 3
Descriptive Statistics for Positive Mental Health Measures and Their Correlations With VOL (Positive Mental Health Study)

	Items	M	(SD)	*Correlation*	
				Positive VOL	*Negative VOL*
Well-Being scales					
Autonomy	9	3.82	(.42)	.17[a]	–.13[a]
Environmental mastery	9	4.90	(.78)	.57	–.51
Personal growth	9	4.61	(.93)	.44	–.55
Positive relationships	9	4.86	(.86)	.49	–.50
Purpose	9	4.44	(.93)	.53	–.60
Self-Acceptance	9	4.82	(.78)	.62	–.52
Self-Esteem	10	1.93	(.13)	.53	–.49
Life orientation test	16	3.90	(.55)	.49	–.50
Hardiness					
Challenge	13	2.74	(.27)	.23	.35
Commitment	10	3.23	(.32)	.40	.51
Control	13	3.15	(.32)	.39	.45
Mastery					
Study					
Positive mental health	7	26.19	(5.61)	.52	–.47
Affect study	7	23.34	(6.80)	.35	–.48
QOL study	7	19.24	(3.43)	.47	–.51

Sources. Well-Being scales (Ryff, 1989), Self-Esteem (Rosenberg, 1965), Life orientation test (Scheier & Carver, 1985), Hardiness (Kobasa, 1979), and Mastery (Pearlin & Schooler, 1978).
Note. VOL = valuation of life and QOL = quality of life.
a. These correlations were not significant. All other correlations significant at $p < .01$, $N = 128$.

two VOL measures in the Positive Mental Health sample (high VOL scores indicate high positive and high negative, i.e., low valuation of life, respectively). Because the Mastery Scale was also used in both the Affect Study and the QOL study, data from three samples are shown in Table 3. All correlations were positive and significant except those between Ryff's Autonomy scale and VOL; those between the Challenge subscale of the Hardiness inventory and VOL were relatively low (.35 and .23). Other correlations ranged between .47 and .67 for negative VOL and between .39 and .62 for positive VOL.

VALUATION OF LIFE AND YEARS OF DESIRED LIFE: CRITERION VALIDITY

Theoretically, the most on-target validity indicator of VOL would be behavioral measures taken by the person to prolong his or her life.

Table 4
Correlations Between VOL and Years of Desired Life (Affect Sample)

	N[a]	*Positive Goals*	*Negative Goals*
No limitations	260	.17***	–.17**
ADL-Dependent at home (no pain, cognitively unlimited)	248	.24***	–.07
ADL-Dependent in nursing home (no pain, cognitively unlimited)	251	.24***	–.09
Confused and ADL-dependent at home (no pain)	249	.19***	.03
Confused and ADL-dependent in nursing home (no pain)	255	.14**	–.02
Mild pain (no ADL or cognitive limitations)	258	.12**	–.10
Severe and frequent pain (no ADL or cognitive limitations)	252	.20***	.08
Severe pain controlled only by narcotics	255	.18***	.06
Unconscious, no hope of recovery	256	–.02	.12

Note. VOL = valuation of life and ADL = activities of daily living.
a. *N* represents the number who provided numerical estimates of time desired to live.
**$p < .01$. ***$p < .001$.

Because such data are obviously not available in a cross-sectional study, a prospective and hypothetical indicator was used in the Years of Desired Life Measure. These questions were difficult for many participants to answer, and the results are analyzed only for those providing numerical responses to each item, with years categorized as less than one, 1 to 9, 10 to 19, and 20 or more, to reduce the effect of skew. As recommended by Schneiderman et al. (1982), "as long as possible" was given the maximum category code, (4 = 20 or more years). (*N*s are shown in first column of Table 4.) Table 4 shows the correlations between the VOL indices and Years of Life desired under nine specified conditions for the Affect sample. The correlations are relatively small but significant between Positive VOL and Years of Desired Life under all but one of the conditions (permanently unconscious). By contrast, negative VOL showed few such significant correlations; a possible explanation for this difference will be suggested in Study 4.

VALUATION OF LIFE AND PHYSICAL AND MENTAL HEALTH: DISCRIMINANT VALIDITY

Finally, discriminant validity should result in a lesser relationship between VOL and physical health or psychopathology than was true between VOL and the positive mental health measures of Table 3.

Table 5
Correlations Between VOL and Physical and Mental Health Measures

	Positive VOL		*Negative VOL*	
	Affect	*QOL*	*Affect*	*QOL*
MAI Health Conditions	–.12	–.22	.22	.30
MAI ADL/IADL	NA	.11*	NA	–.25
CESDD	NA	–.37	NA	.40
PGC Depression	–.44	NA	.36	NA

Note. VOL = valuation of life, QOL = quality of life, MAI = multilevel assessment instrument, ADL = activities of daily living, IADL = instrumental activities of daily living, CESDD = the Center of Epidemiological Studies Depression scale omitting depression, PGC = Philadelphia Geriatric Center, and NA = not an available measure in this data set.
*$p < .05$. All other correlations significant at $p < .01$ level or higher.

Table 5 shows the correlations between VOL and two relatively objective (i.e., not self-rated health) health indices and between VOL and Depression. The measures of health, number of reported health conditions, and total ADL/instrumental activities of daily living (IADL) (used only in the QOL Study), showed significant but very weak relationships to VOL. The correlations between VOL and Depression were significant. Although slightly smaller, they were, in fact, in the same moderate range as the correlations between VOL and the positive mental health measures shown in Table 3. It is thus clear that VOL is not independent of either health or depression and that discriminant validity on the zero-order correlational level was only marginally demonstrated. The more basic issue, however, is addressed in the next section: The degree to which VOL is independently associated with Years of Desired Life when both health and depression are controlled.

MULTIVARIATE ANALYSIS OF VALUATION OF LIFE AND YEARS OF DESIRED LIFE

The most stringent test of validity is whether VOL is related to Years of Desired Life independently of a variety of factors that might be thought to contribute to the length of time one wishes to live. Especially important is the question as to whether VOL is simply another measure of either or both QOL or positive mental health. Is VOL totally redundant with such measures in its association with Years of

Table 6
Independent Contributions of Three VOL Indices to Years of Desired Life Under Nine Conditions (Positive Mental Health Sample)

Condition	*Positive VOL*	*Negative VOL*	*Total*[a] *VOL*
No limitation	.03[b]	–.28*	.23
In bed/chair at home	.13	–.40**	.41*
In bed/chair in nursing home	.31*	–.36**	.57**
Confused at home	.35*	–.24	.52**
Confused in nursing home	.34*	–.29*	.55**
Unconscious, no memory	.33*	–.24*	.50**
Mild pain	.13	–.21	.29
Severe pain	.12	–.17	.24
Severe pain, always narcotics	.31*	–.27*	.50**

Note. VOL = valuation of life.
a. Total VOL is the sum of Positive VOL and the (opposite-sign) Negative VOL scores.
b. Cell entries are standardized regression coefficients with background factors, health, six indicators of quality of life, two measures of mental health, and two measures of positive mental health controlled ($N = 106$).
*$p < .05$. **$p < .01$.

Desired Life? The Positive Mental Health Study allowed such a test. Three sets of multiple regression analyses were performed using Positive VOL, Negative VOL, and VOL total scores, respectively, as independent variables to predict Years of Desired Life, while controlling for several other possible sources of redundancy between VOL and other variables: Background characteristics (age, gender, education; all in this sample were White), health (the Health Conditions checklist), three objective quality of life indicators (Activity Participation, Friends Interaction, Family Interaction), three subjective quality of life indicators (Time Quality, Friends Quality, Family Quality), two mental health indicators (Philadelphia Geriatric Center [PGC] Positive Affect and CESD Depression scales), and finally the two measures of positive mental health most highly correlated with VOL (as shown in Table 3, Ryff's Environmental Mastery and Self-Acceptance scales). Only two of the positive mental health scales were used to maintain an optimal participants-to-variables ratio for this small group of 128 respondents (with missing-data deletions, the analytic *N* was 106). Table 6 shows the standardized betas for the VOL scores in the regression analyses when all other variables were also in the equation. The pattern, though not totally consistent across the 3 indicators

of VOL and the conditions of Years of Life, very clearly attests to the ability of VOL to explain to a significant degree, and independently of all related background health, QOL, and both positive and negative mental health factors, respondents' judgments of Years of Desired Life. The strength of such relationships, under these statistically controlled conditions, did not diminish with the severity of the hypothetical type of disability. The power of these regression analyses would obviously be greater with fewer independent variables. Another set of analyses, based on only the independent variables that were significantly associated with Years of Desired Life (with better participants-to-variables ratio), produced virtually identical results.

Study 4: Potential Errors of Comprehension and Response

The two VOL factors' content shows little face difference; negative VOL appeared to represent simply the negatively stated content of positive VOL. Yet, in the maximum-likelihood solution, they were virtually uncorrelated. The split of the VOL items into factors exactly defined by the division of the meaning of an *agree* response—that is, 13 items where agreement denoted high VOL and 6 items where agreement denoted low VOL—is not the result one would expect from a compactly defined and error-free set of indicators of a single construct. Their lack of correlation was estimated by maximum-likelihood methods. Item-Sum composites were calculated for positive VOL and negative VOL and correlations between them computed for the Affect and QOL samples. In the Affect sample, this correlation was –.26, whereas in the QOL sample it was –.57. Thus, in actuality, the two scales are empirically related. Reasons for the difference in magnitude of the correlation across the two studies will be considered later in this article.

Traditional psychometric practice has been to balance positively and negatively stated items to reduce response error associated with agreement or social-acceptability response sets. In the present case, questions arise as to whether the two factors are measuring the same construct and, if they are, should they be combined as a single score, despite their factorial independence? A first question, however, is whether response error explains the item structure that resulted in two

factors. Earlier research has suggested that some forms of error are more prevalent among older respondents (Rodgers & Herzog, 1987). In particular, double negatives or instances where an agree reverses its meaning from item to item may be cognitively challenging for older people in whom test-taking expertise was never learned or has not been exercised recently. In the absence of a direct method for measuring error, an indirect approach was taken by defining each item in the Negative VOL factor as having been answered incongruously if its meaning was at variance with very high or very low total scores on positive VOL. This approach introduces its own source of error by assuming that people's responses should be totally consistent. Nonetheless, the general assumption that greater departures from total congruity may indicate greater error prevalence seems justified. The presumption of response error would receive support if the number of incongruences were greater with less education, lower cognitive ability, and greater frailty as indicated by more health conditions and more ADL dependencies. The Mastery Scale (Pearlin & Schooler, 1978) possesses the same characteristics, with five negatively-phrased and two positively-phrased items. These seven items exhibited the same type of two-factor structure (data not presented here) based on direction of phrasing as that shown by VOL.

PARTICIPANTS

The Affect Sample and the QOL sample were used for this study. In addition, because some VOL items and other relevant measures were used, the public-use data files from a nationally representative sample constituted a third analytic sample. The AHEAD study consists of a sample of 8,222 people 70 and older (see Myers, 1997, for an extended description of the study and other research reports from the first wave of this longitudinal study). The main interview had a mean duration of 65 minutes and was administered by computer-assisted telephone interview to the majority of respondents or face-to-face to most (70%) of those who were 80 or older. A set of experimental question modules was asked of participants, including one in which subsets of Valuation of Life questions were asked. A total of 858 completed this module.

MEASURES

Health was measured in the Affect and QOL Samples by the MAI Health Conditions index, as described earlier, and in the QOL Sample also by the MAI ADL index. The AHEAD survey utilized different measures of these same constructs. It included a 9-item Health Conditions Checklist and 11 ADL and IADL items (each scored dichotomously). A shortened CESD was used, in which seven items represented CESD-Depression. Finally, a complex set of information, memory, and mental-processing items were used to compose a cognitive function index (see Herzog & Wallace, 1997). The QOL Study utilized the Similarities subtest of the Wechsler (1958) Adult Intelligence Scale as a measure of cognitive performance.

The AHEAD study used two of the positive and four negative VOL items. To increase comparability, only the six items used in the AHEAD survey were analyzed across the three studies. One of these items, "It wouldn't bother me if my life ended soon," was not used in the final VOL scale because it was both highly skewed and displayed low loadings in the Affect study data. In addition, the response alternatives used in the AHEAD data were not the same as those in our own data sets; in the AHEAD study, they were presented as 3-point scales (1 = *most or all of the time*, 2 = *some of the time*, 3 = *hardly ever*).

In the Affect and the QOL Studies, an incongruence was counted in two instances: First, each low Valuation of Life response on a negatively phrased item (i.e., item rating of *agree very strongly* or *agree*) that was given when the positive VOL index score (based on two items) indicated high VOL (two-item sum of 8 to 10, *agree/agree very strongly*) was defined as an incongruence. Second was the opposite situation, when a negatively phrased VOL item was answered in the high-VOL direction in the presence of a very low positive VOL item sum. In the AHEAD study, incongruence was recorded by the use of only the extreme of the 3-point negative VOL response in conjunction with two highest-VOL responses to the Positive VOL questions; the converse type of incongruence (highest VOL to a negative item, together with lowest VOL to the positive items) was also counted. Despite differences among the VOL measures across the three studies, it was possible to determine the correlates of incongruence for each study but not to compare the percentages of incongruence across the

Table 7
Percentages of Incongruences for Each Negative VOL Item by Education in Three Studies

	Years of Education			
Item	*0-9*	*10-12*	*13+*	*Total*
Affect Study				
Wouldn't bother me if life ended	11	9	5	8
Enjoyments in past	15	10	2	7
Few goals in life	11	6	4	7
Just putting in time	14	7	2	6
N	88	249	254	591
Quality of Life Study				
Enjoyments in past	6	5	6	5
Few goals in life	10	7	3	6
Just putting in time	10	4	1	4
N	80	171	156	407
AHEAD Study				
Wouldn't bother me if life ended	21	11	13	14
Enjoyments in past	27	16	11	18
Few goals in life	27	18	22	23
Just putting in time	25	11	7	14
N	230	351	246	827

Note. VOL = valuation of life and AHEAD = Survey of Asset and Health Dynamics Among the Oldest Old.

studies. The relationships of education, cognition, and health to incongruence in each study separately are the focus of the data analysis.

Results

Table 7 shows the incidence of incongruent responses to each of the Negative VOL items across three categories of educational experience for each of the three studies. In the Affect study, the percentages march in exactly decreasing order for every item as educational background increases. The same pattern is seen in the QOL and the AHEAD data, but there were three instances of items where 10 to 12 years and 13 years or more of education did not differ in the predicted order.

The influence of all the predicted factors (education, cognition, ADL, and health conditions), plus age, gender, and racial background, was tested simultaneously in regression equations where number of incongruences for each participant was the dependent variable. Table 8 shows these results. Poor health was associated with more incongruent responses in all three studies, as was low education in the Affect

Table 8
Relationships of Background Factors to Number of Incongruent VOL Scores in Three Studies

	Affect			*QOL*			*AHEAD*		
	r_o		t	r_o		t	r_o		t
Age	.00	.02		.00	.00		.12	.07	
Gender (1 = male, 2 = female)	.01	.00		.03	.04		–.11	–.12	3.73***
Race (1 = Black, 2 = White)	–.08	–.04		–.06	–.05		–.03	–.08	
Education	–.15	–.13	2.98**	–.07	–.06		–.22	–.19	4.86***
Cognition	NA			–.06	–.03		–.06	–.01	
Health conditions	.15	.12	2.70**	.01	.02		–.00	-.01	
ADL (high = dependent)	NA			.07	.11	2.11*	.18	.17	4.50***

Note. VOL = valuation of life, QOL = quality of life, AHEAD = Survey of Asset and Health Dynamics Among the Oldest Old, and NA = not assessed in this study.
*$p < .05$. **$p < .01$. ***$p < .001$.

and the AHEAD samples. Neither cognition nor race was associated with incongruence independently of education and health.

Similar analyses of Pearlin and Schooler's Mastery Scale (1978) are not presented here because patterns virtually identical to those reported for the VOL Scales were observed. Allowing for variations across studies in the number of Mastery items and differences in their response format, low education and cognition and poor health were associated with incongruences in Mastery.

Discussion

Two substantive questions require discussion. First, do the data support the suggestion that VOL is a useful concept? Second, to what extent do the methodological issues raised by the separate appearance of Positive VOL and Negative VOL factors moderate the claim that the VOL construct is useful? Furthermore, what are the implications of these analyses for broader psychometric issues relating to differing sources of error among respondents whose educational background, health, or cognitive function may influence true score variance?

VALUATION OF LIFE AS A USEFUL CONSTRUCT

The construct validity of VOL was established primarily by choosing item content judged to denote active attachment to life. These

components included positive mental health in the form of constructs such as hope, purpose, and persistence. Content with obvious connotation of anxiety, depression, hostility, traditional domain-specific quality of life, health, and expectations with regard to longevity were excluded. Thus, we put to the test our assertion that freedom from negative affect does not constitute the sole basis for attachment to life. A less obvious, latent assertion is that neither does the presence of pleasure, or positive affect, fully account for how much a person values her or his life. What is left, after negative affect and positive affect, to account for the wish to continue to live? To call the residual causal influence *existential factors* succeeds hardly at all in explaining why some people who are depressed, anxious, or distressed physically still find something worthwhile in continuing to live, or why the presence of many sources of satisfaction or even elation are sometimes insufficient to reinforce the conviction that one's life is meaningful and worth living. Our findings at least keep alive the idea that it is useful to keep searching for what lies beyond psychopathology, as Jahoda, Rogers, Ryff, and many others have done.

Even without content referring to psychopathology, the VOL measures shared a moderate amount of variance with almost all the indicators of positive mental health (median $r = .51$). Their discriminant validity from the measures of health (median $r = .20$) was better than from depression (median $r = .40$). Does VOL measure anything different from positive mental health? The empirical evidence on this issue is promising, though not overwhelming. The most affirmative evidence on this issue is the finding that VOL was related to the only direct external criterion, Years of Desired Life. VOL was also consistently related to longer desired life even under conditions of functional impairment, pain, and some forms of cognitive failure. The most compelling argument in favor of VOL as a unique construct came from the demonstration of its independent relationship with many of the Years of Desired Life conditions, over and above any contributions made to Years estimates by related constructs, including the most central general measures of quality of life and positive mental health. People may discount future life on the basis of their present health, as suggested by HRQOL research and as shown by the few Years of Desired Life wished for by respondents, given some forms of functional and cognitive

impairment and severe pain (see Table 7), but clearly other factors are also important.

One possible mechanism for the potency of VOL as a determinant of Years of Desired Life is the ability of people to adjust their standards for what is acceptable in everyday life in accord with changes in both their personal characteristics and the circumstances under which they live. Long ago Helson (1964) termed the point at which level of external stimulation was perceived as neutral (that is, neither high nor low) as *adaptation level* (AL). AL theory suggested that perceptions of amount of stimulation were in a state of continuous flux as a function of the person's changing interactions with the environment. Adaptive behavior demands sensitivity to changes in the environment but also the ability to maintain some degree of stability by assimilating changes, within limits. According to AL theory, the subjective magnitude of a new stimulus is determined by three factors: the intensity of the focal stimulus, past experience with similar stimuli (recency being prepotent), and the context in which the stimulus appears. We suggest that the cognitive schema represented by VOL represents the dynamic accommodation and assimilation process by which people meet the threat of illness and decline. The focal stimulus, poor health and its attendant distresses, has a direct and debilitating effect on the person's attachment to life, as shown in the large body of HRQOL research and in the present research where poor health and depression clearly reduce some aspects of VOL. Age comparisons of self-rated health regularly show fewer or smaller age differences than seem appropriate given illness prevalence rates (Idler, 1993). "My health is great compared to other people my age" is a frequent introspection made by elders with substantial physical illness.

As a whole, these observations seem consistent with the idea that establishing new adaptation levels with changing health input provides a channel for some people to minimize the effect of poor health on their subjective states. Such an outcome is easy to visualize for affective states like depression or happiness. We suggest even further, however, that depressive feelings themselves may constitute a facet of the aging context to which partial adaption is possible. A very small proportion of depressed people wish to die, and an infinitesimal proportion commit suicide. Thus we suggest that VOL represents the

cognitive-affective AL of present, past, and contextual inputs that summarizes the meaning and purpose of the individual's total life. For many, VOL is a positive state where assimilative adaptation occurs in the form of compensating for distress. For others, negative accommodation may occur to the point where meaning and life itself become devalued in response to the threats of illness and impending death.

Years of Desired Life was the closest this research could get to the type of decision making a person might make about life-sustaining effort if in good cognitive health. Fully acknowledging the amount of error in these current measurements and the hypothetical nature of some of our inquiry, the present data nonetheless give reason to look further than physical distress or depression for factors that may determine whether the person sees life as being worthwhile or not.

VALUATION OF LIFE: TWO DIMENSIONS OR ONE?

Although nothing could be clearer than the two-dimensionality of VOL as measured by the item set used for this research, how does the selective influence of response error on Negative VOL affect the strategy for optimum measurement of this construct? It would seem that positive VOL might be preferable as an indicator because its measurement qualities are less affected by respondents' reversing their answers through misunderstanding the meaning of their *agree* or *disagree* response. If there were a strong pattern in which correlates of positive VOL and negative VOL were quite different (aside from the demographic area) or the prevalence of significant correlates of positive VOL were much greater than that for negative VOL, it would be relatively easy to recommend the use of only positive VOL.

Such patterns were not so obvious, however, as in the roughly equal sizes of the correlations between positive and negative VOL and positive mental health indicators in Table 2 and the health indicators in Table 4. Aside from the demonstrations of response errors in negative VOL, the main evidence in favor of the superiority of positive VOL is seen in its generally stronger relationships to the estimates of Years of Desired Life than was true for negative VOL.

Other aspects of the data are not totally consistent with this pattern. When positive VOL and negative VOL were correlated with other mea-

sures of positive mental health in the sample known to have the best educational background (see Table 3), the correlation pattern of the two was identical and the sizes of the relationships with positive mental health approximately equal. In the most direct test of the validity of VOL, the independent correlations of the two VOL indices with Years of Desired Life (see Table 6) were approximately equal and their combination, in total VOL, was more highly associated with Years than either alone. Finally, the differences across the three samples in the strength of relationship between positive VOL and negative VOL are telling. It was least (–.26) in the sample where greatest error was probable, the Affect sample. Special effort to control the error in the QOL sample, we suggest, was responsible for the greater convergence of the two indices ($r = –.58$), and the high educational background of the positive mental health sample made the negatively phrased items more comprehensible ($r = –.57$ between positive and negative VOL). We conclude that the results do not support the idea that VOL may be routinely divided into two factors with demonstrable discriminant validity.

What to do, then, in practice? Clearly it is imperative for the gerontological researcher to make certain that question format and response alternatives are fully understood, by illustrations and feedback to the respondent who agrees with a negative indicator: "You agreed. In other words you meant to say that . . . " (there are few ways around problems, for example). This procedure certainly helped in the QOL study. The effect of low education in producing incongruent responses still persisted, however, and was particularly marked in the AHEAD group, which was most like a representative national sample. The full 19-item VOL scale thus may be less useful in heterogeneous or culturally deprived samples. The 13-item positive VOL scale thus seems preferable, even in spite of its favoring the agreement response set, the 19-item being reserved for participant samples who are reasonably well educated and homogeneous in that respect.

This problem is not new. Many standard tests, including those frequently used with older people, have been constructed with counterbalanced item pools. Our data demonstrated this risk with a much-used scale, the Mastery Scale (Pearlin & Schooler, 1978), in addition to VOL. These findings represent a disturbing factor for measure-

ment in general. When does the response error introduced by counterbalanced positive and negative statements outweigh the response-style adjustment sought by counterbalancing?

LIMITATIONS OF THE RESEARCH AND FUTURE RESEARCH NEEDS

The discriminant validity of VOL with respect to negative mental health (depression) was marginal. Replication with new samples would be useful. But the critical test would be possible with longitudinal research, where one would have the chance to test the hypothesis that earlier VOL would predict a later measure of Years of Desired Life better than would either depression or earlier health. The adaptation hypothesis could also be tested with longitudinal data. Specifically, there should be an interaction between Time 1 VOL and change in health such that those originally higher in VOL would wish for more Years to Live at Time 2 if health diminished. Such a test might help predict why some people endure declining health with fortitude and others do not. We would also hypothesize a main effect whereby there would be an excess of those who increased their Years of Desired Life as health declined over those who decreased. That is, more people would experience adaptation to declining health in terms of positively adjusting their health utility. Finally, a curvilinear hypothesis should also be investigated, that there is a threshold of poor health beyond which the overall trend is toward decreasing Years of Desired Life, regardless of earlier level of VOL. The interactional and curvilinear hypotheses are likely to be confirmed or disconfirmed in ways that reflect individual differences. Finally, the ultimate validity criterion would emerge from following people through the end of their lives to learn whether they made any effort to and had any success in asserting their wish for palliative versus life-extending care.

Conclusion

Articulation of the concept of valuation of life resulted from the assertion that a subjective judgment process was necessary to account for the way people vary in their wish to extend or foreshorten their

lives. Where health-related quality of life suggests that poor health and distress lead people to discount the value of their remaining lives, the view expressed here is that not only do people decrement the worth of their lives, but they also increment its value in terms of positive features, usually non health-related. Valuation of life as operationalized in the research reported here represents an attempt to capture the result of such balancing of negative and positive reasons for living. Although related to positive mental health, VOL displayed a relationship to the Years of Desired Life that was independent of positive mental health, demographic characteristics, health, quality of life, and depression.

We suggest that the major contribution of this research was the identification of a cognitive-affective process that mediates between traditional measures of social position and well-being, on one hand, and processes that are close to actual wishes with regard to the prolongation or foreshortening of one's life. This research by no means contradicts the extensive body of research documenting that people are willing to forego years of life for a smaller number of distress-free years. What it does suggest is that health is not the only determinant of VOL and decrement not the only direction of change.

The VOL measure is certainly not the last word on the assessment of this construct. It seems likely that the VOL domain may be assessed by more on-target and less error-prone items than some of those presented in this report. Ultimate criteria for VOL will be found in the actual behaviors of the ending period of life, to the extent that they are determined by the person rather than by family, professional, or health system. Short of such behavioral outcome criteria, the longitudinal study of VOL as it changes in concert with changes in health and in the many aspects of quality of life will reveal the dynamics of the cognitive and affective processes that compose VOL.

REFERENCES

Aneshensel, C. S., & Yokopenic, P. A. (1985). Tests for the comparability of a causal model of depression under two conditions of interviewing. *Journal of Personality and Social Psychology*, *49*, 1337-1348.

Arbuckle, J. (1994). AMOS: Analysis of moment structures. *Psychometrika*, *59*, 135-137.

Arbuckle, J. (1996). *AMOS users' guide: SPSS* (Version 3.6). Chicago: Small Waters.
Beck, A., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The Hopelessness Scale. *Journal of Consulting and Clinical Psychology*, *38*, 861-865.
Bradburn, N. (1969). *The structure of psychological well-being*. Chicago: Aldine.
Campbell, A., Converse, P., & Rodgers. W. (1976). *Quality of life in America*. New York: Russell Sage.
Crumbaugh, J. C. (1972). Aging and adjustment: The application of logotherapy and the Purpose-In-Life Test. *The Gerontologist*, *12*, 418-420.
Diener, E., & Emmons, R. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology*, *47*, 1105-1117.
Fanshel, S., & Bush, J. W. (1970). A health-status index and its applications to health-services outcomes. *Operations Research*, *18*, 1021-1066.
Gottschalk, L. (1974). A hope scale applicable to verbal samples. *Archives of General Psychiatry*, *30*, 770-785.
Helson, H. (1964). *Adaption-level theory.* New York: Harper & Row.
Herth, K. (1990). Relationship of hope, coping styles, concurrent losses, and setting to grief resolution in the elderly. *Research in Nursing and Health*, *13*, 109-117.
Herzog, A. R., & Wallace, R. B. (1997). Measures of cognitive functioning in the AHEAD study [Special issue]. *Journal of Gerontology*, *52*B, 37-48.
Hull, J. G., Van Treuren, R. R., & Virnelli, S. (1987). Hardiness and health: A critique and alternative approach. *Journal of Personality and Social Psychology*, *53*, 518-530.
Idler, E. L. (1993). Age differences in self-assessments of health: Age changes, cohort differences, or survivorship? *Journal of Gerontology: Social Scineces*, *48*, S289-S300.
Jahoda, M. (1958). *Current concepts of positive mental health*. New York: Basic Books.
Kaplan, R. M., & Anderson, J. P. (1996). The general health policy model: An integrated approach. In B. Spilker (Ed.), *Quality of life and pharmacoeconomics in clinical trials* (pp. 309-322). Philadelphia: Lippincott-Raven.
Kobasa, S. C. (1979). Stressful life events, personality and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, *37*, 1-11.
Lawton, M. P., Kleban, M. H., & Dean, J. (1993). Affect and age: Cross-sectional comparisons of structure and prevalence. *Psychology and Aging*, *8*, 165-175.
Lawton, M. P., Kleban, M. H., Rajagopal, D., & Dean, J. (1992). The dimensions of affective experience in three age groups. *Psychology and Aging*, *7*, 171-184.
Lawton, M. P., Moss, M., Fulcomer, M., & Kleban, M. H. (1982). A research and service-oriented multilevel assessment instrument. *Journal of Gerontology*, *37*, 91-99.
Lawton, M. P., Moss, M. S., Hoffman, C., Grant, R., Ten Have, T., & Kleban, M. H. (1999). Health, valuation of life, and the wish to live. *The Gerontologist*, *39*, 406-416.
Miller, J. F., & Powers, M. J. (1988). Development of an instrument to measure hope. *Nursing Research*, *37*, 6-10.
Myers, G. C. (Ed.). (1997). Asset and health dynamics among the oldest old (AHEAD). Initial results from the longitudinal study [Special issue]. *Journal of Gerontology*, *52*B, 1-120.
Obayuama, A. O., Collins, J. L., Carter, A. L., Mamidanna, S. R., Mathura, C. C., & Wilson, S. B. (1982). Hope Index Scale: An instrument for the objective assessment of hope. *Journal of the National Medical Association*, *74*, 761-765.
Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, *19*, 12-21.
Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385-401.

Rodgers, W. L., & Herzog, A. R. (1987). Interviewing older adults: The accuracy of factual information. *Journal of Gerontology*, *42*, 387-394.

Rogers, C. R. (Ed.). (1951). *Client-centered therapy.* New York: Houghton-Mifflin.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*, 1069-1081.

Sackett, D. L., & Torrance, G. W. (1978). The utility of different health states as perceived by the general public. *Journal of Chronic Diseases*, *31*, 697-704.

Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, *4*, 219-247.

Schneiderman, L. J., Pearlman, R. A., Kaplan, R. M., Anderson, J. P., & Rosenberg, E. M. (1992). Relationship of general advance directive instructions to specific life-sustaining treatment preferences in patients with serious illness. *Archives of Internal Medicine*, *152*, 2114-2122.

Snyder, C. R., Harris, C., Anderson, J. R., Holleran, S. A., Irving, L. M., Sigmon, S. T., Yosinobu, L., Gibb, J., Langelle, C., & Harvey, P. (1991). The will and ways: Development and validation of an individual differences measure of hope. *Journal of Personality and Social Psychology*, *60*, 570-585.

Staats, S. (1989). Hope: A comparison of two self-report measures for adults. *Journal of Personality Assessment*, *53*, 366-375.

Stewart, A. L., Greenfield, S., & Hays, R. D. (1989). Functional status and well-being of patients with chronic conditions. *Journal of the American Medical Association*, *262*, 907-913.

Torrance, G. W. (1987). Utility approach to measuring health-related quality of life. *Journal of Chronic Disease*, *40*, 593-600.

Warner, S. C., & Williams, J. I. (1987). The Meaning In Life Scale: Determining the reliability and validity of a measure. *Journal of Chronic Diseases*, *40*, 503-512.

Wechsler, D. (1958). *The Wechsler Adult Intelligence Scale: Manual*. New York: The Psychological Corporation.

Wechsler, D. (1981). *WAIS-R Manual: Wechsler adult intelligence* (Rev. ed.). New York: The Psychological Corporation.