

# *Empirical Assessment of a Three-Dimensional Wisdom Scale*

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Although wisdom is thought to be a strong predictor for many attributes of aging well, the concept of wisdom still lacks a comprehensive, directly testable scale. Quantitative and qualitative interviews with a sample of 180 older adults (age 52-plus) were conducted to develop a three-dimensional wisdom scale (3D-WS) and to test its validity and reliability. Wisdom was operationalized and measured as a latent variable with cognitive, reflective, and affective effect indicators. Respondents completed a self-administered questionnaire, which included 114 items from existing scales and 18 newly developed items to assess the three dimensions of wisdom. The final version of the 3D-WS consists of 14 items for the cognitive, 12 for the reflective, and 13 for the affective component of wisdom. Results indicate that the 3D-WS can be considered a reliable and valid instrument and a promising measure of the latent variable wisdom in large, standardized surveys of older populations.

**Keywords:** *wisdom; cognition; reflection; compassion; scale construction; aging well*

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*Wise older people* are generally expected to age more successfully than do those low on wisdom (Baltes, Smith, and Staudinger 1992;

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AUTHOR'S NOTE: I would like to thank Anthony J. LaGreca and John C. Henretta for suggestions and comments on earlier drafts. Special thanks go to Carla Edwards, Anna Campbell, Adeen Woolverton, Nicolette Fertakis, Lisa Hamilton, Martine Gauthier, Stephen Mayer, Dacia Caglin, Dana Federici, Amy Monk, Brad Tripp, Elizabeth Brown, and Yvonne Combs for their help at various stages of the research project and to the research participants for their time and commitment to the study. The research was supported by a grant from NIH/NIA (R03 AG14855-01) and a Research Initiation Project Award from the College of Liberal Arts and Sciences at the University of Florida. A previous version of this article was presented at the 1999 annual meetings of the Gerontological Society of America in San Francisco, CA. Correspondence concerning this article should be addressed to Monika Ardel, University of Florida, Department of Sociology, P.O. Box 117330, Gainesville, FL 32611-7330. Phone: (352) 392-0251 ext. 247; fax: (352) 392-6568; e-mail address: ardel@soc.ufl.edu.

RESEARCH ON AGING, Vol. 25 No. 3, May 2003 275-324  
DOI: 10.1177/0164027503251764  
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Baltes et al. 1990). Wisdom is associated with a multitude of positive characteristics, such as ego integrity and maturity, judgment and interpersonal skills, and an exceptional understanding of life (Clayton 1982; Dittmann-Kohli and Baltes 1990; Erikson 1963, 1964; Erikson, Erikson, and Kivnick 1986; Kekes 1983; Orwoll and Perlmutter 1990; Pascual-Leone 1990; Sternberg 1990b; Vaillant 1993). Hence, wisdom in old age is assumed to be positively related to mental health, satisfaction with life, and the ability to cope with physical and social decline and the nearing of death (Achenbaum and Orwoll 1991; Bianchi 1994; Chinen 1987; Clayton 1982; Erikson 1982; Erikson et al. 1986). Erikson (1964) claimed that "wisdom is detached concern with life itself in the face of death itself" (p. 133). Wise elders are assumed to be able to maintain the integrity of experience even when confronted with physical deterioration and death because they can accept life's limitations, contradictions, uncertainty, and unpredictability (Blazer 1991). Furthermore, wisdom is one of the few personal strengths that is believed to increase rather than decline with advanced age (Baltes 1993; Baltes and Smith 1990; Denney, Dew, and Kroupa 1995; Holliday and Chandler 1986; Kekes 1983). Yet, only few empirical studies exist to test those hypotheses. The reason might be less a disinterest of gerontologists in wisdom but difficulties in measuring this elusive concept.

The purpose of the present study was the development of a self-administered three-dimensional wisdom scale (3D-WS) for use in large, standardized surveys of older populations. Quantitative and qualitative interviews with a sample of close-knit social groups of 180 older adults (age 52-plus) were conducted to test the validity and reliability of the 3D-WS, a latent variable with cognitive, reflective, and affective effect indicators. Although it might be difficult or even impossible to measure wisdom per se through a standardized self-administered questionnaire, it is hypothesized that wisdom can be assessed indirectly through indicators that are essential elements of the latent variable wisdom.

Criteria for the assessment of a scale are both validity and reliability (Bollen 1989; DeVellis 1991; Mangen, Peterson, and Sanders 1982; Robinson, Shaver, and Wrightsman 1991). Validity, which measures the accuracy of a scale, was determined through construct, content, predictive, discriminant, and convergent validity. Reliability, that is, the stability or constancy of a scale, was evaluated by Cronbach's alpha,

the correlation between indicators, confirmatory factor analysis to take measurement error into account, and the test-retest reliability of the scale. Overall, empirical tests indicate that the 3D-WS is a valid and reliable instrument and a promising measure of older persons' indicators of the latent variable wisdom in large standardized samples.

### *Definition of Wisdom*

Although wisdom research has gained in popularity over the past two decades, a generally agreed on definition of wisdom does not yet exist (Dittmann-Kohli and Baltes 1990; Kramer 2000). However, there is consensus that wisdom is a multifaceted and multidimensional concept and that the multiple facets and dimensions reinforce each other (Baltes and Staudinger 2000; Taranto 1989; Webster 2003). The multifaceted nature of wisdom tends to evoke different connotations depending on the philosophical and theoretical orientation of the researcher. For example, wisdom has been defined as “a form of advanced cognitive functioning” (Dittmann-Kohli & Baltes, 1990:54), “expertise in the conduct and meaning of life” (Baltes and Staudinger 2000:124), the art of questioning (Arlin 1990), the awareness of ignorance (Meacham 1990), the transformation of intrapersonal, interpersonal, and transpersonal experiences in the domains of personality, cognition, and conation (Achenbaum and Orwoll 1991), and

the application of tacit knowledge as mediated by values toward the achievement of a common good through a balance among multiple (a) intrapersonal, (b) interpersonal, and (c) extrapersonal interests in order to achieve a balance among (a) adaptation to existing environments, (b) shaping of existing environments, and (c) selection of new environments. (Sternberg 1998:347)

Most definitions of wisdom contain cognitive and reflective elements, whereas the affective dimension of wisdom is often neglected.

In the present study, wisdom is defined as an integration of cognitive, reflective, and affective dimensions based on previous work by Clayton and Birren (1980). This basic definition of wisdom appears to be compatible with most modern as well as ancient descriptions of wisdom (Blanchard-Fields and Norris 1995; Levitt 1999; Manheimer

1992; Sternberg 1990b, 1998) and has the additional advantage of being relatively parsimonious.

The cognitive dimension of wisdom refers to a person's ability to understand life, that is, to comprehend the significance and deeper meaning of phenomena and events, particularly with regard to intrapersonal and interpersonal matters (Ardelt 2000b; Blanchard-Fields and Norris 1995; Chandler and Holliday 1990; Kekes 1983; Sternberg 1990a). This includes knowledge of the positive and negative aspects of human nature, of the inherent limits of knowledge, and of life's unpredictability and uncertainties. Items that belong to the cognitive component of wisdom should assess people's ability and willingness to understand a situation or phenomenon thoroughly as well as people's knowledge of the ambiguity of human nature and of life in general. Items should measure knowledge/beliefs about the world that are the result of perspective-taking skills but they should not assess perspective taking (or a lack thereof) *per se* to distinguish this dimension from the reflective component of wisdom.

The reflective dimension is a prerequisite for the development of the cognitive dimension of wisdom. A deeper understanding of life is only possible if one can perceive reality as it is without any major distortions. To do this, one needs to engage in reflective thinking by looking at phenomena and events from many different perspectives to develop self-awareness and self-insight. This practice will gradually reduce one's self-centeredness, subjectivity, and projections, and increase one's insight into the true nature of things, including the motivations of one's own and other people's behavior (Chandler and Holliday 1990; Clayton 1982; Csikszentmihalyi and Rathunde 1990; Kramer 1990; Orwoll and Achenbaum 1993; Rathunde 1995; Taranto 1989). Items for the reflective component should measure the degree to which people try to overcome subjectivity and projections by looking at phenomena and events from different perspectives and how much they avoid blaming other people or circumstances for their present situation.

A diminished self-centeredness and a better understanding of people's behavior, in turn, are likely to improve one's affective emotions and demeanor toward others and tend to increase sympathetic and compassionate love (Csikszentmihalyi and Rathunde 1990; Levitt 1999; Pascual-Leone 1990). Items for the affective dimension of wisdom should, therefore, assess the presence of positive emotions and

behavior toward other beings, such as feelings and acts of sympathy and compassion, and the absence of indifferent or negative emotions and behavior toward others.

The three dimensions are not independent of each other, but they are not conceptually identical either. For example, the understanding of a deeper reality (cognitive dimension) is quite different from a feeling of sympathy and compassion for others (affective dimension). However, all three have to be simultaneously present for a person to be considered “wise” (Clayton and Birren 1980). For example, without the affective element, the construct might assess advanced cognitive functioning or intelligence but not necessarily wisdom. Similarly, without the cognitive component, a person might be well-intentioned but not necessarily successful and effective when interacting with others (Webster 2003). As Vaillant (1993:158) observed, “we can all imagine care without wisdom, but not wisdom without care.” Finally, the lack of the reflective dimension invokes the image of a sympathetic counselor who is unable to help himself or herself (Schmidbauer 1977).

The reflective dimension of wisdom is the crucial component among the three because it encourages the development of both the cognitive and the affective elements of wisdom (Ardelt 2000a). A deeper understanding of life and human nature arises after the consideration of multiple points of view and an overcoming of subjectivity and projections. Similarly, projections do not only distort the perception of reality, but they are often accompanied by negative emotions and feelings such as depression, anger, or even hatred. However, through the practice of (self-)reflection, people on the path to wisdom learn not to react to unpleasant sensations, to accept the reality of the present moment, and to acknowledge and understand their own and other persons’ motives and behavior (Hart 1987). Hence, genuine feelings of sympathy and compassion for others will emerge only after a decrease in self-centeredness through the transcendence of subjectivity and projections (Clayton and Birren 1980; Kramer 1990; Pascual-Leone 1990).

Defined in this way, wisdom is considered a personality characteristic rather than a performance-based characteristic that might vary from one context to the next (Sternberg 1998). It is also a Weberian ideal type since only very few people might exist that would satisfy the above definition of a wise person. Although wisdom per se might be

relatively difficult to find, it should still be possible to assess how close people come to this ideal state.

The conceptualization of wisdom as an integration of cognitive, reflective, and affective personality characteristics is compatible with Erikson's (1982) stage model of human development that describes wisdom as the virtue that results from the successful resolution of the eighth psychosocial crisis, integrity versus despair, in old age. According to Erikson's theory of human development, people's task in old age is to come to terms with their present life and the "inalterability of the past" (Erikson et al. 1986:56). To do this, they have to understand and accept life as it is, including physical decline and the reality of death.

A more detailed discussion of the definition of wisdom and the difference between intelligence, intellectual knowledge, and wisdom can be found in Ardelt (1997, 2000b), Clayton (1982), and Clayton and Birren (1980).

#### *Previous Empirical Wisdom Research*

Empirical wisdom research can be divided into studies that (1) assess the implicit theories or the meaning of wisdom among laypersons and (2) measure people's degree of wisdom or their wisdom-related performance based on either explicit or implicit theories of wisdom.

#### *ASSESSMENT OF IMPLICIT THEORIES OF WISDOM*

Research that focuses on determining the implicit theories or the meaning of wisdom among individuals from different age groups confirms that most people identify cognitive, reflective, and affective characteristics as important elements of wisdom, consistent with the operationalization of the 3D-WS. For example, in their pioneering research on wisdom, Clayton and Birren (1980) gave 83 adults of three age groups (31 young, 23 middle-aged, and 29 old) a list of 12 wisdom descriptors plus the words *wise*, *aged*, and *myself*. The wisdom descriptors had been generated by members of an earlier research project. Clayton and Birren instructed the participants to rate the similarity of all possible, nonredundant word pairs. Multidimensional scaling analysis of the similarities between the pairs yielded three dimensions,

which Clayton and Birren (1980) described as cognitive (knowledgeable, experienced, intelligent, pragmatic, and observant), reflective (introspective and intuitive), and affective (understanding, empathetic, peaceful, and gentle).

In a similar approach, Holliday and Chandler (1986) asked 150 adults of three age groups (50 young, 50 middle-aged, and 50 old) to describe the concept of wisdom. In a second study, another group of 150 adults (with the same age composition) rated the obtained 79 “wisdom attributes” on a scale from 1 (*almost never true of wise people*) to 7 (*almost always true of wise people*). A principal component analysis of the descriptors resulted in a five-factor model. Holliday and Chandler (1986) named the factors “exceptional understanding,” “judgement and communication skills,” “general competencies,” “interpersonal skills,” and “social unobtrusiveness.” However, a closer examination shows that cognitive, reflective, and/or affective items are present in four of the five factors. The factor labeled “exceptional understanding” is a mixture of reflective (e.g., has learned from experience), cognitive (e.g., sees the essence of situations), one affective (empathic), and other items (e.g., not necessarily formally educated); “general competencies” is a mixture of cognitive (e.g., intelligent; knowledgeable), one reflective (thoughtful/thinks a great deal), and other items (e.g., articulate; respected); “judgement and communication skills” is a mixture of cognitive (e.g., comprehending; understands life), reflective (e.g., reflective; considers all options in a situation), one affective (uncondescending), and other items (e.g., conservative); “interpersonal skills” is a mixture of affective items (e.g., unselfish; compassionate), equanimity (e.g., even-tempered; poised), and other items (e.g., modest/humble); and “social unobtrusiveness” is a mixture of different items.

Similarly, Sternberg (1990a) first asked professors of art, business, philosophy, and physics and laypersons to describe the ideal wise individual in their occupation or, for laypersons, in general. The obtained descriptors were then given to a second group of laypersons and professors from the same occupations who rated the items on a scale from 1 (*behavior extremely uncharacteristic for a wise person in my occupation/in general*) to 9 (*behavior extremely characteristic*). The 40 top-rated behaviors were then sorted by 40 college students in as many piles as they liked. A nonmetric multidimensional scaling analysis of the sortings produced six dimensions, which Sternberg



(1990a) labeled “reasoning ability,” “sagacity,” “learning from ideas and environment,” “judgement,” “expeditious use of information,” and “perspicacity.” Again, all of the dimensions contain cognitive, reflective, and/or affective wisdom attributes. The reasoning dimension consists of cognitive items (e.g., has good problem-solving ability; has a logical mind; is good at distinguishing between correct and incorrect answers), and the sagacity dimension is a mixture of affective and reflective items (e.g., displays concerns for others; is fair; considers advice; knows self best; listens to all sides of an issue). The dimension “learning from ideas and environment” is a combination of one cognitive (is perceptive), one reflective (learns from other people’s mistakes), and one other item (attaches importance to ideas); “judgment” is a combination of reflective (e.g., thinks before speaking; thinks before acting or making decisions), cognitive (e.g., acts within [is aware of] own physical and intellectual limitations), and one other item (is sensible); “expeditious use of information” is a combination of maturity (has age, maturity, or long experience) and reflective items (e.g., changes mind on basis of experience); and “perspicacity” is a combination of one reflective (has intuition) and several cognitive items (e.g., can offer solutions that are on the side of right and truth).

The above review shows that the factors/dimensions obtained from exploratory factor analysis and multidimensional scaling tend to be a combination of cognitive, reflective, affective, and other wisdom items. Although the list of wisdom characteristics that was generated and subsequently rated by respondents was not identical in the three studies, cognitive, reflective, and affective wisdom descriptors dominated in all research projects.

*MEASUREMENT OF WISDOM OR WISDOM-RELATED  
PERFORMANCE BASED ON EXPLICIT OR  
IMPLICIT THEORIES OF WISDOM*

Paul Baltes and colleagues at the Max Planck Institute of Human Development in Berlin (e.g., Baltes 1991; Baltes et al. 1992; Baltes and Staudinger 2000; Baltes et al. 1990), a prominent group of contemporary wisdom researchers, and Kitchener and Brenner (1990) used explicit rather than implicit theories of wisdom to measure people’s wisdom-related performance. According to Sternberg (1998),



“explicit theories are constructions of (supposedly) expert theorists and researchers rather than of laypeople. In the study of wisdom, most explicit-theoretical approaches are based on constructs from the psychology of human development” (p. 349). As Takahashi (2000) has shown, explicit theories of wisdom might differ for the philosophical wisdom traditions of Western and Eastern cultures. The wisdom traditions of the West tend to emphasize the cognitive dimension of wisdom (i.e., knowledge and analytical ability), whereas the Eastern wisdom traditions tend to integrate the cognitive, reflective, and affective elements of wisdom. In the Eastern wisdom traditions, wisdom is characterized by flexibility, honesty, sensitivity, understanding, compassion, altruism, and a balanced state of mind that is able to perceive and accept the reality of the present moment. Wise persons look toward the past with gratitude, try to be of service in the present, and consider the future with responsibility (Clayton and Birren 1980; Hart 1987; Levitt 1999; Nakasone 1994).

Following the Western wisdom traditions, Baltes and colleagues (Baltes and Smith 1990) defined wisdom as “an *expert knowledge system* in the domain, fundamental life pragmatics (e.g., life planning, life management, life review)” (p. 95). For the Berlin group, wisdom is not a personality characteristic but “an expert system dealing with the meaning and conduct of life” (Baltes and Staudinger 2000:124). Wisdom-related performance is assessed by asking respondents to evaluate certain hypothetical life problems. For instance, participants are presented with a hypothetical situation in which Joyce, a 60-year-old widow, contemplates giving up her business to live with her son and to care for his two small children (Smith and Baltes 1990). The respondents’ answers are then rated by at least two independent judges according to the following five wisdom criteria: rich factual knowledge, rich procedural knowledge, life span contextualism, value relativism, and the recognition and management of uncertainty. Performances are regarded as wise if all five criteria are present. Baltes and colleagues found that clinical psychologists tended to score higher on that wisdom measure than other professionals (Staudinger et al. 1998; Staudinger, Smith, and Baltes 1992). Openness to experience, psychological mindedness, creativity, and certain cognitive thinking styles were also positively correlated with respondents’ wisdom scores (Staudinger et al. 1998; Staudinger, Lopez, and Baltes 1997).

In a similar approach, Kitchener and Brenner (1990) applied the Reflective Judgement Interview (RJI) to assess a person's wisdom-related performance. They rate people according to their ability to solve ill-structured or wicked decision problems (i.e., problems that have no clearly defined solution). Individuals who reach stage 7, the highest stage of the reflective judgment model, make judgments that are assumed to be wise. "Such judgements reflect a recognition of the limits of personal knowledge, an acknowledgment of the general uncertainty that characterizes human knowing, and a humility about one's own judgements in the face of such limitations" (Kitchener and Brenner 1990:226). The RJI is positively correlated with education and with age among high school and college students and young adults.

By contrast, Ardel (1997, 2000a) defined wisdom as a combination of cognitive, reflective, and affective personality characteristics based on implicit theories of wisdom and explicit wisdom theories from the Eastern wisdom traditions. To measure the cognitive, reflective, and affective components of wisdom, items were selected at face validity from Haan's Ego Rating Scale (Haan 1969) and the California 100-item Q-sort (Block 1971) in a secondary data analysis of a sample of 120 White older adults (age range: 58 to 82 years) from Berkeley, California. The respondents were originally studied in 1928 to 1929 and again in 1968 to 1969 as part of a 40-year follow-up project (Maas and Kuypers 1974). All items were rated by at least two clinically experienced and trained coders who read the transcribed semi-structured interviews.

In structural equation models with latent variables (Bollen 1989; Jöreskog and Sörbom 1988), the social environment of early adulthood had a significant positive impact on wisdom more than 40 years later, whereas mature personality characteristics in early adulthood and the quality of one's childhood exerted no enduring effects (Ardel 2000a). Further analyses suggested that wise older people tended to grow psychologically through the experience of economic hardship during the Great Depression, whereas the psychological health of less wise elderly men and women who were similarly challenged was likely to decline after the Depression years (Ardel 1998).

Contrary to situational theory (Johnson 1995), the latent variable wisdom had a stronger impact on life satisfaction in old age than other indicators of the quality of life (e.g., physical health, socioeconomic status, financial situation, physical environment, and social involve-

ment). However, wisdom was not related to any of the other quality-of-life indicators with the exception of a positive impact on physical health (Ardelt 1997, 2000a). This suggests that a person's psychosocial development might be more important in determining his or her subjective well-being than objective circumstances (Bianchi 1994; Erikson et al. 1986; Taranto 1989).

One major limitation with most empirical wisdom studies to date is that they are not well suited for large, representative samples because they require at least two trained coders who rate the transcribed interviews. To measure wisdom in large samples, it is therefore necessary to develop a standardized wisdom scale that can be administered as part of a standardized survey.

Wink and Helson (1997) attempted to assess wisdom through a standardized self-administered scale by combining cognitive, reflective, and mature adjectives from the Adjective Check List (ACL). They called this construct "practical wisdom" and compared it to wisdom ratings based on respondents' examples of the development of their own wisdom, which they labeled "transcendent wisdom." For a high rating on transcendent wisdom, "the statement needed to be abstract (transcending the personal), insightful (not obvious), and to express key aspects of wisdom, such as a recognition of the complexity and limits of knowledge, an integration of thought and affect, and philosophical/spiritual depth" (p. 6). Both wisdom measures were significantly related to ego development, insight, autonomy, and psychological mindedness; but only practical wisdom was correlated with generativity, social initiative, leadership, and empathy, and only transcendent wisdom was correlated with intuition, occupational creativity, and flexibility. Neither practical nor transcendent wisdom was related to life satisfaction or marital satisfaction. However, the two wisdom measures were not statistically correlated with each other for women and only weakly correlated for men.

Similarly, Webster (2003) designed a self-assessed wisdom scale (SAWS) for use in standardized surveys. The SAWS, which is a combination of five components (critical life experiences, reflectiveness/remembrance, emotional regulation, openness to experience, and humor), attempts to assess the noncognitive aspects of wisdom. The SAWS was significantly correlated with ego integrity, generativity, perceived health, and gender. In accordance with its focus on the non-cognitive dimensions of wisdom, the SAWS was unrelated to education.

By contrast, the 3D-WS attempts to combine the cognitive as well as the noncognitive aspects of wisdom in one standardized and self-administered scale. This approach is consistent with implicit theories of wisdom (Clayton and Birren 1980; Holliday and Chandler 1986; Sternberg 1990a) and also with explicit theories that are based on the Eastern wisdom traditions (Takahashi 2000).

### *Hypotheses*

It is hypothesized that the parsimonious, yet comprehensive, three-dimensional wisdom scale (3D-WS), consisting of cognitive, reflective, and affective dimensions, is a valid and reliable instrument to measure older people's indicators of the latent variable wisdom in large, standardized samples. Validity is assessed through construct, content, predictive, discriminant, and convergent validity. Reliability is determined by the internal reliability of the 3D-WS and its individual dimensions (Cronbach's alpha, the correlation between indicators, and confirmatory factor analysis) and the test-retest reliability of the scale. In particular, the following specific hypotheses are tested.

*Internal reliability.* The internal consistency of the items measuring the cognitive, reflective, and affective dimensions of the 3D-WS should be high, that is, they should have a Cronbach's alpha value of at least .70 (DeVellis 1991).

### *Construct validity and internal reliability.*

1. The cognitive, reflective, and affective dimensions of the 3D-WS should at least be moderately related to each other ( $r \geq .30$ ).
2. The standardized factor loadings of the cognitive, reflective, and affective effect indicators of the latent variable wisdom should be statistically significant with a value of .40 or above, and the overall model should fit the data.
3. The reflective dimension of the latent variable wisdom should have the highest factor loading because it fosters both cognitive and affective characteristics of wisdom.

A person might be cognitively advanced without developing sympathy and compassion toward others or, conversely, a person might be

softhearted without necessarily understanding the true and deeper meaning of life and human nature. However, reflective thinking and the praxis of self-reflection will simultaneously increase one's understanding of life through the transcendence of one's subjectivity and projections and one's sympathy and compassion toward others through insight into one's own and others' motives and behavior and a reduction in self-centeredness.

*Content validity.*

1. Descriptions of wisdom given by the respondents should resemble the descriptions given by participants in previous wisdom studies (Clayton and Birren 1980; Holliday and Chandler 1986; Sternberg 1990a). In particular, respondents should mention a combination of cognitive, reflective, and affective personality qualities as descriptive characteristics of wisdom.
2. The 3D-WS should significantly correlate with a three-dimensional wisdom scale based on cognitive, reflective, and affective ratings by three independent judges of the qualitative interviews.

*Predictive validity.* The 3D-WS should correlate positively with mastery and psychological well-being and negatively with psychological ill-being and negative attitudes toward death.

Wise older people are often believed to be psychological healthy, to possess a mature and integrated personality, and to be able to cope with the vicissitudes of life, including physical deterioration and the nearing of death (Assmann 1994; Bianchi 1994; Clayton 1982; Erikson 1982; Kekes 1983; Kramer 2000; Pascual-Leone 1990). If this is true, wisdom should be positively related to subjective well-being in old age and negatively related to psychological ill-being, fear of death, and death avoidance. Indeed, Ardel (1997) found a positive association between wisdom and life satisfaction in old age. However, the association between wisdom and fear of death and death avoidance has not been empirically tested yet (Kastenbaum 1999).

*Discriminant validity.* The 3D-WS should be unrelated to respondents' general life conditions and a social desirability index.

Previous research has shown that wisdom helps people to cope with the vicissitudes of life and that wise elders tend to be content independent of their objective circumstances (Ardelt 1997, 1998; Bianchi

1994; Erikson et al. 1986). If the 3D-WS indeed measures wisdom and not social desirability, it should be unrelated to a social desirability index.

#### *Convergent validity*

1. Respondents who were nominated as wise by other study participants in the respondent's close-knit social group should score higher on the 3D-WS than should respondents who were not nominated.
2. "Naive" wisdom ratings by the interviewer of the qualitative interviews and another independent judge should significantly correlate with the 3D-WS.

*Test-Retest reliability.* The factor loadings of the 3D-WS at the beginning of the study should not be statistically different from the factor loadings of the 3D-WS 10 months later (Bollen 1989).

#### *Method*

##### *PROCEDURE*

To develop a new personality scale, the initial item pool needs to be large so that inappropriate items or items that do not fulfill statistical requirements can later be eliminated (Robinson et al. 1991). DeVellis (1991) suggested "to begin with a pool of items that is three or four times as large as the final scale" (p. 57). Potential wisdom items that appeared to tap either the cognitive, reflective, or affective dimension of wisdom as defined above were primarily selected from the *Directory of Unpublished Experimental Mental Measures*, volumes 1 through 6 (Goldman and Busch 1978, 1982; Goldman and Mitchell 1990, 1995; Goldman and Osborne 1985; Goldman and Saunders 1974), *Measures of Social Psychological Attitudes* (Robinson and Shaver 1973), and *Scales for the Measurement of Attitudes* (Shaw and Wright 1967). This search resulted in 158 items (64 for the cognitive, 38 for the reflective, and 56 for the affective component of wisdom). Among those, 18 items were newly constructed items.

All items were alphabetically ordered and rated by a team of five independent judges whether the item belonged to the cognitive, reflective, or affective dimension of wisdom. Three of the judges had not worked on this project before and were given only the definition of the three dimensions of wisdom described above. Items that received not more than one dissenting opinion (out of five) were assigned the respective dimension. Ninety items were chosen in this way. The research team then discussed all items together that were not picked in the first round. If the team could reach a consensus as to which of the three dimensions an item belonged, the item was picked during the second round. For some items, the wording had to be changed to make them less ambiguous. Forty-five items were chosen in this way. All remaining 23 items were discarded.

The items for the wisdom scale were divided into two groups according to their answer categories. Items that included the words *I*, *me*, or *my* were primarily measured on a scale ranging from 1 (*definitely true of myself*) to 5 (*not true of myself*). The answer categories were adapted from the Acceptance of Self and Other Scale (Berger 1952; Shaw and Wright 1967). All other items used a Likert-type scale format ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Items within each answer category group were randomly sorted, using a random number table (The RAND Corporation 1955). The preliminary questionnaire was pretested on a convenience sample of nine people age 55 or older. After the pretest, several adjustments were made to the questionnaire: Instructions and wording of the items were made more precise, 3 negative item wordings were turned into positive ones, 4 possible wisdom items that were either dated or ambiguous were deleted, and 1 new wisdom item was added. This procedure resulted in a total of 132 potential wisdom items for the study (49 for the cognitive, 40 for the reflective, and 43 for the affective component of wisdom).

### SAMPLE

#### *Initial Sample*

A stratified sample of close-knit social groups of older adults (target age 55-plus) from North-Central Florida was selected. The sample was drawn from close-knit social groups to ask respondents for



wisdom nominees among their group members. Because the elders in society are presumably more likely to be wise than the young (Baltes 1993; Baltes and Smith 1990; Holliday and Chandler 1986; Kekes 1983), only the elderly population was sampled. The stratification variables were race, gender, and socioeconomic composition of the group. Using word-of-mouth and the Yellow Pages, 38 religious, social, or civic groups that had at least eight members with a minimum age of 55 were contacted between September and December 1997. Among these, 18 group leaders allowed a researcher to speak to the group members and ask for volunteers for a "personality and aging well" study. The researchers did not mention to the group leaders or the members that the study was about the development of a wisdom scale. Of these 18 groups, 3 failed to meet the age requirement and were subsequently excluded from the study. Three additional groups provided their membership lists so that all members could be contacted directly. Hence, a total of 18 groups participated in the study.

Six of the 18 groups had primarily African American members, 7 groups had primarily White members, and 5 groups had mixed racial membership. Four of the groups were women's groups and 1 was a men's group. Thirteen groups consisted of civic or community organizations and the remaining 5 were church groups.

The first wave of data collection took place between December 1997 and June 1998. Members of the research team telephoned respondents who signed up for the study to make an appointment for the delivery of the questionnaire. Even though research team members did not conduct the interview to provide respondents with a greater sense of privacy when answering the questions, for this sample of elderly individuals, it was deemed necessary to give personal instructions for completing the questionnaire. Only if the research team member realized that the respondent had difficulties reading the questions did he or she actually conduct the interview. Ten respondents needed assistance in completing the questionnaire. All other surveys were returned by mail in stamped, preaddressed envelopes.

A total of 180 older adults, ranging in age from 52 to 87 years with a mean age of 71 years ( $SD = 8.02$ ) and a median age of 72 years, ultimately decided to participate. Of the respondents, 73% were women, 72% were White, 61% were married, 30% were widowed, and 78% were retired. Of the respondents, 29% had a high school diploma as their highest educational degree, 17% had some college, 13% had a

bachelor's degree, and 31% had a graduate degree. The median income was about \$35,000 per year. Sixteen married couples participated in the study.

#### *Qualitative Sample*

Ten months after the initial interview, respondents with the highest and the lowest scores and those around the median of the 3D-WS at time 1 (see below) were selected for a qualitative study. A variable was created that identified respondents (1) who scored below the 25% quartile on each of the three dimensions of wisdom; (2) who scored above the 25% quartile but below the 75% quartile on each of the three dimensions; and (3) who scored above the 75% quartile on each of the three dimensions. This resulted in 5 consistently low wisdom scorers on all three dimensions, 28 medium wisdom scorers, and 12 consistently high wisdom scorers. All 5 consistently low and all 12 consistently high scorers were selected for the qualitative study. In addition, 11 respondents with the lowest combined wisdom scores (i.e., the average of the scores on the cognitive, reflective, and affective dimensions) and 4 respondents with the highest combined wisdom scores were selected. Around the median of the combined wisdom score, 16 respondents were chosen. Of these 16 respondents, 14 scored above the 25% quartile but below the 75% quartile on each of the three dimensions of wisdom, and 2 were selected because they received 5 and 8 wisdom nominations by their fellow group members who also participated in the study (see below). Two additional respondents were selected because more than half of their fellow group members in the study characterized these respondents as wise. As a result, the initial pool of potential qualitative respondents contained 50 members.

Of the 5 consistently low scorers, 3 participated, and of the other 11 respondents with the lowest combined wisdom scores, 6 participated. One additional respondent with a combined wisdom score just above the 11 lowest wisdom scorers was selected to obtain 10 interviews. Eleven of the 14 respondents who scored above the 25% quartile but below the 75% quartile on each of the three dimensions of wisdom participated. Both respondents who received 5 and 8 wisdom nominations participated. Of the 2 respondents who were characterized by more than half of their fellow group members as wise, 1 participated. In addition, 4 other respondents were interviewed resulting in 18

participants for the median wisdom score category. Of the 12 consistently high scorers, 8 participated, and of the other 4 respondents with the highest combined wisdom scores, 3 participated. One additional high wisdom scorer was selected, resulting in 12 interviews. Overall, 40 qualitative interviews with 12 high, 10 low, and 18 median scorers were conducted.

An interviewer who was unaware of the purpose of the study visited the 40 participants of the qualitative study in their homes. Using a semistructured qualitative interview procedure, respondents were asked about the most pleasant and unpleasant events during the past week, month, year, and their entire life. In addition, respondents were asked how they dealt with the unpleasant events. The interview was based on the assumption that wise older people tend to use cognitive, reflective, and affective personality skills to deal with unpleasant events and that they might have grown in these qualities by learning to cope successfully with past crises and hardships (Ardelt 1998; Park, Cohen, and Murch 1996). Although, for the purpose of this study, the unpleasant events were more relevant than the pleasant ones, the interviewer probed about pleasant events during the past week first to break the ice and then alternately asked about pleasant and unpleasant events to keep the respondents' stress level from rising. The interviews, which lasted on average between 30 and 60 minutes, were tape-recorded and later transcribed verbatim. After the interview, the interviewer gave the respondent a follow-up questionnaire and a stamped return envelope and asked the respondent to mail back the completed survey.

#### *Follow-Up Sample*

All respondents with known addresses who were not selected for the qualitative part of the study were contacted by mail 10 months after their first interview and asked to fill out a second questionnaire. About two to three weeks after the initial mailing, a member of the research team called all study participants who did not return the second questionnaire to remind them of the questionnaire and to ask if they needed any help in completing the survey. This procedure was also followed with qualitative study participants who failed to return the quantitative survey within three weeks. A total of 123 respondents, or about 70% of the initial sample, with known addresses returned the second questionnaire.

### MEASURES

The measures that were administered in this study serve two purposes: first, the construction of a three-dimensional wisdom scale (3D-WS) and second, the assessment of the content, convergent, predictive, and discriminant validity of the newly constructed scale. Wisdom nominations by other respondents and wisdom ratings by external raters were employed to test the content and convergent validity of the 3D-WS. Preexisting scales that measure aspects of psychological health and attitudes toward death were used to determine predictive validity of the 3D-WS. Preexisting standard scales that assess general life conditions and a social desirability bias were administered to analyze the discriminant validity of the 3D-WS.

#### *Wisdom*

*Three-dimensional wisdom scale (3D-WS).* Wisdom is treated as a latent variable with cognitive, reflective, and affective effect indicators. The cognitive component is assessed by items that measure an understanding of life or the desire to know the truth. This includes knowledge of the paradoxical (i.e., positive and negative) aspects of human nature, tolerance of ambiguity and uncertainty, and the ability to make important decisions despite life's unpredictability and uncertainties. The reflective component measures the ability to look at phenomena and events from different perspectives and to avoid subjectivity and projections (i.e., to avoid blaming other people or circumstances for one's own situation or feelings). The affective element captures the presence of positive emotions and behavior toward other beings, such as feelings and acts of sympathy and compassion, and the absence of indifferent or negative emotions and behaviors toward others. As discussed earlier, all items were assessed using one of two 5-point scales, ranging either from 1 (*strongly agree*) to 5 (*strongly disagree*) or from 1 (*definitely true of myself*) to 5 (*not true of myself*).

The following steps were taken to select the individual items for the 3D-WS (DeVellis 1991): (1) all items with a range < 4 were deleted; (2) items with either a high skewness or a high kurtosis ( $> |2|$ ) or a small variance ( $< .56$ ) were eliminated; (3) all items whose correlation with a social desirability index was .30 or above were deleted; (4) items that correlated negatively or very weakly with other items from

the same dimension of the wisdom scale were eliminated; and (5) some items that consistently correlated negatively with items from the other two dimensions of the wisdom scale were deleted.

The above-described procedure resulted in 14 items for the cognitive, 12 items for the reflective, and 13 items for the affective dimension of the 3D-WS (see Appendices A, B, and C). Interestingly, all items remaining for the cognitive dimension assess the absence rather than the presence of this characteristic. Items that measured the presence of cognitive personality qualities (e.g., I always try to get to the core of a problem; I appreciate opportunities to discover the strength and weaknesses of my own reasoning; The past is no more, the future may never be, the present is all that one can be certain of) tended to be affected by a social desirability bias and were only weakly or even negatively related to other items in this dimension.

Based on the above definitions, the initial and final items that were selected to assess the individual dimensions of the 3D-WS are not unidimensional but cover a broader range of personality characteristics in each of the three domains. This approach was used to capture the broader essence of wisdom in the cognitive, reflective, and affective personality domains. Still, the items in each domain are sufficiently correlated with each other and result in Cronbach's alpha values for the cognitive, reflective, and affective dimensions of the 3D-WS of .78, .75, and .74, respectively, at time 1; and of .85, .71, and .72, respectively, at time 2.

*Wisdom nominations.* At the end of the questionnaire, respondents were asked to nominate members of their close-knit social group and others in the community whom they would consider as wise, excluding relatives who live in their households. They were also asked to specify the characteristics that make those persons wise individuals. Although it might be difficult for most people to give an explicit definition of wisdom, it is often assumed that people are intuitively able to identify wise persons (Assmann 1994; Denney et al. 1995).

Three independent judges rated the respondents' description of wise persons. Coders received a list of wisdom characteristics compiled from the three empirical studies on the implicit meaning of wisdom mentioned above (Clayton and Birren 1980; Holliday and Chandler 1986; Sternberg 1990a). The 127 characteristics from these studies were sorted independently by four raters into five areas (cognitive,

reflective, and affective components of wisdom, equanimity, and maturity). Items for which unanimous interrater agreement could not be obtained were isolated, and the designation of the individual items to one of the five areas was discussed and decided jointly by all raters. The finished list consisted of 40 items for the cognitive dimension, 24 items for the reflective dimension, and 17 items of the affective dimension of wisdom and 8 items for equanimity and maturity each. This list was used as a checklist for the respondents' answers to the following open-ended questions: "Why do you think this person is wise? What are the specific characteristics that make this person a wise individual?" Three independent raters determined if respondents characterized wise persons as having cognitive, reflective, and/or affective personality characteristics (yes vs. no). Cases for which unanimous agreement could not be reached on the combination of characteristics were rated a fourth time by a fourth rater and one of the original coders.

*Wisdom ratings.* The interviewer and another person who was also unaware of the purpose of the study rated the transcribed qualitative interviews with regard to the degree of wisdom displayed by the respondents' answers. The two independent raters were asked to judge the respondent's level of wisdom on a scale from 0 (*very low*) to 10 (*very high*) without any further instructions or any training sessions. Both raters had to rely on their own implicit theories of wisdom to rate the transcripts. The two ratings were only moderately correlated ( $r = .28$ ;  $p = .09$ ).

Three other raters independently judged the qualitative interviews according to the degree of cognitive, reflective, and affective characteristics that the respondents displayed. The scales ranged from 0 (*not at all*) to 10 (*very much*). The three raters used the list of wisdom characteristics compiled from the three empirical studies on the implicit meaning of wisdom (described above) to arrive at their judgments. They were first trained on two practice interviews before they independently rated the qualitative interviews. The training sessions lasted about 10 hours. Two of the raters did not know the purpose of the study, and all raters were blind to the respondents' scores on the 3D-WS. Cronbach's alpha for the three ratings was .61 for cognitive, .75 for reflective, and .64 for affective personality characteristics. The three judges also rated the number of positive and negative events

mentioned during the past week, month, year, and entire life. All ratings were averaged across the three judges.

In addition to the above-described wisdom measures, the following preexisting scales on aspects of psychological health, general life conditions, and social desirability were administered.

#### *Mastery and Psychological Well-Being*

Mastery was assessed by Pearlin and Schooler's (1978) Mastery Scale. The scale consists of the average of seven items (e.g., I have little control over the things that happen to me) ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Cronbach's alpha for the scale is .83.

General well-being was measured by the NCHS General Well-Being Schedule (GWBS) (Fazio 1977). The GWBS is an 18-item instrument that asks respondents how they have felt and how things have been going during the past month. "In addition to producing a score on general well-being, the items can be grouped to yield scores on six aspects of well-being: health worry, energy level, satisfying and interesting life, depressed-cheerful mood, emotional-behavioral control, and relaxed versus tense-anxious" (Andrews and Robinson 1991:91). "Health worry" is measured by the mean of two items (e.g., Have you been bothered by any illness, bodily disorder, pains, or fears about your health?) with an alpha value of .72; "energy level" is assessed by the average of three items (e.g., Have you felt tired, worn out, used-up, or exhausted?) with an alpha of .70; "satisfying and interesting life" is the mean of two items (e.g., Has your daily life been full of things that were interesting to you?) with an alpha of .60; "depressed-cheerful mood" is the average of four items (e.g., How depressed or cheerful have you been?) with an alpha of .80; "emotional-behavioral control" is the mean of three items (e.g., Have you been feeling emotionally stable and sure of yourself?) with an alpha of .65; and "relaxed versus tense-anxious" is the average of four items (e.g., How relaxed or tense have you been?) with an alpha of .77. Scores either range from 1 to 6 (e.g., from 1 = *all the time* to 6 = *none of the time*) or from 0 to 10 (e.g., from 0 = *very depressed* to 10 = *very cheerful*). Before averaging scores, one was subtracted from each 1 to 6 scale, and each 0 to 10 scale was divided by two.

Purpose in life was measured by Crumbaugh and Maholick's (1964) Purpose in Life Test (PIL) (King and Hunt 1975). The PIL taps



a person's positive and negative attitudes toward life. Five items measure positive attitudes toward life (e.g., I have discovered satisfying goals and a clear purpose in life) and four items assess a lack of meaning in life (e.g., My life is often empty, filled with despair). The 5-point scale ranges from 1 (*definitely true of myself*) to 5 (*not true of myself*). All items for the positive subscale were reversed before the mean of the items was calculated. Cronbach's alpha is .78 for the positive subscale and .75 for the negative subscale.

Subjective health was measured by four adapted items from the OARS Multidimensional Functional Assessment Questionnaire (Center for the Study of Aging and Human Development 1975), the National Survey of the Aged (Shanas 1962, 1982), and the Americans' Changing Lives Questionnaire, Wave I (House 1994). The items assess present overall health with a score from 1 (*very bad*) to 5 (*excellent*), overall health compared to other people the respondent's age, and present health compared to health one year ago with both scales ranging from 1 (*worse*) to 3 (*better*), and extent of health-related problems and limitations with a score from 1 (*a great deal*) to 5 (*not at all*). The 3-point scales were first transformed into 5-point scales before the average of all items was calculated. Cronbach's alpha for the combined scale is .74.

#### *Psychological Ill-Being*

Depression was measured by the CES-D (Radloff 1977), a widely used depression scale for the general population. Respondents were asked how often they have felt in a particular way during the past week on a scale ranging from 1 (*less than 1 day*) to 4 (*5-7 days*). The 20 items of the scale can be divided into four separate factors (Mackinnon et al. 1998; Radloff 1977). Seven items measure somatic symptoms (e.g., My sleep was restless), seven items assess depressive affect (e.g., I felt depressed; I felt sad), four items tap (lack of) well-being (e.g., I was happy; I enjoyed life), and two items capture interpersonal relations (People were unfriendly; I felt that people disliked me). Alpha is .69 for somatic symptoms, .85 for depressive affect, .78 for lack of well-being, .30 for the two items of interpersonal relations, and .84 for the combined scale of all 20 items.

Economic pressure was assessed by four adapted items from the OARS Multidimensional Functional Assessment Questionnaire

(Center for the Study of Aging and Human Development 1975) and the Americans' Changing Lives Questionnaire, Wave I (House 1994). The items measure financial situation compared to other people the respondent's age with a scale ranging from 1 (*better*) to 3 (*worse*), difficulties in paying bills with a scale ranging from 1 (*not at all difficult*) to 5 (*extremely difficult*), how well the respondent's amount of money takes care of his or her needs with a scale ranging from 1 (*very well*) to 3 (*poorly*), and how the respondent's finances work out at the end of the month with a scale ranging from 1 (*some money left over*) to 3 (*not enough money*). The 5-point scale was first transformed into a 3-point scale before all items were averaged. The combined scale has an alpha value of .84.

#### *Attitudes Toward Death*

Attitudes toward death were measured at the 10-month follow-up, using the Death Attitude Profile–Revised (Wong, Reker, and Gesser 1994). Death avoidance is the average of five items (e.g., I avoid death thoughts at all costs) with an alpha value of .85. Fear of death is the mean of seven items (e.g., I have an intense fear of death) with an alpha value of .84. The scale of all the items ranges from 1 (*strongly agree*) to 5 (*strongly disagree*), and all items were reversed before the average of the items was computed.

#### *General Life Conditions*

For per capita income, respondents were asked about their yearly total household income before taxes on a scale ranging from 1 (*under \$9,999*) to 8 (*\$70,000 or more*). To compute per capita income, the midpoint of each category was taken (with the midpoint of the highest category estimated at \$85,000) and then divided by the number of people who live on this income.

For occupational status, the longest-held occupation was coded by three raters using Hollingshead's Index of Occupations (O'Rand 1982). Ratings for occupations whose code designation was ambiguous were discussed and jointly decided by at least two raters. The index ranges from 1 (*farm laborers, mental service workers*) to 9 (*higher executive, large business owner, major professional*).

Education was assessed by years of schooling. Age was measured in years. Gender, marital status, and retirement status were coded as dichotomous variables.

#### *Social Desirability*

To check for social desirability bias, the widely used Crowne-Marlowe Social Desirability Scale (Crowne and Marlowe 1960) could not be used in this study because wise individuals might actually behave in those desirable ways. A better index for the purpose of this study is the self-deceptive positivity scale of the Balanced Inventory of Desirable Responding (BIDR) by Paulhus (1988, 1991). This scale measures people's self-deceptive positive opinions about themselves (e.g., It would be hard for me to break any of my bad habits; I have not always been honest with myself). The 20 items of this index were measured on a scale ranging from 1 (*definitely true of myself*) to 5 (*not true of myself*). After the scoring of positively keyed items was reversed, respondents received 1 point for each extreme answer (5). In this way, only the most exaggerated positive claims were counted, and the index has a possible score ranging from 0 to 20.

#### *ANALYSIS*

LISREL 8.30 was used to perform confirmatory factor analyses and to account for measurement error in the more subjective or latent variables such as wisdom, mastery, general well-being, purpose in life, depression, and attitudes toward death (Bollen 1989; Jöreskog and Sörbom 1996). Latent variables were either measured by two or more effect indicators or by a single indicator with a fixed error variance. In the latter case, the error variance was calculated by subtracting the reliability of the indicator (as measured by Cronbach's alpha) from one and multiplying the difference with the variance of the indicator (Bollen 1989). The indicators, in turn, were constructed from several items (described in the measurement section) to increase their reliability. Because some of the variables did not follow a multivariate normal distribution, covariance and asymptotic covariance matrices were computed to obtain corrected *t* values and chi-square statistics. However, due to the relatively small sample size, maximum-likelihood estimation rather than a weighted least-squares estimation procedure

was applied (Jöreskog et al. 1999). The variances of the latent variables were fixed to one to estimate the factor loadings of all the indicators (Jöreskog and Sörbom 1996). To test the overall fit of the model,  $\chi^2$  values, adjusted goodness of fit indices (AGFI), incremental fit indices (IFI), and non-normed fit indices (NNFI) were calculated. The AGFI adjusts for the degrees of freedom, and the IFI and NNFI are best suited to assess the overall model fit if the sample size is relatively small (Bollen 1989).

## *Results*

### *INTERNAL RELIABILITY*

Cronbach's alpha for the cognitive, reflective, and affective dimensions of the 3D-WS ranges from .71 to .85 (see Appendices A, B, and C), thereby confirming the internal reliability of the three dimensions of wisdom.

### *CONSTRUCT VALIDITY AND INTERNAL RELIABILITY*

First, the cognitive, reflective, and affective dimensions of the 3D-WS are significantly correlated with each other and range from .30 to .50. Moreover, the skewness and kurtosis of the individual dimensions are all in acceptable ranges (see Table 1A).

Second, in confirmatory factor analysis, which takes measurement error into account (Bollen 1989), the factor loadings of the cognitive, reflective, and affective effect indicators of the 3D-WS are statistically significant, with standardized values ranging from .50 to .84. As Table 1B shows, the measurement models of the 3D-WS at time 1 and time 2 fit the data well with 1 degree of freedom (*df*) and a Satorra-Bentler scaled  $\chi^2$ , which is adjusted for non-normality, of .14 ( $p = .71$ ) at time 1 and 1.98 ( $p = .16$ ) at time 2. The overall fit indices are all very high, indicating a good model fit.

Third, as predicted, the reflective dimension of wisdom tends to have the highest factor loading. Reflective thinking simultaneously fosters a deeper understanding of life and human nature and the development of sympathy and compassion for others. The factor loadings of the cognitive and affective dimensions of the 3D-WS were

TABLE 1A  
 Correlations and Descriptive Statistics of the Three Dimensions of the Three-Dimensional Wisdom Scale (3D-WS)

| <i>Indicator</i>                  | <i>Correlations</i> |                   | <i>Descriptive Statistics</i> |                |             |           |                 |                 |
|-----------------------------------|---------------------|-------------------|-------------------------------|----------------|-------------|-----------|-----------------|-----------------|
|                                   | <i>Cognitive</i>    | <i>Reflective</i> | <i>Minimum</i>                | <i>Maximum</i> | <i>Mean</i> | <i>SD</i> | <i>Skewness</i> | <i>Kurtosis</i> |
| Time 1                            |                     |                   |                               |                |             |           |                 |                 |
| Cognitive dimension               | —                   | —                 | 1.15                          | 4.43           | 3.44        | .56       | -.84            | 1.23            |
| Reflective dimension              | .41***              | —                 | 2.00                          | 4.83           | 3.82        | .49       | -.54            | .72             |
| Affective dimension               | .30***              | .50***            | 1.46                          | 4.77           | 3.60        | .50       | -.59            | 1.37            |
| Time 2 (10-month retest interval) |                     |                   |                               |                |             |           |                 |                 |
| Cognitive dimension               | —                   | —                 | 1.29                          | 4.64           | 3.43        | .64       | -.58            | .31             |
| Reflective dimension              | .50***              | —                 | 2.33                          | 4.67           | 3.81        | .45       | -.45            | .30             |
| Affective dimension               | .33***              | .46***            | 1.92                          | 4.50           | 3.45        | .49       | -.52            | .55             |

\*\*\* $p < .001$ .

TABLE 1B  
 Measurement Model of the Three-Dimensional Wisdom Scale (3D-WS); LISREL 8.30 ML Coefficient Estimates

| <i>Indicator</i>                  | <i>Factor Loadings<sup>a,b</sup></i> |                     | <i>Goodness of Fit Statistics</i> |                       |     |             |            |             |     |
|-----------------------------------|--------------------------------------|---------------------|-----------------------------------|-----------------------|-----|-------------|------------|-------------|-----|
|                                   | <i>Unstandardized</i>                | <i>Standardized</i> | $\alpha$                          | $\chi^2$ <sup>c</sup> | p   | <i>AGFI</i> | <i>IFI</i> | <i>NNFI</i> | n   |
| Time 1                            |                                      |                     |                                   |                       |     |             |            |             |     |
| Cognitive dimension               | .29                                  | .52                 |                                   |                       |     |             |            |             |     |
| Reflective dimension              | .40                                  | .83                 | .66                               | .14                   | .71 | 1.00        | 1.01       | 1.03        | 178 |
| Affective dimension               | .29                                  | .59                 |                                   |                       |     |             |            |             |     |
| Time 2 (10-month retest interval) |                                      |                     |                                   |                       |     |             |            |             |     |
| Cognitive dimension               | .31                                  | .50                 |                                   |                       |     |             |            |             |     |
| Reflective dimension              | .37                                  | .84                 | .67                               | 1.98                  | .16 | .93         | .98        | .94         | 123 |
| Affective dimension               | .31                                  | .61                 |                                   |                       |     |             |            |             |     |

NOTE: AGFI = adjusted goodness of fit indices. IFI = incremental fit indices. NNFI = non-normed fit indices.

a. All *t* values are greater than 4.90.

b. Unstandardized factor loadings of the cognitive and affective dimensions of the 3D-WS were restricted to be equal.

c. Satorra-Bentler scaled chi-square (corrected for non-normality) with 1 degree of freedom.

restricted to be equal in this and the following analyses because there is no theoretical reason for one loading to be higher than the other. In fact, comparisons of hierarchical models with and without this equality restriction resulted in nonsignificant  $\chi^2$  increases in all cases. An additional advantage of this procedure is that it standardizes the 3D-WS to some degree across the different analyses.

#### CONTENT VALIDITY

First, a total of 102 respondents nominated at least one person as wise and gave a description of wise characteristics. Of those respondents, 88.2% mentioned cognitive, reflective, and/or affective personality qualities as descriptive characteristics of wisdom, and 11.8% named all three dimensions. Of the respondents, 53.9% mentioned cognitive characteristics (e.g., is a good thinker; has a logical, rational mind; is intelligent; never stops learning/growing in knowledge; understands life), 25.5% mentioned reflective characteristics (e.g., not afraid to discuss errors in his/her life; knows when to give or withhold advice; thoughtful), and 63.7% mentioned affective characteristics as descriptors of wise people (e.g., caring; sensitive to others' feelings; concerned with helping others). Interestingly, the affective component, which tends to be neglected in extrinsic theories of wisdom based on the Western wisdom traditions (e.g., Baltes and Staudinger 2000; Kitchener and Brenner 1990), was mentioned most often by participants in this study.

Second, as expected, the 3D-WS correlates significantly with the wisdom scale based on the cognitive, reflective, and affective ratings by three independent judges of the qualitative interviews (see Table 2). The correlation is .41 with scores on the 3D-WS that were obtained approximately 10 months before the qualitative interview took place and .45 with the 3D-WS that was completed by the respondent after the conduction of the qualitative interview. The cognitive and affective dimensions of the 3D-WS and the cognitive and affective ratings were restricted to be equal. Both measurement models fit the data well with 11 *df* and a  $\chi^2$  value of 8.76 ( $p = .64$ ) for the model with the 3D-WS at time 1 and a  $\chi^2$  value of 13.76 ( $p = .25$ ) for the model with the 3D-WS at time 2. Moreover, the AGFI, IFI, and NNFI are all high, suggesting a good model fit. The error variance of the reflective rating



TABLE 2  
 Content Validity of the Three-Dimensional Wisdom Scale (3D-WS);  
 LISREL 8.30 ML Completely Standardized Coefficient Estimates

| <i>Indicator</i>    | <i>Factor Loadings of the 3D-WS<sup>a</sup></i> | <i>Latent Variable</i> | <i>Correlation with Wisdom Ratings<sup>b</sup></i> | <i>Factor Loadings of Wisdom Ratings<sup>a</sup></i> |                               |                  | <i>Goodness of Fit Statistics</i> |          |           |             |            |             |          |  |
|---------------------|---|------------------------|--|--|-------------------------------|------------------|-----------------------------------|----------|-----------|-------------|------------|-------------|----------|--|
|                     |   |                        |  | <i>Cognitive</i>                                     | <i>Reflective<sup>c</sup></i> | <i>Affective</i> | $\chi^2$ <sup>d</sup>             | <i>p</i> | <i>df</i> | <i>AGFI</i> | <i>IFI</i> | <i>NNFI</i> | <i>n</i> |  |
| Cognitive (time 1)  | .82   |                        |  |  |                               |                  |                                   |          |           |             |            |             |          |  |
| Reflective (time 1) | .82   | 3D-WS (time 1)         | .41**  | .76  | 1.00                          | .72              | 8.76                              | .64      | 11        | .87         | 1.02       | 1.03        | 40       |  |
| Affective (time 1)  | .83   |                        |  |  |                               |                  |                                   |          |           |             |            |             |          |  |
| Cognitive (time 2)  | .61   |                        |  |  |                               |                  |                                   |          |           |             |            |             |          |  |
| Reflective (time 2) | .73   | 3D-WS (time 2)         | .45**  | .76  | 1.00                          | .74              | 13.76                             | .25      | 11        | .80         | .96        | .94         | 37       |  |
| Affective (time 2)  | .75   |                        |  |  |                               |                  |                                   |          |           |             |            |             |          |  |

NOTE: All *t* values of factor loadings are greater than 3.81. AGFI = adjusted goodness of fit indices. IFI = incremental fit indices. NNFI = non-normed fit indices.

a. Equal unstandardized factor loadings for cognitive and affective dimensions.

b. Correlation between qualitative wisdom ratings and 3D-WS at time 1 and time 2.

c. Error variance was fixed to .0001 due to a negative error variance.

d. Satorra-Bentler scaled chi-square (corrected for non-normality).

\*\**t* value > 2.58.

had to be fixed to .0001 due to a negative error variance. However, the  $\chi^2$  difference between the two models with and without a fixed error variance was not statistically significant.

#### *PREDICTIVE VALIDITY*

As hypothesized, Table 3 shows that the 3D-WS is significantly and positively correlated with mastery (.63), general well-being (.45), purpose in life (.61), and subjective health (.30). It is significantly and negatively related to depressive symptoms (–.59), feelings of economic pressure (–.23), death avoidance (–.33), and fear of death (–.56). The variables death avoidance and fear of death were measured at time 2 only and, hence, were correlated with the 3D-WS at time 2. All of the models fit the data with *p* values of .05 or greater, and overall goodness of fit indices that are relatively large. All of the factor loadings are statistically significant with standardized values of .43 or higher. The indicator health worry of the GWBS had to be eliminated due to correlated measurement errors between this indicator and several other indicators of the GWBS. Correlated measurement errors exist between the cognitive dimension of the 3D-WS and the single indicator of the latent variable mastery, the positive scale indicator of the Purpose in Life Test, the single indicator of the latent variable economic pressure, and the single indicator of the latent variable death avoidance. The measurement errors of the affective dimension of the 3D-WS and the depressive factor of the CES-D are also correlated. Twelve cases are lost if the CES-D is measured by its four individual factors, and the alpha value of the factor interpersonal relations is very low. As an alternative, the CES-D was measured by a single indicator, the average of all valid items, with a fixed-error variance. However, the correlation between the CES-D and the 3D-WS remains basically the same (–.60; see Table 3).

#### *DISCRIMINANT VALIDITY*

As predicted, the 3D-WS is unrelated to the respondents' marital and retirement status, gender, race, per capita income, and a social desirability index. However, it is significantly and positively correlated with education (.21) and the status of the longest-held occupation (.19), although the correlations are much weaker than the

TABLE 3  
 Predictive Validity of the Three-Dimensional Wisdom Scale (3D-WS);  
 LISREL 8.30 ML Completely Standardized Coefficient Estimates

| <i>Indicator</i>  | <i>Factor Loading</i> | <i>Latent Variable</i> | <i>Correlation with 3D-WS<sup>a</sup></i> | <i>Factor Loadings<sup>b</sup></i> |                   |                  | <i>Correlation between Measurement Errors</i> | <i>Goodness of Fit Statistics</i> |    |     |      |     |      |     |  |
|---|-----------------------|------------------------|---|------------------------------------|-------------------|------------------|---|-----------------------------------|----|-----|------|-----|------|-----|--|
|   |                       |                        |   | <i>Cognitive</i>                   | <i>Reflective</i> | <i>Affective</i> |   | $\chi^2$ <sup>c</sup>             | df | p   | AGFI | IFI | NNFI | n   |  |
| Measures of mastery and psychological well-being (time 1) |                       |                        |   |                                    |                   |                  |   |                                   |    |     |      |     |      |     |  |
| Mastery <sup>d</sup>                                      | .84                   | Mastery                | .63                                       | .43                                | .98               | .50              | and cognitive = .25                           | 3.85                              | 2  | .15 | .94  | .98 | .95  | 178 |  |
| Energy level  | .69                   |                        |   |                                    |                   |                  |   |                                   |    |     |      |     |      |     |  |
| Life satisfaction   | .72                   |                        |   |                                    |                   |                  |   |                                   |    |     |      |     |      |     |  |
| Cheerful  | .90                   | GWBS                   | .45                                       | .45                                | .95               | .51              |   | 31.64                             | 20 | .05 | .90  | .96 | .94  | 174 |  |
| Relaxed   | .79                   |                        |   |                                    |                   |                  |   |                                   |    |     |      |     |      |     |  |
| In control  | .69                   |                        |   |                                    |                   |                  |   |                                   |    |     |      |     |      |     |  |
| Positive scale  | .59                   |                        |   |                                    |                   |                  |   |                                   |    |     |      |     |      |     |  |
| Negative scale <sup>e</sup>                               | .87                   | PILT                   | .61                                       | .47                                | .91               | .54              | and cognitive = -.20                          | 2.46                              | 4  | .65 | .98  | 1.0 | 1.0  | 176 |  |
| Subjective health <sup>d</sup>                            | .86                   | Subjective health      | .30                                       | .52                                | .81               | .59              |   | 1.58                              | 3  | .66 | .98  | 1.0 | 1.0  | 172 |  |

|  |     |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
|--|-----|---------------------|------|-----|-----|-----|----------------------|-------|----|-----|-----|-----|-----|-----|
| Measures of psychological ill-being (time 1) |     |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
| Somatic symptoms                             | .70 |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
| Depressive                                   | .88 |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
|  |     | CES-D               | -.59 | .49 | .86 | .58 | and affective = .20  | 17.94 | 13 | .16 | .92 | .96 | .94 | 157 |
| Well-being <sup>e</sup>                      | .45 |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
| Negative relations                           | .58 |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
| CES-D <sup>d</sup>                           | .89 | CES-D               | -.60 | .48 | .92 | .57 |                      | 7.74  | 3  | .05 | .90 | .94 | .88 | 169 |
| Economic pressure <sup>d</sup>               | .92 | Economical pressure | -.23 | .48 | .87 | .56 | and cognitive = -.22 | 4.79  | 2  | .09 | .92 | .96 | .89 | 166 |
| Attitudes toward death (time 2)              |     |                     |      |     |     |     |                      |       |    |     |     |     |     |     |
| Death avoidance <sup>d</sup>                 | .92 | Death avoidance     | -.33 | .48 | .89 | .58 | and cognitive = -.20 | 3.05  | 2  | .22 | .93 | .98 | .95 | 121 |
| Fear of death <sup>d</sup>                   | .92 | Death fear          | -.56 | .49 | .87 | .59 |                      | 7.16  | 3  | .07 | .90 | .95 | .90 | 122 |

NOTE: All *t* values are greater than 2.58. CES-D = Depression Scale. GWBS = General Well-Being Schedule. PILT = Purpose in Life Test. AGFI = adjusted goodness of fit indices. IFI = incremental fit indices. NNFI = non-normed fit indices.

- Correlation between latent variables.
- Equal unstandardized factor loadings for cognitive and affective dimensions.
- Satorra-Bentler scaled chi-square (corrected for non-normality).
- With fixed-error variance calculated as follows:  $\text{error}(\text{var}) = (1 - \text{reliability})(\text{var}(\text{indicator}))$ .
- Reversed scale.

correlations of the 3D-WS with mastery, general well-being, purpose in life, subjective health, depression, death avoidance, and fear of death (see Tables 3 and 4). All models fit the data well with  $p$  values of .16 or above and very high overall goodness of fit indices. The measurement error of the cognitive component of the 3D-WS is significantly related to marital status, gender, per capita income, education in years, occupation, and social desirability, indicating that the cognitive dimension correlates stronger with those variables than the reflective and affective dimensions of the 3D-WS.

#### *CONVERGENT VALIDITY*

First, 34% of the respondents received at least one wisdom nomination. A received wisdom nomination was statistically independent from the number of fellow group members who participated in the study, the frequency of group attendance, and the proportion of fellow group members that was known by the respondent. The mean difference in wisdom scores between wisdom nominees (mean = 3.71) and respondents who were not nominated as wise (mean = 3.57) is statistically significant ( $t$  value =  $-2.30$ ;  $p = .02$ ). As hypothesized and as shown in Table 5, respondents who scored high on the 3D-WS were in fact more likely to be nominated as wise (correlation = .22;  $t$  value = 2.32).

Second, the wisdom ratings by the interviewer of the qualitative interview are moderately correlated with the 3D-WS (correlation = .30;  $t$  value = 2.23). However, the wisdom rating by the other rater who only read the transcripts of the interviews fail to be significantly related to the 3D-WS (correlation = .10;  $t$  value = .52; see Table 5). As suggested by the notes of this rater, the rater had difficulties distinguishing between religiosity and wisdom. Moreover, further analyses showed that all raters were influenced by the number of positive events mentioned by the respondent during the interview, particular those that were discussed at the beginning of the interview. Although the number of positive and negative events mentioned is unrelated to the 3D-WS, the respondent's description of many positive events might have biased the raters' judgment toward a more favorable perception of the respondent.

TABLE 4  
 Discriminant Validity of the Three-Dimensional Wisdom Scale (3D-WS);  
 LISREL 8.30 ML Completely Standardized Coefficient Estimates

| Variable            | Correlation<br>with 3D-WS | Factor Loadings of the 3D-WS <sup>a</sup> |            |           | Correlation between<br>Variable and<br>Measurement Error | Goodness of Fit Statistics |    |     |      |     |      |     |
|---------------------|---------------------------|---|------------|-----------|--|----------------------------|----|-----|------|-----|------|-----|
|                     |                           | Cognitive                                 | Reflective | Affective |  | $\chi^2$ <sup>b</sup>      | df | p   | AGFI | IFI | NNFI | n   |
| Married (1 = yes)   | .11                       | .51                                       | .82        | .59       | and cognitive = .22**                                    | 2.81                       | 2  | .25 | .96  | .99 | .97  | 173 |
| Retired (1 = yes)   | -.10                      | .52                                       | .81        | .59       |  | .86                        | 3  | .84 | .99  | 1.0 | 1.0  | 170 |
| Gender (1 = female) | .07                       | .54                                       | .77        | .62       | and cognitive = -.24**                                   | 3.71                       | 2  | .16 | .94  | .98 | .93  | 178 |
| Race (1 = White)    | -.08                      | .51                                       | .83        | .58       |  | 4.12                       | 3  | .25 | .96  | .98 | .96  | 177 |
| Per capita income   | .09                       | .45                                       | .82        | .54       | and cognitive = .33**                                    | .83                        | 2  | .66 | .99  | 1.0 | 1.0  | 141 |
| Education in years  | .21*                      | .51                                       | .83        | .59       | and cognitive = .32**                                    | .59                        | 2  | .74 | .99  | 1.0 | 1.0  | 172 |
| Occupational status | .19*                      | .54                                       | .81        | .60       | and cognitive = .41**                                    | .74                        | 2  | .69 | .99  | 1.0 | 1.0  | 144 |
| Social desirability | .22                       | .53                                       | .79        | .61       | and cognitive = -.33**                                   | .77                        | 2  | .68 | .99  | 1.0 | 1.0  | 178 |

NOTE: AGFI = adjusted goodness of fit indices. IFI = incremental fit indices. NNFI = non-normed fit indices.

a. Equal unstandardized factor loadings for cognitive and affective dimensions.

b. Satorra-Bentler scaled chi-square (corrected for non-normality).

\**t* value  $\geq$  1.96. \*\**t* value  $\geq$  2.58.

TABLE 5  
 Convergent Validity of the Three-Dimensional Wisdom Scale (3D-WS);  
 LISREL 8.30 ML Completely Standardized Coefficient Estimates

| <i>Variable</i>               | <i>Correlation<br/>with 3D-WS</i> | <i>Factor Loadings of the 3D-WS<sup>a</sup></i> |                   |                  | <i>Goodness of Fit Statistics</i> |    |     |             |            |             |     |
|-------------------------------|-----------------------------------|---|-------------------|------------------|-----------------------------------|----|-----|-------------|------------|-------------|-----|
|                               |                                   | <i>Cognitive</i>                                | <i>Reflective</i> | <i>Affective</i> | $\chi^2$ <sup>b</sup>             | df | p   | <i>AGFI</i> | <i>IFI</i> | <i>NNFI</i> | n   |
| Wisdom nomination (1 = yes)   | .22*                              | .50   | .85               | .57              | 3.65                              | 3  | .30 | .97         | .99        | .98         | 174 |
| Wisdom rating 1 (interviewer) | .30*                              | .82   | .82               | .85              | 3.68                              | 3  | .30 | .82         | .98        | .95         | 39  |
| Wisdom rating 2 (lay rater)   | .10                               | .84   | .83               | .83              | 2.52                              | 3  | .47 | .86         | .99        | .99         | 39  |

NOTE: AGFI = adjusted goodness of fit indices. IFI = incremental fit indices. NNFI = non-normed fit indices.

a. Equal unstandardized factor loadings for cognitive and affective dimensions.

b. Satorra-Bentler scaled chi-square (corrected for non-normality).

\**t* value  $\geq 1.96$ .

#### *TEST-RETEST RELIABILITY*

As expected, the factor loadings of the 3D-WS are not statistically different between time 1 and time 2. The  $\chi^2$  difference between a model with unequal factor loadings between time 1 and time 2 and a model with equal factor loadings is .29 with 2 *df*, which is not statistically significant (see the difference between models 1 and 2 in Table 6). The 10-month test-retest correlation of the 3D-WS is .85, which suggests that wisdom is relatively stable over short periods of time. The measurement errors of the cognitive dimension and the measurement errors of the affective dimension of the 3D-WS are significantly correlated between time 1 and time 2. The test-retest measurement model of the 3D-WS fits the data well with a  $\chi^2$  value of 10.12 and 10 *df* ( $p = .43$ ) and relatively high overall goodness of fit measures.

#### *Discussion*

The analyses show that the 3D-WS is a reliable and valid instrument and a promising scale to assess respondents' indicators of the latent variable wisdom in large standardized samples of older populations if the latent variable wisdom is defined and operationalized as a combination of cognitive, reflective, and affective personality characteristics. The 3D-WS does not attempt to measure the elusive concept of wisdom directly, a task that might be impossible for a standardized self-administered scale. Rather, the 3D-WS assesses the cognitive, reflective, and affective dimensions of the latent variable wisdom.

Construct, predictive, and discriminant validity and internal and test-retest reliability of the 3D-WS are high. Content and convergent validity are also satisfactory. Although the wisdom nominations and "naive" wisdom ratings were only moderately related and for one rater unrelated to the 3D-WS, other factors than a respondent's level of wisdom might have biased the results. For example, it might be difficult for people to distinguish between religiosity and wisdom, although not all religious people are automatically wise, and not all wise persons are necessarily religious. Moreover, all raters of the qualitative interviews were influenced by the number of positive events mentioned by the respondents, particularly at the beginning of the interview, even though the 3D-WS was unrelated to the number of positive



TABLE 6  
 Test-Retest Reliability of the Three-Dimensional Wisdom Scale (3D-WS);  
 LISREL 8.30 ML Completely Standardized Coefficient Estimates ( $n = 123$ )

| Indicator   | Factor Loadings | Latent Variable | Correlation with 3D-WS (Time 1) <sup>a</sup> | Factor Loadings of the 3D-WS (Time 1) |            |           | Correlation between Measurement Errors | Goodness of Fit Statistics |     |    |             |     |
|---|-----------------|-----------------|--|---------------------------------------|------------|-----------|--|----------------------------|-----|----|-------------|-----|
|   |                 |                 |  | Cognitive                             | Reflective | Affective |  | $\chi^2$ <sup>b</sup>      | p   | df | AGFI        | IFI |
| Model 1: Equal unstandardized factor loadings for cognitive and affective dimensions  |                 |                 |  |                                       |            |           |  |                            |     |    |             |     |
| Cognitive (time 2)  | .48             |                 |  |                                       |            |           |  |                            |     |    |             |     |
| Reflective (time 2)   | .89             | 3D-WS (time 2)  | .85  | .53                                   | .89        | .55       | and cognitive (time 1) = .53           | 9.83                       | .28 | 8  | .92 .99 .98 |     |
| Affective (time 2)  | .59             |                 |  |                                       |            |           | and affective (time 1) = .47           |                            |     |    |             |     |
| Model 2: Equal unstandardized factor loadings for cognitive and affective dimensions and equal unstandardized factor loadings for indicators at time 1 and time 2 |                 |                 |  |                                       |            |           |  |                            |     |    |             |     |
| Cognitive (time 2)  | .47             |                 |  |                                       |            |           |  |                            |     |    |             |     |
| Reflective (time 2)   | .91             | 3D-WS (time 2)  | .85  | .54                                   | .87        | .56       | and cognitive (time 1) = .52           | 10.12                      | .43 | 10 | .93 .99 .99 |     |
| Affective (time 2)  | .57             |                 |  |                                       |            |           | and affective (time 1) = .48           |                            |     |    |             |     |

NOTE: All  $t$  values are greater than 5.43. AGFI = adjusted goodness of fit indices. IFI = incremental fit indices. NNFI = non-normed fit indices.

a. Correlation between 3D-WS (time 1) and 3D-WS (time 2).

b. Satorra-Bentler scaled chi-square (corrected for non-normality).

and negative events mentioned. The number of positive events mentioned at the beginning of the interview might have biased the ratings in a positive or negative direction, similar to the “halo” effect in personality research (Kiker and Motowidlo 1998; Larose and Standing 1998; Solomonson and Lance 1997). Still, the three-dimensional wisdom scale constructed from the cognitive, reflective, and affective ratings of the qualitative interviews was significantly correlated with the 3D-WS in the .41 to .45 range. This indicates that the 3D-WS indeed taps the cognitive, reflective, and affective personality characteristics of older respondents. Although the 3D-WS was specifically designed for older populations, future research should examine if the 3D-WS is also sufficiently reliable and valid for younger populations.

The analyses also demonstrated that a higher education and occupation are conducive for the development of wisdom, although this pattern is relatively weak (.19 to .22), particularly compared to the much stronger relationships between the 3D-WS and measures of mastery, general well-being, purpose in life, depression, and fear of death (.45 to .63). It should be noted, however, that the sample contained a group of retired professors and retired educators. Although the cross-sectional nature of the data did not allow a test of the directionality of the effects, it might be that individuals in search of wisdom are more likely to get an advanced educational degree and to choose certain higher occupations such as professor or teacher.

Furthermore, the measurement error of the cognitive component of the 3D-WS was correlated positively with education, occupational status, income, and marital status and associated negatively with social desirability and gender. Because the cognitive dimension measures an understanding of life or the desire to know the truth, it makes sense that people with those characteristics also tend to have more years of schooling, a higher occupational status, and, as a possible consequence, higher income. In addition, those qualities might make them more attractive to others, which would explain why they are more likely to be married. Because those people search for the truth, they do not tend to give socially desirable answers that do not necessarily correspond to reality. Finally, the negative correlation between gender and the measurement error of the cognitive dimension of wisdom in this sample of older respondents might be explained by the fact that, traditionally, men were more encouraged to develop their

cognitive capacities and to know the deeper meaning of phenomena and events than were women.

The present study is just the first step in the construction of a valid and reliable standardized self-administered wisdom scale. Further empirical research is needed to replicate the findings with a larger and more representative data set and to correlate the 3D-WS with other personality characteristics, such as ego integrity, generativity, maturity, good judgment, interpersonal skills, altruism, humility, gratitude, humor, and open-mindedness that presumably accompany the development of wisdom. Although it is likely that wise people possess other positive qualities that are not directly captured by the cognitive, reflective, and affective personality characteristics of the 3D-WS, it is hypothesized that the acquisition of those three personality qualities is necessary but also sufficient for a person to be called wise. Yet, future research will have to test if cognitive, reflective, and affective personality qualities are indeed sufficient or if additional qualities are required for wisdom to emerge.

It would also be interesting to analyze the association of the 3D-WS with other existing measures of wisdom, such as Baltes and colleagues' five criteria of wisdom-related performance (e.g., Baltes and Staudinger 2000), Kitchener and Brenner's (1990) Reflective Judgment Interview, Wink and Helson's (1997) measures of "practical wisdom" and "transcendent wisdom," and Webster's (2003) Self-Assessed Wisdom Scale to determine the overlap and the difference between the diverse instruments.

Furthermore, it should be tested if the 3D-WS is able to distinguish between wise individuals and those that are merely well-adjusted, compassionate/caring, or intelligent. Although it is expected that compassion and caring are important elements of wisdom (Vaillant 1993) and that wise individuals are well-adjusted (e.g., Erikson 1982; Erikson et al. 1986) and exhibit social, emotional, interpersonal, and intrapersonal intelligence (Sternberg 1998), the opposite that all compassionate/caring, well-adjusted, and socially, emotionally, interpersonal, and intrapersonal intelligent people are also wise is not necessarily true. One possibility to test the difference between those constructs might be a comparison of intervention studies that either

aim to increase wisdom or compassion/caring, adjustment, or social, emotional, interpersonal, or intrapersonal intelligence. An increase in wisdom should be accompanied by an increase in compassion/caring, adjustment, as well as social, emotional, interpersonal, and intrapersonal intelligence, but an increase in compassion/caring, adjustment, or social, emotional, interpersonal, or intrapersonal intelligence should not necessarily increase a person's degree of wisdom.

Finally, longitudinal studies are required to examine the predictors and the development of wisdom across the life course and to investigate the relationship between wisdom and age. In the present study, the 3D-WS was negatively related to age (correlation =  $-.29$ ;  $t$  value =  $-3.22$ ;  $n = 167$ ), even after controlling for the negative association between the measurement error of the cognitive component and age. Although wisdom does not automatically increase with age (Ardelt 1997; Staudinger 1999; Webster 2003), it is generally expected that the development of wisdom requires time and experience (Kekes 1983). In fact, in their longitudinal study, Wink and Helson (1997) found that practical wisdom tended to be lower for respondents at age 27 than at age 52. On average, clinical psychologists showed a stronger increase in practical wisdom over time than did nonpsychologists. It might be that wisdom only increases with age for those people who actively pursue the development of wisdom and engage in the practice of (self-)reflection to overcome their subjectivity and projections. Yet, to date, no longitudinal studies exist that test the development of wisdom over time for people with different interest in the acquisition of wisdom. Because the present sample was cross-sectional and limited to persons age 52 and above, it is not clear how the negative correlation between the 3D-WS and age should be interpreted. Since the 3D-WS was correlated positively with years of education, a possible explanation might be that the younger respondents in the sample tended to have a higher education than did the older respondents. Yet, age was uncorrelated with either years of education ( $r = -.01$ ;  $p = .89$ ;  $n = 163$ ) or educational degree ( $r = -.05$ ;  $p = .50$ ;  $n = 166$ ). Future longitudinal research with samples from different age groups will need to explore those issues further.

**APPENDIX A**  
**Cognitive Dimension of the 3D-WS**

| <i>Item Wording</i>   | <i>Source</i>   |
|---|---|
| <i>How strongly do you agree or disagree with the following statements? (1 = strongly agree to 5 = strongly disagree)</i>       |   |
| Ignorance is bliss  | Need for Cognition Scale (Cacioppo and Petty 1983)                          |
| It is better not to know too much about things that cannot be changed   | Attitudes About Reality Scale (Unger, Draper, and Pendergrass 1986)         |
| In this complicated world of ours, the only way we can know what's going on is to rely on leaders or experts who can be trusted | Dogmatism Scale (Rokeach 1960)  |
| There is only one right way to do anything  | Intolerance of Ambiguity Scale (King and Hunt 1975; Martin and Westie 1959) |
| A person either knows the answer to a question or he/she doesn't  |   |
| You can classify almost all people as either honest or crooked  |   |
| People are either good or bad   | New items   |
| Life is basically the same most of the time   |   |
| <i>How much are the following statements true of yourself? (1 = definitely true of myself to 5 = not true of myself)</i>        |   |
| A problem has little attraction for me if I don't think it has a solution   | Ambiguity Tolerance Scale (MacDonald 1970)                                  |
| I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something           | Need for Cognition Scale (Cacioppo and Petty 1983)                          |
| I prefer just to let things happen rather than try to understand why they turned out that way                                   |   |
| Simply knowing the answer rather than understanding the reasons for the answer to a problem is fine with me                     |   |
| I am hesitant about making important decisions after thinking about them  |   |
| I often do not understand people's behavior   | New item  |

NOTE: The scale is the mean of 14 items. Alpha = .78 (time 1) and .85 (time 2).

## APPENDIX B Reflective Dimension of the 3D-WS

| <i>Item Wording</i>  | <i>Source</i>  |
|--|--|
| <i>How strongly do you agree or disagree with the following statements? (1 = strongly agree to 5 = strongly disagree)</i>                            |  |
| Things often go wrong for me by no fault of my own <sup>a</sup>  | Ideas of Reference Scale (Sears 1937)  |
| I would feel much better if my present circumstances changed   | New item   |
| <i>How much are the following statements true of yourself? (1 = definitely true of myself to 5 = not true of myself)</i>                             |  |
| I try to look at everybody's side of a disagreement before I make a decision (reversed)  | Perspective-Taking Scale of the Interpersonal Reactivity Index (Davis 1980)    |
| When I'm upset at someone, I usually try to "put myself in his or her shoes" for a while (reversed)  |  |
| I always try to look at all sides of a problem <sup>a</sup> (reversed)   |  |
| Before criticizing somebody, I try to imagine how I would feel if I were in their place (reversed)   |  |
| I sometimes find it difficult to see things from another person's point of view <sup>a</sup>   |  |
| When I am confused by a problem, one of the first things I do is survey the situation and consider all the relevant pieces of information (reversed) | Personal Problem-Solving Inventory (Heppner and Petersen 1982)                 |
| Sometimes I get so charged up emotionally that I am unable to consider many ways of dealing with my problems   |  |
| When I look back on what has happened to me, I can't help feeling resentful  | Resentment Scale of the Buss-Durkee Hostility Inventory (Buss and Durkee 1957) |
| When I look back on what's happened to me, I feel cheated  | Resentment Scale (Bachman et al. 1967)   |
| I either get very angry or depressed if things go wrong  | New item   |

NOTE: The scale is the mean of 12 items. Alpha = .75 (time 1) and .71 (time 2).  
 a. Indicates adapted item.

**APPENDIX C**  
**Affective Dimension of the 3D-WS**

| <i>Item Wording</i>   | <i>Source</i>   |
|---|---|
| <i>How strongly do you agree or disagree with the following statements? (1 = strongly agree to 5 = strongly disagree)</i>                 |   |
| I am annoyed by unhappy people who just feel sorry for themselves   | Measure of Emotional Empathy (Mehrabian and Epstein 1972)                               |
| People make too much of the feelings and sensitivity of animals   |   |
| There are some people I know I would never like <sup>a</sup>  | Pensacola Z Scale (Jones 1957)  |
| I can be comfortable with all kinds of people (reversed)  | Acceptance of Others Scale (Fey 1955)   |
| It's not really my problem if others are in trouble and need help   | Compassion Scale (Beutel and Marini 1995)   |
| <i>How much are the following statements true of yourself? (1 = definitely true of myself to 5 = not true of myself)</i>                  |   |
| Sometimes I don't feel very sorry for other people when they are having problems  | Empathic Concern Scale of the Interpersonal Reactivity Index (Davis 1980)               |
| Sometimes I feel a real compassion for everyone <sup>a</sup> (reversed)   | Pensacola Z Scale (Jones 1957)  |
| I often have not comforted another when he or she needed it <sup>a</sup>  | Helping Disposition Scale (Severy 1975)   |
| I don't like to get involved in listening to another person's troubles  |   |
| There are certain people whom I dislike so much that I am inwardly pleased when they are caught and punished for something they have done | Overt but Safe Aggression Scale of the new F Scale (Webster, Sanford, and Freeman 1955) |
| Sometimes when people are talking to me, I find myself wishing that they would leave  | Liking People Scale (Filsinger 1981)  |
| I'm easily irritated by people who argue with me  | Acceptance of Self and Others Scale (Berger 1952; Shaw and Wright 1967)                 |
| If I see people in need, I try to help them one way or another (reversed)   | New item  |

NOTE: The scale is the mean of 13 items. Alpha = .74 (time 1) and .72 (time 2).  
 a. Indicates adapted item.

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