COZORT, RACHEL W., Ph.D. Revising the Gerotranscendence Scale for Use with Older Adults in the Southern United States and Establishing Psychometric Properties of the Revised Gerotranscendence Scale. (2008)
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Healthcare providers have long recognized that people change over the course of their lives. Early developmental theorists focused on changes across childhood. More recently, theorists and providers of elder care have attempted to define how older adults mature. Lars Tornstam, professor of sociology at Uppsala University in Sweden, developed the Theory of Gerotranscendence, which posits that the developmental tasks for older adults include gaining perspective on past life events, attaining wisdom, and preparing for death. The Theory of Gerotranscendence may lead to a more balanced understanding of how older adults continue to mature at the end of life. Tornstam also developed the Gerotranscendence Scale (GS) for use in Sweden and Denmark. A culturally appropriate and psychometrically sound tool is needed to explore gerotranscendence in the southern United States.

The purpose of this study was to revise the GS for use with older adults in the southern United States. Tornstam's Theory of Gerotranscendence and Measurement Theory were used to guide the study. This triangulated mixed-methods methodological study was conducted in two phases.

The purpose of Phase I was to ascertain if items on the GS were understandable to older adults in the southern United States and to reword the items as necessary. Two focus groups of older adults (n=17) were convened to review the items. Group consensus

was used to revise the scale. Both scoring and wording were changed in the resulting revised scale (GS-R).

The purpose of Phase II was to examine selected psychometric properties of the GS-R. An expert panel reviewed the GS-R for content validity. The GS-R was administered to 124 older adults, along with the Life Satisfaction Inventory in Aging (LSI-A), the Purpose in Life Test (PILT) and Successful Aging Inventory (SAI). Two weeks later the GS-R was re-administered to 90 of the respondents.

The GS-R was found to have adequate test-retest reliability ($r = .53, p < .001$), internal consistency reliability (alpha = 0.61), face validity, and content validity (CVI = 0.86). Tests of hypotheses provided preliminary support of construct validity. However, several items on the GS-R were found to be problematic and reliability for some subscales was low. Results suggest that gerotranscendence may be a measurable construct in southern older adults, but the scale needs further revision. Results also raise the question about use of reverse scored items with this population.

REVISING THE GEROTRANSCENDENCE SCALE FOR USE WITH OLDER

ADULTS IN THE SOUTHERN UNITED STATES AND ESTABLISHING

PSYCHOMETRIC PROPERTIES OF THE REVISED

GEROTRANSCENDENCE SCALE

by

Rachel W. Cozort

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To Dale and Emily for their enduring love, patience, and encouragement.

APPROVAL PAGE

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iii

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TABLE OF CONTENTS

LIST OF TABLES

x

LIST OF FIGURES

Page

CHAPTER I

INTRODUCTION

Nurses and other health care providers have long recognized that people change over the course of their lifetimes. Early developmental theorists focused on changes across childhood. Examining changes from middle age to older age is much more recent. Much of the early research on developmental theories of aging was conducted with older individuals who were ill or impaired, and the desirable view of healthy aging was essentially identical to healthy middle age (Ebersole, Hess, Touhy, & Jett, 2005). Furthermore, much research on theories of aging was written by people in their middle years rather than by people of older age. Very little is written by the oldest old. Researchers only recently began studying aging in healthy older adults, and this knowledge is redefining what is known about growing old. Previous models of aging are now being reevaluated and questions are focused on values of middle age.

The increasing population of older adults coupled with the ability of medical science to extend an individual's life span into the eighth decade and beyond (United States Department of Health and Human Services, 2006) has caused theorists to revisit developmental theories of aging. In order to enhance quality of life, theorists and providers of elder care are attempting to define how older adults continue to change and mature at the end of life (Brown & Lowis, 2003; Erikson, 1997; Tornstam, 1989, 1992,

1994, 1996a, 1996b, 1997a, 1997b, 2005). In the 1980s, Lars Tornstam, professor of Sociology at Uppsala University in Sweden, developed the Theory of Gerotranscendence.

This theory posits that older individuals are thought to be motivated to resolve and overcome past difficulties and prepare for death. The Theory of Gerotranscendence may lead to a more balanced understanding of how older adults continue to mature at the end of life.

Overview of the Theory of Gerotranscendence

Tornstam (1989, 1992, 1994, 1996a, 1996b, 1996c, 1997a, 1997b, 1999, 2000, 2005) believed that in the first parts of life, an individual's task is to get acquainted with and socialized to society; whereas the task in old age is to get acquainted with oneself and with one's unconscious. He felt that this process could be understood as a transcendental change of the definition of reality. There is a shift in one's metaperspective from a materialistic and rational view to a more cosmic and transcendental one, which is normally accompanied by an increase in life satisfaction.

With a more cosmic and transcendent vision, Tornstam (1989, 1996a, 1996b, 1996c, 2000, 2005) believed that older individuals no longer consider themselves particularly significant. Instead, they have a growing feeling of being part of a larger whole. Importance is placed on how one fits within the overall flow of life. The fear of death is lessened, while there is an increasing feeling of affinity with former, present, and coming generations. A transcendent vision of life involves a change in the perception of time, so that the boundaries between past, present, and future are erased. In the same way, the boundaries between the individual and others may also become indistinct. These

boundaries between past, present, and future, and between self and others, become less necessary and significant in old age. As a consequence, the older adult with a more transcendent perspective experiences a need to spend more time on mediation and less on material things and superficial social relationships.

Tornstam (1989, 1992, 1994, 1996a, 1996b, 1996c, 1997a, 1997b, 1999, 2005) developed the Theory of Gerotranscendence based on three levels of ontological change: cosmic transcendence, coherence, and solitude. He defined these changes as:

- Cosmic transcendence- feelings encompassing changes in the perception of definitions of time, space, life and death, and an increasing feeling of connection with the spirit of the universe.

- Coherence - the discovery of hidden aspects of the self (both good and bad), removal of the self from the center of one's universe, continuation of care of the body without obsession with it, experience of the return to childhood, and the realization that the pieces of life's puzzle form a whole.

- Solitude – a decreased interest in superficial relationships, an increased need for meditation, a deceased desire for materialist possessions, and an increased tendency to withhold from judgments and giving advice.

Tornstam (1997a, 2005) substantiated these changes by means of empirical findings. For the measurement of gerotranscendence, Tornstam (1994, 1997a, 1997b, 2005) constructed three gerotranscendence scales. The first scale consisted of a series of ten items designed to tap what Tornstam (2005) calls "retrospective change" (p. 93); how respondents see they have changed since age 50. This scale will be called the

Retrospective Gerotranscendence Scale (RGS) for the purpose of this paper. The RGS

used a yes or no response scale to measure how older individuals have changed since age

50. A copy of the scale is located in Appendix A. The second scale consists of a series of

25 statements derived in accordance with theoretical dimensions of gerotranscendence.

This scale contains three subscales corresponding to the dimensions of cosmic

transcendence, coherence, and solitude. It is a four-point response scale designed to

measure how well signs of gerotranscendence agree with individuals' own experiences

and present feelings For the purpose of this paper this scale will be called the

Gerotranscendence Scale (GS). A copy of the scale is located in Appendix A. The third

scale contains ten statements that are worded to "elicit a snapshot status" (Tornstam,

2005, p. 109) of the three dimensions. It is also a four-point response scale designed to

measure how well signs of gerotranscendence agree with individuals' immediate feelings

and past experiences. This scale contains a subset of questions from the second scale with

slight alterations in wording. It appears that Dr. Tornstam considers the third scale neither

a parallel form nor a replacement for the second scale, but a short version of the second

scale (personal communication, Dr. Lars Tornstam, February 12, 2008). This scale will

be called the Gerotranscendence Scale - Snapshot (GS-S) for the purpose of this paper. A

copy of the scale is located in Appendix A. Tornstam has investigated some psychometric

properties of all three scales in Sweden and Denmark. Only a single study exploring use

of one of the gerotranscendence scales, the RGS, in the United States was found.

Identification of the Problem

There is a pressing need for studies of the aging process in this country. People are living longer than ever before in the United States. Individuals over the age of 65 are thriving and increasing in numbers at a phenomenal rate. In 2005 (the most recent year for which data are available) the elderly population represented 12.4 percent of the population. In 2030 that number will grow by 20% (United States Department of Health and Human Services Administration on Aging, 2008). From 2010 until 2030, the growth rate of older adults will exceed those under the age of 65 (United States Department of Health and Human Services Administration on Aging, 2008). The growth in the number of the oldest old (aged 85 and older) is of concern. From 1995 to 2010 this population is expected to grow by 56 percent (United States Department of Health and Human Services Administration on Aging, 2008). This number means that a larger proportion of the elderly will be over the age of 85. In subsequent decades, especially between 2030 and 2050, the 85 and over population will grow dramatically as the baby boom cohorts (persons born between 1946 and 1964) age.

The rapid rise in the elder population of the southern part of the United States is also dramatic. Specifically, in the state of North Carolina, the population age 65 and older is projected to increase by 22 percent between 2000 and 2010 (North Carolina Department of Health and Human Services Division of Aging, 2007). Among the 50 states and District of Columbia, North Carolina is projected to have the 11th highest proportion of elderly in 2025 (United States Census Bureau, 2007).

Given the aging of the population of the United States and North Carolina, most nurses and other healthcare providers will spend more of their time caring for elderly individuals. While older adults currently make up only 13 percent of the population, they represent the core of health care consumers (Burbank, Dowling-Castronovo, Crowther, & Capezuti, 2006). Adults age 65 and over, account for 25 percent of all physician visits, 48 percent of hospitalizations (Volland & Berkman, 2004), 60 percent of all ambulatory adult primary care visits, 80 percent of all home care visits, and 85 percent of residents in nursing homes (Hartford Geriatric Nursing Initiative, 2006).

Care of the elderly should encompass more than just addressing physical and medical needs. Even though aging may bring inevitabilities of infirmity and ultimate death, Tornstam (2005) believes there is an opportunity for older adults to continue to evolve and attain wisdom at the end of life. This wisdom leads to an understanding of the meaning and purpose of life and can translate into enhanced quality of life. If older adults are allowed to seize the opportunity for development (gerotranscendence), their elderly years may become the most fruitful years.

However, in western societies such as the United States, gerotranscendence may be misinterpreted as negative disengagement (Jonson & Magnusson, 2001; Tornstam, 1992; Tornstam & Tournquist, 2000; Wadensten & Carlsson, 2001). Older adults who withdraw from physical and social activities are often regarded as apathetic or disengaged, rather than seen as needing time for reflection and solitude. Society pressures older individuals to continue participation of midlife activities into old age. In this perspective, the elderly are considered lonely and withdrawn if they are not as socially

active as in midlife. Many interventions are directed toward keeping older adults active and engaged whether they want to be or not.

Contrary to the prevailing western perspective, the Theory of Gerotranscendence offers a positive view of a natural developmental process toward maturity and wisdom. Tornstam (2005) believes that older adults need more time for reflection and mediation, hence less activity. Through the process of gerotranscendence older adults are able to find meaning and purpose in life accompanied by an increase in life satisfaction.

Tornstam's (2005) ideas, while compelling, need empirical validation before they can be widely adopted as a basis for nursing and other healthcare practice. An instrument to measure the attributes of gerotranscendence in a culturally appropriate manner is necessary to examine the construct empirically.

To date, a review of the literature reveals that scales used to measure the construct of gerotranscendence were developed and evaluated based on input from older individuals in Sweden and Denmark. The literature further reveals that empirical studies examining the gerotranscendence scales were undertaken in these countries leaving a wide geographical gap. Only one study was found revealing that the RGS had been modified and administered to older adults in the United States (Atchley, 1999). Not all relevant properties have been evaluated. Only selected properties have been examined for the three scales.

Purpose of the Study and Research Questions

The overall purpose of this methodological study is to examine psychometric properties of the GS for use with older adults in the southern United States. Since

Tornstam's (1997a, 2005) second scale (GS) is the longest instrument, containing 25 items with a four-point response scale, it will be examined in this study and revised as necessary to make it appropriate for use with older adults in the southern United States. If the scale is found to be unclear, it will be modified to increase clarity before exploration of other properties. The following research questions will be examined:

1. Is the GS appropriate and understandable for older adults in the southern United States? If not, how can the GS be reworded and revised to make it applicable for use with older adults in the southern United States?

2. What is the reliability of the GS (revised as necessary)?

3. What is the validity of the GS (revised as necessary)?

Significance of the Study

Treatment of older adults is affected by the knowledge and perspectives that health care providers and society have about the implications of aging. Nurses and other professional health care workers provide care based on their theoretical knowledge and intrinsic values. What one considers important in the care of older adults depends largely on one's theoretical perspective. Due to shifting demographics of the older population and societal views of aging, it is imperative that health care providers have a positive theoretical perspective on aging that is culturally appropriate. Traditionally, nurses and other health care providers have viewed older adults through the lens of varied theories of aging that continue to project midlife values, activity patterns, and expectations into old age (Degges-White, 2005; Tornstam, 2005; Tornstam & Tornqvist, 2000; Wadensten, 2005; Wadensten & Carlsson, 2001). Successful aging is often viewed as the ability of

older individuals to remain active participants in the world around them. Furthermore, older adults are often negatively stereotyped as passive, fragile, depressed, lonely, and useless (Pinquart, 2002). Based on the premise that activity may prevent some of these negative stereotypes, health care providers have been socialized to believe that the elderly should be active whether they desire to be or not. The Theory of Gerotranscendence calls for reexamination of this widely held perspective. A valid and reliable GS will enable researchers in the southern United States to fully examine gerotranscendence in older adults.

Conceptual Framework

Measurement Theory (MT) provides the conceptual framework guiding this study. Measurement is a precise way of assigning numbers to represent the amount of an attribute present in an object or a person, using a specified set of rules (Allen & Yen, 1979; Nunnally, 1978; Pedhazur & Schmelkin, 1991; Polit & Beck, 2004). It is sometimes also called Modern Measurement Theory (Crocker & Algina, 1986). MT posits that an observed (obtained) score on a measure is composed of both "true score" and "error" (Allen & Yen, 1979, p. 57).

On a paper and pencil instrument the true score is sometimes defined as the average or mean score that would be obtained if the instrument were to be administered to the same participants an infinite number of times (Downing, 2003). However, this definition does not account for the possibility of systematic error or bias that would occur in every administration. A true score is hypothetical. It can never be known because measures are not infallible (Polit & Beck, 2004). In MT, the difference between the

obtained score and the true score is the result of errors of measurement (Allen & Yen, 1979).

Error scores are further divided into random and systematic errors (Waltz, Strickland, & Lentz, 2005). Random error consists of all the uncontrolled conditions that interfere with the precise and accurate measurement of the participant's true score. Examples of random error may include participants' internal states such as illness, inattention, or fatigue.

Systematic error is defined as a "measurement error that is consistent, not random" (Vogt, 2005, p. 320). Systematic errors are predictable and expected. Examples of possible systematic error in paper and pencil instruments include use of words that have different meanings to different groups or that are unfamiliar to one group. Reading level and cultural differences are often examples of systematic error. Both random and systematic errors can occur in all measurements (Nunnally, 1978; Downing, 2003).

Errors of measurement are never completely eliminated (Nunnally, 1978). Efforts are made to reduce errors as much as possible. If measurement error is slight, a measure is said to be reliable (Allen & Yen, 1979; Nunnally, 1978). Reliability concerns the extent to which a measure yields a consistent result (Polit & Beck, 2004). Thus, for this study reliability for the revised gerotranscendence scale can be defined as the consistency with which the scale measures the target attribute of gerotranscendence for older adults in the southern United States.

Even though an instrument is consistent (reliable), the instrument may not measure what it is intended to measure. This property is referred to as validity. Any

instrument may be consistent but not measure the intended construct. Therefore, validity should be established as well. Reliability is a necessary precondition for validity (Nunnally, 1978). An instrument that is not reliable cannot be valid (Polit & Beck, 2004). Thus, minimizing error components while maximizing true score components is the goal of scale development and revision. Several ways of investigating reliability and validity have been identified and are discussed in Chapter II in relationship to the gerotranscendence scales.

Assumptions

Assumptions are inherent in the methods proposed for this study. The first assumption is that persons who live in the southern United States may experience gerotranscendence. The second assumption is that persons living in the southern United States may be culturally different than those in Scandinavia on whom psychometric properties of the original scales were established. The third assumption is that the abstract attributes defining the constructs of gerotranscendence can be quantified through paper and pencil surveys. The final assumption is that older adults in the southern United States will honestly answer questions that measure gerotranscendence and other constructs used in this study (purpose in life, satisfaction with life, and successful aging).

Summary

The Theory of Gerotranscendence provides the foundation for this study. Measurement Theory guides the design and conduct of the study. Applying the construct of gerotranscendence in older adults has the potential to provide a positive theoretical view of aging and better care to a rapidly growing population. In nursing and other health

care professions where the concern is with the measurement of dynamic process variables, accurate and culturally appropriate measures of phenomena are essential. The construct of gerotranscendence contains many attributes that are highly abstract. Descriptions differ between cultures. Therefore, in order to accurately measure gerotranscendence in older adults living in the southern United States, it is necessary to use terms that are meaningful to this population. Furthermore, in order to advance the science, the tool must measure the constructs of gerotranscendence consistently and accurately.

CHAPTER II

BACKGROUND

Introduction

In an attempt to explain what happens socially and psychologically to individuals as they age, developmental theory suggests that "growth and change occur through out the life course in somewhat predictable ways" (Adams, 2004, p. 88). Adams further explains that a developmental theory implies change that is "universal, occurs in a set sequence, and flows in one direction" (p. 88). Developmental theories of aging can be further divided into two broad categories: biological theories and psychosocial theories (Ebersole et al., 2005; Wadensten, 2007). Biological theories concern what happens to the physical body during the aging process while psychosocial theories explain human development and aging in terms of changes in "cognitive functions, behavior, roles, relationships, coping ability, and social change" (Wadensten, 2007 p. 289).

A review of the literature reveals four dominate developmental theories of aging: Erikson's psychodynamic theory; activity theory; disengagement theory; and continuity theory. Grand nursing theorists hold a developmental perspective; however, a review of the literature reveals that none of the grand nursing theories show what this development is leading to, or how to apply the theory to older adults. Two middle range nursing theories, theory of successful aging (Flood, 2006a) and theory of self-transcendence (Reed, 1991), were found to offer insights into the aging process.

Dominant Developmental Theories of Aging

Erikson's Psychodynamic Theory

One of the most influential psychosocial developmental theories regarding old age is that offered by Erik Erikson (1959). Erikson describes eight stages of psychosocial development across the life span. The developmental task at each stage depends on the resolution of two opposing states, and the successful transition into the next developmental stage depends on resolution of previous stages. For example, the psychosocial developmental task of infants is found in the task of "trust verses mistrust" regarding the infant's caregivers. A positive balance between trust and mistrust will lead to hope for the future (Erikson, 1959). The final developmental stage is assigned to older adults, which, according to Erikson, is the resolution of "integrity versus despair." A balanced resolution of this stage is believed to result in the attainment of wisdom about the meaning and purpose of one's life while failure to attain a sense of integrity will result in developing a sense of despair about the past and an increasing fear of death.

Erikson's (1959) theory implies that once a sense of integrity is attained, older adults spend the remaining years of their lives in a stagnant period of identity development. Nearing the end of her life, Joan Erikson, widow and past colleague of Erik Erikson, disagreed with this implication. She stated that "old age in one's 80s and 90s brings with it new demands, reevaluations, and daily difficulties" (Erikson, 1997, p. 105). In fact, she explains that near the end of his life her husband was prepared to change his views due to his own experience of aging (Erikson, 1997). After Erikson's death, writing at age 93, Joan Erikson extended E. Erikson's earlier work, T*he Life Cycle Completed,*

and added a ninth stage which she felt had been overlooked in the original theory (Brown & Lowis, 2003; Erikson, 1997; Johansson, 2002). She believed that development beyond the eighth stage is possible in later life and is accompanied by life satisfaction. Citing Tornstam's Theory of Gerotranscendence, J. Erikson (1997) called this a time of gerotranscendence. She believed that in the ninth developmental stage, previously resolved stages are again confronted. She added that if older adults could come to terms with the "dystonic elements in their life experiences" (Erikson, 1997, p. 113), they may successfully achieve gerotranscendence at the end of life.

Activity Theory

Activity theory presents yet another perspective on aging. Activity theory is based on the premise that remaining as active as possible in the pursuits of middle age is the ideal for later life (Ebersole, et al., 2005; Havighurst, 1961; Knapp, 1977). Activity and social interactions are highly valued. Havighurst (1961) maintained that continuing the activity patterns and values of middle age is necessary to have a satisfying life. This view is widely espoused in the health care profession throughout western culture.

Activity theory claims that an older individual should continue a middle-aged lifestyle, denying the existence of old age as long as possible, and that society should apply the same norms to old age as it does to middle age and not advocate diminishing activity, interests and involvement as its members grow old (Havighurst, 1961; Knapp, 1977; Wadensten, 2006). The activity perspective, according to common interpretations, assumes that all kinds of physical and social activity are beneficial for the older adult, and that the lack of activity can result in maladjustment (Knapp, 1977), negative self-concepts

(Havighurst, 1961), and loss of one's sense of purpose (Ebersole, et al., 2005). Activity theory further emphasizes that well-being is reflected by the extent to which the older individual is able to remain actively involved in the social context. The theory promotes ways of maintaining activity in the presence of multiple losses associated with the aging process such as substituting intellectual activities for physical activities when physical capacity is reduced, replacing the work role with other roles when retirement occurs, and establishing new friendships when old ones are lost (Ebersole et al., 2005).

Disengagement Theory

Disengagement theory, at the opposite end of the spectrum, elucidates that life satisfaction increases as activities decrease. This theory postulates that human aging involves an inevitable severance of relationships with others which is beneficial to both society and the individual (Cumming & Henry, 1961). The theory assumes that there is a tendency to disengage and withdraw when growing old, which supposedly goes along with the tendency of society to reject older individuals (Tornstam, 1989, 1996b, 2005). The older adult severs ties with society and turns inward. As a preparation for the end of life, older adults and society gradually separate themselves from each other. Cumming and Henry explain that this is a natural process associated with satisfaction and inner harmony.

Continuity Theory

Continuity theory contradicts the tenets of both the activity and disengagement theories. According to this theory, neither trying to maintain a sense of being

middle-aged, nor willingly withdrawing from society will necessarily bring happiness (Meiner & Lueckenotte, 2006). Rather, continuity theory posits that how a person has been throughout life is how that individual will be through the remainder of life (Havens, 1968).

Continuity theory as presented by Havens (1968) explains that life satisfaction with engagement or disengagement depends upon one's personality traits. Personality is assumed to remain stable throughout the lifespan. The basic tenet of continuity theory is that, as middle-aged and older adults adapt to changes associated with the normal aging process, they will rely on comfortable coping strategies learned earlier in life (Atchley, 1999; Havens, 1968; Wadensten, 2006). Change results from the older person's reflections upon past experience and setting goals for the future. Aging people make choices over their experiences, and recognize that some of the changes are occurring due to the normal process of aging.

Continuity theory is based on data from the Duke Longitudinal Study (Maddox, 1968). Findings from this study revealed that over time people tended to maintain their customary lifestyle patterns of activity as they age. Age did not affect personality traits. Based on individual personality traits, older adults will accept and adapt to changes of aging, just as they do every other event in their lives.

Old age is not viewed as the final part of life. According to this theory old age is a continuation of one's earlier life and an integral part of the entire life cycle (Meiner & Lueckenotte, 2006). When viewed from this perspective, continuity theory can be seen as a developmental theory of aging. Simply stated, the theory maintains that as individuals

age, they maintain or continue their previous habits, preferences, commitments, values, beliefs, and any other factors that have contributed to their personalities (Havens, 1968).

Nursing Theories

The profession of nursing offers little theoretical perspective on the developmental process of aging. Wadensten and Carlsson (2003) examined seventeen grand nursing theories and found that none had a description of the process of human aging. Realizing the absence of a specific nursing theory that deals with the aging process, Wadensten and Carlsson wrote,

> The absence of practical guidance on how nurses could act, and what actions can be taken to support older people in the process of aging highlights the need to develop further and discuss how gerontological care should be provided. It also suggests the need to develop a nursing theory based on an aging theory in which development into old age is included. What is required, quite simply, is a nursing care model based on specific theories of human aging. (p. 123)

Two mid-range nursing theories were found to be relevant to the theoretical perspectives on old age. However, one is not specific to older adults (Reed, 1991) and the other (Flood, 2002, 2006a, 2008) is still emerging (personal communication, M. Flood, August 2, 2007).

Reed's (1991) mid-range nursing theory of self-transcendence offers a developmental perspective, but not a perspective that is specific to older adults. Reed defined self-transcendence as expansion of self boundaries multidimensionally (inwardly through introspective activities, outwardly through concern for others, and temporally through integration of one's past and future to improve the present). Self-transcendence is proposed to be a developmental correlate of well-being in persons facing end of life

issues (Reed, 1991) as well as illnesses and loss (Acton & Wright, 2000; Ellerman & Reed, 2001; Stinson & Kirk, 2006; Wayman & Gaydos, 2005). According to the theory of self-transcendence, life events that "heighten a sense of mortality can trigger developmental progress toward expanded self-boundaries" (Reed, 1991, p. 5). Although change related to end of life issues and loss is often experienced by older adults, the theory is not specific for this population.

The emerging middle range nursing theory of successful aging (Flood, 2002, 2006a) takes into account the developmental process of aging, and is not based solely on suffering and end of life issues. Flood proposes a definition of successful aging that emphasizes the older adult's perception of how successful they have been in adapting to changes that occur as a result of the aging process. In fact, Flood uses Tornstam's (2005) construct of gerotranscendence as a major dimension of her theory. The theory is visualized as a three dimensional pyramid with gerotranscendence above the other concepts of functional performance, intrapsychic factors, and spirituality. Flood defines gerotranscendence as "a shift in metaperpsective, from a materialist and rationalistic perspective to a more mature and existential one that accompanies the process of aging" (Flood, 2006a, p. 38) and credits Tornstam for the definition. The theory of successful aging maintains that one's functional performance, spirituality, and intrapsychic factors lead to gerotranscendence which in turn leads to successful aging. Tornstam states that the development of gerotranscendence is accompanied by an increase in life satisfaction which in turn is a part of successful aging. Flood and Tornstam both define successful aging as one's ability to find meaning and purpose in life.

Theory of Gerotranscendence

A Different Perspective

The Theory of Gerotranscendence is different from other theories of aging (with the exception of Flood's [2006a] theory of successful aging) because it defines a reality somewhat different from the middle-age reality (Tornstam, 2005; Wadensten, 2007). Activity theory implies that there is no difference between middle-aged and older adults. This theory assumes that older adults desire to remain as active in later life as in middle-age. However, a problem with this assumption is the fact that in reality many older adults may not desire to remain as active in later life as they were in middle-age.

Tornstam (1989, 2005) explains that the disengagement theory is the basis of the Theory of Gerotranscendence. However, it differs from disengagement in several ways. Disengagement implies an inherent turning inward, a mutual withdrawal from society, and a passive lifestyle with defensive coping mechanisms (Tornstam, 1989, 2005; Wadensten, 2007). Gerotranscendence implies a positive process in which the older individual does not withdraw from society, but rather takes time for meditation and reflection in order to find meaning and purpose in life. Coping mechanisms are not defensive, but rather a composite of mechanisms based on prior life experiences and acceptance of how life's pieces come together to form a whole.

Continuity theory does not offer any explanations for development of successful aging, except to say that one's personality remains the same throughout the lifespan, and aging successfully depends on prior learned behaviors. Erikson's developmental theory defines successful aging as the attainment of wisdom if the older adult is able to accept

the lived life (ego-integrity), but does not define what wisdom actually implies (Erikson, 1997; Johansson, 2002).

Tornstam (2005) studied and engaged in work on aging from the beginning of the 1970s. After working in the gerontological field for some time, he reacted to how some of the myths about aging still persisted despite empirical research findings which proved they were wrong. Tornstam especially questioned the widely held theories of activity and disengagement. He challenged the assumption that old age represents the continuation of midlife patterns and values of life, and proposed that older age reflects a development into a qualitatively different state of being (Tornstam, 1989, 2005). Tornstam describes two myths arising from these theories: that older adults are lonely, and that retirement is a traumatic experience. These myths are based on the belief that midlife values are valid in old age. In this perspective, retirement will be seen as traumatic and the elderly will be considered lonely if they are not as socially active as in midlife. Tornstam (1989, 1994, 2005) argues that what theorists call disengagement is in reality often a positive development towards gerotranscendence. He further argued that if left to themselves, older adults will self-initiate activities based on their needs and desires.

Tornstam (2005) maintained that the process towards a transcendent form of life is instinctive and transcultural. He further argued that this development is continuous, but that it may be accelerated or impeded by external factors. The process may be accelerated through meditation or brought on by life crises or severe illnesses. It may be impeded by aspects of culture that define successful aging in terms of midlife values and

expectations. It may also be impeded by individual feelings such as feelings of death, anger at one's own aging process, or prominently held stereotypes.

The Theory of Gerotranscendence offers theoretical implications that may help to alleviate prominently held stereotypes that often define the construct of successful aging. Aging successfully is most often defined to include an emphasis on midlife values such as "activity, productivity, efficiency, independence, wealth, health, and sociability" (Tornstam, 2005, p. 3). Tornstam does not accept this assumption that successful aging is the same as continuing the midlife pattern indefinitely. Instead, he maintains that growing older has it own meaning characterized by a change in one's metaperspective from a materialistic view to a more rational view. Gerotranscendence and successful aging are not synonymous constructs. Rather, they are complimentary. Successful aging is contingent upon the individual's perception. With a change in one's metaperspective, it is possible that gerotranscendent individuals may define themselves as having aged successfully.

Use of the Theory of Gerotranscendence in Practice

In addition to new theoretical insights provided by the Theory of Gerotranscendence, the theory has substantial practical implications for care of the elderly (Tornstam, 1996a, 2005; Tornstam & Tornqvist, 2000; Wadensten, 2007; Wadensten & Carlsson, 2003). Tornstam introduced the theory to a group of nurses working with the elderly in Sweden. A large majority of the nurses revealed that the theory corresponded to the reality that they were seeing. Studies by Tornstam and Tornqvist, as well as Wadensten and Carlsson revealed that staff members working with

elderly in nursing homes in Sweden noticed the transcendence between past and present, the increasing need for solitude, the rejoicing in small events, and a decreased need for material things and superfluous relationships. However, the staff either interpreted these behaviors as negative and related to pathological conditions, or they scarcely noticed them at all.

Based on these studies, Wadensten and Carlsson (2003) developed a number of guidelines derived from the Theory of Gerotranscendence on how to relate to and treat older adults. These guidelines guide nursing staff regarding important aspects of care in order to facilitate gerotranscendence. Using the Theory of Gerotranscendence as a foundation for stimulating focus group discussion and as a foundation for the analysis Wadensten and Carlsson (2007) expanded these guidelines to include ways to reduce preoccupation with the body, ideas about conversations that stimulate personal growth, and different ways to use reminiscence. These guidelines include:

> Accept the possibility that behaviors resembling the signs of gerotranscendence are normal signs of aging.
> Reduce preoccupation with the body. Choose a topic of conversation not focusing on health and physical limitations.
> Allow alternative definitions of time. Ask the person to talk about his/her adventures in the past. Do not routinely correct older people about the time, when, for example, they seem to be in the past. Do not always try to bring them back to the present.
> Allow thoughts and conversations about death. Listen when someone talks about death. Let him/her speak. Listen and ask questions, stimulate further thoughts. Do not lead the conversation away from death to other topics.
> Allow older persons to recall and talk about childhood and of the old times, and how he/she has developed during life.
> Let older people decide for themselves whether they want to be alone or participate in activities. Discuss in a group or in individual conversations the topic of growing old, and introduce older people to the Theory of Gerotranscendence as a positive process of aging.

Plan and organize for quiet moments of rest and respect a person's wish to be alone in their room.
Do not always have the television or radio on the whole day. (Wadensten & Carlsson, 2007, p. 297)

A recent study by Wadensten, Conden, Wahlund, and Murray (2007) found that nursing staff need to reflect on their own attitudes towards death in order to facilitate movement toward gerotranscendence for older adults. This qualitative study took place in a nursing home in Sweden. Recommendations from the study included having specific guidelines that emphasize allowing older adults to talk about death and loss. Further recommendations included facilitating such conversations by having staff pose questions concerning death instead of changing the subject. Suggestions for counseling professionals by Degges-White (2005) also addresses the fact that counselors must feel comfortable with the subject of death so that they can assist the client with working through fears of his or her own death (an expected step in gerotranscendence).

Reminiscence therapy is an intervention often used in gerontological nursing. Tornstam (1999, 2005) states that using reminiscence in a gerotranscendental perspective is different from using it in other theoretical perspectives because the goal is to promote the process of gerotranscendence rather than maintain the present identity, which is the most common use of reminiscence. Wadensten and Hagglund (2006) examined the use of reminiscence therapy with a gerotranscendental perspective on eight older adults in a day care center in Sweden. Discussions included memories of early childhood, school years, first occupations, enjoyments during younger life, influences of technology, and persons who meant a lot to the individuals. Results revealed that participants felt reminiscence

helped them to structure their memories in a positive manner and influenced how they appraised the significance attached to the memories. Degges-White (2005) suggested that gerotranscendence may be facilitated through life review so that older adults can make sense of the events in their lives and come to terms with their previous choices. She explains that this review will enable older adults to move toward a broader sense of their place in the universe.

Cranford (2007) explained that using the Theory of Gerotranscendence in occupational therapy would facilitate a holistic view of the client which is the basis of the profession. Corresponding with the idea that the borders of past and present can be blurred and memories of the past seem much closer than at other times in life, she gave examples of reminiscence tasks such as playing favorite childhood games, watching vintage movies or TV programs, and creating memory books. She further emphasized that it is necessary for therapists and care providers to offer appropriate social activities based on the client's needs and wishes and to respect their need for time alone.

Development of the Gerotranscendence Scales

Tornstam (1996c, 2005) has presented three versions of a gerotranscendence scale, all of which were based on in-depth interviews with 50 people recruited following a lecture on early tentative ideas about the Theory of Gerotranscendence. In these semi-structured interviews, participants ranging from 52 to 97 years of age were asked to tell about changes in attitudes and perspectives during life. They were specifically asked to respond to questions such as "Has anything changed since midlife, and in such case what had changed" (Tornstam, 2005, p. 49). Thematic analysis of the interviews revealed three

main dimensions of gerotranscendental change: cosmic dimension; self; and social and personal relations.

Change in the concept of time is one of the items under the heading of cosmic dimension. Tornstam (1996c) introduced the time concept theme in the following way:

> Some people say that they have gradually come to a concept of time which is different from the one they had before. They say that, in early life and adulthood, they had a very clear idea of what is today and what belongs to yesterday, but that it has changed and they feel like they are able to be in two time periods at once. Their past may be present so strongly that they almost live in it, at the same time as they live in the present. Is this something you recognize? (p. 147)

Only one-third of the respondents answered "yes" to this specific question. However, Tornstam reported that the majority of the participants claimed that childhood had come more alive as they grew older.

Tornstam (1996c) also introduced a theme more directly related to the participants' own ancestry:

> Some people say that, during the course of life, they experience a change in how they feel in relation to their ancestors. It's a kind of increasing kinship with those who lived earlier, a feeling that you are a link in the chain of generations. Have you experienced this? (p. 149)

Participants responded to this question by reporting an increased interest in genealogy. Several of the participants had begun to seek their roots in a tangible manner.

The Theory of Gerotranscendence assumes that the self is gradually changing and developing (Tornstam, 1996c, 1997b, 2005). To introduce this concept, Tornstam asked, "Some people say that, during the course of life, they have begun to discover sides of

themselves that they hadn't known before, both positive and negative. Do you recognize any of this in yourself?" (Tornstam, 1996c, p. 150). All of the participants reported that they had discovered both positive and negative sides of themselves in their older years. Most themes did not revolve around discovering new qualities in one's self, but about redefining qualities that were already known.

A major tenet of the Theory of Gerotranscendence is a shift in the meaning of social relations as one ages. Given this assumption, Tornstam (1996c) asked:

> Some people say that their interest in other people changes character during the course of life. One becomes more selective and prefers deeper relationships with a few people rather than more superficial relationships with many people. Is this something that you recognize? (p. 151)

Tornstam reported that a large majority of participants said that they had changed in this regard. Many expressed a need for positive solitude. Tornstam stated that responses to this interview item led him to believe that it was clear that older adults are not dealing with a kind of "passive withdrawal", but rather "changes in the importance of social relationships. They shed the company and activities that lack content; they become more selective, preferring literature or music, or a few friends. Not because of lack of possibilities, but of choice" (p. 151).

A frequent theme which emerged from this item also was the delight in breaking away from role expectations that were compelling in middle age. Participants expressed that they could admit they did not know about something without feeling embarrassed. Tornstam (1996c) called this theme "emancipated innocence" (p. 152) and defined this concept as the ability of older adults to break away from social conventions.

Tornstam (1996c) believed that practical everyday wisdom increases with age. Following this logic, he introduced the interview question: "Some people think that it has become easier and easier to make wise decisions and help others to make decisions. What is your experience of this?" (p. 152). Many of the participants responded that it was difficult to identify the boundary between wise and unwise. Tornstam concluded that since the boundaries between right and wrong, wise and unwise, are transcended for older adults, the consequence for everyday wisdom is to refrain from giving advice or helping others to make decisions.

Tornstam (2005) explained that when he was given the opportunity to participate in the 1990 retrospective Danish study, he did not have all the qualitative interviews completed and data compiled. Therefore, he took the raw interview data available, and together with the tenets of the theory, developed a ten item scale (RGS) in which he posed the following question: "We now want to ask you whether your view of life and existence is different today, compared to when you were 50 years of age?" (p. 81). He used only two dimensions for this scale, cosmic transcendence with six items and ego-transcendence with four items. Cosmic transcendence refers to the transcendence of "time, space, life and death" (p. 81). Ego-transcendence is connected to changes in the "perception of the self and relations with other people" (p. 83). For each item, participants had two response choices: Yes (I do recognize myself in the statement) or No (I do not recognize myself in the statement).

Based on analysis of the data from the qualitative study, Tornstam (1994, 1997a, 2005) constructed the 25 item GS scale consisting of a series of 25 statements to be

examined in this study that were framed in accordance with the theoretical dimensions of

gerotranscendence. This scale was designed to "tap the status of these dimensions, not the

retrospective change as in the 1990 Danish study" (Tornstam, 2005, p. 93). The scale

contains three subscales corresponding to the dimensions of cosmic transcendence,

coherence, and solitude. The cosmic dimension refers to the transcendence of time, space,

and objects. Coherence corresponds to changes related to the self. Solitude is connected

to the changed meaning and importance of social and individual relationships.

This scale (GS) is a self-administered questionnaire. Older adults are asked to rate

how poorly or how well each statement agrees with his or her own experiences and

feelings at the present time on a four-point fixed scale (Tornstam, 1997b, 2005).

Responses for each item include 1 (strongly disagree), 2 (disagree), 3 (agree), and 4

(strongly agree). Scores can range from 0 to 100 with higher scores indicating

gerotranscendence. Twelve items are negatively coordinated with tenets of the Theory of

Gerotranscendence and are reverse scored as 1 (strongly agree), 2 (agree), 3 (disagree),

and 4 (strongly disagree). These items include:

> I am afraid of death.
> It seems unfair that I must die sometime when life on earth just continues.
> My life feels chaotic and disrupted.
> I take myself very seriously.
> To be honest, I must say that I am the most important thing in the world.
> I like meetings with new people.
> I need something going on all the time in order to feel good.
> I find it easy to give other people good advice.
> I find it easy to see what's right and wrong in other people's behavior.
> I am often afraid of asking stupid questions and embarrassing myself in front of others.
> For me, having a high material standard is among the most important things in my life right now.

> For me, being active in my work and other things is among the most important things in my life right now.

Because statements are worded in the present tense, this scale can be used in research including participants with a wide age range (Tornstam, 2005).

Tornstam (2005) further reduced the 25 item scale to a ten item scale (GS-S) which he designed to "elicit a snapshot status" (p. 109) of three dimensions: cosmic transcendence, coherence, and solitude. For this scale, Tornstam asked older adults to rate on a fixed four point scale, "how poorly or how well each statement agreed with his/her experiences and feelings" (p. 109).

Existing evidence on the psychometric properties of the gerotranscendence scales is seen in Tables B1 and B2 and discussed in more detail in subsequent sections of this paper. Much of the empirical work has been done in Denmark and Sweden. Several potential applicable properties have not been examined at all.

Use of the Gerotranscendence Scales

Tornstam (1994, 1996b, 1997a, 2005) developed and used three scales: a ten item dichotomous response scale; a 25 item four response scale; and a ten item four response scale. Using the first scale (RGS) devised to tap retrospective change, Tornstam (1994) first empirically explored the construct of gerotranscendence in a community-based sample of Danish adults aged 74-100. Specifically, participants were asked if their view of life was different today compared to when they were 50 years of age. According to Tornstam (2005) findings revealed that the majority of participants did recognize themselves in the items on the scale. The percentage of persons ranged from 32 percent

who reported that they saw themselves in the item, "Today, I feel a greater mutual connection with the universe" to 74 percent who stated that they recognized themselves in the item, "Today, material things mean less, compared with when I was 50". See Table B3 for exact percentages of each item.

In 1995 Tornstam (1997a, 2005) conducted a cross-sectional study of 2002 Swedish men and women between the ages of 20 and 85 using the 25 item scale (GS). The basic findings, supporting the Theory of Gerotranscendence, revealed that the dimensions of gerotranscendence increase as one grows older. The data revealed that cosmic transcendence and coherence are principally continuous developmental processes that begin in the first half of the adult's life and gradually develop to their maximum in later life. Tornstam found that the need for solitude develops most rapidly during the first half of the adult life and reaches its maximum in late life. There was a statistically significant, but weak, correlation between satisfaction with life and the need for solitude (eta = .16, p < .001). Results also revealed that women score higher than men on cosmic transcendence, but this difference decreases as age increases. He also found that crises in life correlated positively with cosmic transcendence, negatively with coherence, and did not affect the need for solitude except for men over the age of 75. Crises were defined by the participants as events including death of spouse, illnesses, loss of employment, family conflicts, problems at work, and economical issues (Tornstam, 1997b).

Tornstam (2005) focused on the specific age group of 65 and older during a study conducted in 2001 to reexamine each of the gerotranscendence dimensions in an attempt to reveal developmental patterns of older adults. For this study, he used the third scale

(GS-S), a ten-item scale developed to "elicit a snapshot status" (p. 109) of the three dimensions: cosmic transcendence; coherence; and solitude. He constructed additive indexes for the measurement of diseases, life crises, and activities. Participants were asked to mark the diseases they suffered from a list of common diseases. They were also asked if they had experienced something they regarded as a life crisis within the last two years. Participants were asked how often they participated in activities outside the home (organizational activities such as church, cinema, and theater), received visitors at home (friends, neighbors, children, or other relatives), and visited friends, neighbors, or other relatives. A single-item measure for life satisfaction was assessed in which participants were asked to rate on a five-point fixed scale, how satisfied they were with their present existence. This study agreed with results from the 1995 study. Basically, Tornstam (2005) concluded that there is an increase in cosmic transcendence with age. During young adulthood and middle age, life crises, diseases, and social factors positively contribute to the development of cosmic transcendence, but in older adults factors such as social activities have lost their impact. Interestingly, correlations with demographics in this study showed that persons who own their own homes, were married, and had skilled professions were found to have the highest degree of coherence. Tornstam found a statistically significant correlation between satisfaction with life and cosmic transcendence and coherence, but a negative correlation with the subscale of solitude.

Looking across these empirical studies by Tornstam (1994, 1997a, 1999, 2005), several variables such as self-initiated social activity, offensive and multi-coping, life satisfaction (Tornstam, 1994, 2005), age (Tornstam, 1997a, 2005), and functions of

reminiscence (Tornstam, 1999, 2005) were shown to correlate positively with gerotranscendence. As expected, variables such as fear of death (Tornstam, 1997a, 2005) were found to correlate negatively with gerotranscendence. In addition, women who experienced one or more life crises were found to obtain high scores on all three subscales of the GS (Tornstam, 1997a, 1997b, 2005).

Braam, Bramsen, van Tilburg, van der Ploeg, and Deeg (2006) modified Tornstam's GS-S subscale of cosmic transcendence to examine how cosmic transcendence relates to a sense of meaning in life and whether a relationship depends on the degree of religious involvement. Items from the subscale of cosmic transcendence were translated from Swedish to Dutch and administered in 1998 to 1,055 older participants in the Netherlands. Results revealed that the association between cosmic transcendence and sense of meaning in life proved to be stronger among people who were not religiously involved.

In the United States, Atchley (1999) examined and adapted a six item version of the RGS among adults older than age 70 in the 1995 wave of the Ohio Longitudinal Study of Aging and Adaptation. Using a series of focus groups, Atchley revised the RGS initially developed by Tornstam (1997a, 2005). Atchley found that focus group participants had difficulty relating to items concerning altered perceptions of time, space, and the boundary between life and death. Therefore, he omitted these items from the scale. Factor analysis revealed two dimensions: gerotranscendence and present-moment orientation. Core measures of gerotranscendence were found to revolve around three items: feeling greater connection with the universe; taking more enjoyment from one's

inner life; and having less fear of death. These three items formed a subscale with acceptable reliability (Cronbach's coefficient alpha = 0.66). The second factor (present moment orientation) was also made up of three items: "I take myself more seriously"; "Material things mean more"; and "I feel less connection to past and future generations" (Atchley, 1999, p. 143). However, these items did not form a reliable subscale (Cronbach's coefficient alpha = 0.483). Furthermore, results from these three items were in the opposite direction from predictions of the Theory of Gerotranscendence. For example, 78.4 percent of participants responded that material things meant more, not less, as predicted by the theory. In accordance with the theory, Atchley did find that scoring high on the three item gerotranscendence subscale was "highly correlated with being able to maintain morale in the face of disability" (p. 145). In contrast to the study by Braam and colleagues (2006), Atchley found that participants who thought being a religious person was important were "significantly more likely to feel a greater connection with the universe and to take more enjoyment from their inner life compared with those who thought being a religious person was unimportant" (p. 145). A summary of studies using the gerotranscendence scales is located in Table B4.

Known Psychometrics of the Gerotranscendence Scales

Reliability

According to Measurement Theory, reliability is the consistency and accuracy with which an instrument measures the target attribute. Reliability is a way to show the amount of error, random and systematic, inherent in any measurement (Streiner & Norman, 1995; Waltz, Strickland, & Lenz, 2005). An instrument's reliability depends on

sample composition and data collection conditions. Therefore, it should be estimated for each subscale each time the instrument is used, particularly for different populations. Key forms of reliability include stability over time, internal consistency, and equivalence (Polit & Beck, 2004). One form of reliability does not guarantee the other since "each may incorporate a unique definition of measurement error" (Standards for Educational and Psychological Testing, 1999, p. 32). Therefore, one cannot substitute one form of reliability for another. Each of the key forms of reliability will be explained, and published work on the target attribute of gerotranscendence for each subscale will be examined in light of these forms. Evidence on reliability is also summarized in Table B1.

Stability over Time

Stability of an instrument refers to the extent to which similar results are obtained on two separate occasions using the same participants (Polit & Beck, 2004; Waltz, et al., 2005). The instrument is given to a group of participants and then repeated, usually two weeks after the first administration, although time may vary depending on the setting and construct (Waltz et al., 2005). This procedure is also known as test-retest reliability. Scores are computed to obtain a reliability coefficient, which is a numeric indicator of the magnitude of the instrument's ability to remain stable over separate administrations. The measuring device is presumed to be stable depending on how close the coefficient is to 1.0. Reliability coefficients above 0.70 are considered satisfactory (Nunnally, 1978; Polit & Beck, 2004). The major concern with test-retest is that experience in the first testing may influence responses in the second testing to the extent that responses on the first test are remembered (Nunnally, 1978). There is no published evidence of assessment of

test-retest reliability on the RGS, GS, and GS-S, although this form of reliability is pertinent.

Parallel-Forms/Equivalence

When two forms of an instrument exist, the parallel-form procedure (also called equivalence) is a necessary form of reliability to establish. Two alternative forms of the instrument can be administered to a representative group of subjects on the same occasion or on two separate occasions. Coefficient values above 0.80 are generally accepted as evidence that the forms may be used interchangeably (Waltz et al., 2005). The parallel-form procedure is not applicable to the three gerotranscendence scales. The scales are not considered to be equal because each scale is designed for a different purpose. There is no published evidence that the same subjects have taken any of the two scales.

Internal Consistency

Internal consistency measures homogeneity of the items, the extent to which the items of an instrument measure the critical attribute and nothing else. It is used for cognitive measures when the concern is with the consistency of performance of a group of individuals across the items of a single measure (Waltz et al., 2005). The instrument is administered to a representative group on one occasion, and a correlational coefficient is obtained for each subscale.

The simplest way to measure internal consistency is the split-half technique. Items on a scale are divided into two groups and scored separately (Nunnally, 1978; Polit & Beck, 2004). Scores on the two halves are then used to compute a correlation coefficient.

If one of the halves is measuring the same attribute as the other half, then the correlation coefficient should be high (Polit & Beck, 2004). There are several ways in which to split the instrument in half. One can use even and odd numbers, which according to Polit and Beck is the preferred choice, or one can simply divide the instrument in two using top items and bottom items. Since cutting a scale in half shortens it, the Spearman Brown Prophecy formula is used to correct for changes in length. There is no reason to employ the split-half technique for the RGS and GS-S since Tornstam (2005) reports Cronbach's alpha.

Cronbach's alpha is preferred over the split-half procedure because it gives an estimate of the split-half correlation for all possible ways of dividing the measure into two halves (Polit & Beck, 2004). It is a more sophisticated technique which is considered the preferred index of internal consistency (Nunnally, 1978; Polit & Beck, 2004). The higher the value (closer to 1.00), the higher the internal consistency. For instruments that contain subscales, an alpha value is computed for each scale (Waltz et al., 2005). For the RGS Tornstam (2005) reports Cronbach's alpha as 0.81 for the cosmic transcendence subscale consisting of six items, and 0.75 for the ego transcendence subscale consisting of four items. For the GS-S, Tornstam reports Cronbach's alpha as 0.73 for the cosmic transcendence subscale (five items), 0.60 for the coherence subscale (two items), and 0.57 for the solitude subscale (three items). He further states that these numbers are below the threshold of 0.70 but "expectedly and acceptably so, since the alpha value is highly dependent on the number of items in the scale" (p. 110).

There is no published evidence of Cronbach's alpha for the GS. Since longer scales tend to be more reliable than shorter scales (Nunnally, 1978), it would be anticipated that the GS would have greater reliability than the shorter version. By using the Spearman Brown Prophecy Formula as explained in Waltz et al. (2005), one can approximate the alpha coefficients for the GS from those of the GS-S. Using the known reliability coefficients for the GS-S in the formula, the alpha coefficients for the GS would be estimated as: cosmic transcendence subscale, ~ 0.84; coherence, ~ 0.82; and solitude, ~ 0.80. These estimates are based on the assumption that the additional items in the GS contribute comparably to reliability of items in the GS-S. If Tornstam (2005) shortened the GS to the GS-S scale by eliminating weaker items (i. e. those with lesser item-to-total correlations), then these will be overestimates.

Kuder-Richardson Formulas (KR 20 and KR 21) are simplified formulas of Cronbach's alpha used for the situation in which items are dichotomously scored. Items have only two possible answers such as yes or no, or agree or disagree (Vogt, 2005), and there are known right and wrong answers (Waltz et al., 2005). Since there is no right or wrong answer in any of the three gerotranscendence scales, KR 20 and KR 21 are not applicable.

Interrater/Intraobserver

Interrater reliability, also called intraobserver reliability, is obtained by having two or more trained observers rate or evaluate an event and record simultaneously. Results are then used to compute an index of agreement between the observers (Polit & Beck, 2004). Although the researcher can affect scores in self-administered instruments

such as the gerotranscendence scales, interrater reliability is not generally calculated in such cases and has not been reported.

Validity

According to Polit and Beck (2004) validity is "the degree to which an instrument measures what it is supposed to measure" (p. 422). Validity indicates the degree of confidence that can be placed on inferences made about people based on their scores on a tool (Streiner & Norman, 1995), not the tool itself. Four distinct types of validity are commonly recognized: face; content; criterion-related; and construct. As with reliability, evidence that supports one form of validity does not guarantee other forms. For example, high content validity does not ensure criterion-related validity. However, all evidence of validity is interpreted as evidence of construct validity. Each of the distinct types of validity will be explained, and published work on the RGS, GS, and GS-S will be examined for evidence of each type. Published work is also presented in Table B2.

Face Validity

Face validity simply refers to whether the instrument looks as though it is measuring the appropriate construct (Polit & Beck, 2004). Even though it is a weak form of validity, face validity can be important for acceptance by stakeholders. There is no explicitly published evidence of face validity for the three gerotranscendence scales. However, Tornstam (1994, 2005) states that the fact that many respondents recognized themselves in the items on both the RGS and GS-S can be regarded as confirmation of validity by the stakeholders. Tornstam (1994) used the RGS in 1990 with a group of 912 Danish men and women between the ages of 74 and 100 and the GS-S in 2001 with a

group of 1,215 Swedish men and women of the same age. Although the studies are

eleven years apart, the results are remarkably similar. These results are presented in Table

B3. Since proportions of respondents ranging from 28 percent to 81 percent recognized in

themselves the content of the various statements, Tornstam concluded that the items of

the scale apparently correspond with developmental changes people see in themselves.

This fact appears to correspond to face validity rather than content validity since the

respondents were not experts, except perhaps in their own subjective experience of aging.

In the revised six item version of the RGS, Atchley (1999) reported that persons

over the age of 70 ($n = 294$) recognizing themselves in items on the scale ranged from 48

percent to 61 percent. Although he does not report this finding as face validity, these

percentages can be seen as evidence of face validity by the stakeholders. These

percentages are presented in Table B4.

Content Validity

Content validity refers to the degree that the instrument has an appropriate

sample of items for the construct being measured (Polit & Beck, 2004). Content validity

is based on judgment of experts. It is often established through the use of a panel of

experts to evaluate and document if the individual items on the scale adequately measure

all dimensions of the construct being measured (Polit & Beck, 2004; Waltz et al., 2005).

According to Polit and Beck, a content validity index (CVI) can be obtained by having

experts rate the items on a four-point scale from 1 (not relevant) to 4 (very relevant). The

CVI is the proportion of items rated as 3 or 4. A score of 0.80 indicates good content

validity. There is no published evidence showing the use of an expert panel to evaluate

content validity for any of the gerotranscendence scales. However, since some people

consider content validity merely a form of face validity (personal communication, A.

Tesh, June 14, 2007), and if one views older adults as experts on the experience of aging,

then the fact that many older adults recognized themselves in the items on the RGS and

GS-S could be interpreted as evidence of content validity.

Criterion-Related Validity

Criterion-related validity refers to the relationship between an instrument and an

external criterion. According to Polit and Beck (2004), the key issue is whether the

instrument is useful in predicting other behaviors, experiences, or conditions. A desirable

criterion is some behavior that the score is used to predict (Allen & Yen, 1979). For

example, scores used to screen job applicants should be related to the criterion of work

effectiveness. Once a criterion is selected, a correlation coefficient is computed between

the scores on the instrument and the criteria.

There are two types of criterion related validity, predictive validity and concurrent

validity. Predictive ability refers to the instruments ability to predict an individual's

future level of performance on a criterion. Concurrent validity refers to the extent that an

instrument is able to distinguish individuals who differ on a present criterion. In other

words, it refers to the extent to which a measure is able to estimate an individual's

present standing on the criterion (Waltz et al., 2005). Determination of an acceptable

criterion is necessary for criterion validity. Since there are no known criterion for

determining who has achieved gerotranscendence, concurrent and predictive validity of

the scales would be difficult, if not impossible, to establish. One could ask an older

individual, "Have you aged successfully?" The problem with this criterion is that one would be using a measure with unknown properties. Therefore, criterion validity is not feasible to establish for Tornstam's (1994, 2005) gerotranscendence scales. Since there is no single tool to establish content validity, all other evidence of validity is seen as contributing to evidence of construct validity.

Construct Validity

Construct validity is the most important type of validity for a quantitative instrument (Polit & Beck, 2004). Construct validity refers to the extent to which relationships among items included in the scale are consistent with the theory and concepts as operationally defined (Waltz et al., 2005). Researchers use other concepts to make predictions about the manner in which the target construct will function in relation to convergence and discriminability of these concepts. There are several construct validation approaches. These are known-groups technique, hypothesis testing (Waltz et al., 2005), a statistical procedure known as factor analysis (Polit & Beck, 2004), and the multi-trait-multimethod matrix (MTMM) which consists of combining evidence of convergence and discriminability (Campbell & Fiske, 1959).

The known-groups technique looks at the differences between two groups of individuals who are "expected to differ on the critical attribute because of some known characteristic" (Polit & Beck, 2004, p. 425). The instrument is administered to the two groups, and the differences in scores from each group are examined. According to Waltz et al. (2005) whether the groups differ can be assessed through the use of an appropriate statistical procedure such as the t test or an analysis of variance (ANOVA) test. No

theoretical or published empirical evidence justify identifying known groups high or low in gerotranscendence.

Hypothesis testing examines the relationships based on theoretical predictions. This approach is also known as the experimental manipulation approach (Waltz et al., 2005). The researcher uses the conceptual framework or theory on which the instrument is based to state hypotheses regarding the behavior of individuals, gathers data to test the hypotheses, and makes inferences on the basis of the findings "regarding whether or not the rationale underlying the instrument's construction is adequate" (Waltz et al., 2005, p. 157). This approach uses logic and reason. Polit and Beck (2004) explain hypothesis testing using the following example of logical reason.

> According to the theory, construct X is positively related to construct Y. Instrument A is a measure of construct X; Instrument B is a measure of construct Y. Scores on A and B are correlated positively, as predicted by theory. Therefore, it is inferred that A and B are valid measures of X and Y (p. 426).

Tornstam (1994, 2005) hypothesized that individuals with a high degree of gerotranscendence have a high degree of life satisfaction; that gerotranscendence is not related to depression, mental disturbances, and consumption of psychotropic medications; and that individuals with a high degree of gerotranscendence have a higher degree of self-initiated social activity than individuals with a low degree of gerotranscendence.

Tornstam (1994, 1997a, 2005) designed a brief life satisfaction scale (BLSS) that measured life satisfaction by a single item in which respondents were asked to state how satisfied or dissatisfied they were with overall life at present using a five-point scale. He correlated the BLSS to the RGS in 1990 (Tornstam, 1994), to the GS in 1995 (Tornstam,

1997a), and to the GS-S in 2001 (Tornstam, 2005). Psychometric properties for the BLSS

are unknown. Results for all three scales revealed a positive correlation between

satisfaction with life and the construct of gerotranscendence. Tornstam (2005) reported

statistically significant positive correlations between BLSS scores and scores on the

subscales of cosmic transcendence (eta = .21, $p < .05$) and ego transcendence

(eta = .16, $p < .001$) for the RGS; statistically significant positive correlation between

BLSS scores and scores on the coherence subscale (eta = .17, $p < .01$); a negative

correlation between BLSS scores and scores on the solitude subscale (eta = - .16,

$p < .001$) of the GS; a positive correlation between the BLSS and GS-S subscale score of

cosmic transcendence (eta = .16, $p < .001$) and coherence (eta = .44, $p < .001$), but a

negative correlation of BLSS scores with scores on the GS-S subscale, solitude (eta = .16,

$p < .001$). Results of the negative correlations between scores on the subscale of solitude

and satisfaction with life led Tornstam to conclude that the less the satisfaction with life,

the greater the need for solitude.

Tornstam (1994, 2005) constructed an old age depression scale (OADS) of five

items in which the participants were asked to agree or disagree using a three-point scale

on whether they feel lonely, find the time passing slowly, have a feeling of being

forgotten, have a feeling of being superfluous, or feel old. Psychometric properties of the

OADS are unknown. He compared the OADS to the RGS and found that scores on the

OADS were not statistically significant compared to scores on the subscale of cosmic

transcendence (eta = .06, $p > .05$) and ego-transcendence (eta = .02, $p > .05$),

substantiating his hypothesis that gerotranscendence is not a "depression correlate" (Tornstam, 2005, p. 90).

Tornstam (1994, 1997a, 2005) constructed a social activity index scale which summed the frequency of visits to other people in their homes, visits by other people to the home of the participant, contacts with relatives (other than children and grandchildren), contacts with friends, and leisure activities outside the home. He compared this scale to the RGS and found a positive correlation between cosmic transcendence and social activity (eta = .17, $p < .001$), but no significant correlation between ego transcendence and social activity. From these results he theorized that gerotranscendence goes with self-decided activity, not with withdrawal. In 2001, Tornstam used an additive activity index, where the participants were asked how often they participated in activities outside the home (church, cinema, theatre, clubs, etc.), received visitors at home (friends, neighbors, children, other relatives), and themselves visit friends, neighbors children, or other relatives. A five-point response included the alternatives of daily, weekly, monthly, every six months, and less often. Tornstam (2005) found that this activity index correlated with the subscales of cosmic transcendence (eta = .08, $p < .05$) and coherence (statistics for coherence not available). These findings substantiated the hypothesis that individuals with a high degree of gerotranscendence have a higher degree of self-initiated social activity.

A number of methodological weaknesses are inherent in these hypotheses studies by Tornstam (1994, 1997a, 2005). First, all published studies have been done by Tornstam in Scandinavia rather than by other scientists working with other populations.

Second, Tornstam's studies suffer from the weakness that he developed or adapted tools to measure concepts for comparison to gerotranscendence and the psychometric properties of the scales are unknown. Third, Tornstam (1994, 1997a, 2005) rejected the null hypothesis with small p values, but values of the test statistic were also small for his studies. Tornstam used large sample sizes in his studies allowing for rejection of the null hypothesis when in fact the relations found may be too small for practical importance. The RGS was used with 912 older individuals (1994), the GS was used with 2,002 individuals (1997), and the GS-S was used with 1,771 individuals (2005). Fourth, Tornstam (1994, 1997a, 2005) used eta as his measure of association, rather than the more commonly seen correlation coefficient. Eta is a measurement of association that does not assume the relationship between two variables to be linear (Vogt, 2005). Thus, it is typically used to test for a curvilinear relationship. Tornstam does not explain how he chose to conclude the relationship between the variables as curvilinear.

Another method in which one can analyze construct validity is by employing the statistical approach of factor analysis. It is a useful approach to identify clusters of related variables. Factor analysis is especially useful when the researcher has designed a measure to assess various dimensions of the phemononem of interest such as gerotranscendence. Exploratory factor analysis refers to a technique that separates the variance of a measure into variance that is shared by common factors plus variance that is not shared. Variance that is not shared is the measure's uniqueness (Waltz et al., 2005). The goal is to explain the most variance in the items with the least number of factors using a standard such as an eigenvalue greater than one.

Theorizing that the Theory of Gerotranscendence suggests different types of changes that may reflect different dimensions of gerotranscendence, Tornstam (1994, 2005) analyzed the ten items of the RGS using exploratory analysis. The factor analysis separated gerotranscendence into two factors. Tornstam labeled the first factor cosmic transcendence since it defines a type of transcendence connected with changes in the participants' perception of time, space, life, and death. He labeled the second factor ego-transcendence since it relates to changes in the perception of the self and relations with other people. Factor loads are shown in Table B5. Using exploratory factor analysis, Tornstam (1997a) analyzed the answers to the GS which produced three dimensions, cosmic transcendence, coherence, and solitude. Tornstam was able to reduce the 25 items of the GS to the ten items in the GS-S by placing two restrictions on the factors to be analyzed: factors should be interpretable; and none of the items in a factor should have factor loads above 0.40. Factor loads can be seen in Table B6. Tornstam (2005) used the procedure of exploratory factor analysis for the GS-S and was able to reproduce the same dimensions as in 1995 with similar factor loadings. These results are also presented in Table B6.

Confirmatory factor analysis is theory-driven instead of data-driven (Waltz et al, 2005). This method allows the researcher to define the factors and then determine how well the measurement model fits the observed data. Waltz et al. (2005) explains that in order to perform confirmatory factor analysis, the researcher must explicitly specify the hypothesized model and the relationships among the variables and constructs using a diagram or a set of equations. Then the researcher must decide whether it is theoretically

possible to estimate every parameter in the model. Next, parameters are estimated. The

researcher must also evaluate whether the measurement fits the model through a test of

model fit. A common index is the goodness-of-fit index. This index explains the

proportion of observed covariance explained by the implied model covariances. The

literature does not reveal that Tornstam constructed diagrams and equations showing

confirmatory path analysis.

One of the most sophisticated approaches to examine construct validity is the

multitrait-multimethod matrix method (MTMM). According to Waltz et al. (2005),

MTMM is the preferred approach to establish construct validity whenever it is reasonable

to:

1. Measure two or more different constructs.
2. Use two or more methodologies to measure each construct.
3. Administer all instruments to every subject as the same time.
4. Assume that performance on each instrument employed is independent that is, not influenced by, biased by, or a function of performance on any other instrument. (p. 158)

The MTMM involves examining the concepts of convergence and discriminability.

Convergent validity refers to the fact that different measures of the same construct should

correlate highly with each other (Campbell & Fiske, 1959). Simply stated, different

methods of measuring the same trait should yield similar results. Discriminate validity

refers to the ability of the instrument to differentiate the construct from other similar

constructs (Campbell & Fiske, 1959). A matrix is constructed and correlations are

entered. Per Waltz et al. (2005) reliability of each instrument is constructed and

correlations are entered. Reliability of each instrument is determined using Cronbach's

alpha (Waltz et al., 2005). The reliability estimate is entered into the matrix and is referred to as the reliability diagonal. If these values are sufficient (generally above 0.70), the procedure continues. If not, the procedure ends because reliability is a prerequisite for validity. Convergent validity is determined by entering the correlation coefficients between the two measures in the lower left block of the matrix to form the validity diagonal. The remaining coefficients are entered in the lower block in the left of the matrix. These values should be lower than the values in the validity diagonal. This procedure shows discriminate validity.

Although a published matrix, as described in the preceding paragraph cannot be found in the literature, Tornstam (1994, 2005) does address discriminate validity of the gerotranscendence scales. Several skeptics of the Theory of Gerotranscendence argued that gerotranscendence scores could be the same as disengagement or withdrawal. To demonstrate that the construct of gerotranscendence is empirically different from negative disengagement or withdrawal, Tornstam constructed a coping pattern typology scale on four items, where respondents were asked to agree or disagree, using a four-point scale, on what they do when they have problems or worries. The scale (Cronbach's alpha 0.77), formed two dimensions: defensive coping and offensive coping. Tornstam further divided the scale into subscales. These subscales consisted of low copers (individuals with scores below average on both the offensive and the defensive coping dimensions), multicopers (individuals who are above average on both dimensions), and offensive copers (individuals who are high on the offensive coping dimension, but low on the defensive dimension). Tornstam (2005) correlated the subscale

scores with the RGS and found a statistically significant difference between coping patterns and the degree of cosmic transcendences (eta = .16, *p* < .001) as well as the degree of ego-transcendence (eta = .13, *p* < .05). He stated that these findings contradict the assumption that gerotranscendence is the same as negative disengagement or a breakdown syndrome. If gerotranscendence were the same as disengagement, the predicted coping patterns would be an increasing proportion of low copers and defensive copers, with increasing degrees of gerotranscendence. Instead, Tornstam found the opposite. He found that with increasing degrees of gerotranscendence, there were increasing proportions of offensive copers and multicopers. However, this study suffers from the use of an unknown tool.

Tornstam (1994, 2005) compared the social activity index which summed up frequency of visits to other people in their home, visits by other people to the home of the participant, contact with relatives (other than children and grandchildren), contacts with other friends, and leisure activities outside the home, to the RGS. He theorized that if gerotranscendence were to be synonymous with aspects of social withdrawal and disengagement, then one would expect to find a negative correlation with social activities. Instead, he found a positive correlation between cosmic transcendence and social activity (eta = .17, *p* < .001), which he interpreted to be an empirical indication that the construct of gerotranscendence is different from the concepts of disengagement or withdrawal. Most importantly, he found that social activities that most strongly correlated positively with gerotranscendence were activities where more of the initiation for the activity rested with the individual.

Tornstam (1994, 2005) constructed another activity index, in which participants were asked how often they participate in activities outside the home, receive visitors at home, and themselves visit friends, neighbors, children, and other relatives. He compared this scale to the GS-S. He once again found cosmic transcendence to be related to activity and not to disengagement (eta = .08, $p < .05$). He also found that the higher the score on the coherence subscale, the higher the activity score. From these results, Tornstam (2005) concluded that gerotranscendence and activity theory are not mutually exclusive, but rather they are complementary.

Other Criteria

Sensitivity is the ability of an instrument to identify a case correctly and specificity is the ability of an instrument to screen out cases without the condition (Polit & Beck, 2004). Since there is no gold standard that distinguishes individuals with or without gerotranscendence, these concepts cannot be established for the gerotranscendence scales.

Speediness, comprehensibility, and precision are typically concerns for tests of maximal performance rather than typical performance (personal communication, A. Tesh, June 14, 2007). Researchers should allow adequate time to obtain complete measurements. Since gerotranscendence is not a measure of maximal performance, but one in which the goal is to measure each individual's typical level of the construct, these issues are not of primary concern.

All forms of the gerotranscendence scales have been self administered by respondents. Conditions of administration can contribute to random or systemic error. For

example, comfort related to room temperature, characteristics of data collector, or other situational factors may have an effect on scores of the gerotranscendence scales.

<div align="center">***Bias***</div>

Bias is an unintended factor that confuses or changes the results of a study in such a manner that incorrect conclusions about a group can be obtained (Macnee & McCabe, 2008). Thus, a high degree of bias can introduce systematic error into measurement and impair validity of inferences made based on the scores. Determination of bias is a complex process, and one which neither Tornstam nor other researchers have addressed in the literature. However, biases may exist in the gerotranscendence scales.

General ideas about aging are relative to conditions of culture. Tornstam (1994, 1997a, 2005) conducted psychometric studies on the gerotranscendence scales using samples of Swedish and Danish individuals. While the GS may be generalizable to older adults in these populations, the instrument may reflect bias for other cultures. Sweden and Denmark may be more culturally homogeneous than the southern United States. For example, older individuals in Sweden and Denmark may be better educated and use a common language more than older individuals in the southern United States.

Items on instruments can be biased toward cultural subgroups as well. These subgroups may be related to age, gender, race, ethnicity, language, reading ability, or anything that makes one group different from another group. Tornstam (2005) did examine subgroups of age and gender. However, he was not looking for bias in the instruments, but at the differences in levels of gerotranscendence between groups. Items on the three scales are not worded in ways that reflect obvious gender bias. For example,

Tornstam does not use gender pronouns such as "he or she", nor does he ask specific questions for men or women. However, absence of such language does not guarantee absence of bias.

Bias can be inherent in how individuals comprehend and interpret questions. Even in a homogeneous sample, words may have different meanings for different people. For example, the question taken from the GS and GS-S, "I can feel a strong presence of people who are elsewhere," could be interpreted by some individuals as a presence of people who are deceased, and by others as presence of persons who are not currently in the same room, city, or other shared area. Tornstam (personal communication, February 12, 2008) indicated that both of these interpretations are equally valid and consistent with the Theory of Gerotranscendence. Another example taken from the GS and GS-S is the question, "Being at peace and 'philosophizing' by myself is important for my well-being." A respondent's answer to this item would depend on how the respondent defines peace as well as how he or she feels about "philosophizing". Due to values and beliefs, some people may view time spent in "philosophizing" negatively as unproductive time spent being lazy. Such interpretations may be cultural or generational.

Interviewers and survey data collectors can introduce bias into instruments simply by how they introduce the topic, state questions, or give directions. If respondents know the interviewer or survey data collector, they may answer questions in ways they think the researcher would like, which may not always be an accurate representation of their views. Tornstam (1994, 1997a, 2005) used mail surveys for the empirical studies evaluating the gerotranscendence scales. He did not publish any materials that may have

accompanied the mailed surveys. Therefore, it is not known how much bias may have inadvertently been introduced through explanation of the studies, as well as introduction of the researcher himself in the cover letter or accompanying materials. Existing work on psychometric properties of the gerotranscendence scales are summarized in Tables B1 and B2.

Need for Further Evaluation of the Gerotranscendence Scales

Some aspects of reliability and validity have been investigated for the gerotranscendence scales with older individuals in Sweden and Denmark, but not in the southern United States. However, not all pertinent aspects have been examined. Further, all but one study has been done by Tornstam himself rather than by other scientists. If the construct of gerotranscendence is to be explored in the southern United States, it is necessary to first examine the measure of gerotranscendence to be used with this specific population to make sure that scales measure the construct in a reliable, valid, and culturally appropriate manner. An American version of the GS may be needed to examine the construct of gerotranscendence in older adults who reside in the southern United States. Further reliability and validity of this tool needs to be documented.

Understanding the Theory of Gerotranscendence may lead to a more balanced perception on how older adults continue to mature at the end of life. Using the RGS, GS, and GS-S Tornstam (1994, 1997a, 2005) concluded that older adults in Sweden and Denmark experience gerotranscendence. However, a culturally appropriate and psychometric sound tool is necessary to more fully examine gerotranscendence in older adults in the southern United States.

Summary and Support for Study

The dominant developmental theories of aging and nursing theories are important because these perspectives influence treatment of older adults. These theories often define expected behaviors of the older adult. Older individuals who do not conform to expected behaviors are often viewed as maladjusted (Ebersole et al., 2005; Knapp, 1977) and pathologically in need of assistance (Tornstam, 2005; Wadensten, 2005, 2007; Wadensten & Carlsson, 2001) triggering intervention.

The Theory of Gerotranscendence describes the experience of growing old as a normal and desirable aging process. Tornstam (1989, 1992, 1994, 1996b, 1997a, 1997b, 2000, 2005) introduces a perspective that emphasizes change and development. According to Tornstam this process can be misunderstood due to dominate perspectives on aging. Nurses and other healthcare providers perform their occupation on the basis of theoretical knowledge, intrinsic values and practical skills. When the predominant theories of aging support midlife values, nurses and other health care providers project these values on older adults. Older adults are expected to be active and passivity is considered pathological. However, if the Theory of Gerotranscendence is emphasized in health care, nurses and other health care professionals will be empowered to let older adults choose their activity level and times for positive solitude and meditation.

In order to evaluate gerotranscendence in older adults in the southern United States, a culturally appropriate and psychometrically sound tool is needed. Empirical studies of the gerotranscendence scales have been conducted in Denmark and Sweden with only one study found in the United States. Furthermore, some important

psychometric properties have not been explored or examined at all. Therefore, a study was undertaken to examine the psychometric properties of the GS for use with older adults in the southern United States. The 25 item scale (GS) was selected for this study rather than the ten item scale because the ten item scale had low reliability and longer scales typically have higher levels of reliability.

A series of hierarchal research questions were investigated using the 25 item scale (GS). These are shown below:

1. Is the GS appropriate for use with older adults in the southern United States? If not, how can the GS be revised to make it applicable for use with older adults in the southern United States?

2. Is the GS (revised as necessary) reliable?

    a. What is the test-retest reliability?

    b. What is the internal consistency reliability?

3. Is the GS (revised as necessary) valid?

    a. Does the GS (revised as necessary) have face validity?

    b. Does the GS (revised as necessary) have content validity?

    c. Does the GS (revised as necessary) have construct validity?

CHAPTER III

METHODS

Introduction

This triangulated mixed-methods methodological study addressing a series of hierarchal research questions was conducted in two phases. The research questions were: 1. Is the GS appropriate for use with older adults in the southern United States? If not, how can the GS be revised to make it applicable for use with older adults in the southern United States?; 2. Is the GS (revised as necessary) reliable?; 2a. What is the test-retest reliability?; 2b. What is the internal consistency reliability?; 3. Is the GS (revised as necessary) valid?; 3a. Does the GS (revised as necessary) have face validity?; 3b. Does the GS (revised as necessary) have content validity?; and 3c. Does the GS (revised as necessary) have construct validity?

In Phase I, two focus groups were convened to answer the first research question and to establish face validity, question 3a. In Phase II, the GS (based on focus group results) was administered to a convenience sample of community dwelling older adults, and its psychometric properties examined in order to answer research questions 2, 3b, and 3c.

Special Considerations for Research with Older Adults

Special considerations were especially important for older adults who experienced age-related physiological changes such as delayed response time (Crane, Cody, &

McSweeney, 2004), decreased vision, decreased hearing, decreased mobility, and the tendency to tire easily (Ebersole et al., 2005). Focus groups and administration of scales were conducted during the morning hours with the exception of two sites whose administrators asked that the early afternoon hours be used. Breaks with refreshments were offered at least every hour, and lunch was served at the church sites. Bathrooms were conveniently located and adequate time was allowed for personal use. Adequate time was given for participant's comments. The researcher and researcher assistant read consent forms to older adults who reported difficulty reading smaller print. Questions for focus groups were shown through overhead projection as well as spoken aloud. Questions on the scales were read to participants as requested by the participants and printed using a large scale font. The church fellowship halls and meeting rooms at the independent living centers and senior center provided suitable quiet, comfortable and well-lit rooms. To minimize distractions, a 'do not disturb' sign was placed on all doors leading into rooms where focus groups were held and scales administered. Appropriate accommodations for limitations imposed by physical impairments such as wheelchair access, walkers, ramps, devices to enhance hearing, and microphones were available.

Phase I: Qualitative Data

Research Question 1: Appropriateness for Older Adults

Research Question 1: Is the GS appropriate and understandable for older adults in the Southern United States? If not, how can the GS be revised to make it applicable for use with older adults in the southern United States?

Two separate focus groups were convened to answer the first research question. These groups were also used to establish face validity, which is part of Phase II, question 3.

Settings

The first focus group was conducted in a rural Methodist church in western North Carolina. Church membership consists of 84 parishioners. Approximately one-third of the members are age 65 and older (personal communication, M. Grigg, April 4, 2008). All are White. Participants were recruited following a joint presentation of the Theory of Gerotranscendence to the United Methodist Men's and Women's groups.

In order to be sure that focus group participation consisted of a variety of older adults, not just those with a single religious affiliation or from one race, the second focus group was conducted in an independent living facility in central North Carolina. The independent living center is a 16-story high rise apartment building for senior citizens operated by the city housing authority. There are 89 residents ages 65 and older residing at this facility (personal communication, A. Stossmeister, March 24, 2008). Seventy-two percent are Black and 28 percent are White (personal communication, A. Stossmeister, March 24, 2008). Participants for this group were recruited through flyers posted at the facility and by word of mouth from other residents.

Samples

Each focus group was comprised of volunteers who were age 65 and older by self-report. All participants were community dwelling persons who were able to speak and read English. No one was excluded based on race, gender, or physical limitations. As

an incentive to participate, lunch was served to the first group. Because lunch is provided at the independent living center as a part of congregate meals, a ten dollar gift certificate to Wal-Mart was given to participants in the second focus group.

Protection of Human Subjects

This study was approved by the Institutional Review Board (IRB) of the University of North Carolina at Greensboro (IRB No. 078013, July 30, 2007 and March 24, 2008). Letters granting permission to conduct the first focus group at the Methodist church was obtained from the Pastor of the church and for the second focus group from the Coordinator of Resident Services at the independent living center.

Following IRB approval, volunteers were recruited and asked to sign a consent form at the beginning of each focus group session. Informed consent consisted of informing participants about the risks and benefits, the nature of their involvement, the purpose of the study, and their right to withdraw from the study at any point as explained by Jokinen, Lappalainen, Merilainen, and Pelkonen (2002). There were no known risks for the study. Participants were informed that the benefit of the study is the knowledge that they will be contributing to further research on older adults by helping to develop an applicable gerotranscendence scale. After obtaining informed consent, an unsigned copy of the consent form was given to each participant for their records. Signed consent forms are kept in a locked filed cabinet. Only the researcher has a key to the file cabinet.

In order to ally any potential concerns over confidentiality, participants were informed at the beginning of the focus group sessions that each person should speak freely, and that everyone is asked to keep what others say confidential. Participants were

informed that no individual names will be recorded with responses. The focus group was

not tape recorded. Instead the researcher and research assistant took field notes and

names were not included. Participants were also informed that in addition to the

researcher and research assistant, only a dissertation committee from the University of

North Carolina at Greensboro will see the overall group consensus. A research assistant

that is trained in research with human subjects assisted with the focus groups. The

research assistant was asked to sign a confidentiality statement prior to the focus group

sessions.

Anonymous aggregate data are stored on the researcher's password protected

computer. These data will be destroyed five years after dissemination of the results. Flip

charts and field notes used to record comments during the focus group were shredded

following compilation of the data.

Data Collection

Following guidelines developed by Krueger & Casey (2000), data were collected

via focus group participation using a semi-structured interview technique. The first group

received a brief introduction to the Theory of Gerotranscendence before convening the

focus group. To decrease bias, the second focus group received only Tornstam's (1996c)

brief introduction to each item before discussing the item. See Chapter II

for these introductions.

Following the introduction, items from the GS were presented orally to the

participants of each focus group and shown simultaneously on overhead projection.

Participants were asked how each item was interpreted and if needed, how the item could

be worded differently to make it more understandable. Only focus group consensus was recorded. Specifically, comments were recorded on flip charts that could be viewed and corrected by participants in an ongoing manner during the focus group sessions.

Data Analysis

Data analysis was concurrent with data collection. Data were analyzed using an ethnographic approach. Ethnographic analysis is contextual and represents interpretations from the participants' perspective (Wilkinson, 2004). Therefore, the whole group is the unit of analysis. Comments for each item were critically analyzed for group consensus. Comments (without individual names) were written as field notes and on flip charts. The field notes were scrutinized and immediately reviewed for reoccurring interpretations. The most frequent comments were recorded as group consensus. When necessary, the moderator explained Tornstam's (1996c) description of meaning for items of the GS. If an item was difficult to understand and interpret, the group was asked how the item could be reworded to make it more understandable. These comments were analyzed in the same manner as interpretation of an item. They were recorded as field notes and on flip charts as well. Before moving on to the next item, each item was thoroughly investigated, and the group was asked to confirm that the researcher and research assistant had correctly identified and documented consensus of the group.

After each item had been thoroughly discussed and participants took a break, participants were queried as to how many actually saw themselves in the items. This data was written on field notes without participant names. The percentage of those who

recognized themselves in the items was used to establish face validity by the stakeholders.

Trustworthiness

Validity requires that the results accurately reflect the phenomenon studied (Morse & Richards, 2002). Credibility and validity of this phase of the study were assessed through member checking. Comments recorded on flip charts could be viewed and corrected by participants in an ongoing manner during the focus group sessions. Focus group participants were asked to confirm that the researcher and research assistant had correctly identified and documented the consensus of the group following discussion of each item on the GS. A summary of the discussion was given at the end of each focus group session, and participants were again asked to confirm that the researcher and research assistant had accurately documented their comments.

Confirmability of the study was assessed through an audit trail (Morse & Richards, 2002). All activities of the study including raw data such as comments written on flip charts, field notes, analysis, interpretations, and findings were recorded in a document. Transferability and reliability will be assessed by the ability of the final results to have meaning for future studies using the GS with older adults in the southern United States.

Revision of the GS

Consensus from both groups concerning interpretation, understandability, and suggestions for rewording of each item on the GS were compared. In the event that both groups agreed, the GS was reworded as suggested. In the event that the groups did not

agree on similar wording, the researcher used the wording most congruent with the concepts of the Theory of Gerotranscendence. See Table E2. The GS was then renamed the Gerotranscendence Scale - Revised (GS-R). A copy of the GS-R is located in Appendix C.

Phase II: Quantitative Psychometric Studies of the GS-R

Psychometric Studies

Following rewording of the scale based on focus group data, studies were undertaken to answer research questions 2 and 3: What is the reliability of the GS-R and what is the validity of the GS-R? Specifically, the following research questions were addressed: What is the test/retest reliability of the GS-R?; What is the internal consistency of the GS-R?; and, Does the GS-R exhibit face validity, content validity, and construct validity?

Settings

Phase II data collection was undertaken at three independent living centers in central North Carolina, two Methodist churches in western North Carolina, a Baptist church in western North Carolina, and a Senior Center in western North Carolina. The independent living facilities have apartments and homes that are leased by older adults. Independent living is a care option for older Americans which provides a residential community setting with the privacy and amenities of home in addition to offering a limited set of services such as congregate meals, personal care, supervision, and housekeeping. Residents at these facilities comprise older adults in the second half of life who continue to dwell in a community setting. Currently, there are 149 adults age 65 and

older living at these facilities. Ethnic makeup is varied: 87 are Black; 60 are White: one is

Native American; and one is Hispanic (personal communication, A. Stossmeister, March

24, 2008).

Attendance at worship services for both the Methodist churches and the Baptist

church is largely comprised of adults who are age 65 and older. All are White. According

to pastors of the churches, older adults comprise approximately 75 percent of persons

attending services at these Methodist churches (personal communication, G. Williams,

July 20, 2008) and approximately 65 percent of persons attending services at the Baptist

church (personal communication, K. Purcell, June 23, 2008). These figures appear

consistent with data published by the Pew Forum (2008) indicating that 54 percent of

Americans age 65 and older report that they attend church services weekly. Sixteen

percent of these older adults attend Baptist churches and 23 percent attend Methodist

churches (Arn, 2008). Furthermore, Newport (2007) reports that residents of southern

states are much more likely to attend church services than other states.

The Senior Center is located in an urban community situated in western North

Carolina in which adults age 65 and older comprise 11.8 percent of the population (U.S.

Census Bureau, 2008). Senior Centers are designated as community focal points through

the Older Americans Act. The National Council on Aging (2005) defines a Senior Center

as a "place where older adults come together for services and activities that reflect their

experience and skills, respond to their diverse needs and interests, enhance their dignity,

support their independence, and encourage their involvement in and with the Center and

the community" (p. 3).

Sample

A power analysis was undertaken to estimate sample size needed to obtain

significant results for establishing hypotheses testing for construct validity for the

subscales of the GS-R. All hypothesis tests involved correlation coefficients. According

to Polit and Beck (2004), the standard alpha level is .05 and the standard for power is .80

to test correlation coefficients. To have 80 percent power at alpha = .05 to detect a

medium size correlation coefficient of .30, a sample size of 88 is needed (Polit & Beck,

2004). This medium correlation of .30 is smaller than the correlations found for internal

consistency reliability of the subscales (cosmic transcendence = .73, coherence = .67,

solitude = .57), but larger than the values of eta (.17 to .21) which Tornstam (2005) has

reported. These results are presented in Table B4. Theoretically, using these procedures,

88 subjects should assure that the researcher only erroneously rejects the null hypothesis

five times out of 100 and only erroneously retains the null hypotheses 20 times out of

100.

The sample of 88 would also assure the number of participants needed for

calculation of test-retest reliability. Based on a medium correlation of .30, an alpha level

of .05, a power of .80 calls for a sample of 88 subjects (Polit & Beck, 2004).

To obtain a sample of at least 88 subjects and to allow for non response and

missing data, all older adults at the three independent living centers, three churches, and

Senior Center were recruited through flyers placed at the facilities. Thus, the sampling

frame consisted of all persons ages 65 and older residing in the three independent living

facilities, attending worship services at the three churches, and attending activities at the Senior Center. All respondents who agreed to participate were included.

All participants were community dwelling individuals age 65 and older by self report. They were able to speak and read English. No one was excluded based on race, gender, or other factors such as physical limitations. Since these older adults were living independently, their capacity to give consent is comparable to other adults living independently. No specific tests for dementia were administered. A modest incentive equivalent to $2.00 was given at each data collection point with the exception of the churches. Lunch was provided at the churches as an incentive to participate.

Protection of Human Subjects

The study was approved by the Institutional Review Board (IRB) of the University of North Carolina at Greensboro (IRB No. 078373, May 5, 2008 and June 25, 2008). In addition, permission to conduct the study was obtained from the Resident Coordinator at the independent living centers, Pastor of the churches, and Director of the Senior Center.

A registered nurse in the RN to BSN program at the University of North Carolina at Greensboro assisted with data collection. Prior to the study, she was trained in protection of human subjects. She was also asked to sign a confidentiality statement stating that she will not disclose names of the participants nor participant's individual scores on instruments used for the study.

All participants were informed of the purpose of the study and expectations of participation. Prior to collecting data, participants were asked to sign a consent form. An

unsigned copy of the consent form was given to the participants for their records. The consent form was written on a seventh grade reading level and clearly stated that participation was voluntary and that withdrawal from the study was permitted at any time without negative consequences.

Confidentiality was maintained on all data collection by using code numbers instead of participants' real names. In addition, name codes were created by having participants put their mother's maiden name and their father's first name on the General Information Form so that first and second administrations by the same individuals could be tracked by the researcher. All data collection forms are kept in a locked file cabinet and entered into an electronic database by the coded numbers. Data are password protected on the computer. The locked file cabinet is assessable only to the researcher. Participants were also informed that only a dissertation committee from the University of North Carolina at Greensboro will be reviewing the results. No participants will be identified in any reports or publications.

Data Collection and Analyses

All data for research questions 2 and 3 were collected through completion of self-administered surveys done in group settings. Surveys were administered either by the PI or a research assistant, who were available to answer questions regarding the surveys or the procedures. Details of procedure and analyses are addressed separately below.

Plan for missing data. The following decision rules were made prior to data analyses:

1. Data from subjects who did not fill out the critical variables of age, race, and gender will not included in the study.

2. Data will be retained for subjects who omitted other items on the information form such as employment, relationship status, years widowed, and number of health conditions.

3. If a subject omitted more than ten percent of items on a scale, all that subject's data for that scale will be discarded.

4. In cases where less than ten percent of items were omitted by a subject, the item mean will be substituted for the missing values of individual items left blank on a scale by the subject.

5. In cases where subjects filled out the GS-R on the second administration and not the first, survey data for those subjects will be treated as a first time administration and included in the analyses for research question 2b only.

Research Question 2: Reliability

Research Question 2a: Test-retest Reliability

Stability over time of the GS-R was established through a test/retest procedure. The GS-R was first administered to individuals from central North Carolina who were 65 years of age or older by self-report. After two weeks the GS-R was re-administered to the same participants in the same setting. Data were analyzed via the Statistical Package for the Social Sciences (SPSS) 16.0, to obtain a Pearson's correlation coefficient that indicated the relationship of individuals' scores at the two administration times. Pearson's

correlation coefficients were calculated separately for each subscale and for the GS-R overall.

Research Question 2b: Internal Consistency Reliability

Scores obtained on first administration of the GS-R were examined for internal consistency reliability. Cronbach's alpha for each of the dimensions (subscales) was calculated using Ackerman's (2004) ITEMALS computer software program. Corrected item-to-total correlation, inter-item correlations, and means and standard deviations for each item were generated as part of this analysis.

Research Question 3: Validity

Research Question 3a: Face Validity

Face validity was established by stakeholders. At the end of the focus groups convened for Phase I and after the second administration of the GS-R for test-retest, participants were asked if they recognized themselves in the items on the scale defined as signs of gerotranscendence. For each item, descriptive statistics were used to calculate percentages of participants who said they did or did not see the signs of gerotranscendence in themselves. This procedure was done separately for Phase I and Phase II since Phase I participants saw the original GS before revision.

Research Question 3b: Content Validity

Content validity was established through review by two panels of gerontological experts, one panel familiar with the construct of gerotranscendence, the other not. The first panel included two professors specializing in gerontology who are familiar with the Theory of Gerotranscendence at the University of North Carolina at Greensboro, Anita

Tesh, PhD, RN and Beth Barba, PhD, RN. Dr. Tesh is chair of the researcher's dissertation committee and Dr. Barba is the professor who first introduced the Theory of Gerotranscendence to the researcher. The first panel also included Meredith Floyd, PhD, RN, a nursing professor from the University of North Carolina at Charlotte. Dr. Flood is the author of a mid-range nursing theory of successful aging that uses gerotranscendence as one of the main constructs. Dr. Lars Tornstam, developer of the original scale, was also asked to participate on the panel of experts. However, he declined explaining that he would "have difficulty to assume any obligations as regards to the expert panel for content analysis" (personal communication, L. Tornstam, February 5, 2008).

The first panel was asked if they felt that the revised scale measures the constructs of gerotranscendence. Specifically, they were asked to rate the items on how well they related to the concepts of gerotranscendence using a four-point Likert scale from 1 (not relevant) to 4 (very relevant) (Polit & Beck, 2004). A CVI score was obtained based on the proportion of items rated as 3 or 4.

The second panel included three gerontological experts from the University of North Carolina at Greensboro who stated they were not familiar with the Theory of Gerotranscendence. These included: Ellen Jones, ND, a geriatric nurse practitioner and nursing professor; Eileen Rossen, PhD, RN, a nursing professor specializing in gerontology; and Sue Collins, PhD, RN, a clinical nursing professor whose primary clientele in the clinical setting is older adults. Having persons who are not familiar with the Theory of Gerotranscendence serve on the content validity panel helped to ensure that

items on the scale were relevant to what these gerontological experts see in older adults in the southern region of the United States.

The second panel was given Tornstam's (1996c) brief description of the concepts representing subscales of gerotranscendence as described in Chapter II. They were asked to rate the items on how well they related to the brief concept descriptions using a four-point Likert scale from 1 (not relevant) to 4 (very relevant) (Polit & Beck, 2004). Separate CVI scores were calculated for each panel. A CVI based on the combined panel responses was also calculated.

Research Question 3c: Construct Validity

Construct validity was established through hypotheses testing. Because tenets of the Theory of Gerotranscendence maintain that gerotranscendent older adults find meaning and purpose in life accompanied by an increase in life satisfaction, and because Tornstam (2005) and Flood (2002, 2006a, 2006b) define this phemononem as successful aging, the following hypotheses were tested for construct validity:

1. There are moderate to high positive correlations between older adults' scores on the subscales of the GS-R and older adults' scores on the Life Satisfaction Inventory - A (LSI-A).

2. There are moderate to high positive correlations between older adults' scores on the subscales of the GS-R and older adults' scores on the Purpose in Life Test (PILT).

3. There are moderate to high positive correlations between older adults' scores on the subscales of the GS-R and older adults' scores on the Successful Aging Inventory (SAI).

These three scales were chosen based on a literature review, availability of appropriate psychometrically sound measures, and congruence with Tornstam's (2005) Theory of Gerotranscendence. Copies of the scales are located in Appendix D. The scales were administered concurrently with the first administration of the GS-R.

Neugarten, Havighurst, and Tobin (1961) developed the Life Satisfaction Index - A (LSI-A) to appraise life satisfaction in adults over the age of 50. It is a self-administered, paper and pencil instrument written on a third grade reading level that takes approximately 20 minutes to administer. The LSI- A is a 20 item instrument with dichotomous answer choices consisting of "agree" and "disagree". Each item is scored as either 0, which is not suggestive of life satisfaction, or 1, which indicates life satisfaction. Scores are summed and possible score totals range from 0 to 20. Neugarten and colleagues report interrater reliability of 0.78 for the LSI-A. Content validity has been established through repeated interviews with people aged 50 to 90 years about life patterns, attitudes, daily activities, values, social interactions, and other concerns (American Thoracic Society, 1999; Flood, 2006b). A number of studies using the LSI-A with older adults have produced statistically sound and theoretically meaningful results (Adams, 1971; Baur & Okun, 1983; Bortner & Hultsch, 1970; Bowling, 1990; Chen, 2001, Flood, 2006b; Neugarten et al., 1961). The LSI-A also has construct validity established through a moderate correlation ($r = .64$, $p < .05$) between the LSI-A and the

Life Satisfaction Rating Scale (American Thoracic Society, 1999; Neugarten et al., 1961). The LSI-A is claimed to be based on neither the activity nor the disengagement theory (Adams, 1969), and is therefore deemed by the researcher appropriate for testing how life satisfaction correlates with gerotranscendence. In this study Cronbach's alpha was found to be 0.734.

The Purpose in Life Test (PILT) is a 20-item seven-point Likert scale which measures the degree to which a person experiences a sense of meaning and purpose in life (Crumbaugh, 1968). Reponses for each items include 1 (strongly disagree), 2 (disagree), 3 (somewhat disagree), 4 (neither agree nor disagree), 5 (somewhat agree), 6 (agree), or 7 (strongly agree). The range of total scores for the PILT is 0 to 140 with higher scores reflecting increased feelings of purposefulness (Phillips, 1980). The PILT is a self-administered, paper and pencil instrument written on a fifth grade reading level that takes approximately 20 minutes to administer. This instrument has been used with individuals up to 103 years of age (Elbersole & Depola, 1987, 1989; Flood, 2006b; Flood & Scharer, 2006). Crumbaugh and Maholick (1969) reported parallel forms reliability as Pearson's *r* of .995 between two forms of the PILT when administered to the same sample. They reported a correlational coefficient of .68 between the PILT and the Frankl Questionnaire as evidence of concurrent validity. Additional studies have provided evidence of construct validity. The PILT was found to correlate with concepts of: self-actualized function (Phillips, Watkins, & Knoll, 1974); idealism (Pearson & Sheffield, 1974); positive world view (Sharpe & Viney, 1973); resilience; sense of coherence; and self-transcendence (Nygren, Alex, Jonsen, Gustafson, Norberg, & Lundman, 2005).

Since, finding meaning and purpose in life is a major concept of gerotranscendence (Tornstam, 2005), this scale is appropriate for exploration of construct validity for the GS-R. In this study Cronbach's alpha was found to be 0.919.

The Successful Aging Inventory (SAI) is a 20-item questionnaire developed by Flood (2006b) to test the emerging theory of successful aging. The SAI is a 20 item self-administered, paper and pencil instrument written on a fifth grade reading level that takes approximately 15 minutes to administer. The SAI was developed for use with persons age 65 and older (M. Flood, personal communication, March 29, 2008). Each item is scored as either 1 (strongly disagree), 2 (disagree), 3 (agree), or 4 (strongly agree). Total scores range from 0 to 80. For the SAI, Flood (2008) reports acceptable internal consistency (Cronbach's alpha .88) and evidences convergent validity by significant positive correlations of moderate strength with the LSI-A, PILT, and Mastery Scale. Divergent validity was demonstrated by significant negative correlations with the Centers for Epidemiologic Studies Depression Scale (CESD). Because the theory of successful aging contains the construct of gerotranscendence, the SAI is appropriate for examining construct validity of the GS-R. In this study Cronbach's alpha was found to be 0.907.

It was hypothesized that there is a moderate to high positive correlation between the GS-R and each of these scales. Polit and Beck (2004) state that a Pearson's *r* of .70 is considered high for psychosocial variables; while correlations between these types of variables are generally in the .10 to .40 range. Older adults who scored high on the

GS-R were expected to score high on the LSI-A, PILT, and SAI as well. Hypotheses were tested using a one-tailed test with a significance level of .05. Data were analyzed using SPSS 16.0 and Pearson's correlational coefficients were calculated.

Descriptive Data

The researcher developed a general information form, which included demographic variables of age, race, gender, level of education, relationship status, health conditions, and employment status. A copy of this form is located in Appendix D. Descriptive statistics were used to describe the characteristics of the study sample using SPSS 16.0.

Limitations

The study has several limitations. By using a convenience sample of residents residing in three independent living facilities in one area of North Carolina, the design of the study threatens external validity. The three independent living facilities are managed by the city housing authority in accordance with the United States Department of Housing and Urban Renewal, Section Eight. Section Eight is a federally funded housing subsidy program that provides low-income individuals the opportunity to lease safe and affordable housing (United States Department of Housing and Urban Renewal, 2008). These three facilities provide safe homes for low-income seniors (personal communication, A. Stossmeiser, March 24, 2008). There is no published evidence stating how socioeconomic status affects the process of gerotranscendence. Thus, it is reasonable that socioeconomic status may possibly affect how one relates to the concepts of gerotranscendence. Inclusion criteria require that the person is literate in the English

language; an issue that limits generalization for many cultural populations of interest in gerontology. There are more males than females residing at the facilities. Therefore, this accessible population sample is not totally representative of the target population (all adults 65 and older living in the southern United States).

Participants in the first focus group and at the three church sites in which surveys were administered were known to the researcher. For this reason, it is acknowledged that these persons may have interpreted items on the gerotranscendence scale in the manner in which they felt the researcher wanted. Their comments may not have been their actual feelings.

Summary

A methodologically triangulated mixed methods study was conducted in two phases to determine if the GS was appropriate for use with older adults in the southern United States, to reword the scale as needed, and to establish psychometric properties of the revised scale. The research study was approved by the IRB of the University of North Carolina in Greensboro.

In Phase I of the study, two separate focus groups consisting of 17 participants examined each item on the GS and reworded items that were not understandable. The GS was revised using data from each of the focus groups and renamed the GS-R. These participants also evaluated face validity.

In Phase II, reliability and validity of the GS-R were explored. The GS-R was administered to a convenience sample of adults ages 65 and older. Reliability coefficients were obtained through test-retest procedure. Cronbach's alpha was computed for internal

consistency. Three instruments were administered along with the first administration of the GS-R to establish construct validity through hypotheses testing. Correlational coefficients were computed to establish a theoretical relationship between the constructs of gerotranscendence and satisfaction with life, purpose in life, and successful aging. These participants also evaluated face validity. To establish content validity, two panels of gerontological experts reviewed the GS-R and a CVI was calculated. Data analysis included descriptive statistics to describe characteristics of the samples.

CHAPTER IV

RESULTS

This chapter describes the results of the qualitative and quantitative analyses utilized for Phase I and Phase II of this methodological study. A description of the sample used for each phase is included followed by an examination of the study data and outcomes of analyses. Results of each research question are addressed separately.

Phase I: Research Question 1: Revision of the GS

Sample Characteristics

A total of 17 individuals participated in two focus groups ($n = 9$ and $n = 8$, respectfully). Focus Group I was conducted in a rural Methodist church in western North Carolina while Focus Group II was conducted at an independent living center in central North Carolina. Ages ranged from 65 to 84 years. The sample consisted of 15 females (88%) and two males (12%). There were 12 Whites (70%) and 5 Blacks (30%). See Table E1.

Participants' Feedback on the GS

Focus group participants were asked by the primary researcher to answer, "For each statement, tell me what it means to you. What would an answer 'yes' mean? Or what would an answer 'no' mean? Is it clear? If not, how can it be reworded so that it is clearer?" To answer research question one, consensus of each group was taken to see if the items were understandable and if not, how each item on Tornstam's (1997a) GS could

be reworded to make it more understandable. Consensus recommendations from the two groups were then compared and the scale was revised based on this information. A summary of participants' feedback is located in Table E2. For most items, the consensus of both groups was quite similar.

Participants in both focus groups agreed that five items on the GS were understandable and did not need rewording. Thus, the following items were not changed and left as originally developed by Tornstam (1997a).

Genealogy research seems interesting to me . . .
To be honest, I must say that I am the most important thing in the world . . .
I find it easy to laugh at myself . . .
I need something going on all the time in order to feel good . . .
I find it easy to give other people good advice . . . (p. 21)

Participants suggested only minor semantic changes for six items from Tornstam's (1997a) original scale. Participants stated that while a feeling of connection with earlier generations (item no. 1) is present, this feeling may be present in varying degrees. Therefore, participants recommended that the word "strong" should be removed from the item, "I feel a strong connection with earlier generations" (Tornstam, 1997a, p. 21). Participants indicated that the item, "Some things that happen in life can't be explained by logic and science and need to be left unresolved" (Tornstam, 1997a, p. 21) would be easier to understand if the words, "left unresolved," were replaced with the words, "accepted by faith." Participants requested that the word, "sometime," be deleted from the item, "It seems unfair that I must die sometime when life on earth just continues" (p. 21). Participants stated that "death is inevitable" and therefore, the word,

"sometime" is not necessary. For the item, "I am often afraid of asking stupid questions and embarrassing myself in front of others" (Tornstam, 1997a, p. 21), all participants agreed that the word, "stupid," was offensive, and suggested that this word be removed from the item. Because the word "simultaneously" was not fully understood by some individuals, participants recommended that "at the same time," be substituted in the item, "Sometimes I feel like I live in the past and present simultaneously" (Tornstam, 1997a, p. 21). Group consensus was that changing "a high material standard," to "a desire for material possessions" would clarify the item, "For me, having a high material standard is among the most important things in my life right now" (Tornstam, 1997a, p. 21).

The item, "Knowing that life on earth will continue is more important than my individual life" (Tornstam, 1997a, p. 21) proved difficult for participants. Discussion concerning the meaning of this item centered around three themes: 1) *knowing that there is life after death*, 2) *it is important that our children's lives continue*, and 3) *life around us, the environment, will continue even if we are not here, and that's important*. Final consensus of the groups was that the wording should be changed to "*knowing that life will continue after death is more important than my individual life*." To retain Tornstam's focus on the importance of life on earth continuing after one's death rather than the possibility of an afterlife or reincarnation, the researcher changed the item to "*Knowing that life on earth will continue after my death is more important than my individual life*". A positive answer to this item attests to the fact that gerotranscendent individuals see themselves as links in a chain of generations (Tornstam, 2005).

The item, "I feel connected with the entire universe" (Tornstam, 1997a, p. 21) elicited dialogue concerning current politics and how what is going on in other countries affects America. Participants also discussed how increased technology makes one more connected than ever before. Consensus from the first focus group was that the item should be "*I feel a part of the entire universe*" while the second group felt that the word, "entire", was too broad and the item should be changed to "*I feel a part of the local universe.*" Since the Theory of Gerotranscendence posits that older individuals often perceive themselves as a part of the "flow of life itself" (Tornstam, 2005, p. 50), the researcher elected to use the wording from the first focus group which stated, "*I feel a part of the entire universe.*"

The item, "I feel that I am a part of everything alive" (Tornstam, 1997a, p. 21) elicited considerable discussion. Several participants responded that they did not feel a part of everything alive such as snakes, spiders, and "things in the ocean." After further discussion, participants agreed that they did feel "a part of life" and "a part of all God's children." Participants recommended that the item should be reworded to "*I feel that I am a part of all God's creations.*"

All participants agreed that the item, "I am afraid of death*"* (Tornstam, 1997a, p. 21) is not true. However, participants had difficulty understanding that scoring of this item was to be reversed. Comments from respondents included: "We can't avoid death"; "Life is fragile and death is imminent"; "As we get older, we are less afraid of death"; "I don't look forward to death, but I am not afraid of it. I just want to put it off as long as possible"; and "the older I get, the less I am afraid of death." Based on these comments

the item was changed to *"I have less fear of death now than when I was younger,"* which will be positively scored.

At first, focus group participants had difficulty with the item, "I can feel a strong presence of people elsewhere" (Tornstam, 1997a, p. 21). They were uncertain about the meaning of the phrase, "people elsewhere." Participants indicated that this phrase means "ancestors, families and friends who have died"; "people who have gone on"; "people you have a strong bond with, alive or dead"; and "someone who lives far away and you feel them near you." Tornstam (personal communication, February 12, 2008) had indicated that the item could be appropriately interpreted as those who are dead or those who are geographically distant. So the item was reworded to *"I can feel the presence of people who are elsewhere."*

Theoretically, gerotranscendent individuals will attain wisdom at the end of life through the ability to find meaning and purpose in the life they have lived. Participants agreed that their lives have meaning, but stated that they really did not understand the meaning of "coherence" in the item, "The life I have lived has coherence and meaning" (Tornstam, 1997a, p. 21). The researcher explained that the word, "coherence" indicates that everything that happens in an individual's life comes together to form a whole and gives meaning to one's life. After further discussion, participants agreed that the word, "coherence," does not add to the statement, may be confusing to some people, and should be deleted.

Participants stated that the item, "My life feels chaotic and disrupted" (Tornstam, 1997a, p. 21) was too severe. Again, participants had difficulty understanding that the

item was to be reverse scored. One participant made the comment, "I like my life the way it is" and all agreed. Consensus of the group was to reword the item to "*I like my life the way it is.*" The original intent of the statement is to ascertain if one feels that life is satisfactory. Thus, participants recommended changing a negatively scored item to a positive scored item without altering the original meaning of the item.

Congruent with the Theory of Gerotranscendence, which posits that older adults develop an increased sense of self confidence and are able to laugh at themselves (Tornstam, 2005, 1997a), participants disagreed with the statement, "I take myself very seriously" (Tornstam, 1997a, p. 21). The fact that gerotranscendent older adults take themselves less seriously was well illustrated by comments such as "We are able to laugh at ourselves more", and "We are able to see the humor in life as we get older". Knowing that this item is worded for reverse scoring, participants suggested that the item be revised to "*I take myself more seriously now than when I was younger.*"

Participants found the item, "My personality has both female and male components" (Tornstam, 1997a, p. 21) confusing. Participants ultimately concluded this item to mean that as one grows older, women accept roles and responsibilities that are often considered masculine and men accept roles and responsibilities that are often considered feminine. For example, comments were made that "Women become stronger, like men," and "A woman is fragile, but can be strong depending on the situation as one gets older." According to Tornstam (2005) older adults are often able to shed masks that society expected them to wear earlier in life. Everyone felt that the item would be easier

to understand if it was reworded to *"The characteristics of my personality have both female and male components."*

The item, "I like meetings with new people" (Tornstam, 1997a, p. 21) was easier for participants to understand. Group comments were harmonious with the assumption of the Theory of Gerotranscendence which states that the nature and importance of social contacts can change character as one grows older (Tornstam, 2005). These comments included: "I don't have to have people around me all the time"; "I like my family and friends"; and "I like meetings with new people, but am more comfortable with close friends and family". Since consensus of the groups was that the word, "meetings," can also suggest group gatherings and not just encountering other individuals, the item was changed to *"I like meeting new people less now than when I was younger."* Again, this is a change from a negatively scored item to a positively scored item.

The item, "I like to be myself better than being with others" (Tornstam, 1997a, p. 21) was felt to mirror the above item. Consensus of the groups was that participants liked having time alone, but did not want to be alone all the time. Therefore, the item was reworded to "At times, I like to be by myself better than being with others."

Participants had difficulty comprehending the word, "philosophizing" in the item, "Being a peace and philosophizing by myself is important for my well-being" (Tornstam, 1997a, p. 21). The word, "philosophizing" was clarified by the researcher to mean "meditation" or "alone time just to think." All participants then agreed that philosophizing is something they do frequently. One lady remarked that "When you don't have time to meditate, it makes a big difference." Comments congruent with the tenet of

the Theory of Gerotranscendence which states that older individuals have a need for positive solitude included: "Until you search yourself, you never know the true meaning of things" and "My time to think helps me understand what is going on around me." Participants agreed with these statements and requested that the item be revised to *"Quiet meditation is important for my well-being."*

The Theory of Gerotranscendence posits that the transcendence of the boundary between right and wrong is accompanied by an increased "broadmindedness and tolerance" as one grows older (Tornstam, 2005, p. 69). The item, "I find it easy to see what's right and wrong in other people's behavior" (Tornstam, 1997a, p. 21) is worded for reverse scoring in Tornstam's original scale. All participants agreed that although they may see what is right and wrong in the way other people act, they are not as quick to judge or criticize behaviors. Realizing that the item is reverse scored, participants changed the item to *"I am quicker to criticize other people now than when I was younger."*

The last item, "For me, being active in my work and other things is among the most important" (Tornstam, 1997a, p. 21) was interpreted by participants to mean that remaining active in life is important. Theoretically, gerotranscendent older adults self-select their activity levels and have a need for positive solitude. Hence, this item is reverse scored. Illustrating the Theory of Gerotranscendence, consensus was that participants liked to be active "but not every moment of every day." Participants found the phrase "work and other things," confusing. They stated that this phrase could mean actual employment, everyday chores, hobbies, or just life in general. Consensus was that

the phrase, "work and other things" was not necessary. Therefore, they recommended the item be changed to "*For me being active is one of the most important things in life.*" This item remains reverse scored.

Revision of the GS

The original subscales of Cosmic Transcendence, Coherence, and Solitude were retained for the Revised Gerotranscendence Scale (GS-R). Items comprising these subscales were reworded based on focus group recommendations. See Table E2. The resulting GS-R can be reviewed in Appendix C. Scoring for the GS-R remains on a four point Likert scale and does not change. Three items (numbers 5, 12, and 17), which were reversed scored in the original GS, were changed to positive scoring based on focus group recommendation. Nine other items (numbers 7, 13, 14, 19, 20, 22, 23, 24, and 25) were retained as reverse scored items.

Summary of Findings for Research Question 1

The GS was found to be largely appropriate for older individuals residing in central and western North Carolina. This fact was well illustrated through comments made by participants (n=17) in two focus groups. Five items were found to be easily understood by the participants and were left as originally worded by Tornstam (1997a). The remaining 20 items were reworded to make them applicable to and comprehensible by older individuals in the southern United States. Overall group consensus, comments, and recommendations were utilized to revise the scale. Items worded for reverse scoring caused the most initial confusion and seven of the original items worded for reverse scoring were revised.

Phase II: Research Questions 2 and 3: Reliability and Validity of the GS-R

Sample Characteristics

One research question (3a) in Phase II was addressed using data from Phase I participants. Additionally, research question 3b was addressed using an expert panel. A total of 124 older adults participated in Phase II of the study. Fifty-nine (47.6%) were recruited following church services, 48 (38.7%) from independent living facilities, and 17 (13.7%) from a Senior Center. The sample in this phase (see Table F1) had a mean age of 75 years (*SD* 7.0) and was predominately White (69.4%), female (69.4%), widowed (38.7%), and retired (9.3%). Over one half of the participants had a high school education (57.3%), and reported that they experience good health (54.0%). A large number of subjects reported having more than one health problem with the average being 2.18 (*SD* 1.49) health problems per individual. The sample was fairly evenly split between men (26%) and women (25%) who reported an education beyond the high school level. More women (63%) reported their current health status as good or excellent compared to men (58%). Table F2 shows selective demographic characteristics of the sample in comparison to statistics of older adults in North Carolina.

Data Analyses

Missing Data

No subjects omitted the critical demographic variables of *age, race,* and *gender,* and none had excessive numbers of missing items. Thus, it was not necessary to discard all data from any subjects. One subject omitted the variable of *educational level.* One subject marked *relationship* as widowed, but omitted the variable of *number of years*

widowed. One subject omitted the variables of *relationship, years widowed, employment status*, and *number of health conditions.* This pattern suggests that the subject missed a page since all of these items appear on the second page of the information form.

Most items on all surveys had no missing data. The largest number of missing values, four, occurred on item ten of the first administration of the GS-R. Table F3 lists missing values for the GS-R and Table F4 lists missing values for other surveys. It was not necessary to discard all of a subject's data on any individual survey because of missing data. One subject took the second administration of the GS-R and not the first administration. This data was included in internal consistency analyses for the GS-R, but excluded from other survey analyses.

Incidental Findings

Multiple participants took 20 to 30 minutes to complete the GS-R on the first and second administrations. It was noted that on the first administration many subjects took over an hour to complete all the surveys. Also, it became obvious that many of the participants knew each other and would discuss their instruments while completing them rather than completing them alone.

Research Question 2a: Test-Retest Reliability

Approximately two weeks after initial administration, the GS-R was re-administered to 90 participants to examine stability over time using a test-retest procedure. Eleven other individuals completed the second administration of the GS-R at shorter (n=2) or longer (n=9) intervals because of scheduling conflicts or personal requests. This data were not included in the analyses because they did not conform to the

study plan. Scores on the GS-R for first and second administrations are located in Table

F5. Correlational coefficients for the GS-R subscales and GS-R total scores are shown in

Table F6.

Assumptions inherent in the analysis of correlational coefficients were examined.

Scatterplots do not suggest a nonlinear relationship for scores on the first and second

administrations for GS-R total scores and subscale scores of cosmic, coherence, and

solitude. Histograms reveal a roughly normal distribution for these variables so no

transformations were done. See Figures F1 through F12 and Table F7.

Bivariate analysis reveals a moderate relationship between scores on the first and

second administrations of the GS-R. The test-retest correlational coefficient for total

scores for subjects (n=90) who took the GS-R after a two week interval was $r = .53$

(p < .001); for the three subscales, the test-retest correlation coefficients were $r = .40$

(p < .001) for cosmic dimension, $r = .62$ (p < .001) for coherence dimension, and

$r = .55$ (p < .01) for solitude dimension. All correlations were statistically significant at

the .01 level. According to Munro (2005), a correlation of .90 to 1.00 is "very high", a

correlation of .70 to .80 is "high", a correlation of .50 to .69 is "moderate", a correlation

of .26 to .49 is "low" and a correlation of .00 to .25 shows "little if any" correlation

(p. 258). Following Munro's conventions, the test-retest correlational coefficient for

overall GS-R total scores was a moderate relationship, as were the correlations for the

subscales of coherence and solitude. Test-retest correlation for the subscale of cosmic

revealed a low relationship. These correlations can be reviewed in Table F6.

Research Question 2b: Internal Consistency Reliability

Using data from the first administration from all 124 subjects, the 25 items on the GS-R were examined for internal consistency, item-to-total correlation, and inter-item correlations using Ackerman's (2004) computer software, ITEMALS, and SPSS 16.0. Internal consistency reliability was demonstrated with a moderate Cronbach's alpha (0.61) for total scores on the GS-R. Cronbach's alpha results were moderate to low for scores on subscales of the GS-R ranging from 0.62 for Cosmic to 0.27 for Coherence.

Although the analysis plan called for examining Cronbach's alpha only for the first administration, Cronbach's alpha was also calculated for scores on the second administration of the GS-R. Cronbach's alpha was higher on the second administration for all subscales. Cronbach's alpha results for first and second administrations can be reviewed in Table F5.

Other Item Statistics

Missing data on the GS-R. Missing data for each of the items were examined to determine if there was a pattern to the missing values. See Table F3. No item on the first or second administration of the GS-R had missing values for more than four subjects. Item number 10, *Genealogy research seems interesting to me* had missing values (4) on the first administration of the GS-R for the most people and item number 21, *Quiet mediation is important for my well-being* had missing values (3) on the second administration for the most people. Several items for which values were missing on the first administration were also missing on the second, but not for the same subjects. These items included: *I feel a connection with earlier generation; Knowing that life on earth*

will continue after my death is more important than my individual life; and *Quiet meditation is important for my well-being.* Missing values appeared random without systematic pattern.

   Item means and standard deviations. Item means and standard deviations were calculated. Item means ranged from 1.79 to 3.49. The lowest mean (1.79) was found for item 25, *For me, being active is one of the most important things in life,* which also correlated poorly with other items. Item 13, *I take myself more seriously now than when I was younger,* also had a low mean (1.83). Items with the highest means were item number 4 (3.49), *I feel that I am a part of all God's creations,* and item number 6 (3.39), *Some things that happen in life cannot be explained by logic and science and need to be accepted by faith.* All item means were within one point of the scale mid-point. Standard deviations ranged from .51 to .80 giving relatively high variance on each item (0.26 to 0.62). This data can be reviewed in Table F8.

   Item-to-total correlations. To determine the contribution of each item to the reliability of the GS-R, corrected item-scale GSR scores were calculated. All item-scale correlations were corrected by excluding the item from the total score. All but one item had a positive item-to-total correlation. Five items had item-to-total correlations of .50 to .56; 11 items had correlations of .26 to .49; and 8 items had correlations of .13 to .25. The item which had a negative item-to-total correlation *(r = - .26)* was item number 25 which is worded for reverse scoring. Also, this item is located on the subscale (Solitude) that had a low Cronbach's alpha. These data can be reviewed in Table F8.

Inter-item correlations. Inter-item correlations were also calculated. A review of the inter-item correlation matrix (Table F9) shows that inter-item correlations for the Cosmic subscale varied from - .01 to .49. Item number 7, which is worded for reverse scoring, had a weak correlation with all other items. Inter-item correlations for the Coherence subscale ranged from -.02 to .35. Again, the item that is worded for reverse scoring performed poorly. Item 13 had weak negative correlations with other items on the subscale and with most other items on the GS-R. For the Solitude subscale, inter-item correlations ranged from - .02 to .32. Item number 25 did not perform in a manner to contribute to reliability of this subscale. As would be anticipated, since this item had a negative item-to-total score correlation, it also had negative correlations with several other individual items. The items with the lower correlations such as items 23 and 13 also had negative or weak correlations with other items. There were no redundant items with high correlations with each other.

Research Question 3a: Face Validity of the GS-R

Following discussion of each item, Phase I participants (n=17) were asked if they recognized themselves in the content of individual items on the GS-R. The percent of subjects who recognized themselves in the items ranged from 88 percent to 100 percent. Two subjects (12%) did not recognize themselves in the content of the items, *I feel a connection with earlier generations* and *Some things that happen in life cannot be explained by logic and science and need to be accepted by faith.* One subject (6%) stated that the item, *I need something going on all the time in order to feel good,* is true while another subject (6%) stated that the item, *For me, being active is one of the most*

important things in my life, is true. These two items are worded for reverse scoring on the GS-R. These results suggest endorsement of the GS-R and can be reviewed in Table F10.

To further explore face validity, a total of 99 Phase II subjects responded to the question, *Do these questions reflect what aging is like for you?* This question was included as a part of the GS-R survey for the second administration. Eighty-five subjects (86%) circled *yes* indicating that the questions did reflect what aging is like for them. Twelve subjects (12%) circled *no* indicating that the questions did not reflect what aging is like for them, and two subjects (2%) circled both *yes* and *no* indicating the possibility that they were uncertain if the questions reflect what aging is like for them.

Participants were given the opportunity to write narrative comments on the second GS-R survey. Of the 99 subjects who responded to the question, *Do these questions reflect what aging is like for you,* 14 chose to write a narrative comment. Most of the comments reflected the participants' personal views of aging. Three subjects endorsed face validity of the GS-R by commenting on the actual survey itself. These comments included: "I think it is a good survey. It is necessary so we can find out about other people and how they feel"; "I thought that aging meant growing old. After answering some of these questions, I feel different. As long as I age gracefully, I'm satisfied"; and "The questions make you really look at yourself and see what you really feel at this stage of life." These comments can be reviewed in Table F11.

Research Question 3b: Content Validity of the GS-R

A Content Validity Index (CVI) was calculated using data from two expert panels. The first panel was both expert in gerontology and familiar with the Theory of

Gerotranscendence (n=3), while the second panel was expert in gerontology but unfamiliar with the Theory of Gerotranscendence (n=3) beyond a brief introduction provided by the Researcher. These panel members evaluated each item on the GS-R for how well the item measures the constructs of gerotranscendence. The average CVI was computed separately for each panel and for the combined panel as well. The average CVI scores were .92 for the first panel, and .80 for the second panel. For both panels, the combined CVI score was .86. According to Polit and Beck (2004) "a CVI score of .80 or better indicates good content validity" (p. 423).

Research Question 3c: Construct Validity of the GS-R

The GS-R and three other instruments were used to examine construct validity: LSI-A; PILT; and SAI. Overall scores for the first administration for the GS-R ranged from 59 to 88 (Mean 71.4, *SD* 5.3) out of a possible score of 0-100. These scores are shown in Table F5. Scores for the other instruments are also shown in Table F5. A total of 123 participants completed the LSI-A, PILT, and SAI surveys. Scatterplots do not show a nonlinear relationship between variables. Histograms reveal a normal distribution for scores on subscales of the GS-R and total scores on the LSI-A, PILT, and SAI. No assumptions are violated. Scatterplots and histograms can be reviewed in Figures F19 through F31. Results of each hypotheses test used to examine construct validity are presented separately below.

Hypothesis One. Hypothesis One tested the null hypotheses that there were no correlations between older adults' scores on the LSI-A and GS-R against the directional alternate hypotheses that there were positive correlations between these scores.

Correlation between scores on the LSI-A and the subscale Coherence ($r = .21$, $p = .009$) was a weak positive correlation, but statistically significant. A nonsignificant correlation was found between scores on the LSI-A and the subscale Cosmic ($r = .04$, $p = .338$). A weak statistically significant negative correlation was found between the LSI-A and Solitude subscale ($r = -.16$, $p = .035$). The correlation between total scores on the GS-R and LSI-A ($r = .02$, $p = .415$) was also nonsignificant. Thus, the null hypothesis was rejected for the subscale Coherence. The null hypothesis was retained for the Cosmic subscale, Solitude subscale, and for the total GS-R. These correlations are shown in Table F12.

Hypothesis Two. Hypothesis Two tested the null hypotheses that there were no correlations between older adults' scores on the PILT and GS-R against the directional alternate hypotheses that there were positive correlations between these scores. A nonsignificant correlation was found for scores on the PILT and total GS-R scores ($r = .13$, $p = .072$). PILT correlations with the subscales Cosmic ($r = .17$, $p = .031$) and Coherence ($r = .27$, $p = .002$) were weak, but significant. The Solitude subscale ($r = -.14$, $p = .081$) was found to have a nonsignificant correlation. Therefore, the null hypothesis was rejected for the subscales of Cosmic and Coherence. The null hypothesis was retained for GS-R total score and Solitude subscale. These correlations are also shown in Table F12.

Hypothesis Three. Hypothesis Three tested the null hypotheses that there were no correlations between older adults' scores on the SAI and GS-R against the directional alternate hypotheses that there were positive correlations between these scores.

Correlation between the SAI and total GS-R scores ($r = .31$ $p < .001$) was statistically significant as were the correlations for the subscales of Cosmic ($r = .34$, $p < .001$) and Coherence ($r = .28$, $p = .001$). A nonsignificant correlation was found between the Solitude subscale and SAI ($r = .01$, $p = .411$). Thus, the null hypothesis was rejected for the GS-R overall scores and for the subscales of Cosmic and Coherence. The null hypothesis was retained for the Solitude subscale. The results are presented in Table F12.

Summary of Findings for Research Questions 2, 3a, 3b, and 3c

The GS-R was found to have adequate content and face validity. Adequate internal consistency and test-retest reliability were established for the subscales of Coherence and Solitude. The Cosmic subscale was found to have both low internal consistency reliability and low stability. In part, the Solitude subscale has low reliability. Test-retest reliability for the GS-R was also adequate.

Problematic items were identified through item-to-total correlation, inter-item correlation, and examination of item means and standard deviations. Results indicate that several items need to be revised or eliminated. All items worded for reverse scoring had item statistics that were less than desirable. Item 16, *The characteristics of my personality have both female and male components,* also revealed a low item-to-total correlation and an item mean lower than expected. These problematic items can be viewed in Table F13. The nine item Solitude subscale contained six of the ten problematic items.

Hypotheses testing did not support construct validity for GS-R total scores with two of the instruments used. Positive correlations between the GS-R and its subscales

were anticipated between the LSI-A, PILT, and SAI. However, total scores for the GS-R had a significant positive correlation with only the SAI. Hypotheses testing did not support construct validity for the Solitude subscale. Solitude had nonsignificant correlations with all three of the instruments used. Correlations between the Cosmic subscale and LSI-A were not statistically significant.

CHAPTER V

DISCUSSION

The GS was revised as a first step toward allowing researchers to quantify the abstract phenomenon of gerotranscendence in older adults in the southern United States. Original items were revised according to focus group recommendations in order to develop an instrument that is culturally appropriate for older adults living in the southern United States. The GS-R was administered to another sample of older adults and appears to have adequate face validity, content validity, and adequate test-retest reliability and internal consistency for the total score. Test-retest reliability was moderate for two of the three subscales (Coherence and Solitude) and low for the Cosmic subscale. Internal consistency reliability was moderate for the total score and for the Cosmic subscale and low for the subscales of Coherence and Solitude. Results of hypotheses tests revealed positive correlations between the LSI-A and the Coherence subscale. Cosmic and Coherence subscales had positive correlations with the PILT and SAI. GS-R total scores also had a positive correlation with the SAI. However, all positive correlations were weaker than anticipated.

Examination of item statistics identified 11 problematic items. These items were confusing to participants in focus groups and also demonstrated negative or weak item-to-total correlations and inter-item correlations in Phase II. Several of these problematic

items composed the GS-R subscale with the lowest internal consistency reliability. Additionally, nine of the eleven items were worded for reverse scoring.

Representativeness of the Sample

While it was noted in the Methods Section that the accessible population had a larger percentage of men than the target population, the sample was quite similar to the population of older adults because more women chose to participate. Of course, a convenience sample cannot be strictly generalized to a larger population, but the sample was reflective of the population of older adults in many ways. A large percentage (47.6%) of the sample was recruited following church services. This figure is congruent with recent research published by the Pew Forum (2008) which shows that 53 percent of older adults in America report that they attend church services, and also to findings by Newport (2007) which reveal that residents of southern states are much more likely to attend church services than other states. Thirteen participants were age 85 and older representing 1.4 percent of the study sample. According to the U.S. Census Bureau (2008), adults ages 85 and older represent 1.6% of the population of individuals ages 65 and older. More women (78%) were unmarried (never married, widowed, separated, or divorced) compared to men (41%). In North Carolina there are two and one-half times more unmarried women ages 65 and older than unmarried men (North Carolina Division of Aging and Adult Services, 2008). Thirty-eight (3.6%) participants were Black. Although the elderly population of North Carolina is primarily White, North Carolina has a significantly higher percentage of Black elderly than the overall United States (15.6% in North Carolina compared to 8.3% nationally). The sample did differ from the target

population on education. Twenty-one participants (16.9%) had less than a high school

education (0 through 8th grade). Current statistics reveal that 41.5 percent of the age

group, 65 and older in North Carolina, does not have a high school diploma (North

Carolina Division of Aging and Adult Services, 2008). Thus, the sample used in this

study was similar to older adults in the southern United States in age, gender, and race.

These similarities support the interpretation that the findings of this study have

implications for other older adults in the southern United States. However, since the

sample was better educated than older adults in general, items that were hard for the

sample to interpret would probably be even more difficult for the target population.

Discussion of Phase I Findings

Certain items on the original GS presented difficulty for focus group participants.

The item "I like meetings with new people" (Tornstam, 1997a, p. 21) may have been a

mistranslation from the original Swedish version. Tornstam does not specifically address

convened meetings with groups of people. The wording, *I like meeting new people less*

now than when I was younger, seems more consistent with Tornstam's (2005) description

of the construct of gerotranscendence in his book. In further work with the scale, this

wording might be substituted for this item.

Some reverse scored items remained confusing to the focus group participants

even after discussion and revision. Three items worded for reverse scoring were

particularly confusing. The three items that they seemed to understand after discussion

were *I take myself more seriously now than I did when I was younger, I am often afraid*

of asking questions and embarrassing myself in front of others, and *For me, being active*

is one of the most important things in my life right now. However, when the GS-R was administered to older adults completing it without discussion, item-to-total correlations were negative or low for all items worded for reverse scoring. Although participants in the focus groups gave verbal comments that they take themselves less seriously now than they did when they were younger, Phase II participants indicated that they did take themselves more seriously. These findings suggest that older adults in the southern United States may not understand how to respond to items that are worded for reverse scoring.

Participants also had difficulty with the item, *My personality has both female and male components.* Although focus group participants verbalized that they were able to change roles as they grow older, several participants voiced that they did not like being seen as masculine (for women) and feminine (for men) implying that these terms had connotations for sexual orientation. Tornstam (2005) does not refer to one's sexual orientation. Rather, he refers to roles that society may traditionally deem masculine or feminine. Discomfort with a possible sexual connotation with this item is not surprising for older adults in the southern United States who grew up in a period when same sex attractions were considered immoral and symptoms of a mental disorder. This finding suggests that this item should be eliminated or dramatically revised.

In other revisions, focus groups addressed God and faith directly. Tornstam did not. Rather, he addressed a "cosmic spirit of the universe" (Tornstam, 1997a, p. 18). However, placing an emphasis on God and faith is typical of older adults living in the southern United States. Geographically, North Carolina is located in a region in the

United States in which a belief in God is a dominate part of the culture. The two items that were revised to include a reference to God or faith performed well.

Overall response to items comprising the GS-R was positive. A large percentage of focus group participants commented that they could relate to the items, particularly after discussion. They also indicated that the items depicted what aging is actually like for them. Participants indicated that several items of the original scale were appropriate and understandable without revision. A few (3) items were initially confusing and understanding evolved after discussion. Many items that were worded for reverse scoring were confusing, but participants agreed that they were understandable after discussion. However, since the GS-R may ultimately be used in situations in which older adults complete it without discussion with others, these items may be problematic.

Discussion of Phase II Findings

Reliability

Test-Retest Reliability

Gerotranscendence should be a fairly stable attribute that does not fluctuate much from day to day so one would expect a measure of it to yield reliable scores on two occasions. Test-retest reliability was moderate for the GS-R overall and two of the subscales (Coherence and Solitude) and low for the Cosmic subscale. Improving clarity and understandability of items would be anticipated to improve test-retest reliability.

Internal Consistency

Internal consistency was marginally acceptable for the subscales of Cosmic, Coherence, and Solitude and for the total GS-R. It has been argued that low reliability

coefficients are tolerable in early stages of research and for more abstract constructs (Nunnally, 1978; Pedhazur & Schmelkin, 1991). Since gerotranscendence is a complex and abstract construct that is not easily observable, coefficients below 0.70 are considered acceptable. However, review of item statistics suggest that internal consistency could be improved by revising or eliminating selected items.

Overall alpha coefficients were higher on the second administration. One could reason that the alphas are higher because older adults had time to think about confusing items and even possibly to discuss these items with their peers prior to the second administration. One might speculate that participants may have even discussed items in a manner similar to focus group discussion. Focus group results suggest that interpretations of some items changed after discussion. It may be reasonable that items that were confusing on initial administration were understandable after a two week period of reflection and possible discussion with other older adults.

Other Item Statistics

Missing data for the GS-R. The Cosmic subscale contained items with the most missing values and the Solitude subscale contained items with the least amount of missing data. Several items that were found to have low item-to-total correlations, low inter-item correlations, or low means also had missing values for one to three subjects. These items included: *I feel a connection with earlier generations; I feel a part of the entire universe;* and *For me having a desire for material possessions is among the most important things in my life right now.* Many of the items that had missing data on the first administration did not have missing data on the second administration. This finding

further suggests that participants may have thought about the item or discussed the item with their peers prior to the second administration.

Item means and standard deviations. According to DeVellis (1991) it is desirable to have items with relatively high variance and means near the middle of the response scale. All items revealed adequate variances. However, two items had means well outside the desirable range. Both of these items contained a reference to God or faith. This finding is not surprising since almost half of the sample completed the survey following church services. No item had means so high or low to suggest a ceiling or floor effect.

Item-to-total correlations. Homogeneity of the GS-R was examined by using the item-to-total correlation method. According to Streiner and Norman (1995) the usual rule of thumb is that an item should correlate with the total score above 0.20. Five items had item-to-total correlations below 0.20. The subscales of Coherence and Solitude contained items with the lowest item-to-total correlations. Two of the items were located in the Coherence subscale (numbers 13 and 16). The remaining three were contained in the Solitude subscale (numbers 18, 23, and 25). Item 25 had the lowest item-to-total correlation. This finding suggests that these items should be revised or eliminated.

Inter-item correlations. When deciding if inter-item correlations are strong or weak, one has to take into consideration what can reasonably be expected. According to Streiner and Norman (1995) the items should be moderately correlated with each other. If items are used without regard for homogeneity, then the scale could possibly be tapping a number of traits. However, one does not want an item-to-item correlation so strong (closer to 1.0) that it suggests redundancy. The Solitude subscale contained the items that

had the lowest item-to-total correlation, item number 25. This item did not perform in a manner in which to contribute to the overall scale. No item had an item-to-item correlation strong enough to suggest redundancy. Most items had weak correlations. This finding suggests that weaker items should be revised or eliminated.

Problematic Items

The item, *For me, being active is one of the most important things in my life right now,* proved to be the most problematic item. This is an item that is worded for reverse scoring. However, most participants marked that they agree with the item (87% on the first administration and 89% on the second administration). Social desirability may play a large role in performance of this item. Remaining active is the expected response in American society. Responding candidly may be difficult for older adults in a culture that places paramount value on remaining active.

Item 13, *The characteristics of my personality have both female and male components,* was not only problematic for focus group participants, but for participants in Phase II as well. During initial administration of the GS-R multiple subjects approached the researcher to request clarification of this item at both administration times further showing that this item is confusing. Individual subjects asked for clarification on items number 8, *Sometimes I feel like I live in the past and present at the same time,* number 19, *I need something going on all the time in order to feel good,* and number 24, *For me, having a desire for material possessions is among the most important things in my life right now.* Subjects sought meanings for the concepts of *living in the past and present at*

the same time, *something going on*, and *material possessions* showing that these items were confusing to older adults.

Retained items from the original scale performed well compared to those that were revised. Item-to-total coefficients ranged from .2845 to .4523 for the items that were left as originally worded by Tornstam (1997a) and from - .0256 to. 5592 for those that were revised. Inter-item correlations were also higher for the retained items ranging from .27 to .49 compared to .00 to .39 for revised items. This information supports the need for further revision of the scale.

Validity

Face Validity

Face validity is probably the weakest way to demonstrate validity because it is a subjective judgment call. Nonetheless, the fact that a large percentage of older adults indicated that they display some of the characteristics of gerotranscendence identified by Tornstam (1997a) is taken as an indication that the GS-R looks as though it is measuring the construct of gerotranscendence. In fact, Tornstam (1992) argues that it has to be the elderly themselves who will define concepts about aging, not researchers or society.

Content Validity

Congruence between two expert panels who reviewed content of the GS-R was high. However, one should keep in mind that validation is an ongoing process, that validity is best viewed along a continuum, and that further improvement is typically possible and desirable. Further validity is for a particular use or interpretation of the

scale; it is not a characteristic of the scale itself. The two expert panels were endorsing validity as a research instrument not as a diagnostic instrument.

Without encouragement, expert panel members gave valuable suggestions for further revision of the scale. It was suggested that the word *genealogy* may be too complex for older adults in the southern United States. This astute observation was valid because the item containing the word *genealogy* was the item with the most missing values. One can speculate that participants left the item blank because they may not have fully understood the meaning of the word. Three members of the expert panels suggested further revision of items 13, 20, 22, 23, 24 and 25. All of these items are worded for reverse scoring and were found to be problematic during item analyses. This finding further illustrates the fact that items worded for reverse scoring may not work for older adults.

Construct Validity

The researcher anticipated moderate to high relationships between scores on the GS-R and LSI-A, PILT, and SAI and found instead that they were weak correlations. These weak correlations might be due in part to a high proportion of error variance in the GS-R since an instrument that is unreliable cannot by Measurement Theory definition be valid.

Scores on the LSI-A were comparable to scores found in the literature using older adults in the southern United States. Flood (2006b) administered the LSI-A to a total of 57 older adults living in the southern part of the United States (South Carolina) and reported an overall mean score of 13.51 (*SD* 3.57*)*. Flood's mean score finding is a little

more than half of the possible total score. The overall mean score for the current study (n=123) was 13.61 (*SD* 7.6). This finding is also a little more than half of the possible total score. Neugarten et al. (1961) did not publish mean scores in the initial psychometric studies on the LSI-A so a comparison could not be made to the initial study. However, comparison of this study's results to Flood's evidence would suggest that the LSI-A performed as expected in this study.

SAI scores were comparable to Flood's (2008) initial psychometric studies on the SAI. The mean SAI score for this study was 64.15 (*SD* 6.76) with a possible range of 0-100. Flood administered the scale to 106 older adults in the southern United States (South Carolina) and reported a mean score of 65.42 (*SD* 10.84). Flood's scores show more variability; however, this evidence suggests that the SAI performed as expected in this study.

PILT scores were lower than expected suggesting that this instrument may not have been appropriate for use with this sample. The mean score for the PILT was 103.79 (*SD* 18.32) which is considerably lower than the score in Crumbaugh and Maholick's (1969) sample of 805 adults, who had a mean PILT score of 112.4, or in Krawczynski and Olszewski's (2000) sample of older adults who had a mean score of 113.2. (Standard deviations were not available). The PILT was not designed specifically for use with older adults. This instrument has a seven-point Likert response scale which may be difficult for older adults to complete due to the existence of many choices.

Correlations between the LSI-A and subscales of the GS-R are comparable to Tornstam's (1997a) findings. Tornstam used a single-item measure in which he asked

participants to rate on a five-point scale, how satisfied they were with their present life. He found weak correlations between these responses and the subscales of cosmic transcendence and coherence and a nonsignificant relationship for the solitude subscale. Tornstam did not examine relationships between measures for purpose in life and successful aging to gerotranscendence so no comparisons to this study's findings could be made. Findings from these hypotheses tests show that construct validity of the GS-R needs further examination.

Optimizing the Scale

Elimination or Revision of Problematic Items

Eleven items were found to be problematic. Nine of these items are worded for reverse scoring. These 11 items had low mean scores, low inter-item correlations, low item-to-total correlations, and/or missing values. Also, several of them were confusing to participants. A description of these items can be viewed in Table F13. Eliminating these weaker items would raise Cronbach's alpha to 0.79 for GS-R total scores (14 items), to 0.67 for the Cosmic subscale (8 items), to 0.68 for the Coherence subscale (3 items), and to 0.32 for the Solitude subscale (3 items). Using the Spearman Brown Prophecy formula (Waltz et al., 2005) to correct for scale and subscale length predicts alphas of ~ 0.72 for the Cosmic subscale, ~ 0.81 for the Coherence subscale, ~ 0.59 for the Solitude subscale, and ~ 0.89 for GS-R total scores. These projected alphas are within the acceptable range for scales. This correction for length suggests that it would be desirable to revise the problematic items and retain current scale length rather than simply eliminating the items.

Hypotheses Testing after Elimination of Problematic Items

Correlations were examined for hypotheses one, two, and three after elimination of the 11 problematic items on the GS-R. Correlations for GS-R total score and scores on the PILT ($r = .203$, $p = .012$), and SAI ($r = .438$, $p < .001$) were statistically significant and went up fairly dramatically. GS-R total scores ($r = 0.49$, $p = .293$) and Cosmic subscale scores ($r = .021$, $p = .407$) continued to have nonsignificant relationships with scores on the LSI-A. The Solitude subscale continued to have a nonsignificant correlation with the PILT ($r = .030$, $p = .373$) and a negative relationship with the LSI-A ($r = -.193$, $p = 0.16$). The Solitude subscale had a weak, but statistically significant correlation with the SAI ($r = .170$, $p = .030$). All subscales did have a statistically significant correlation with either the LSI-A, SAI, or the PILT. Revision of problematic items, rather than elimination of problematic items, might result in stronger correlations.

Further Limitations

Additional limitations not cited in the Methods section arose during conduct of the study. Older adults in this study were more educated than the overall population of older adults in North Carolina. Therefore, in addition to the general caution of using convenience samples, the representativeness of the general population of older adults in North Carolina must be questioned.

General methodological issues warrant consideration and may serve to limit the findings of this study. Because of time constraints and logistics of accessing the desired population, it was necessary to administer the surveys in congregate settings. These settings allowed subjects to discuss items with each other and to listen to others receive

clarification of items. The settings also allowed other distractions to influence the survey such as the reading of surveys to subjects who had difficulty seeing the items. If participants had been allowed to complete the surveys alone in a private setting, it is possible that different answers would have resulted.

All subjects completed the instruments in the same order. Multiple participants took 20 to 30 minutes to complete the GS-R on the first and second administrations. Many subjects took over an hour to complete all the surveys. It is reasonable to assume that increased time led to fatigue which affected scores on later instruments included in the instrument packet. Spiraling of the instruments may have provided different results as fatigue could certainly affect scores on later instruments. Even though the researcher encouraged subjects to take a break, many did not. The researcher also encouraged older adults to answer each item if they could. Encouraging older adults to answer each question may lead them to randomly answer items they do not understand.

Implications for Theory

Findings support the contention that gerotranscendence is a measurable concept in older adults in the southern United States. Overall response to the Theory of Gerotranscendence was positive. According to response patterns, it is seemingly relevant to the personal experiences of older adults in the southern United States. A large percentage of participants identified with the items on the GS-R and related that they can see themselves in the items. This finding suggests that Tornstam's theory while developed for Scandinavian older adults may be applicable for older adults in the southern United States.

This theory offers a different perspective from other well-known theoretical concepts in gerontology. The Theory of Gerotranscendence is a solution to one of the fundamental issues of aging in the United States. It posits that aging is a positive developmental process and does not measure healthy aging as one's ability to live up to midlife standards. Rather aging is seen as a time of personal spiritual growth and attainment of wisdom. With a tool to measure the construct of gerotranscendence, it would be possible to begin to understand the meaning of development into old age for adults living in the southern United States. This theory could change how people view and care for older adults. Guidelines on care of older individuals could be developed based on the theory enabling persons caring for older adults to promote the process of aging. The Theory of Gerotranscendence needs further research in the United States. Research on the theory will be aided by having a culturally appropriate and psychometrically sound tool.

Measurement Theory guided the design of this study. MT indicates that an individual's observed score on a measure is composed of both true score and error components. When reliability is low, a larger proportion of the observed score is error. This means that the measure would not perform as anticipated in relationships with other measures. This statement proved true with the GS-R. Reliability was low, particularly for the subscales of Coherence and Solitude. In hypotheses tests to examine construct validity, associations with other constructs were much weaker than anticipated. This finding is as MT would predict since subjects' scores had large error components. MT

would suggest revising the instrument to establish acceptable reliability before examining construct validity.

Implications for Practice

The fact that the population in the southern United States is aging at an alarming rate presents a challenge for providers of care. A study by Tornstam (1996a) among caretakers of older adults showed that when people were made aware of gerotranscendence they valued the behaviors of some elderly differently. The GS-R is a potentially valuable tool to measure the construct of gerotranscendence. It could be used not just for further research on the theory, but also to disseminate the phenomenon of gerotranscendence to health care organizations, caregivers, relatives, the community at large, and especially to older adults in order to make them aware of the positive aspects of aging. Having a tool to validate the Theory of Gerotranscendence will advance scientific knowledge of gerontology by providing an interpretative framework for offering care to elderly individuals that will support older adults in their developmental process of aging and personal growth.

This framework may give providers a broader perspective on aging that can serve as a guide to support older adults as they age. Therapeutic interventions based on the Theory of Gerotranscendence can include: allowing thoughts and conversations about death; encouraging older people to talk about childhood and old times; creating new types of activities such as reminiscence therapy; and encouraging and facilitating quiet, peaceful, places and times. However, the tool needs further revision before clinical or practice decisions can be based on it.

Results from this study indicate that instruments containing items worded for reverse scoring should be used with caution when doing research with older adults. Adding reverse scored items is a common practice to reduce response set bias. However, persons working with older adults should be alert to possible problems in scales that use such items.

Results from this study also indicate that allowing extensive discussion of items when using focus groups to reword questions may not work well with older adults. Items that elicited a lot of discussion and "dawning understanding" during focus groups did not work well in individual administration.

Implications for Research

This study supports the feasibility of designing a tool to measure gerotranscendence in older adults in the southern United States. However, further revision of the GS-R based on findings from this study is indicated. Subjects found most of the items on the GS-R understandable. However, problematic items need to be revised or eliminated to yield a more reliable tool with which to measure gerotranscendence. It is recommended that selective aspects of this study be repeated using a scale in which the problematic items are further revised. Those results could guide decisions to eliminate or revise the items that are currently problematic.

A further revised scale (GS-RR) in which reverse scored items have been reworded for positive scoring, the word *genealogy* has been replaced, and item number 16, *The characteristics of my personality have both female and male components,* has been reworded is located in Appendix G. This GS-RR retains the original scale and

subscale length and thus would be anticipated to have higher reliability than an instrument in which problematic items were simply eliminated. Test-retest reliability should be established for this tool before further investigation of construct validity is undertaken. Alternately, it might be advisable to test multiple versions of a reworded item to replace number 16.

Once an instrument with sufficient reliability has been finalized, construct validity should be reexamined. The measures used in this study could be augmented by an appropriate quality of life scale in hypotheses testing. An examination of the relationship of gerotranscendence to age may provide further evidence of construct validity. Because the Theory of Gerotranscendence is a developmental theory of aging, it would be anticipated that adults would have higher scores on gerotranscendence as they age. Construct validity should be further examined using confirmatory factor analysis. A factor analysis was not feasible in this study due to a small sample size.

In future studies with the GS-RR certain administrative procedures should be changed. It would be ideal to administer the GS-RR in a setting in which participants can complete the survey in privacy using a sample that is more representative of the target population. When using the GS-RR, it is recommended that individual administrations rather than group settings be used. Individual interviews would allow the Resnik procedure for obtaining consent to be used. Results of this study indicate that spiraling instruments may be more appropriate for older adults when using multiple instruments. Spiraling instruments was not done in this study because that would be confusing to subjects who were seeking clarification and listening to others get clarification. It is also

recommended that the GS-RR not be administered as a mailed survey until a version that is clear and easy to understand is validated. Subjects need to be able to ask questions about the survey.

When a valid and reliable version of the GS-RR is developed for older adults in the southern United States, research is needed to investigate the relationship between scores on gerotranscendence and life trajectory, life choices, gender, and race. Cross-sectional and longitudinal studies are needed to see if scores increase as individuals age. An examination of factors such as religion, life crises, health status, and socioeconomic status is needed to find out how these variables affect the process of gerotranscendence. Studies are also needed to examine whether living situations (alone, institution, extended family) affect gerotranscendence.

Scores on gerotranscendence can be compared to policies, procedures and practice to see how these may potentiate or impede the process of gerotranscendence. For instance, the GS-RR could be used to investigate the research question, Do residents living in long-term care facilities that have an intergenerational program have higher scores than older adults who reside in more traditional facilities? Studies examining how participation in planned activities such as reminiscence therapy, group discussions, or games affects the process of gerotranscendence are needed. Results from studies such as these could potentially be used to change policy, procedures, and practice thereby promoting the process of gerotranscendence for older adults.

Using the GS-RR as an interview guide, focus groups comprised of health care workers are needed to examine if items on the scale match behaviors actually seen in

older adults. Results of these studies using the GS-RR could be used to help guide caregivers decisions, promote settings in which to age, and enable older adults and caregivers to have a broader perspective on aging.

Conclusion

In conclusion, this study's findings suggest that gerotranscendence may be a construct experienced by older adults in the southern United States. Further, the construct may be measurable. A scale (GS-R) to measure the construct of gerotranscendence was revised for use with this population and its psychometric properties were explored. Results suggest that the scale needs further revision. Suggested revisions include modification of items that are worded for reverse scoring and description of certain concepts. Following revision, psychometric properties should be reexamined.

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Appendix A

Original Gerotranscendence Scales

Retrospective Gerotranscendence Scale (RGS)

Please answer the following questions according to: Yes, I do recognize myself in the statement or No, I do not recognize myself in the statement.

Cosmic Transcendence

Today I feel that the border between life and death is less striking compared with when I was 50 years of age.   Yes _____ No _____

Today I feel to a higher degree how unimportant an individual life is, in comparison with the continuing life as such.   Yes _____ No _____

Today I feel a greater mutual connection with the universe, compared with when I was 50 years of age.   Yes _____ No _____

Today I more often experience a close presence of persons, even when they are physically elsewhere.   Yes _____ No _____

Today I feel that the distance between past and present disappears. Yes _____ No _____

Today I feel a greater state of belonging with both earlier and coming generations.

                                                                  Yes _____ No _____

Ego Transcendence

Today I take myself less seriously than earlier.   Yes _____ No _____

Today material things mean less, compared with when I was 50.   Yes _____ No _____

Today I am less interested in superficial social contacts.   Yes _____ No _____

Today I have more delight in my inner world, i.e., thinking and pondering, compared with when I was 50.   Yes _____ No _____

25 Item Gerotranscendence Scale (GS)

Please indicate how well each statement below agrees with your own personal experiences and feelings by checking the appropriate column.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Cosmic Dimension I feel a strong connection with earlier generations.				
Knowing that life on earth will continue is more important than my individual life.				
I feel connected with the entire universe.				
I feel that I am a part of everything alive.				
I am afraid of death.*				
Some things that happen in life can't be explained by logic and science and need to be left unresolved.				
It seems unfair that I must die sometime when life on earth just continues.*				
Sometimes I feel like I live in the past and present simultaneously.				
I can feel a strong presence of people who are elsewhere.				
Genealogy research seems interesting to me.				
Coherence Dimension The life I have lived has coherence and meaning.				
My life feels chaotic and disrupted.*				
I take myself very seriously.*				
To be honest, I must say that I am the most important thing in the world.*				
I find it easy to laugh at myself.				
My personality has both female and male components.				
Solitude Dimension I like meetings with new people.*				
I like to be by myself better than being with others.				
I need something going on all the time in order to feel good.*				
I find it easy to give other people good advice.*				
Being at peace and philosophizing by myself is important for my well-being.				
I find it easy to see what's right and wrong in other people's behavior.				
I am often afraid of asking stupid questions and embarrassing myself in front of others.*				
For me, having a high material standard is among the most important things in my life right now.*				
For me, being active in my work and other things is among the most important things in my life right now.*				
*Items are worded for reverse scoring.				

Snapshot Version of the Gerotranscendence Scale (GS-S)

Please indicate how well each statement below agrees with your own personal

experiences and feelings by checking the appropriate column.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Cosmic Dimension I feel connected with the entire universe				
I feel that I am a part of everything alive.				
I can feel a strong presence of people who are elsewhere.				
Sometimes I feel like I live in the past and present simultaneously.				
I can feel a strong connection with earlier generations.				
Coherence Dimension My life feels chaotic and disrupted.*				
The life I have lived has coherence and meaning.				
Solitude Dimension I like to be by myself better than being with others.				
I like meetings with new people.*				
Being at peace and philosophizing by myself is important for my well-being. *Items are worded for reverse scoring.				

Appendix B

Reliability and Validity Studies of the Original Gerotranscendence Scales

Table B1

Psychometric Properties of the Gerotranscendence Scales: Reliability

Scale	Stability	Internal Consistency
RGS	Test-retest: No evidence	Cronbach's alpha: Cosmic transcendence subscale (six items) = 0.81; Ego transcendence subscale (four items) = 0.75 (Tornstam, 2005).
		Cronbach's alpha for revised RGS: Gerotranscendence subscale (three items) = 0.655; present-moment orientation subscale = 0.483 (Atchley, 1999).
GS	Test-retest: No evidence	Cronbach's alpha: No evidence
		Using Spearman Brown Prophecy Formula based on reported reliability for GS-S (Tornstam, 2005) one would anticipate the reliabilities to be ~ 0.84 for cosmic transcendence, ~0 .82 for coherence, and ~0.80 for solitude.
GS-S	Test-retest: No evidence	Cronbach's alpha: Cosmic transcendence Subscale (five items) = 0.73; coherence Subscale (two items = 0.60; and solitude Subscale (three items) = 0.57 (Tornstam, 2005).

Table B2

Psychometric Properties of the Gerotranscendence Scales: Validity

Scale	Face Validity	Content Validity	Construct Validity
RGS	No evidence. However, the fact items were recognized by many respondents (Tornstam, 2005; Atchley, 1999) can be regarded as face validity.	Panel of experts: No evidence.	Hypotheses Testing: (Tornstam, 2005) Gerotranscendence is not the same as social withdrawal. Gerotranscendence is positively related to life satisfaction, and negatively related to depression, mental illnesses, and use of psychotropic drugs. Factor analysis: (Tornstam, 2005) Exploratory factor analysis separated into two factors: Cosmic transcendence and ego transcendence. Factor analysis: (Atchley, 1999) Exploratory factor analysis on a revised RGS separated into two factors: Gerotranscendence and present-moment orientation.

Table B2—Continued

Psychometric Properties of the Gerotranscendence Scales: Validity

Scale	Face Validity	Content Validity	Construct Validity
RGS			Multitrait Multimethod Matrix: No evidence of matrix constructed.
			Convergence: See hypotheses testing.
			Discriminate: See hypotheses testing.
GS	No evidence.	Panel of experts: No evidence.	Hypotheses Testing: (Tornstam, 2005) Individuals who scored higher on a brief life satisfaction survey scored higher on the subscale of cosmic transcendence.
			Factor analysis: (Tornstam, 1994, 2005) Exploratory factor analysis revealed three dimensions: cosmic transcendence, coherence, and solitude.

Table B2—Continued

Psychometric Properties of the Gerotranscendence Scales: Validity

Scale	Face Validity	Content Validity	Construct Validity
GS			Multitrait Multimethod Matrix: No evidence of matrix constructed. Convergence: See hypotheses testing. Discriminate: No evidence.
GS-S	No evidence.	Panel of experts: No evidence.	Hypotheses testing: (Tornstam, 2005) Individuals who scored higher on a brief life satisfaction scale scored higher on the subscales of cosmic transcendence, coherence, and solitude. There is a positive relationship between coping with life crises and cosmic transcendence. Factor analysis: (Tornstam, 2005) Revealed same dimensions as GS. Multitrait Multimethod Matrix: No evidence of matrix constructed.

Table B2—Continued

Psychometric Properties of the Gerotranscendence Scales: Validity

Scale	Face Validity	Content Validity	Construct Validity
GS-S			Convergence: See hypotheses testing.
			Discriminate: No evidence.

Table B3

Percent of Persons Recognizing Themselves in Content of Items on the RGS and GS-S

	RGS (Tornstam, 1994)	GS-S (Tornstam, 2005)
Cosmic Transcendence		
Today I feel that the border between life and death is less striking compared with when I was 50 years of age	60%	68%
Today I feel to a higher degree how unimportant an individual life is, in comparison with the continuing life as such	55%	52%
Today I feel a greater mutual connection with the universe, compared with when I was 50 years of age	32%	28%
Today I more often experience a close presence of persons, even when they are physically elsewhere	36%	36%
Today I feel that the distance between past present disappears	42%	52%
Today I feel a greater state of belonging with both earlier and coming generations	49%	57%
Ego-transcendence		
Today I take myself less seriously than earlier	60%	73%
Today material things mean less, compared with when I was 50	74%	81%
Today I am less interested in superficial contacts.	53%	71%
Today I have more delight in my inner world, i.e., thinking and pondering, compared with when I was 50	57%	65%

Table B4

Summary of Studies Using the Gerotranscendence Scales

Researcher and Date	Type	Sample	Research Questions	Findings
Scale: RGS				
Tornstam (1994, 2005) Tornstam 1990	Retrospective Mail survey	912 Danish men and women, ages 74 to 100	Do old people recognize changes suggested by the Theory of Gerotranscendence?	32% to 74% of items recognized.
			How does one define groups high or low in gerotranscendence?	No significant correlation between age or gender.
			What is the relationship between gerotranscendence and social activity?	Significant positive correlation between subscale of cosmic transcendence and social activity (eta = .17, p < .001), but no significant transcendence and social activity.
			How do individuals with high degrees of gerotranscendence cope with problems of life?	Positive relationship between cosmic transcendence and coping skills (eta = .13,

Table B4—Continued

Summary of Studies Using the Gerotranscendence Scales

Researcher and Date	Type	Sample	Research Questions	Findings
				$p < .05$).
			Is there a positive relationship between scores on the subscales of the RGS and scores on a brief Life Satisfaction Scale (BLSS).	Significant positive correlation between cosmic transcendence and life satisfaction (eta = .16, $p < .001$) and between ego transcendence and life satisfaction (eta = .12, $p < .001$).
			Do crises in life accelerate the process of gerotranscendence?	Illness and perceived crisis in life positively correlated with subscale of cosmic transcendence.
			Is gerotranscendence related to depression, mental illness, and use of psychotropic drugs?	Gerotranscendence is not significantly correlated with depression (eta = .06, $p > .05$) or mental illness (eta = .01, $p > .05$), but has a negative correlation with use of psychotropic drugs

Table B4—Continued

Summary of Studies Using the Gerotranscendence Scales

Researcher and Date	Type	Sample	Research Questions	Findings
Scale: RGS continued				
				(eta = - .07, $p < .05$).
(Atchley, 1999) Atchley 1995	Mail survey Longitudinal	$n = 300$ American men and women	Do older adults experience gerotranscendence?	6.8% agreed that death is less frightening. 53.4% agreed that they felt a greater connection with the universe. 64.4% stated that they take more enjoyment from their inner life. 48% stated that they take themselves less seriously. 61% stated that material things mean more, not less. 50% said they feel less connected to past and future generations.
			Does gerotranscendence make a difference in one's ability to adapt	Higher scores on the subscales of gerotranscendence and present moment orientation were highly correlated with

Table B4—Continued

Summary of Studies Using the Gerotranscendence Scales

Researcher and Date	Type	Sample	Research Questions	Findings
RGS continued.				being able to maintain morality in the face of disability, independent of other factors.
			How does religion affect scores on the subscale of gerotranscendence?	85% agreed that religion is important in the item, *Death seems less frightening;* 72% agreed that religion is important for the item, *I feel a greater connection with the universe;* and 87% felt that religion was important for the item, *I get more enjoyment from my inner life.*
Scale: GS (Tornstam, 2005) Tornstam 1995	Cross-Sectional	Random sample of 2002 men and women ages 20 to 85	What would the results be if questions in the 1990 study were asked to adults of all ages? Would there be age differences suggestion gerotranscendence?	Cosmic transcendence (eta = .16, *p* < .001) and coherence (eta = .16, p < .001) are higher for higher age brackets. Women score higher than men on cosmic transcendence

Table B4—Continued

Summary of Studies Using the Gerotranscendence Scales

Researcher and Date	Type	Sample	Research Questions	Findings
				(eta = .13, $p < .05$) and coherence (eta = .05, $p < .05$) than men. The less the satisfaction with life, the greater the need for solitude (eta = .16, $p < .001$). Coherence subscale correlates strongly with life satisfaction (eta = .52, $p < .001$) and moderately with fear of death (eta = -.19, $p < .001$).
Scale: GS-S (Tornstam, 2005) Tornstam 2001	Mail Survey	n = 1,771 Swedish men and women ages 65-104	For each of the subscales (cosmic transcendence, coherence, and solitude), how can the development from young old age to oldest old be characterized – continuous increase, leveling out, or decrease?	There is a continuous increase in scores on the subscales as individuals age.

Table B4—Continued

Summary of Studies Using the Gerotranscendence Scales

Researcher and Date	Type	Sample	Research Questions	Findings
Scale: GS-S continued				
			What is the relationship between the subscales of cosmic transcendence, coherence, and solitude and satisfaction with life?	There is a significant positive relationship between scores on a brief life satisfaction survey and scores on the subscales of cosmic transcendence, (eta = .16, p < .001), coherence (eta = .44, p < .001), and a negative relationship between scores on solitude (eta = -.12, p < .001) and scores on a brief life satisfaction survey.

Table B5

Dimensions of Gerotranscendence for the RGS Using Exploratory Factor Analysis in 1990 (Tornstam, 2005)

	Factor Load

Cosmic Transcendence

Today I feel that the border between life and death is less striking compared
With when I was 50 years of age.   .75

Today I feel to a higher degree how unimportant an individual life is, in
comparison with the continuing life as such.   .72

Today I feel a greater mutual connection with the universe, compared with when
I was 50 years of age.   .68

Today I more often experience a close presence of persons, even when they are
physically elsewhere.   .67

Today I feel that the distance between past and present disappears.   .64

Today I feel a greater state of belonging with both earlier and coming generations.   .61

Ego-Transcendence

Today I take myself less seriously than earlier.   .77

Today material things mean less, compared with when I was 5.   .76

Today I am less interested in superficial social contacts.   .59

Today I have more delight in my inner world, i.e., thinking and pondering
compared with when I was 5.   .54

Table B6

***Dimensions of the GS and GS-S Using Exploratory Factor Analysis in 1995 and 2001
(Tornstam, 2005)***

	Factor Load	
	1995	2001
	GS	GS-S
Cosmic		
I feel connected with the entire universe.	.78	.79
I feel that I am a part of everything alive.	.71	.61
I can feel a strong present of people who are elsewhere.	.60	.75
Sometimes I feel like I live in the past and present simultaneously.	.44	.68
I feel a strong connection with earlier generations.	.41	.64
Coherence		
My life feels chaotic and disrupted.	-.74	-.77
The life I have lived has coherence and meaning.	.70	.67
Solitude		
I like to be by myself better than being with others	.78	.89
I like meetings with new people.	-.59	-.71
Being at peace and philosophizing by myself is important for my well-being.	.58	.51

APPENDIX C

REVISED GEROTRANSCENDENCE SCALE

Gerotranscendence Scale - Revised (GS-R)

Please indicate how well each statement below agrees with your own personal experiences and feeling by checking (v) the appropriate column.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Cosmic Dimension				
1. I feel a connection with earlier generations.				
2. Knowing that life on earth will continue after my death is more important than my individual life.				
3. I feel a part of the entire universe.				
4. I feel that I am a part of all God's creations.				
5. I have less fear of death.				
6. Some things that happen in life can not be explained by logic and science and need to be accepted by faith.				
7. It seems unfair that I must die when life on earth just continues.* **Continue to next page.**				

	Strongly Agree	Agree	Disagree	Strongly Disagree
8. Sometimes I feel like I live in the past and present at the same time.				
9. I can feel the presence of people who are elsewhere.				
10. Genealogy research seems interesting to me.				
Coherence Dimension				
11. The life I have lived has meaning.				
12. I like my life the way it is.				
13. I take life more seriously now than when I was younger.*				
14. To be honest, I must say that I am the most important thing in the world.*				
15. I find it easy to laugh at myself.				
16. The characteristics of my personality have both female and male components. **Continue to next page.**				

	Strongly Agree	Agree	Disagree	Strongly Disagree
Solitude Dimension				
17. I like meeting new people less now than when I was younger.				
18. At times I like to be by myself better than being with others.				
19. I need something going on all the time in order to feel good.*				
20. I find it easy to give other people good advice.*				
21. Quiet meditation is important for my well-being.				
22. I am quicker to criticize other people now than when I was younger.*				
23. I am often afraid of asking questions and embarrassing myself in front of others.*				
24. For me, having a desire for material possessions is among the most important things in my life right now.* **Continue to next page.**				

	Strongly Agree	Agree	Disagree	Strongly Disagree
25. For me, being active is one of the most important things in life.*				

*Items are worded for reverse scoring.

APPENDIX D

INSTRUMENTS USED IN PHASE II

GENERAL INFORMATION FORM

Fill out the form by placing a check (v) mark or by writing in the answer that best describes you.

Mother's Maiden Name:_____

Father's First Name: _____

Have you filled out this form before?   Yes_____ No_____

1. AGE: _____

2. GENDER: Male_____

Female_____

3. RACE: White_____

Black_____

Hispanic_____

Other_____

4. EDUCATION: Grade completed_____

5. HEALTH STATUS: Would you rate your health as:

Poor_____Fair_____Good_____

Excellent_____

Continue to next page.

6. RELATIONSHIP STATUS:

Never Married _____

Divorced_____

Separated_____

Married_____

Companion/Significant Other_____

Widowed_____Years_____

Ever Widowed_____Years_____

7. EMPLOYMENT STATUS:

Retired_____

Retired, but working part time_____

Unemployed_____

Full Time Employment_____

Part-time employment, not retired_____

8. Do you have any of these health conditions? (**Mark all that apply).**

Heart/Vascular_____   Depression_____ Arthritis/Orthopedic_____

Respiratory_____   Anxiety_____   Cancer_____

Diabetes_____   Stroke_____   Chronic Pain_____

Other_____

Life Satisfaction Inventory-A

Please read each statement on the list, and indicate how well each statement agrees with your personal experiences and feelings by checking (v) the appropriate column.

	Agree	Disagree
1. As I grow older, things seem better than I thought they would be.		
2. I have gotten more of the breaks in life than most of the people I know.		
3. This is the dreariest time of my life.		
4. I am just as happy as when I was younger.		
5. My life could be happier than it is now.		
6. These are the best years of my life.		
7. Most of the things I do are boring or monotonous.		
8. I expect some interesting and pleasant things to happen to me in the future.		
9. The things I do are as interesting to me as they ever were.		
10. I feel old and somewhat tired.		
11. I feel my age, but it does not bother me.		
Continue to next page.		

	Agree	Disagree
12. As I look back on my life, I am fairly well satisfied.		
13. I would not change my past life even if I could.		
14. Compared to other people my age, I've made a lot of foolish decisions in my life.		
15. Compared to other people my age, I make a good appearance.		
16. I have made plans for things I'll be doing a month or a year from now.		
17. When I think back over my life, I didn't get most of the important things I wanted.		
18. *Compared to other people, I get down in the dumps too often.		
19. I've gotten pretty much what I expected out of life		
20. In spite of what people say, the lot of the average man is getting worse, not better.		

PURPOSE IN LIFE TEST

Read each statement below. Put a check (v) in the block for the answer that best matches how you feel in general.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. I am usually exuberant, enthusiastic.							
2. Life to me seems always exciting.							
3. In life I have very clear goals and aims.							
4. My personal existence is very purposeful and meaningful. **Continue to next page.**							

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
5. Every day is constantly new and different.							
6. If I could choose, I would like nine more lives just like this one.							
7. After retiring I have done some of the exciting things I always wanted to do.							
8. In achieving life goals, I have progressed to complete fulfillment.							
9. My life is running over with exciting good things. **Continue to next page.**							

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
10. If I should die today, I would feel that my life has been very worthwhile.							
11. In thinking of my life, I always see a reason for my being here.							
12. As I view the world in relation to my life, the world fits meaningfully with my life.							
Continue to next page.							

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
13. I am a very responsible person.							
14. Concerning man's freedom to make his own choices, I believe man is absolutely free to make all life choices.							
15. With regard to death, I am prepared, unafraid.							
16. With regard to suicide, I have never given it a second thought. **Continue to next page.**							

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
17. I regard my ability to find a meaning, purpose, or mission in life as very great.							
18. My life is in my hands and I am in control of it.							
19. Facing my daily tasks is a source of pleasure and satisfaction.							
20. I have discovered clear-cut goals and a satisfying purpose.							

Successful Aging Inventory

Read each statement carefully. Check (v) the answer that matches how you feel right now. Remember, there are no right or wrong answers.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. I manage to do the things that I need to do to take care of my home and to take care of myself (eating, bathing, dressing).				
2. I have been able to cope with the changes that have occurred to my body as I have aged.				
3. Being the age that I am now is as good as or better than I thought it would be.				
4. I feel able to cope or deal with my own aging.				
5. I feel able to cope with life events. **Continue to next page.**				

	Strongly Agree	Agree	Disagree	Strongly Disagree
6. I can usually come up with solutions to problems.				
7. I am good at thinking of new ways to solve problems.				
8. I enjoy doing creative new things or making things.				
9. I am usually in a positive, pleasant mood.				
10. A relationship with God or some higher power is important to me.				
11. I spend a good bit of time in prayer or doing some kind of religious activity.				
12. As I have aged, the way I think of the world has changed.				
13. I would rather have a few close friends than many casual ones. **Continue to next page.**				

	Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**
14. Sometimes there can be two right answers to a problem or a situation.				
15. I often think of my loved ones who have passed away and feel close to them.				
16. I feel interest in/concern for the next generation.				
17. My life is meaningful.				
18. I am overall satisfied with my life right now.				
19. I feel that I serve a purpose in this world.				
20. I look forward to the future.				

APPENDIX E

RESULTS OF PHASE I

Table E1

Demographic Characteristics of Phase I Participants

	Focus Group I (n=9)	Focus Group II (n=8)	Total (n=17)	
Age range	65 – 81	65 - 84	65 - 84	
	n	n	n	%
Female				
White	7	3	10	59%
Black	0	5	5	29%
Male				
White	2	0	2	12%
Black	0	0	0	0%

Table E2

Rewording of the GS Based on Focus Group Recommendations

Item	Consensus for Rewording Focus Group I	Consensus for Rewording Focus Group II	Comparison Between Groups	Rewording Used Based on Tenets of the Theory of Gerotranscendence	Researcher's Comments
1. I feel a strong connection with earlier generations.	Does not need rewording.	I feel a connection with earlier generations.	Similar	I feel a connection with earlier generations.	
2. Knowing that life on earth will continue is more important than my individual life.	Knowing that life will continue after death is more important than my individual life.	Does not need rewording.	Similar	Knowing that life on earth will continue after my death is more important than my individual life.	Researcher added words, "on earth" and "my" for clarity.
3. I feel connected with the entire universe.	I feel a part of the entire universe.	I feel connected with the local universe.	Different	I feel a part of the entire universe.	
4. I feel that I a part of everything alive.	Delete item. Felt to be the same as number 3.	I feel that I am a part of all God's creations.	Different	I feel that I am a part of all God's creations.	
5. I am afraid of death.*	Does not need rewording.	I have less fear of death.	Similar	I have less fear of death now than when I was younger.	Participants changed from negative to positive response.

Table E2 (continued)

Rewording of the GS Based on Focus Group Recommendations

Item	Consensus for Rewording Focus Group I	Consensus for Rewording Focus Group II	Comparison Between Groups	Rewording Used Based on Tenets of the Theory of Gerotranscendence	Researcher's Comments
6. Some things that happen in life can't be explained logic and science and need to be left unresolved.	Some things that happen in life can't be explained by logic and science and need to be accepted by faith.	Some things that happen in life can not be explained by logic and science and need to be left unresolved such as: (give examples).	Similar	Some things that happen in life cannot be explained by logic and science and need to be accepted by faith.	
7. It seems unfair that I must die sometime when life on earth just continues.*	It seems unfair that I must die when life on earth just continues.	Does not need rewording unless changed to say, It is fair that I must die sometime and life on earth continues.	Similar	It seems unfair that I must die when life on earth just continues.*	
8. Sometimes I feel like I live in the past and present simultaneously.	Sometimes I feel like I live in the past and present at the same time.	Does not need rewording.	Similar	Sometimes I feel like I live in the past and the present at the same time.	
9. I can feel a strong presence of people elsewhere.	I can feel a strong bond with people in the past, present, and future.	Does not need rewording.	Different	I can feel the presence of people who are elsewhere.	

Table E2 (continued)

Rewording of the GS Based on Focus Group Recommendations

Item	Consensus for Rewording Focus Group I	Consensus for Rewording Focus Group II	Comparison Between Groups	Rewording Used Based on Tenets of the Theory of Gerotranscendence	Researcher's Comments
10. Genealogy research seems interesting to me.	Does not need rewording.	Does not need rewording.	Agreement	Genealogy research seems interesting to me.	
11. The life I have lived has coherence and meaning	The life I have lived has meaning.	Does not need rewording.	Similar	The life I have lived has meaning.	
12. My life feels chaotic and disrupted.*	My life feels chaotic and disrupted at times.	I like my life the way it is.	Different	I like my life the way it is.	Participants changed from negative to positive response.
13. I take myself very seriously.*	I take life more seriously now, than when I was younger.	I take myself serious at times.	Different	I take myself more serious now, than when I was younger.*	
14. *To be honest, I must say that I am the most important thing in the world.	Does not need rewording.	Does not need rewording.	Agreement	*To be honest, I must say that I am the most important thing in the world.	
15. I find it easy to laugh at myself.	Does not need rewording.	Does not need rewording.	Agreement	I find it easy to laugh at myself.	

Table E2 (continued)

Rewording of the GS Based on Focus Group Recommendations

Item	Consensus for Rewording Focus Group I	Consensus for Rewording Focus Group II	Comparison Between Groups	Rewording Used Based on Tenets of the Theory of Gerotranscendence	Researcher's Comments
16. My personality has both female and male components.	The characteristics of my personality have both female and male components.	My responsibilities have both female and male components.	Different	The characteristics of my personality have both female and male components.	
17. I like meetings with new people.*	At times, I like meetings with new people.	I like meetings with new people occasionally.	Similar	I like meeting new people less now than when I was younger.	Participants changed from negative to positive response.
18. I like to be by myself better than being with others.	At times, I like to be by myself better than being with others.	I like to be by myself better than being with others at times.	Agreement	At times I like to be by myself better than being with others.	
19. I need something going on all the time in order to feel good.*	Does not need rewording.	Does not need rewording.	Agreement	I need something going on all the time in order to feel good.*	
20. I find it easy to give other people good advice.*	I find it easy to give other people good advice if the need arises.	I feel comfortable giving good advice, but it depends on the condition.	Similar	I find it easy to give other people good advice.	Did not change in order to remain consistent with Theory.

Table E2 (continued)

Rewording of the GS Based on Focus Group Recommendations

Item	Consensus for Rewording Focus Group I	Consensus for Rewording Focus Group II	Comparison Between Groups	Rewording Used Based on Tenets of the Theory of Gerotranscendence	Researcher's Comments
21. Being at peace and philosophizing by myself is important for my well-being.	Quiet meditation is important for my well-being.	Does not need rewording.	Similar	Quiet meditation is important for my well-being.	
22. I find it easy to see what's right and wrong in other people's behavior.*	I am not as quick to criticize what's right or wrong in other people's behavior even though it can be seen.	I don't look for what's right or wrong in other people's behavior.	Similar	I am quicker to criticize other people now than when I was younger.*	
23. I am often afraid of asking stupid questions and embarrassing myself in front of others*.	I am often afraid of asking questions and embarrassing myself in front of others.	I am often afraid of asking questions and embarrassing myself in front of others.	Similar	I am often afraid of asking questions and embarrassing myself in front of others.*	

Table E2 (continued)

Rewording of the GS Based on Focus Group Recommendations

Item	Consensus for Rewording Focus Group I	Consensus for Rewording Focus Group II	Comparison Between Groups	Rewording Used Based on Tenets of the Theory of Gerotranscendence	Researcher's Comments
24. For me, having a high material standard is among the most important things in my life right now.*	For me, having a desire for material possessions is among the most important things in my life right now.	Does not need rewording.	Similar	For me, having a desire for material possessions is among the most important things in my life right now.*	
25. For me, being active in my work and other things is among the most important things in my life right now.*	To continue to be actively involved in choosing my activity level in life is important.	For me, remaining active is among the most important things in my life.	Similar	For me, being active is one of the most important things in my life.*	

*Reponses are worded for reverse scoring.

APPENDIX F

RESULTS OF PHASE II

Table F1

Demographic Characteristics of Phase II Participants

	Black Female (n=27)	Black Male (n=11)	White Female (n=59)	White Male (n=27)	Sample Total (%)
Age					
Mean (*SD*)	71.8 (*SD* 6.76)	70.8 (*SD* 3.92)	77.5 (*SD* 7.07)	74.4 (*SD* 7.16)	74.9 (*SD* 7.16)
Range	65-92	65-77	65-94	65-88	65-94
Education					
< than High School (0-8th grade)	4	6	7	4	21 (17%)
High School (9th – 12th grade)	16	4	37	14	71(58%)
College (>12 years)	6	15	1	9	31 (25%)

Table F1 (continued).

Demographic Characteristics of Phase II Participants

	Black Female (n=27)	Black Male (n=11)	White Female (n=59)	White Male (n=27)	Sample Total (%)
Relationship Status					
Never Married	3	2	0	0	5 (4%)
Divorced	8	2	9	3	22 (18%)
Separated	3	3	0	1	7 (5%)
Married	1	2	18	20	41 (33%)
Widowed	12	2	32	2	48 (40%)
Current Employment					
Retired	25	9	55	23	112 (92%)

Table F1 (continued).

Demographic Characteristics of Phase II Participants

	Black Female (n=27)	Black Male (n=11)	White Female (n=59)	White Male (n=27)	Sample Total (%)
Retired, working part time	1	1	2	2	6 (5%)
Unemployed	1	1	1	0	3 (2%)
Full time employment	0	0	0	1	1 (1%)
Current Health Status					
Excellent	3	1	4	1	9 (7%)
Good	15	5	32	15	67 (54%)
Fair	7	4	22	6	39 (32%)
Poor	2	1	1	5	9 (7%)
No. Health Conditions Mean (*SD*)	2.6 (*SD* 1.90)	2.0 (*SD* 1.48)	2.0 (*SD* 1.29)	2.2 (*SD* 1.35)	2.8 (*SD* 1.49)

Table F2

Characteristics of Phase II Participants and Older Adults in North Carolina

	Sample n	Sample %	Older Adults in North Carolina %*
Gender			
Male	38	3.6%	4.1%
Female	86	69.4%	59.9%
Ethnicity			
White	86	69.4%	82.5%
African American	38	3.6%	15.8%
Marital Status			
Married	41	33.1%	23%
Separated	7	5.6%	
Divorced	22	17.7%	
Widowed	48	38.7%	
Single/Never Married	5	4.0%	
Educational Level			
< than High School (0-8th grade)	21	16.9%	41.6%

Table F2 (continued).

Characteristics of Phase II Participants and Older Adults in North Carolina

	Sample n	Sample %	Older Adults in North Carolina %*
High School (9th – 12th grade)	71	57.3%	29.6%
College (> 12 yrs)	31	25.2%	12.0%
Missing data	1	.8%	
Employment Status			14.4% in Labor Force
Retired	112	9.3%	
Retired, working part time	6	4.8%	
Unemployed	3	2.4%	
Full time employment	1	.8%	
Missing data	2	1.6%	

*Source: North Carolina Division of Aging and Adult Services (2008).

Table F3

Missing Values for Individual Items for the First and Second Administrations of the GS-R

Item	First Administration (n=124) No. of subjects with missing data	Second Administration (n=101) No. of subjects with missing data
1. I feel a connection with earlier generations.	3	1
2. Knowing that life on earth will continue after my death is more important than my individual life.	1	1
3. I feel a part of the entire universe.	3	0
4. I feel that I am a part of all God's creations.	0	0
5. I have less fear of death now than when I was younger.	0	1
6. Some things that happen in life can not be explained by logic and science and need to be accepted by faith.	0	1
7.It seems unfair that I must die when life on earth just continues.*	2	0

Table F3 (continued).

Missing Values for Individual Items for the First and Second Administrations of the GS-R

Item	First Administration (n=124) No. of subjects with missing data	Second Administration (n=101) No. of subjects with missing data
8. Sometimes I feel like I live in the past and present at the same time.	2	1
9. I can feel the presence of people who are elsewhere.	2	0
10. Genealogy research seems interesting to me.	4	1
11. The life I have lived has meaning.	0	1
12. I like my life the way it is.	1	2
13. I take myself more seriously now than when I was younger.*	0	0
14. To be honest, I must say that I am the most important thing in the world.*	0	1
15. I find it easy to laugh at myself.	2	1
16. The characteristics of my personality have both female and male components.	2	2

Table F3 (continued).

Missing Values for Individual Items for the First and Second Administrations of the GS-R

Item	First Administration (n=124) No. of subjects with missing data	Second Administration (n=101) No. of subjects with missing data
17. I like meeting new people less now than when I was younger.	1	0
18. At times I like to be by myself better than being with others.	0	0
19. I need something going on all the time in order to feel good.*	0	0
20. I find it easy to give other people good advice.*	0	2
21. Quiet meditation is important for my well-being.	1	3
22. I am quicker to criticize other people now than when I was younger.*	0	1
23. I am often afraid of asking questions and embarrassing myself in front of others.*	0	0
24. For me, having a desire for material possessions is among the most important things in my life right now.*	2	0

Table F3 (continued).

Missing Values for Individual Items for the First and Second Administrations of the GS-R

Item	First Administration (n=124) No. of subjects with missing data	Second Administration (n=101) No. of subjects with missing data
25. For me, being active is one of the most important things in life.*	0	0
Total No. Missing Items	26	19

*Items are worded for reverse scoring.

Table F4

Missing Values for the LSI-A, PILT, and SAI

Number Missing Values	LSI-A Items	PILT Items	SAI Items
0	1-2, 4, 7-8, 10-16, 18-20	1, 4, 6-7, 9-13, 15, 17-20	1, 3-13, 15-19
1	3, 5-6, 9, 17	2, 3, 5, 14, 16	2, 14, 20
2		8	

Table F5

Descriptive Statistics of Scales and Subscales

	Possible Range	Actual Range	Mean Score	*SD*	Cronbach's Alpha
GS-R (First Administration) (n=124)					
Cosmic	0-40	21-40	30.35	3.19	0.62
Coherence	0-24	11-23	16.95	1.84	0.27
Solitude	0-36	19-32	24.14	2.55	0.33
Total GS-R	0-100	59-88	71.44	5.30	0.61
GS-R (Second Administration) (n=90)					
Cosmic	0-40	24-39	33.18	3.25	0.60
Coherence	0-24	14-23	16.91	1.88	0.43
Solitude	0-36	17-33	24.11	2.55	0.46
Total GS-R	0-100	61-91	74.44	6.10	0.71
LSI-A (n=123)	0-20	4-20	13.61	3.60	0.73
PILT (n=123)	0-140	45-140	103.78	18.32	0.92
SAI (n=123)	0-80	53-80	64.15	6.75	0.91

Table F6

Test-Retest Reliability of the GS-R

Subscale	Two Week Interval (n=90)
Cosmic	$r = .40, p < .001$
Coherence	$r = .62, p < .001$
Solitude	$r = .55, p < .001$
Total GS-R	$r = .54, p < .001$

Table F7

Indices of Normality for all Scales and Subscales

Scale	Skewness	Kurtosis
GS-R (First Administration) (n=124)		
Cosmic	.212	.160
Coherence	.359	.933
Solitude	.565	.659
Overall GS-R	.481	.488
GS-R (Second Administration) (n=101)		
Cosmic	.170	.532
Coherence	.922	1.230
Solitude	.395	1.586
Overall GS-R	.319	.103
LSI-A (n=123)	-.389	-.154
PILT (n=123)	-.828	.538
SAI (n=123)	.517	-.700

Table F8

Corrected Item-to-total Correlations of the GS-R by Subscale (n=124)

Item No.	Corrected Item-to-total Correlations of GS-R items	M	SD
Cosmic Subscale (alpha = 0.612)			
1	.2310	3.1613	.6009
2	.4224	3.0242	.7124
3	.4163	3.0242	.7124
4	.5110	3.4919	.5608
5	.5592	3.2016	.6387
6	.5414	3.3871	.6052
7*	.2567	2.6290	.7456
8	.2724	2.6532	.7518
9	.3298	2.6774	.7678
10	.3641	2.9274	.6670
Coherence Subscale (alpha = 0.274)			
11	.5521	3.3387	.5062
12	.2232	3.1048	.6198
13*	.1343	1.8306	.7039
14*	.3397	2.8306	.7484

Table F8 (continued).

Corrected Item-to-total Correlations of the GS-R by Subscale (n=124)

Item No.	Corrected Item-to-total Correlations of GS-R items	*M*	*SD*
15	.4523	3.2581	.5939
16	.1638	2.5887	.7407
Solitude Subscale (alpha = 0.344)			
17	.2459	2.4435	.7962
18	.1556	3.0887	.6722
19*	.2119	2.7903	.7326
20*	.2845	2.2742	.6995
21	.4964	3.2177	.6421
22*	.3199	2.7903	.7326
23*	.1977	2.6452	.7849
24*	.3940	3.0806	.6299
25*	-.0256	1.7984	.6718

*Items are worded for reverse scoring.

Table F9

Inter-item Correlations for the GS-R

Item No.	1	2	3	4	5	6	7	8	9	10

Cosmic (items 1-10)

Item	1	2	3	4	5	6	7	8	9	10
1										
2		.31								
3		.22	.24							
4		.22	.11	.44						
5		.18	.21	.22	.27					
6		.32	.22	.39	.44	.53				
7*		-.01	-.01	-.06	.07	-.03	.05			
8		.11	.17	.19	.12	.07	.14	-.17		
9		.27	.16	.14	.14	.00	.06	-.14	.49	
10		.03	.23	.21	.12	.17	.27	-.09	.13	.03

Table F9 (continued).

Inter-item Correlations for the GS-R

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Coherence (items 11-16)																
11	.09	.20	.43	.46	.39	.39	.08	.05	.12	.22						
12	.02	-.02	.27	.18	.08	.24	.00	-.01	.10	.12	.35					
13*	-.11	-.01	-.25	-.01	-.05	-.19	.17	.06	.23	-.23	-.22	-.20				
14*	-.17	.08	-.06	.06	.27	.09	.10	-.08	-.19	-.02	.19	-.08	.16			
15	.13	.14	.23	.30	.27	.37	.13	-.14	.01	.25	.49	.43	-.05	.06		
16	.06	-.01	.22	.02	.02	.10	-.07	.12	.15	.09	.05	.09	.07	-.24	.11	

Table F9 (continued)

Inter-item Correlations for the GS-R

Item No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	-.03	.14	.03	.00	-.02	-.04	.15	.28	.22	.26	.01	-.22	.00	-.09	-.07	.02
18	-.12	.03	.12	-.05	.19	.05	-.13	.00	-.02	.05	.05	-.08	-.04	.11	02	-.04
19*	-.12	-.01	-.10	.00	.13	.04	.05	-.25	-.11	.02	.02	.05	-.02	.33	.12	-.19
20*	-.18	.02	-.13	.13	.05	-.08	.20	.01	.01	-.03	-.01	-.31	.19	.35	-.23	-.12
21	.12	.20	.32	.31	.36	.36	-.02	.02	.06	.34	.27	.23	-.19	.11	.30	.02
22*	.08	.06	-.12	.11	.15	.09	.18	-.15	.01	.00	.17	-.04	.06	-.01	.09	.08
23*	-.14	-.11	-.06	.03	.00	-.03	.15	-.09	-.02	-.03	.06	.16	.14	.10	.09	.03
24*	.01	.18	.15	.16	.17	.07	.10	-.08	-.18	.05	.22	.02	-.02	.39	.18	-.10
25*	-.20	-.09	-.27	-.16	.00	-.20	.20	.04	-.06	-.16	-.23	-.24	.23	.14	-.25	-.15

Table F9 (continued).

Inter-item Correlations for the GS-R

Item No.	17	18	19	20	21	22	23	24	25
Solitude (items 17-25)									
17									
18	.15								
19*	-.20	-.01							
20*	.13	-.02	.27						
21	.06	.20	.05	.03					
22*	-.01	-.03	.05	.19	.15				
23*	-.30	-.18	.22	.06	-.02	.32			
24*	-.01	.02	.30	.30	.08	.04	.24		
25*	.24	-.01	-.04	.17	-.12	-.05	-.20	-.06	

*Items are worded for reverse scoring.

Table F10

Participants Who Recognized Themselves in Items on the GS-R

Item No.	Participants (n=17) n	%
1. I feel a strong connection with earlier generations.	15	88%
2. Knowing that life on earth will continue after my death is more important than my individual life.	17	100%
3. I feel a part of the entire universe.	17	100%
4. I feel that I am a part of all God's creations.	17	100%
5. I have less fear of death now than when I was younger.	17	100%
6. Some things that happen in life cannot be explained by logic and science and need to be accepted by faith.	15	88%
7. It seems unfair that I must die when life on earth just continues.*	17	100%
8. Sometimes I feel like I live in the past and the present at the same time.	17	100%
9. I can feel the presence of people who are elsewhere.	17	100%
10. Genealogy research seems interesting to me.	17	100%
11. The life I have lived has meaning.	17	100%
12. I like my life the way it is.	17	100%

Table F10 (continued).

Participants Who Recognized Themselves in Items on the GS-R

	Participants (n=17)	
Item No.	n	%
13. I take life more seriously now, than when I was younger.*	17	100%
14. To be honest, I must say that I am the most important thing in the world.*	17	100%
15. I find it easy to laugh at myself.	17	100%
16. My personality has both female and male components.	17	100%
17. I like meeting with new people less now than when I was younger.	17	100%
18. At times I like to be by myself better than being with others.	17	100%
19. I need something going on all the time in order to feel good.*	16	94%
20. I find it easy to give other people good advice.*	17	100%
21. Quiet meditation is important for my well-being.	17	100%
22. I am quicker to criticize other people now than when I was younger.*	17	100%
23. I am often afraid of asking questions and embarrassing myself in front of others.*	17	100%

Table F10 (continued).

Participants Who Recognized Themselves in Items on the GS-R

	Participants (n=17)	
Item No.	n	%
24. For me, having a desire for material possessions is among the most important things in my life.*	17	100%
25. For me, being active is one of the most important things in my life.*	16	94%

*Items are worded for reverse scoring.

Table F11

Narrative Comments Following the Question, Do These Questions Reflect What Aging is Like for You?

Pertaining to Aging	Pertaining to the GS-R Survey
"The only thing, if I had life to live over, I would be more thoughtful and prepared. Some things I would repeat and many things would be different."	"I guess so."
	"I think it is a good survey. It is necessary so we can find out about other people and how they feel."
"I think I have been consistent with my views. I'd like more money."	
	"I thought that aging meant growing old. After answering some of these questions, I feel different. As long as I age gracefully, I'm satisfied."
"As long as I stay well, I'm ok, but I don't want to linger if I can't take care of myself."	
"Happy about thinking about Jesus and going home to see my Mother."	"The questions make you really look at yourself at this stage of life."
"I am 80 years old and still mow my yard. I have 4 artificial joints. Regular church person. Christian. Love doing for others."	

Table F11 (continued).

Narrative Comments Following the Question, Do These Questions Reflect What Aging is Like for You?

_____

Pertaining to Aging   Pertaining to the GS-R Survey

_____

"What I have, I have always shared – my

food, my home; whatever was needed, I

gave to others."

"I do not dwell on my age. I think a person

is as old as he/she makes self."

'I love the age I am because I am closer to

a better life than those who are younger."

"Haven't thought that much about aging.

Thankful for each day we have."

"Growing older is not a winner. Makes

you wonder, Where are the Golden Years?"

_____

Table F12

Pearson's r Correlations between Subscales of the GS-R and LSI-A, PILT, and SAI (n=123)

	LSI-A	PILT	SAI
Cosmic Transcendence	.04 (*p* = .338)	.17 (*p* = .032)	.34 (*p* <. 001)
Coherence	.21 (*p* = .009)	.27 (*p* = .002)	.28 (*p* = .001)
Solitude	-.16 (*p*= .035)	-.14 (*p* =.081)	.02 (*p*= .411)
Total GS-R	.02 (*p* = .415)	.13 (*p* =.072)	.31 (*p* < .001)

Table F13

Summary of Problematic Items

Item No.	Item-to-total Correlation	No. of Missing Values	Phase I Subjects Sought clarification	Phase II Subjects Sought clarification	Resulted in Extensive controversy In Phase I	Item Revised for GS-R
Cosmic Subscale (2 items)						
7. It seems unfair that I must die when life on earth just continues.*	.2567	2				X
10. Genealogy research seems interesting to me.	.3641	4				
Coherence Subscale (3 items)						
13. I take myself more seriously now than when I was younger.*	.1343	0	X		X	X

Table F13 (continued).

Summary of Problematic Items

Item No.	Item-to-total Correlation	No. of Missing Values	Phase I Subjects Sought clarification	Phase II Subjects Sought clarification	Resulted in Extensive controversy In Phase I	Item Revised for GS-R
14.To be honest, I must say that I am the most important thing in the world*.	.3397	1				X
16. The characteristics of my personality have both female and male components.	.1638	2	X		X	X
Solitude Subscale (6 items)						
19.I need something going on all the time in order to feel good.*	.2119	0	X		X	X
20. I find it easy to give other people good advice.*	.2845	2			X	
22 I am quicker to criticize other people now than when I was younger.*	.3199	1			X	X

F13 (continued).

Table F13 (continued).

Summary of Problematic Items

Item No.	Item-to-total Correlation	No. of Missing Values	Phase I Subjects Sought clarification	Phase II Subjects Sought clarification	Resulted in Extensive controversy In Phase I	Item Revised for GS-R
23. I am often afraid of asking questions and embarrassing myself in front of others.*	.3940	0	X			X
24. For me, having a desire for material possessions is among the most important things in my life right now.*	.3940	2	X	X	X	X
25. For me, being active is one of the most important things In life.*	-.0256	0				X

*Items are worded for reverse scoring.
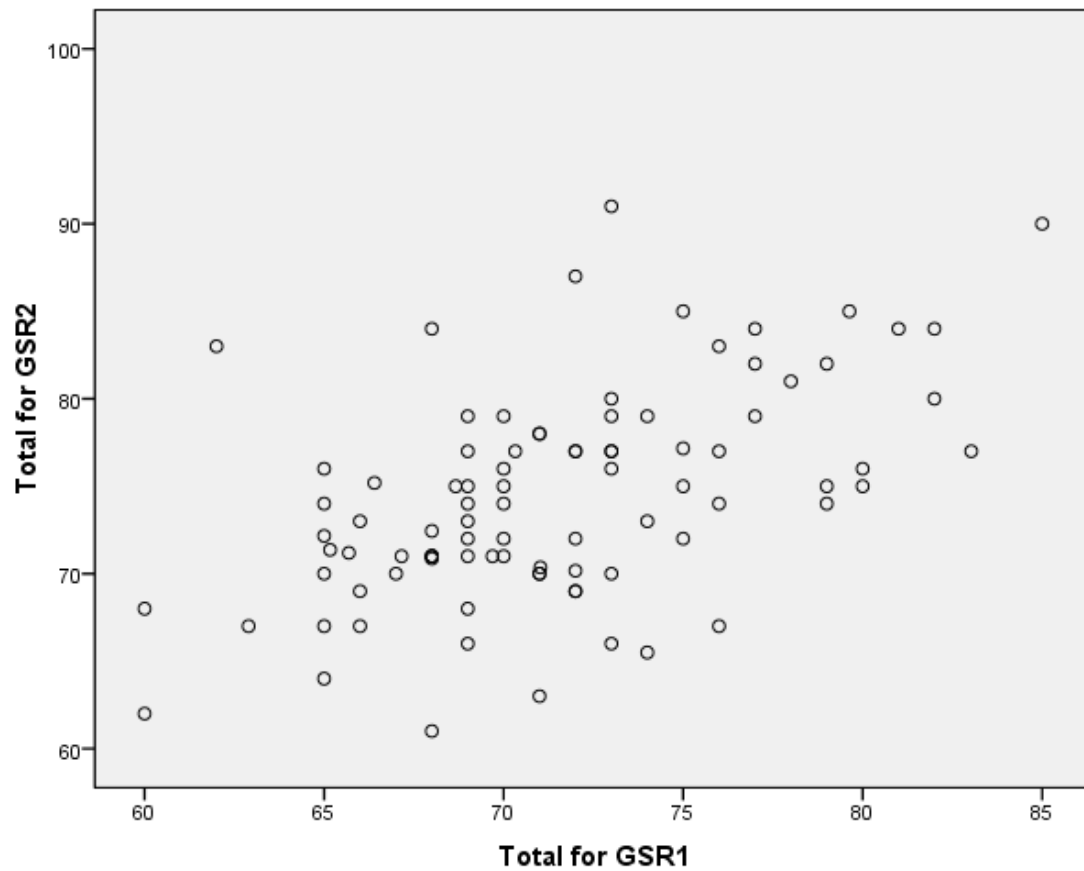
Figure F1. *Scatterplot of Total Scores (N=90) for the First and Second*
Administrations of the GS-R after a Two Week Interval

The x-axis represents scores on the first administration; the y-axis represents scores on the second administration.
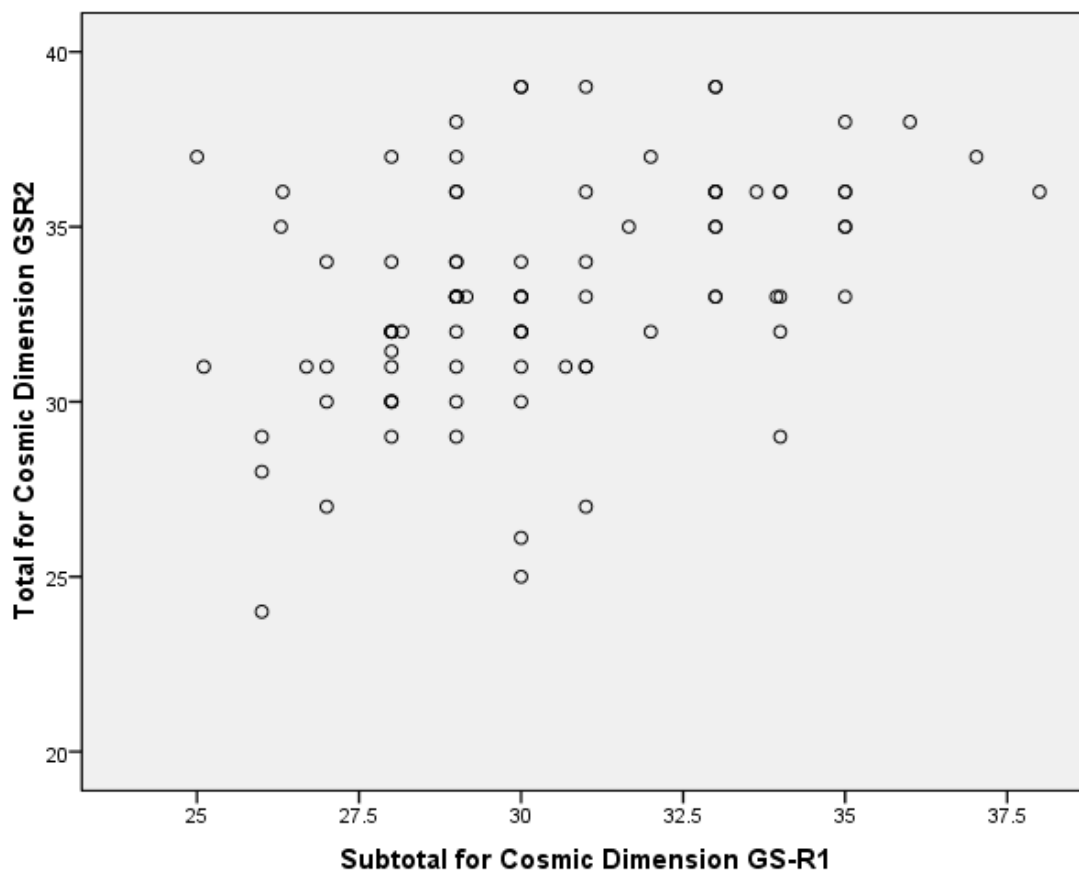
Figure F2. *Scatterplot of Total Scores (N=90) for the First and Second*
Administrations of the Subscale Cosmic of the GS-R after a Two Week
Interval

The x-axis represents scores on the first administration; the y-axis represents scores on
the second administration.
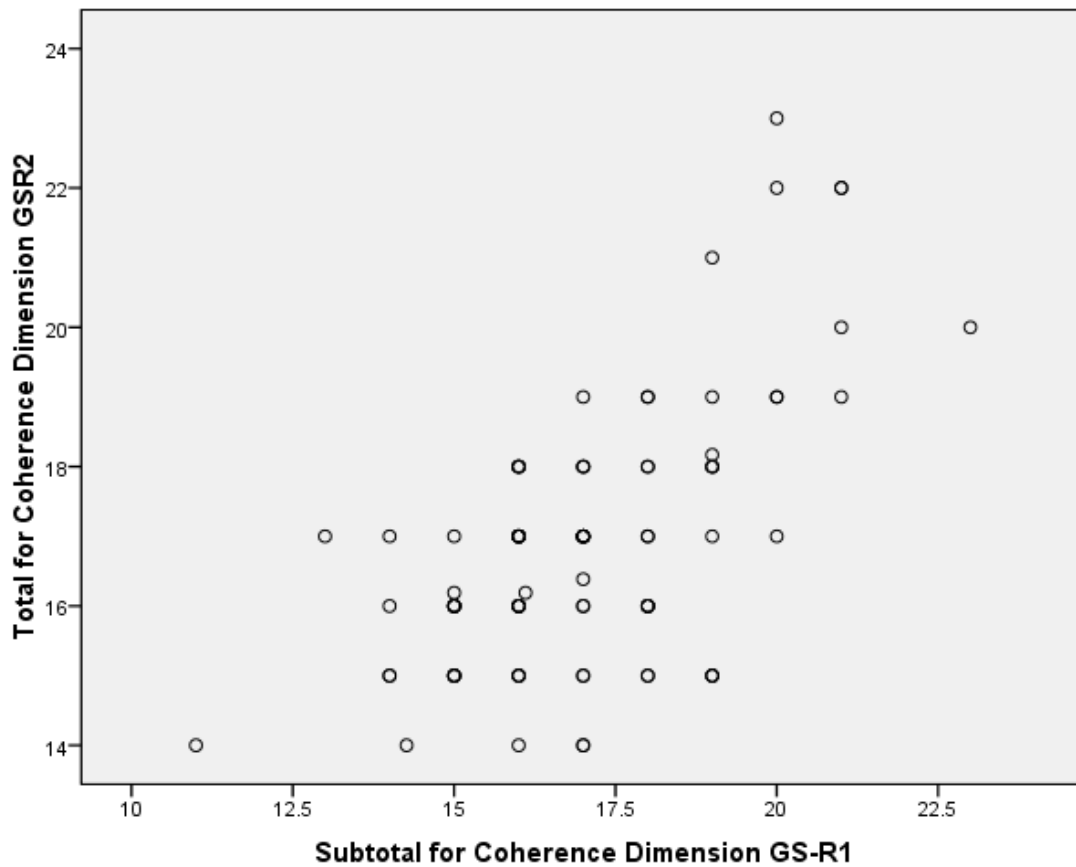
Figure F3. *Scatterplot of Total Scores (N=90) for the First and Second Administrations of the Subscale Coherence of the GS-R after a Two Week Interval*

The x-axis represents scores on the first administration; the y-axis represents scores on the second administration.
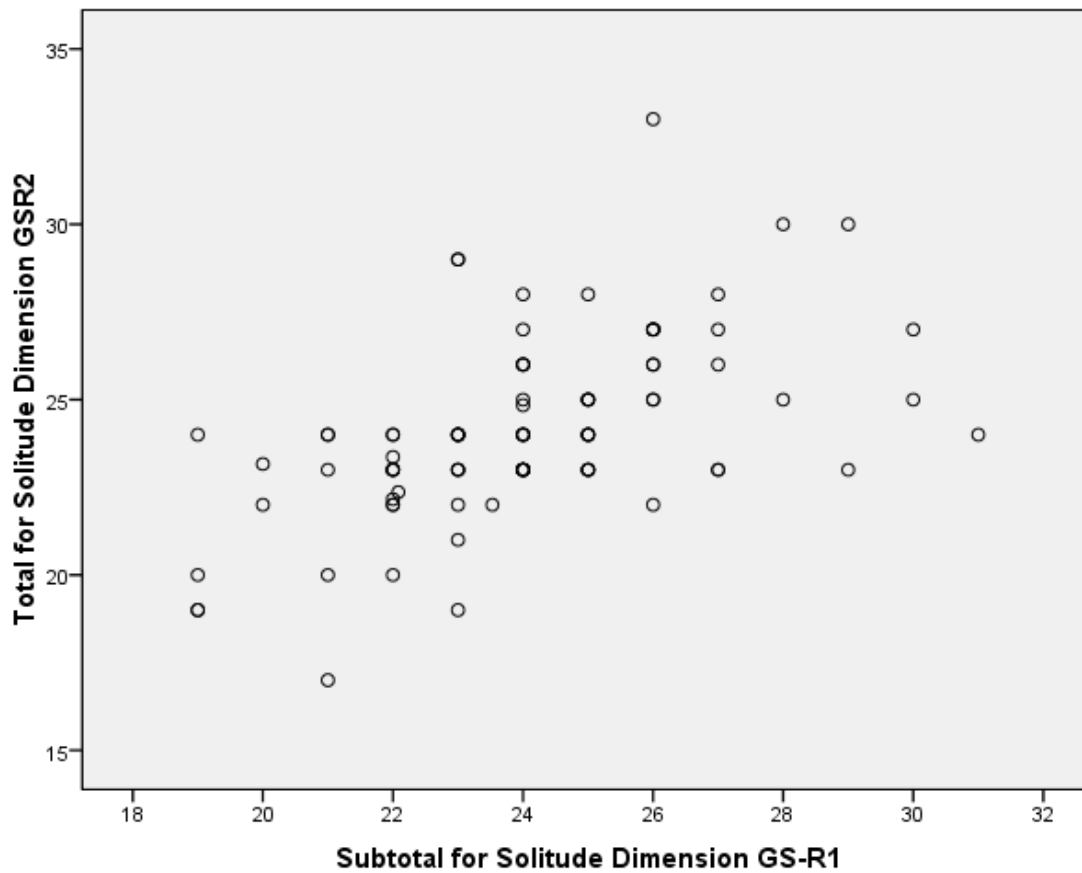
Figure F4. *Scatterplot of Total Scores (N=90) on the First and Second Administration of the Subscale Solitude for the GS-R after a Two Week Interval*

The x-axis represents scores on the first administration; the y-axis represents scores on the second administration.
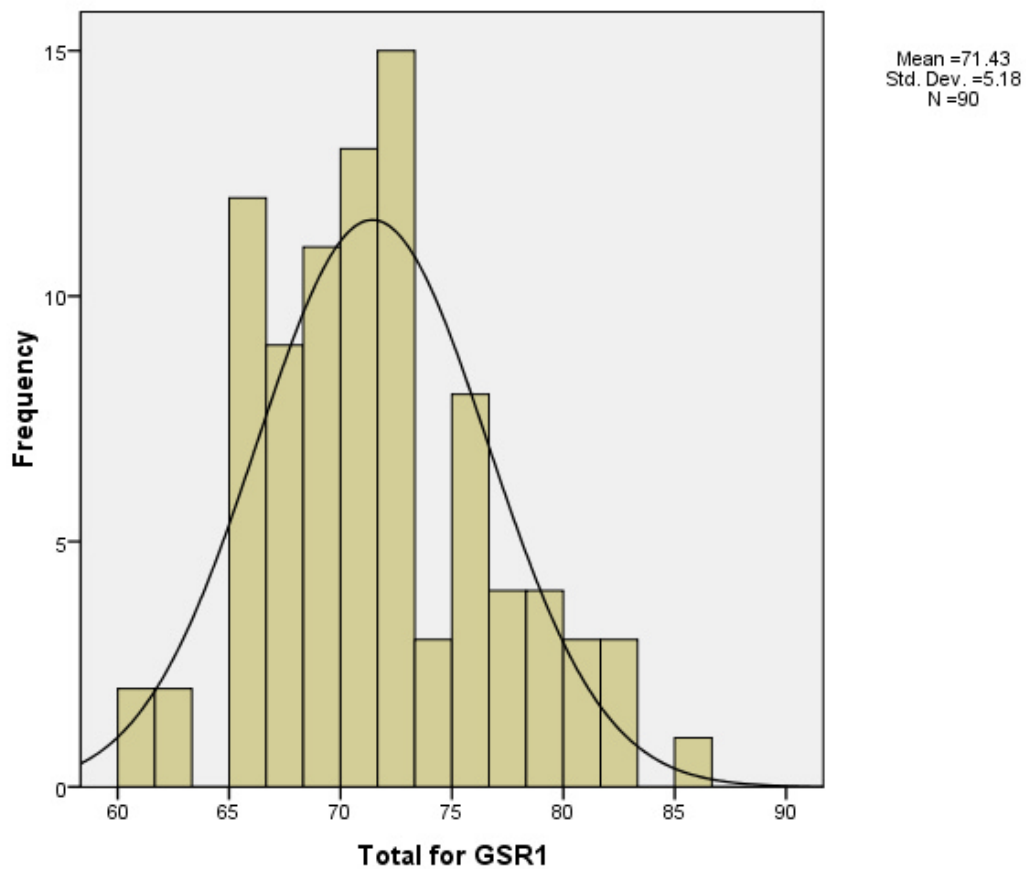
Figure F5. *Histogram of Total Scores for the First Administration of the GS-R (N=90)*
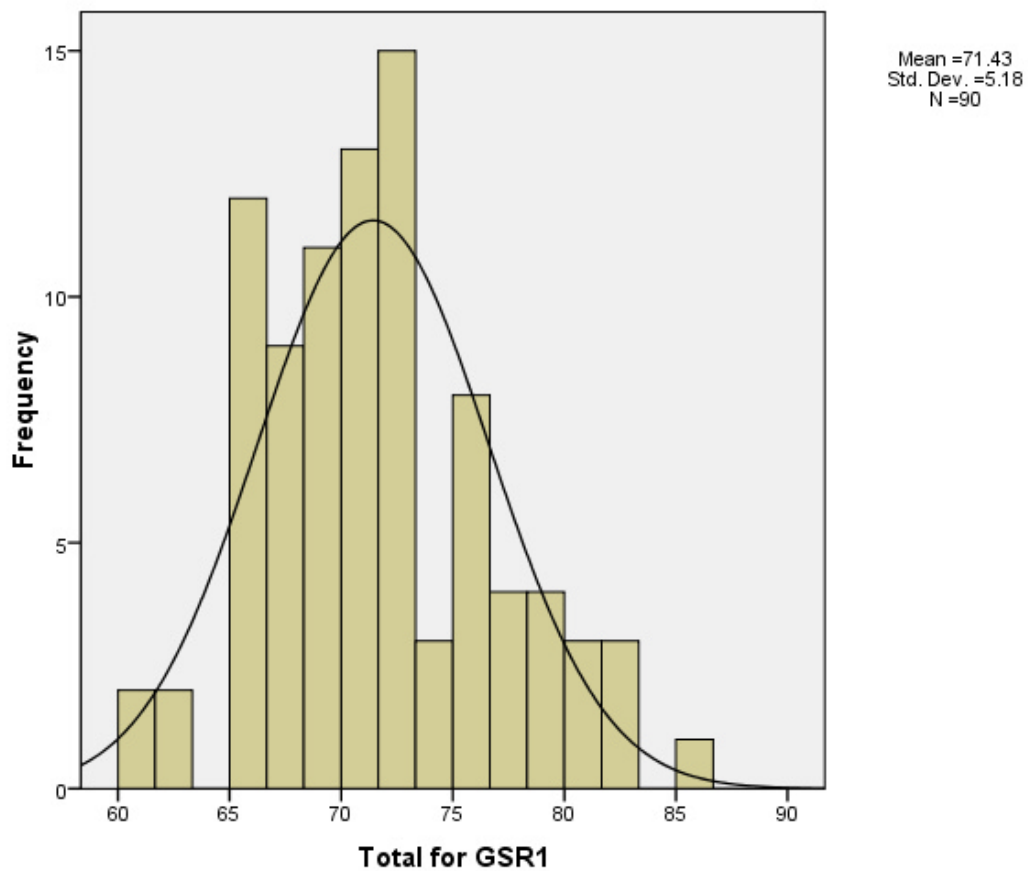
Figure F6. *Histogram of Total Scores for the Second Administration of the GS-R (N=90)*
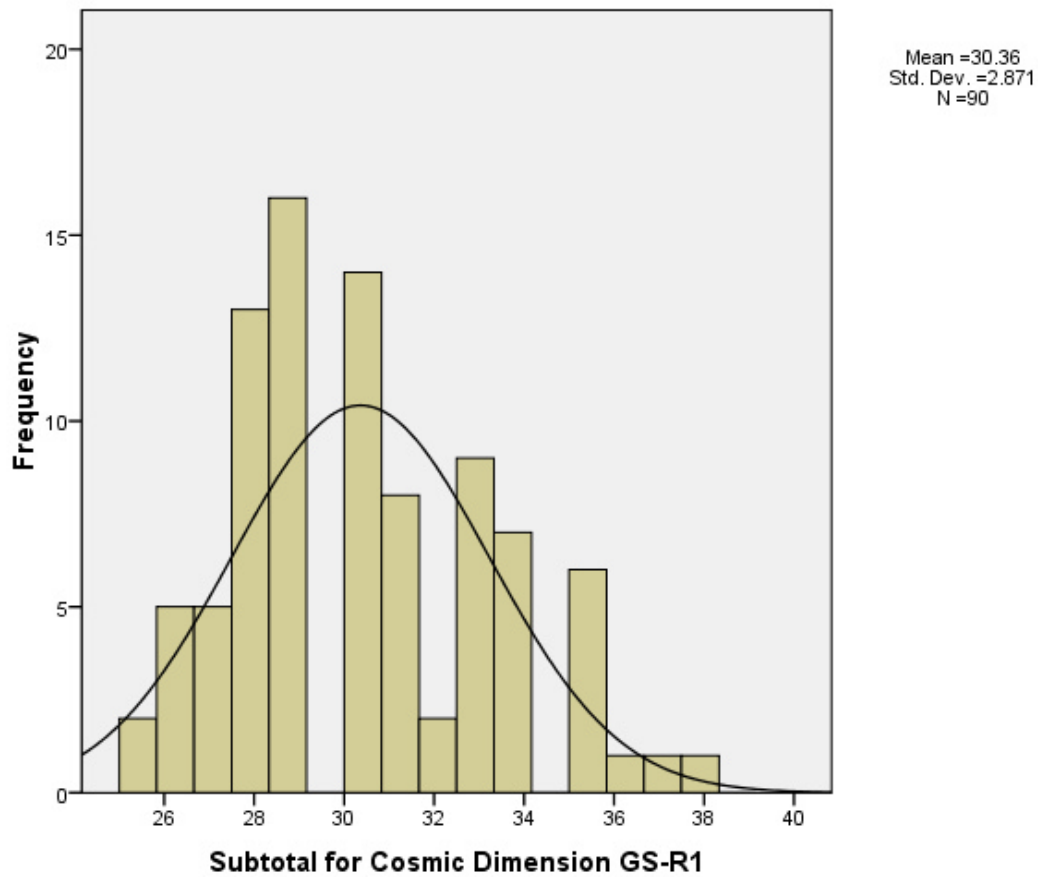
Figure F7. *Histogram of Scores for Subscale Cosmic for the First Administration of the GSR (N=90)*
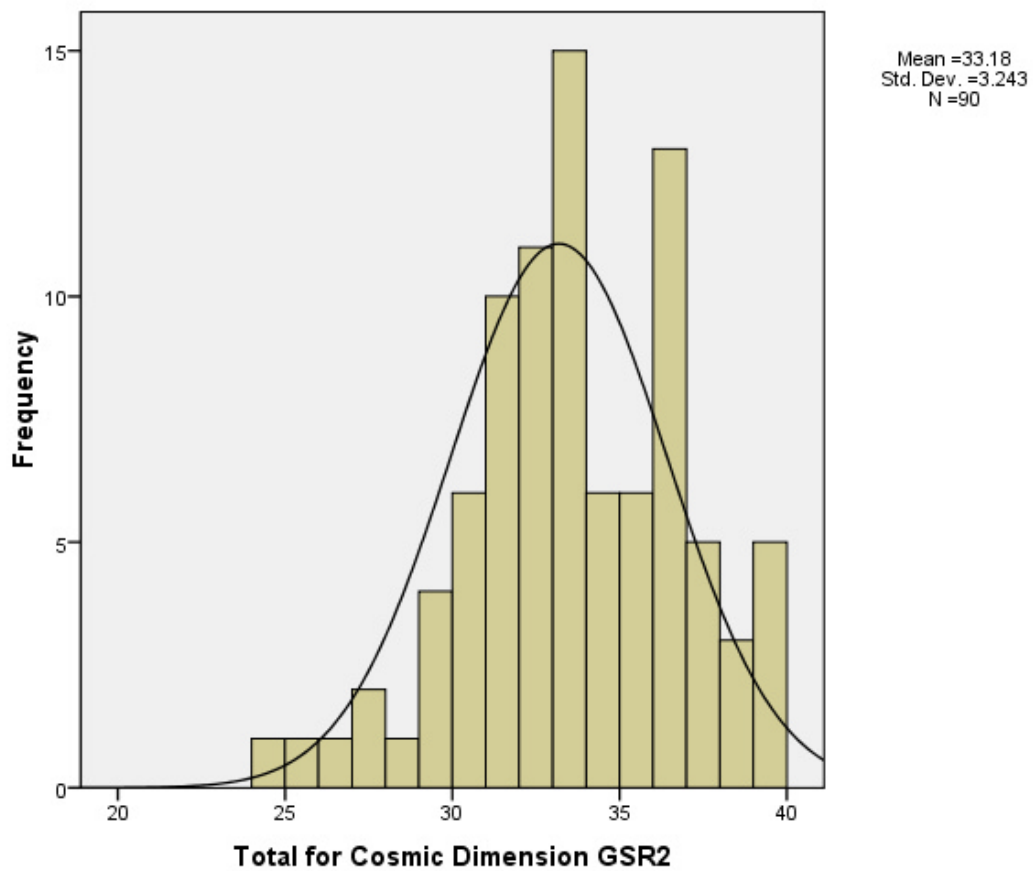
Figure F8. *Histogram of Scores for Subscale Cosmic for the Second Administration of the GS-R (N=90)*
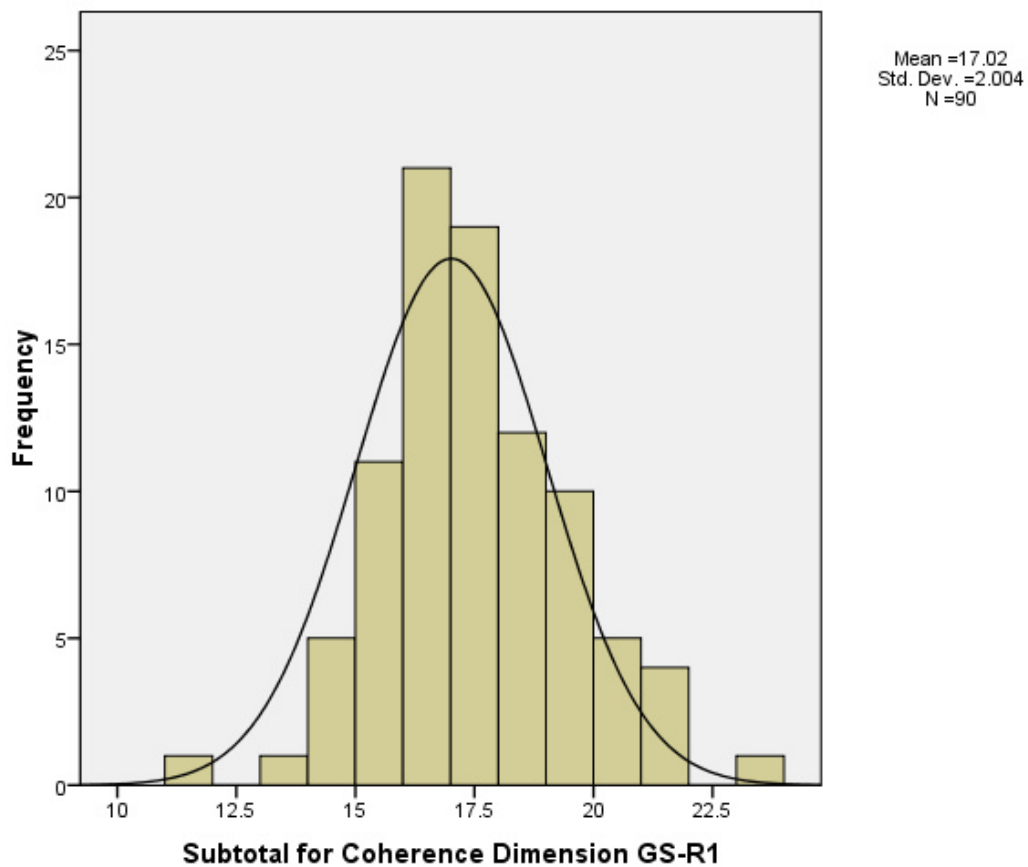
Figure F9. *Histogram of Scores for Subscale Coherence for the First Administration of the GS-R (N=90)*
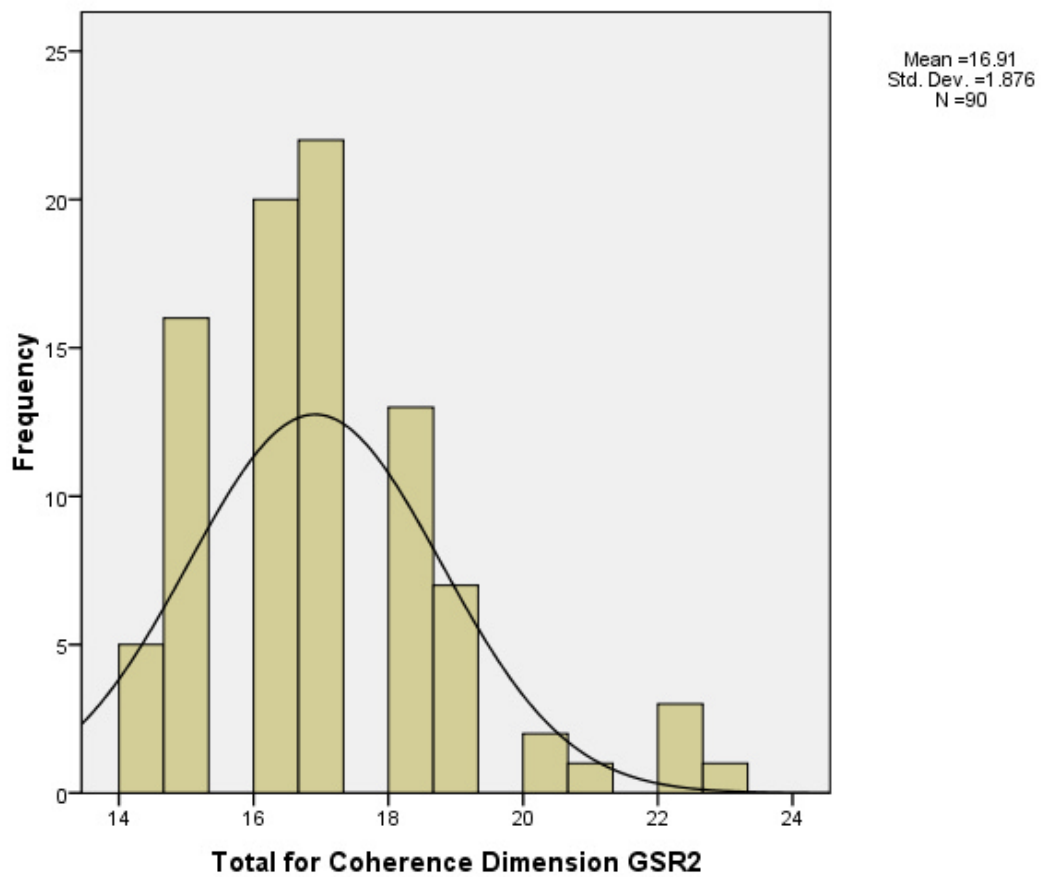
Figure F10. *Histogram of Scores for Subscale Coherence for the Second Administration of the GS-R (N=90)*
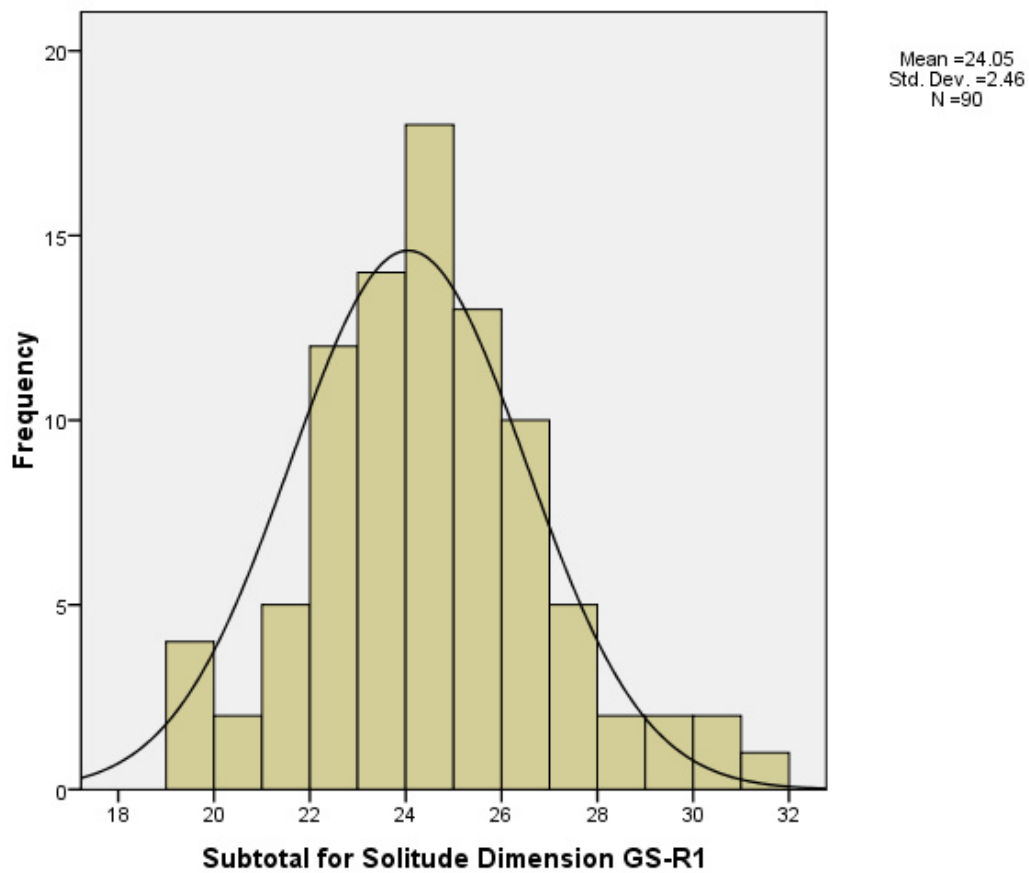
Figure F11. *Histogram of Scores for Subscale Solitude for the First Administration*
of the GS-R (N=90)
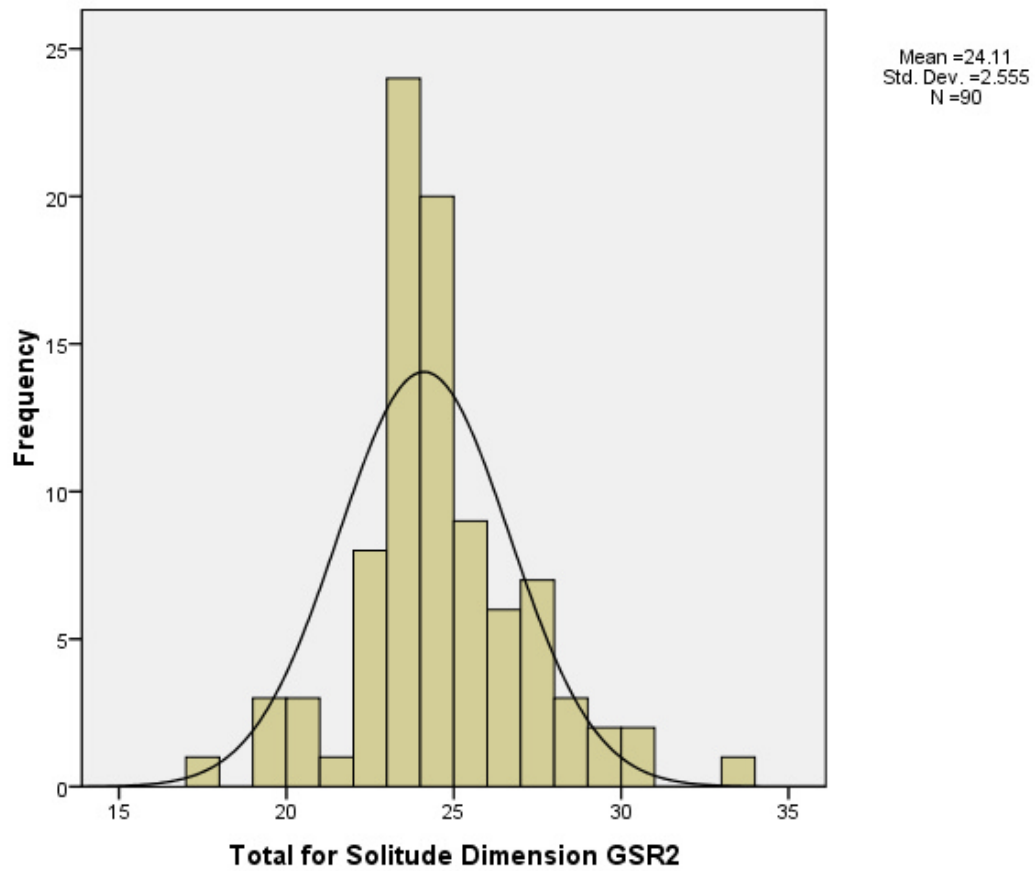
Figure F12. *Histogram of Scores for Subscale Solitude for the Second Administration of the GS-R (N=90)*
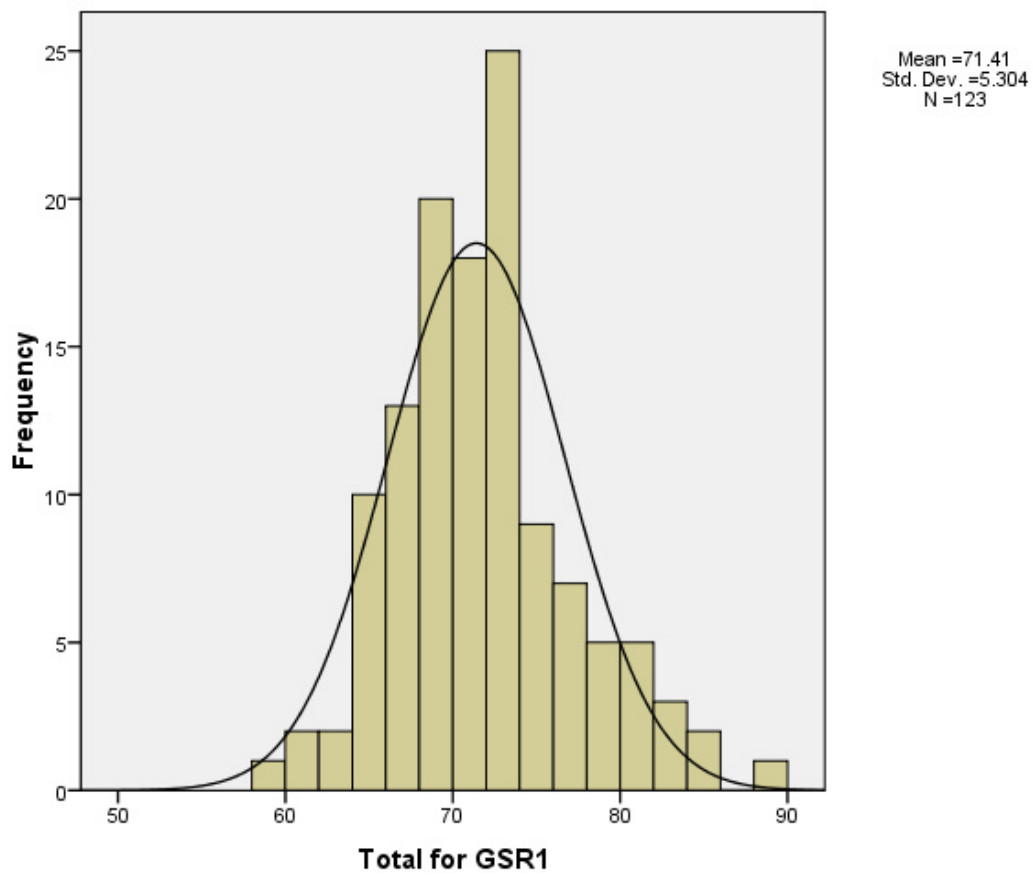
Figure F13. *Histogram of Total Scores on the GS-R (N=123)*
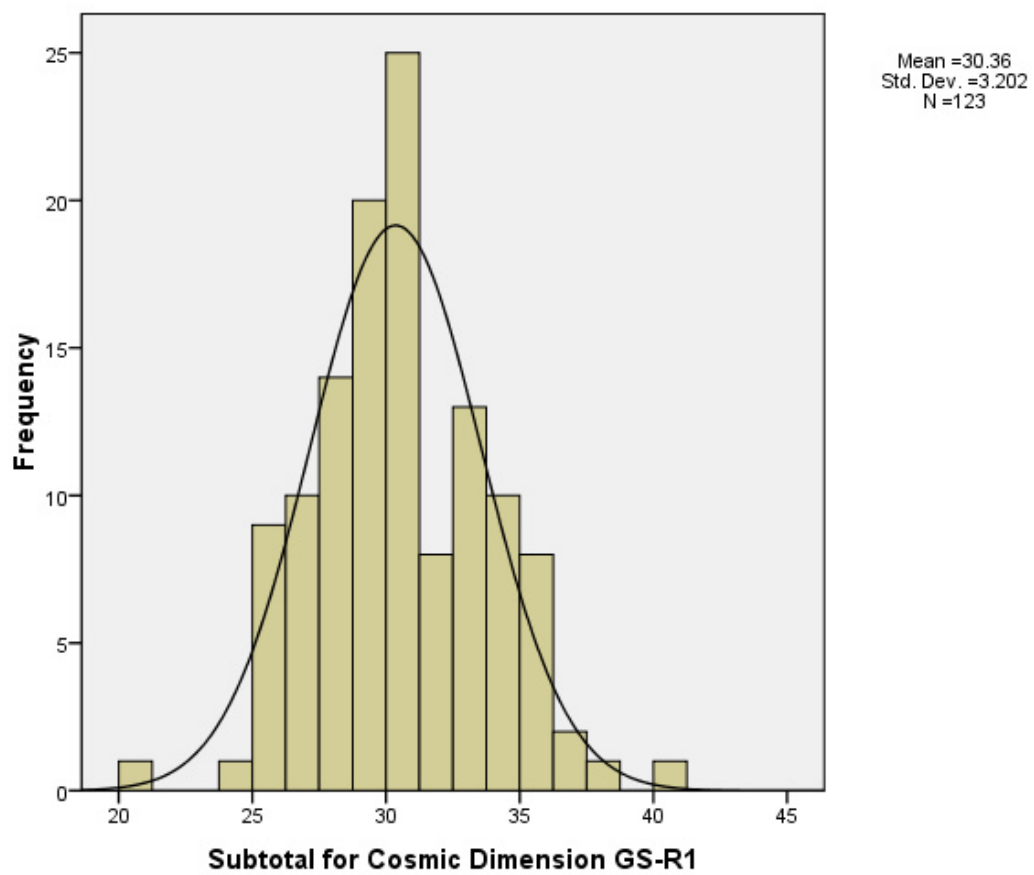
Figure F14. *Histogram of Scores on Subscale Cosmic (N=123)*
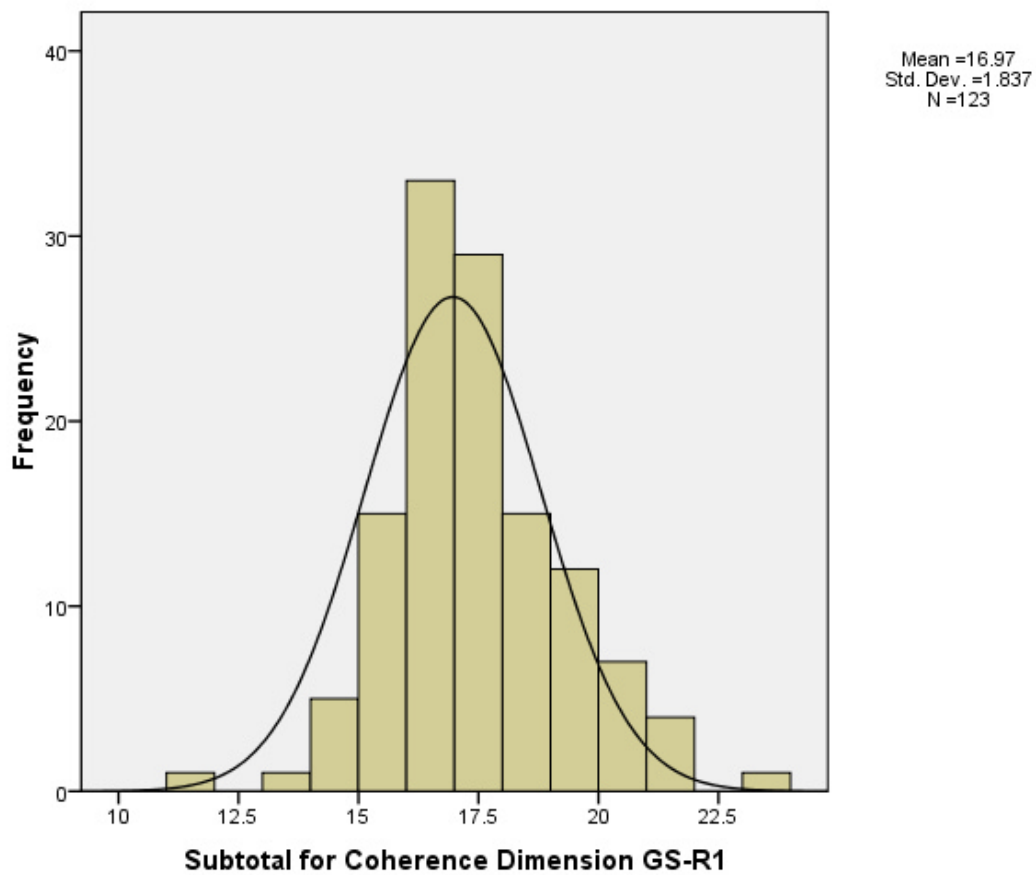
Figure F15. *Histogram of Scores on Subscale Coherence (N=123)*
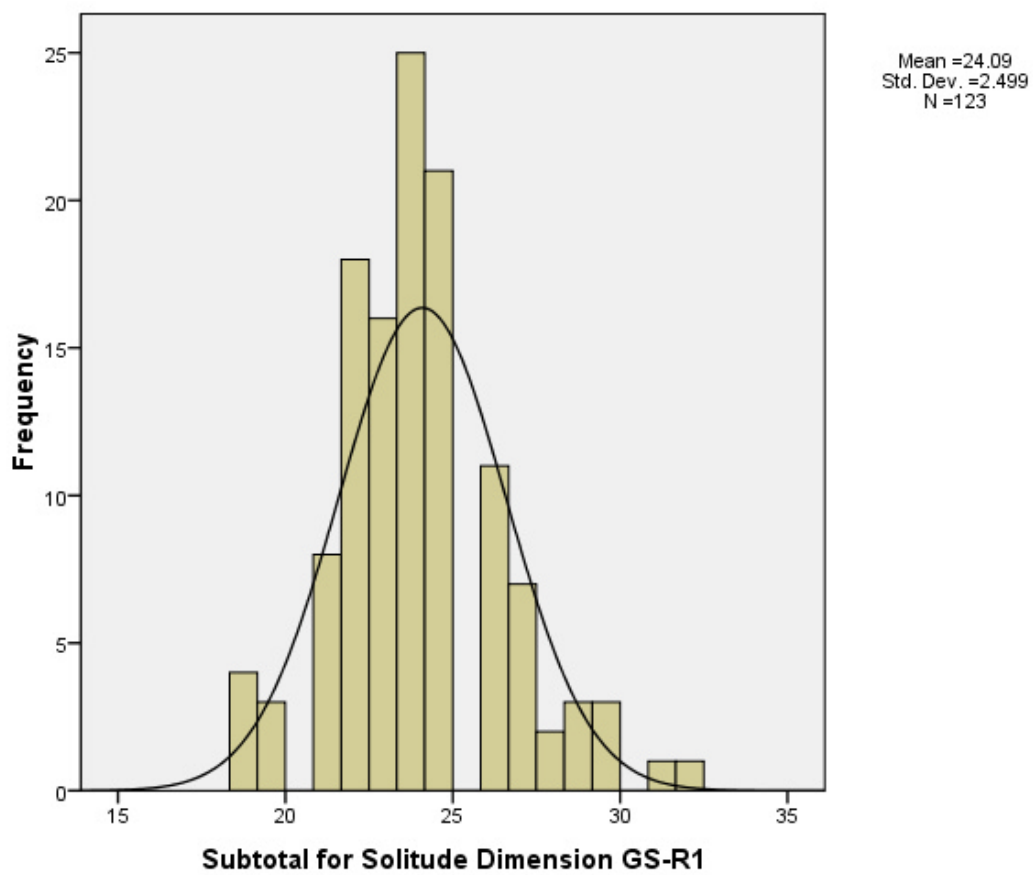
Figure F16. *Histogram of Scores on Subscale Solitude (N=123)*
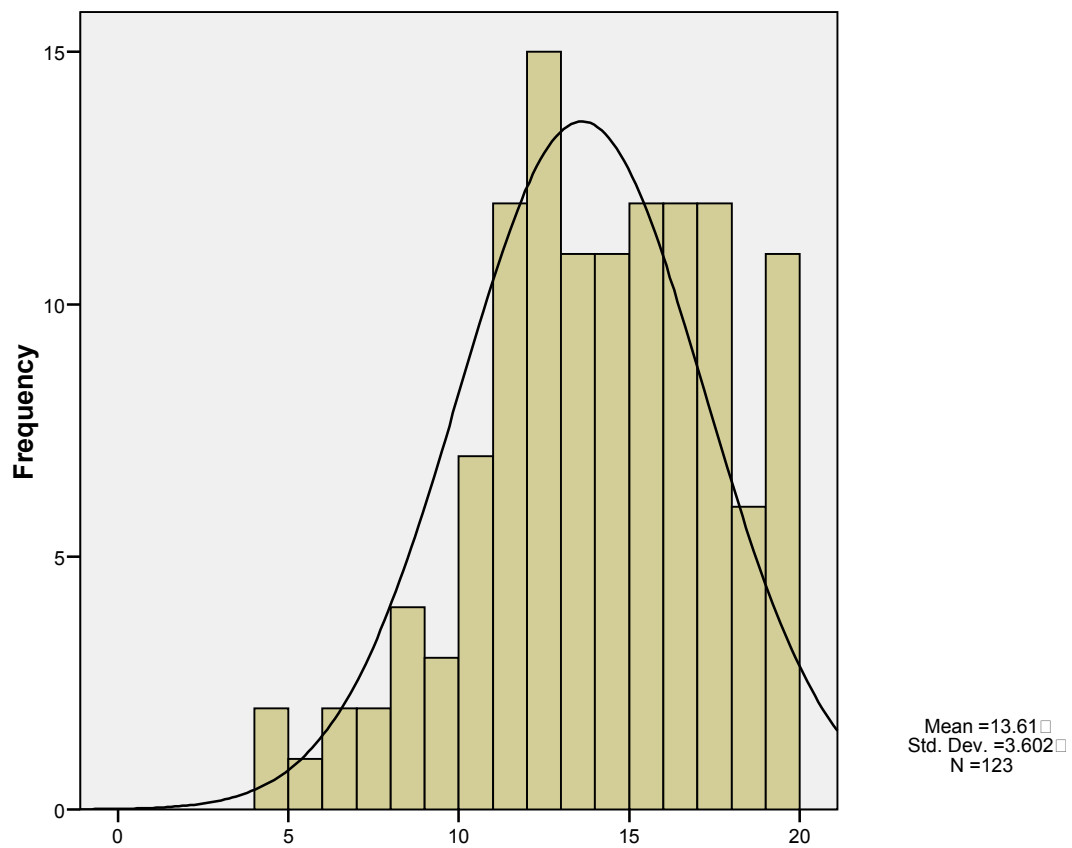
Figure F17. *Histogram of Total Scores on LSI-A (N=123)*
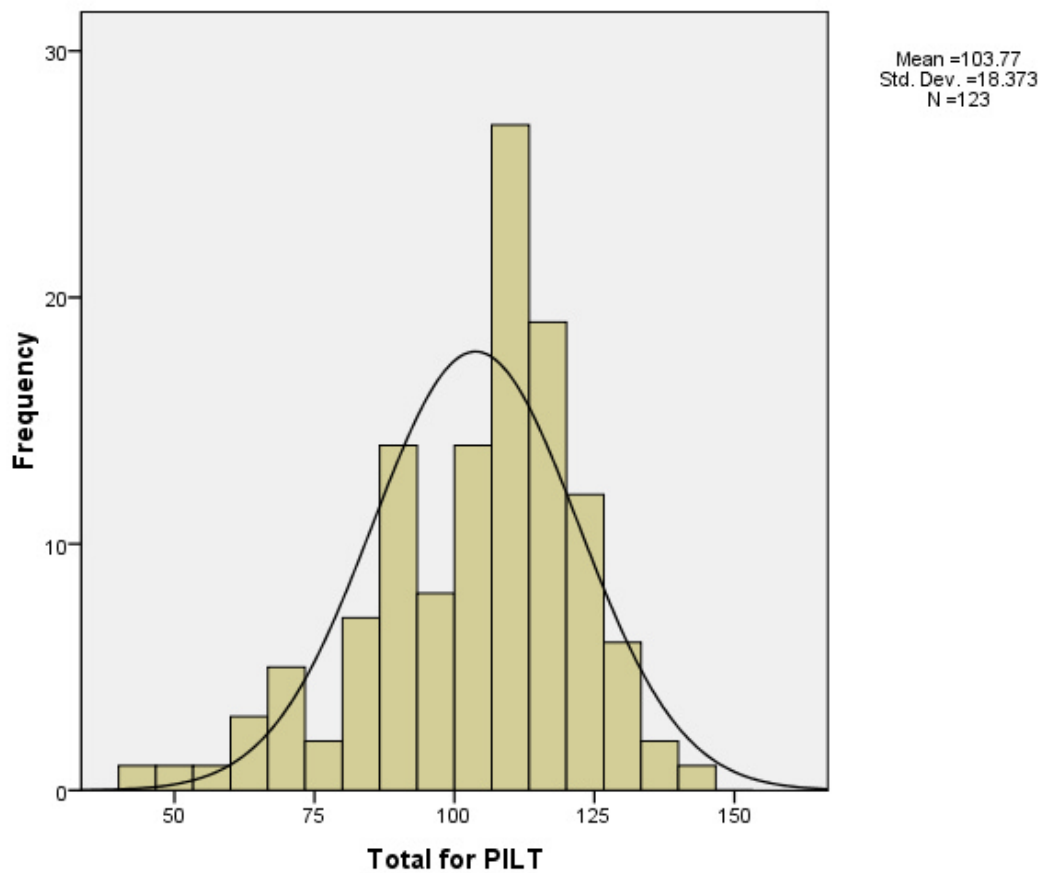
Figure F18. *Histogram of Total Scores on PILT (N=123)*

Mean =64.15
Std. Dev. =6.788
N =123
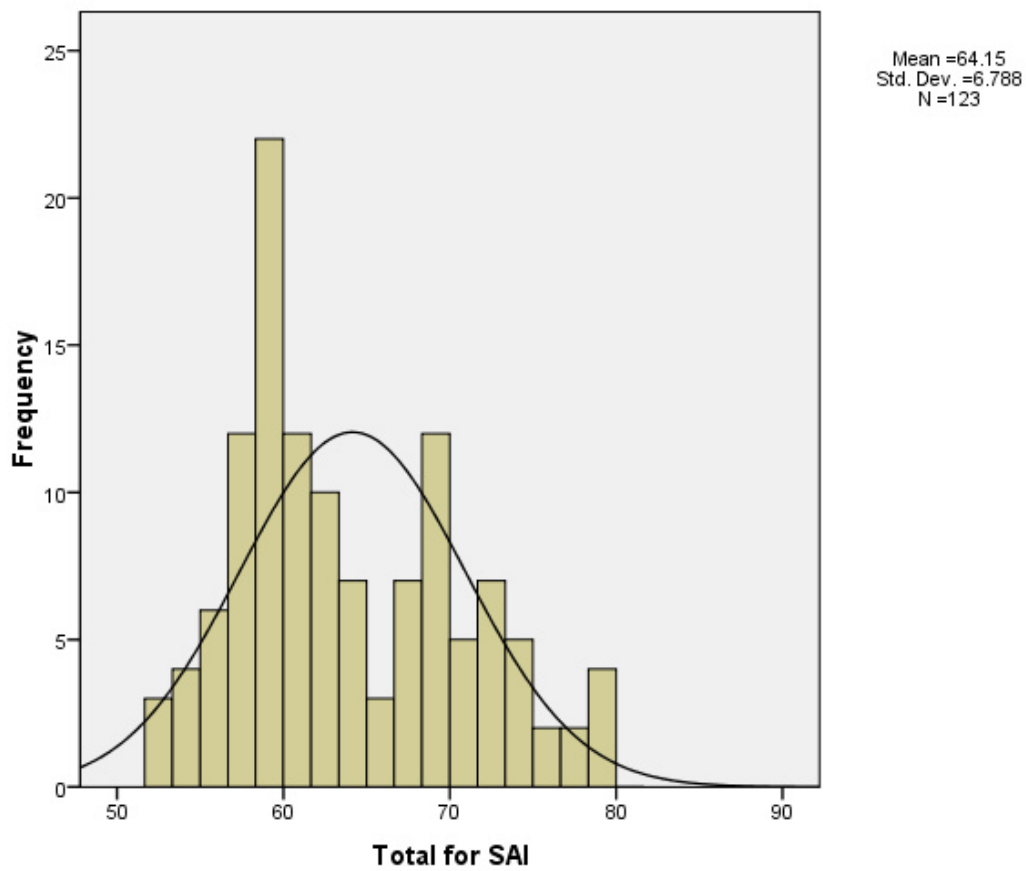
Figure F19. *Histogram of Total Scores on SAI (N=123)*
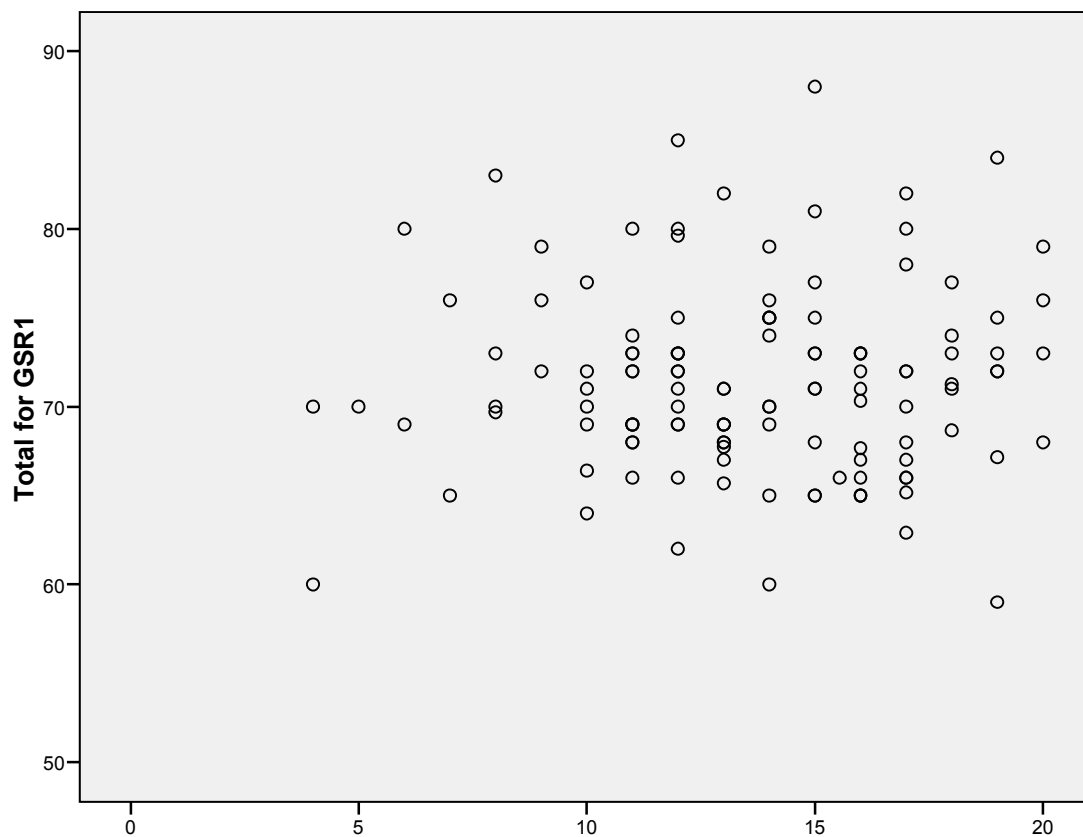
Figure F20. *Scatterplot of Total Scores on the LSI-A and GS-R*

The x-axis represents total scores on the LSI-A; the y-axis represents total scores on the GS-R (N=123).
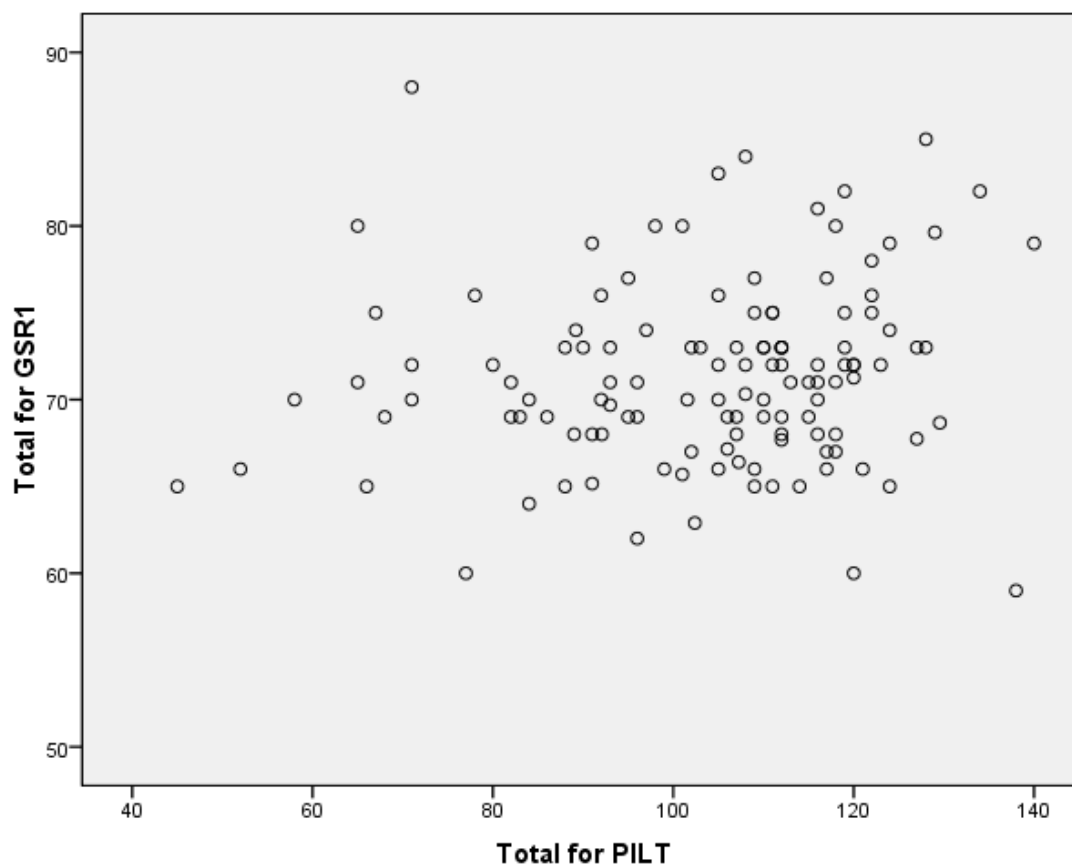
Figure F21. *Scatterplot of Total Scores on the PILT and GS-R*

The x-axis represents scores on the PILT. The y-axis represents scores on the GS-R (N=123).
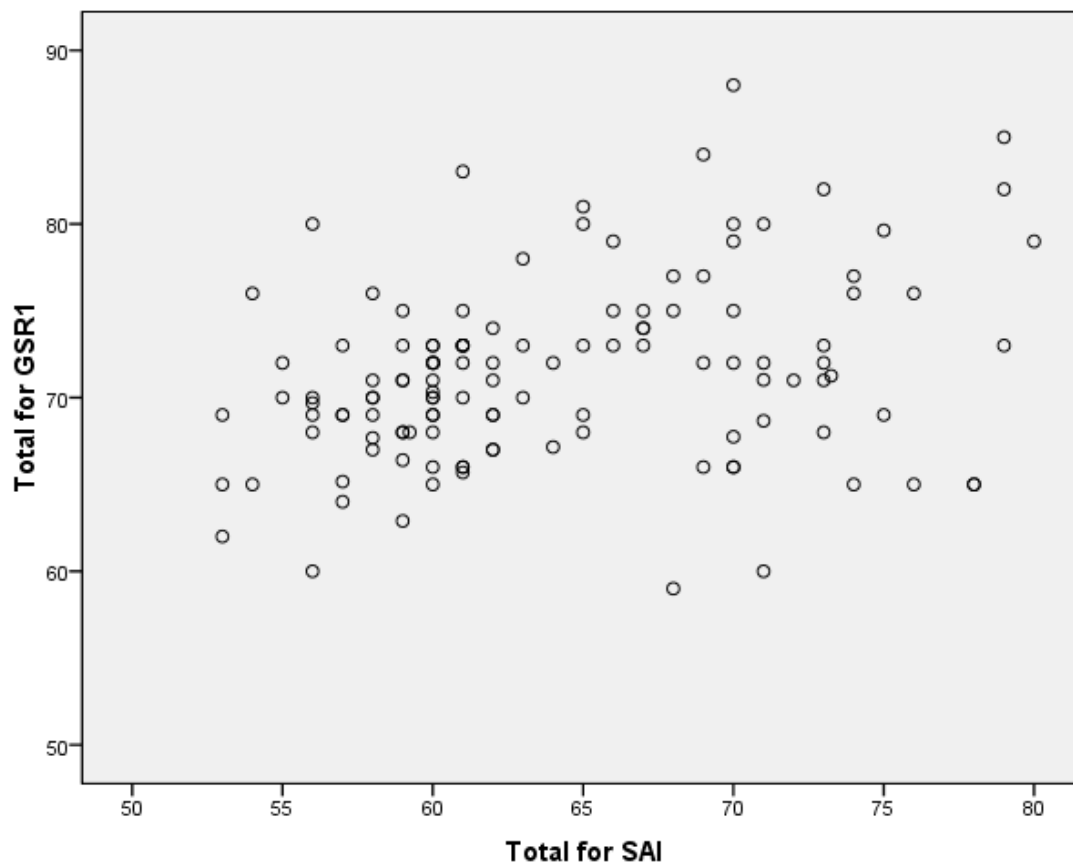
Figure F22. *Scatterplot of Total Scores on the SAI and GS-R*

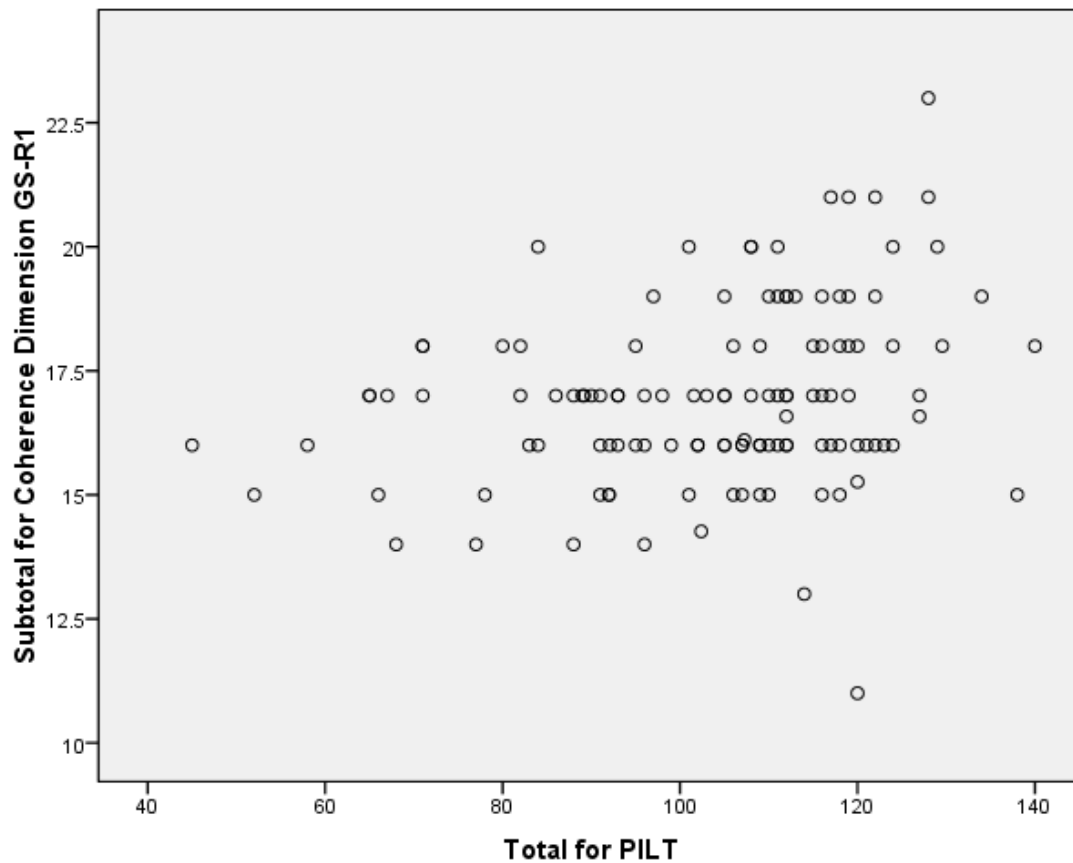The x-axis represents scores on the SAI; the y-axis represents scores on the GS-R (N=123).
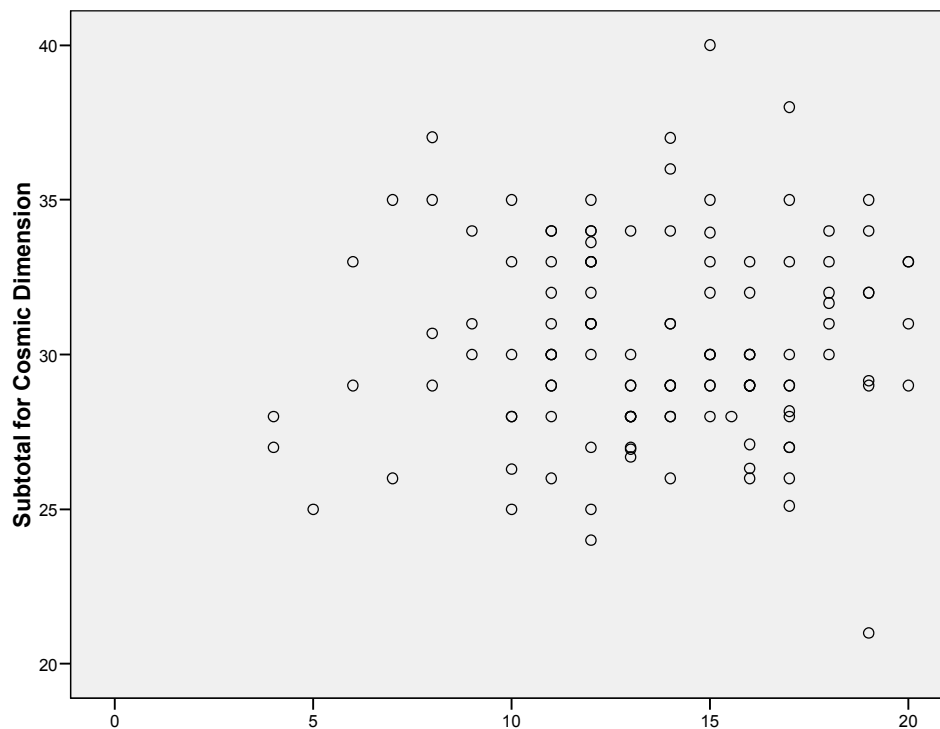
Figure F23. *Scatterplot of Scores for Subscale Cosmic and LSI-A*

The x-axis represents scores on the LSI-A; the y-axis represents scores on the subscale of Cosmic (N=123).
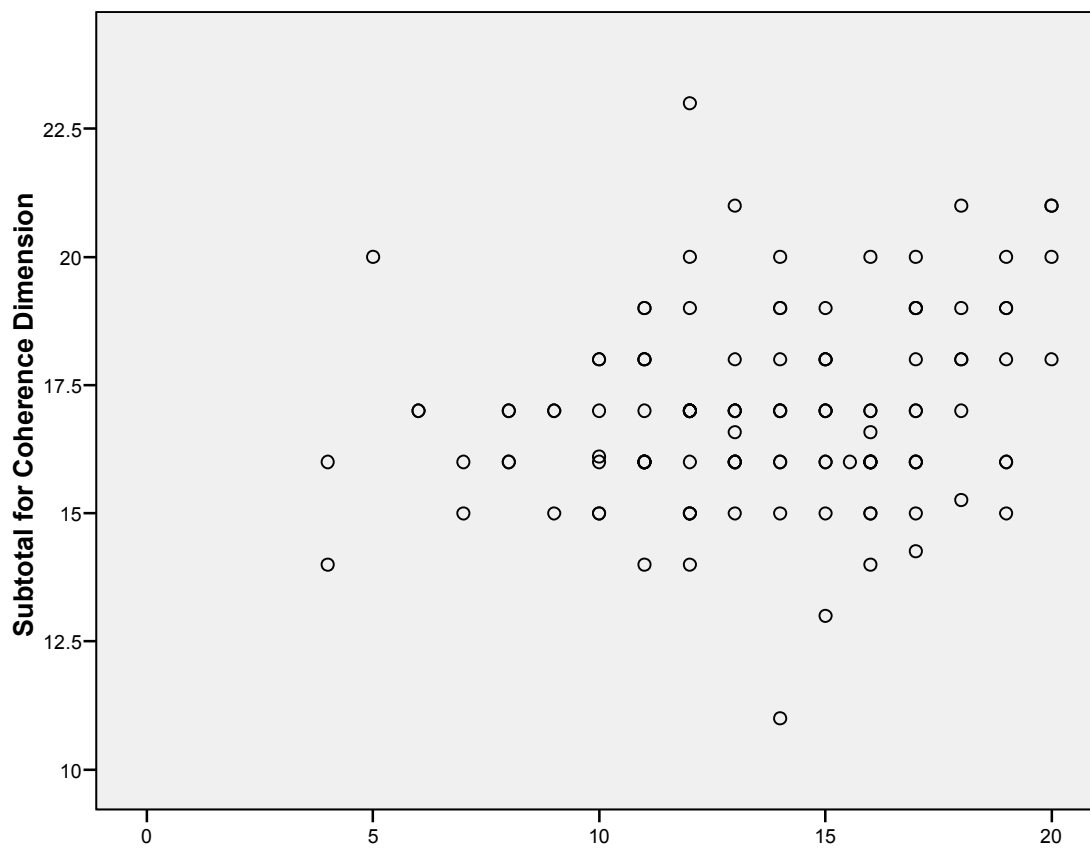
Figure F24. *Scatterplot of Scores for Subscale Coherence and LSI-A*

The x-axis represents scores on the LSI-A; the y-axis represents scores on the subscale of Coherence (N=123).
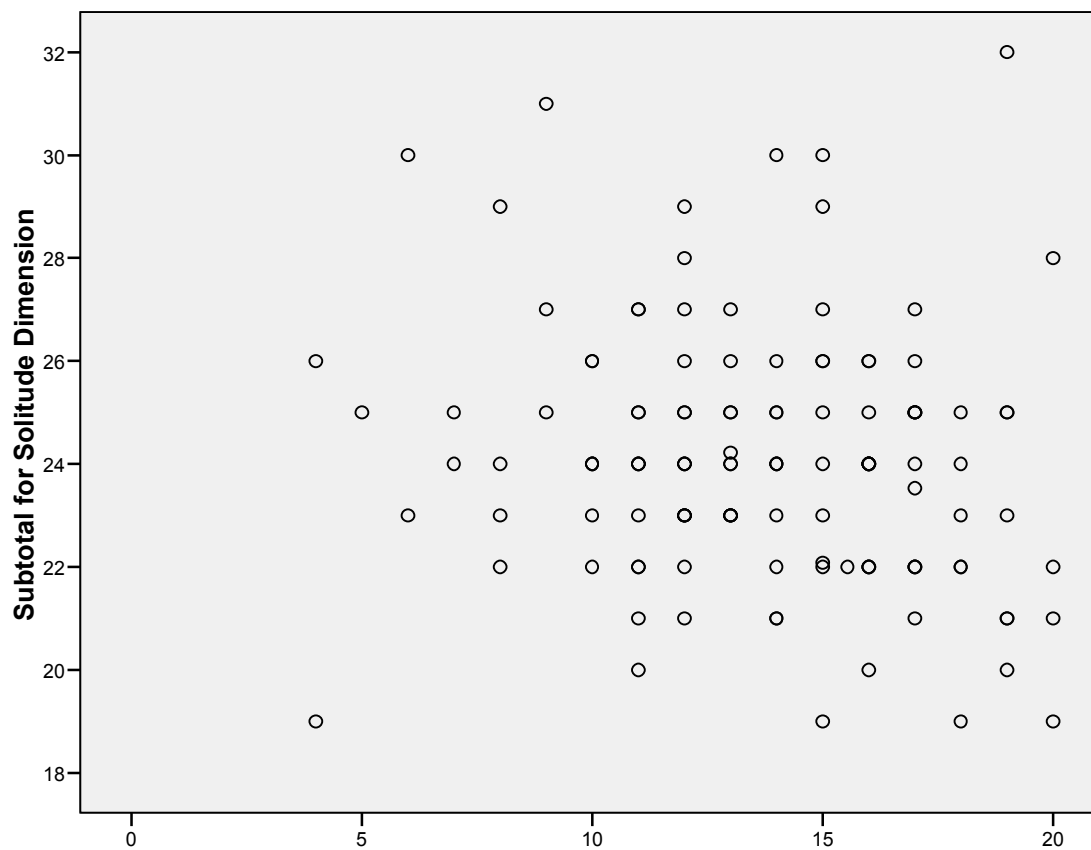
Figure F25. *Scatterplot of Scores for Subscale Solitude and LSI-A*

The x-axis represents scores on the LSI-A; the y-axis represents scores on the subscale of Solitude (N=123).
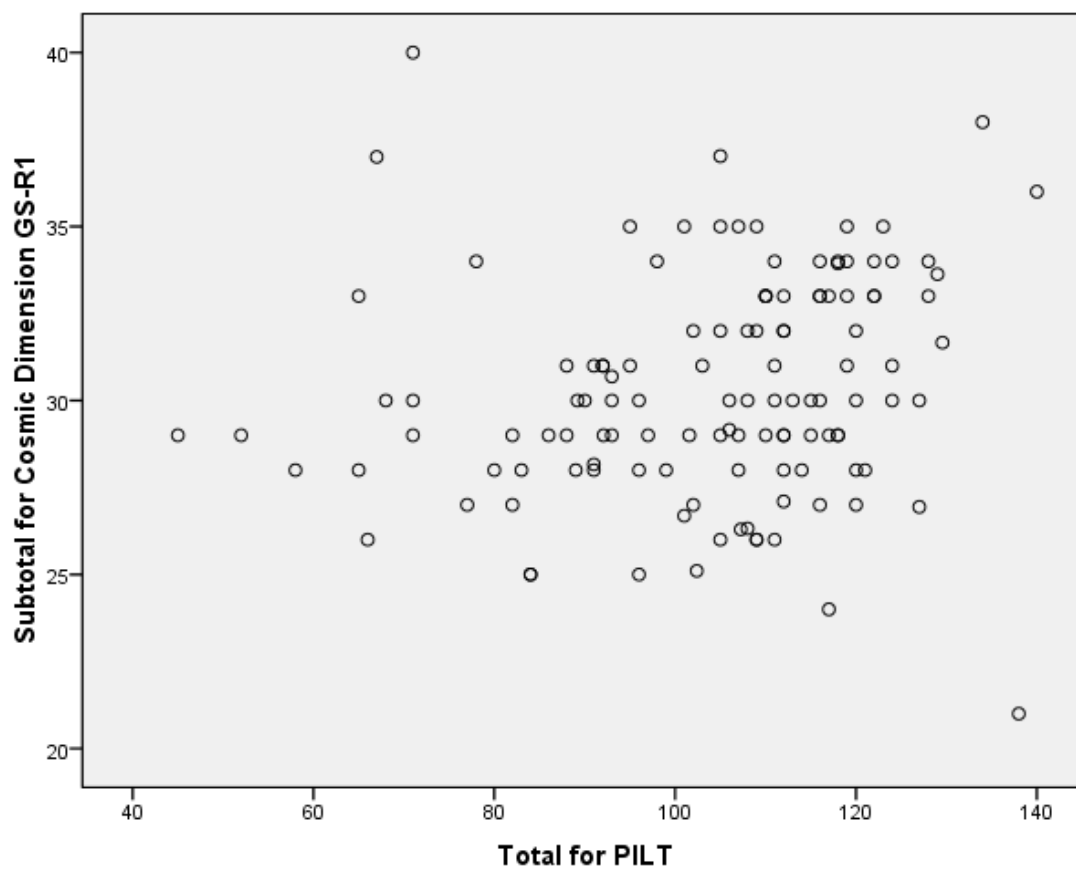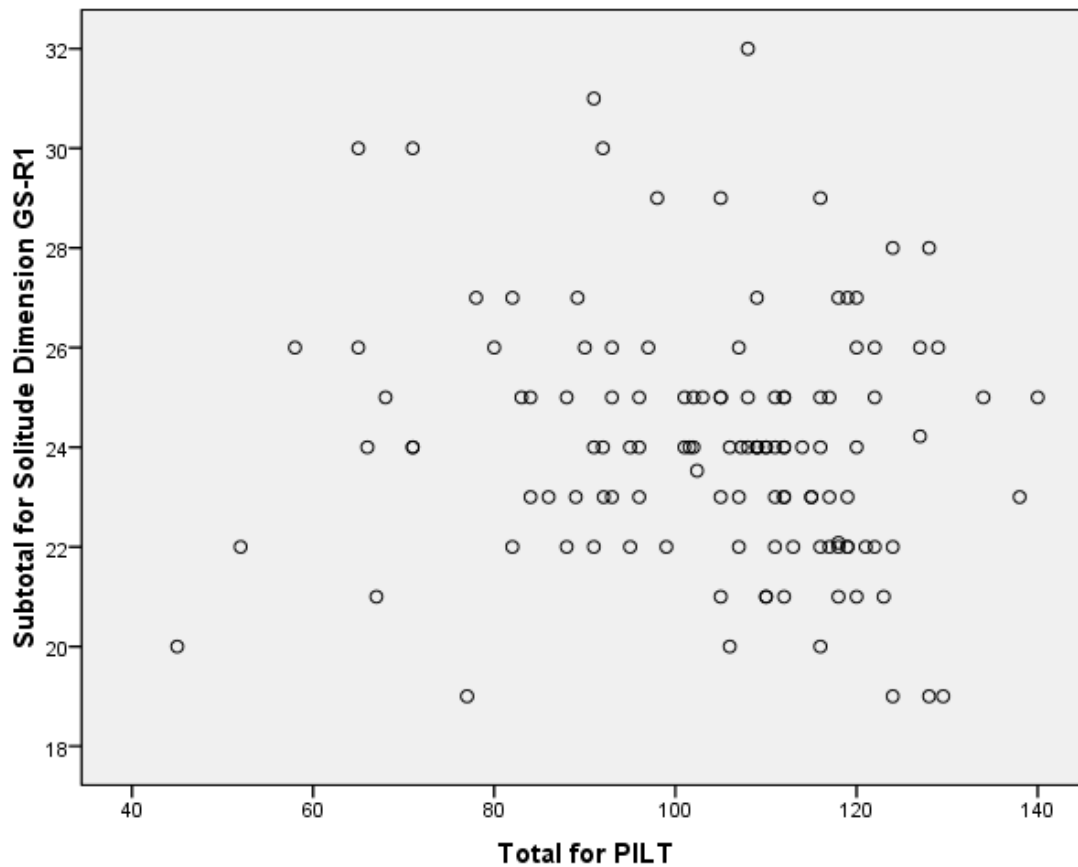
Figure F26. *Scatterplot of Scores for Subscale Cosmic and PILT*

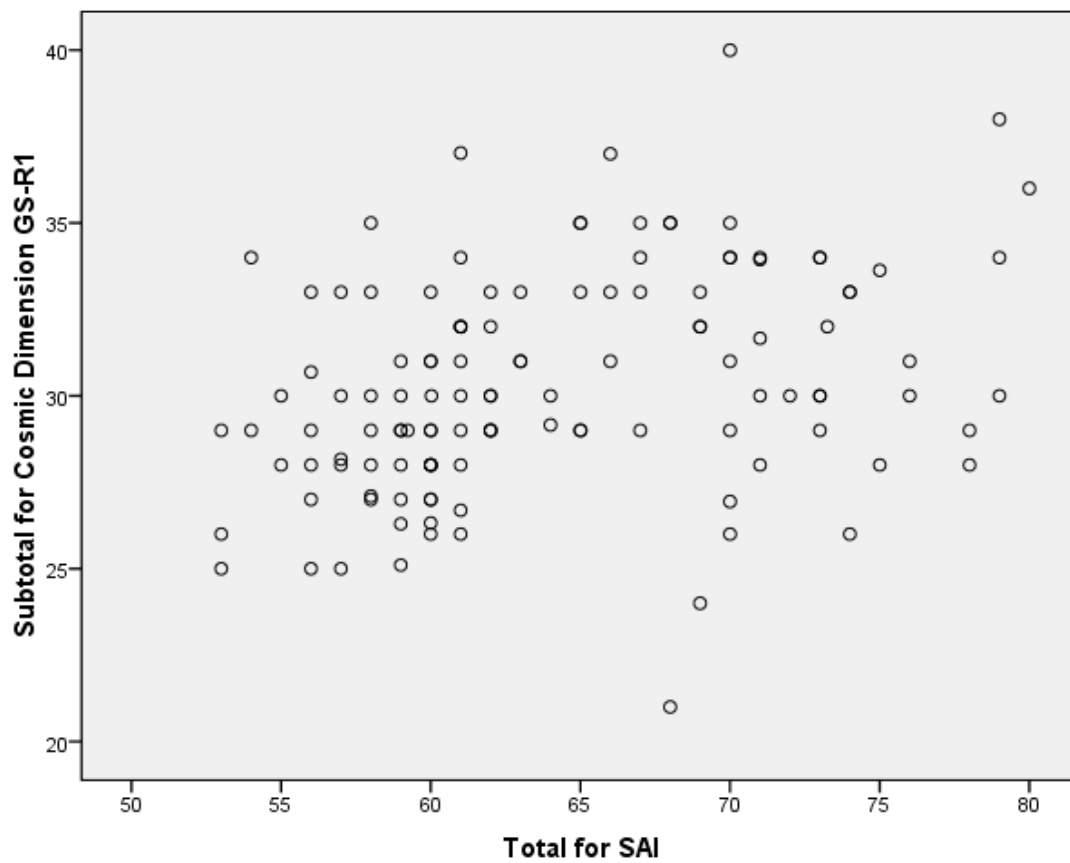The x-axis represents scores on the PILT; the y-axis represents scores on Cosmic (N=123).

Figure F27. *Scatterplot of Scores for Subscale Coherence and PILT*

The x-axis represents scores on the PILT; the y-axis represents scores on Coherence (N=123).

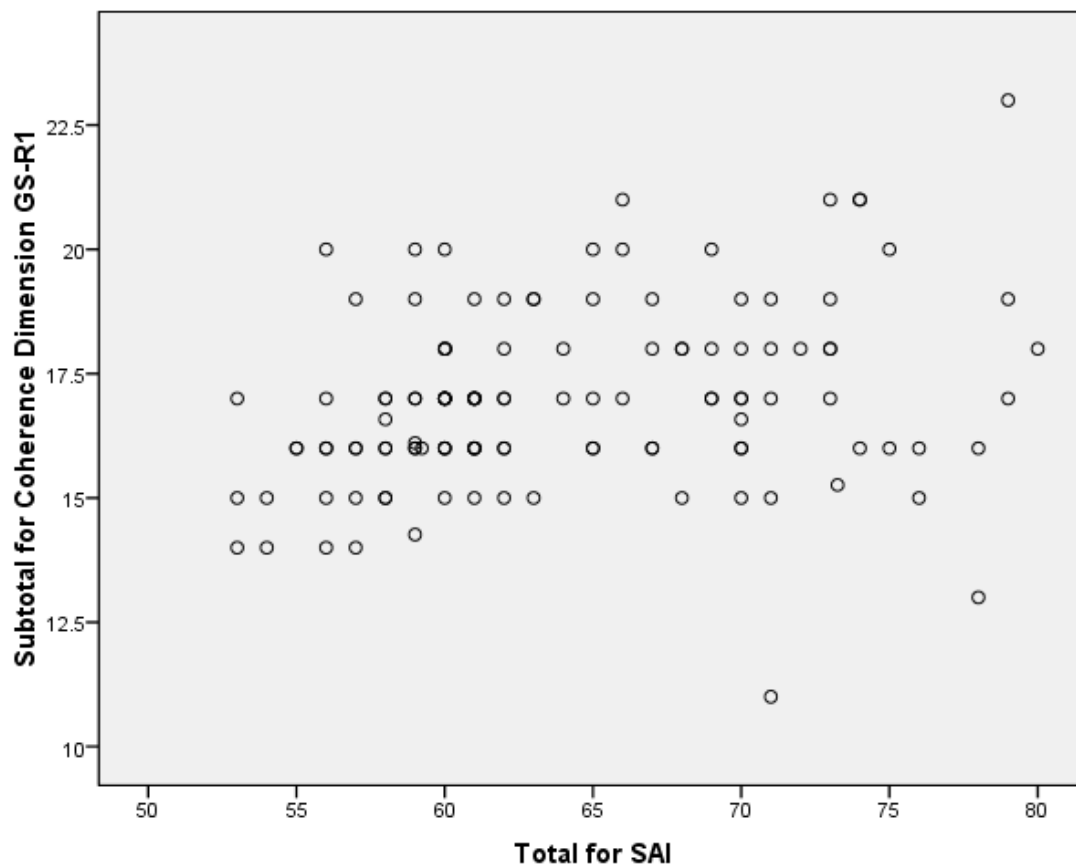**Figure F28.** *Scatterplot of Scores for Subscale Solitude and PILT*

The x-axis represents scores on the PILT; the y-axis represents scores on Solitude (N=123).

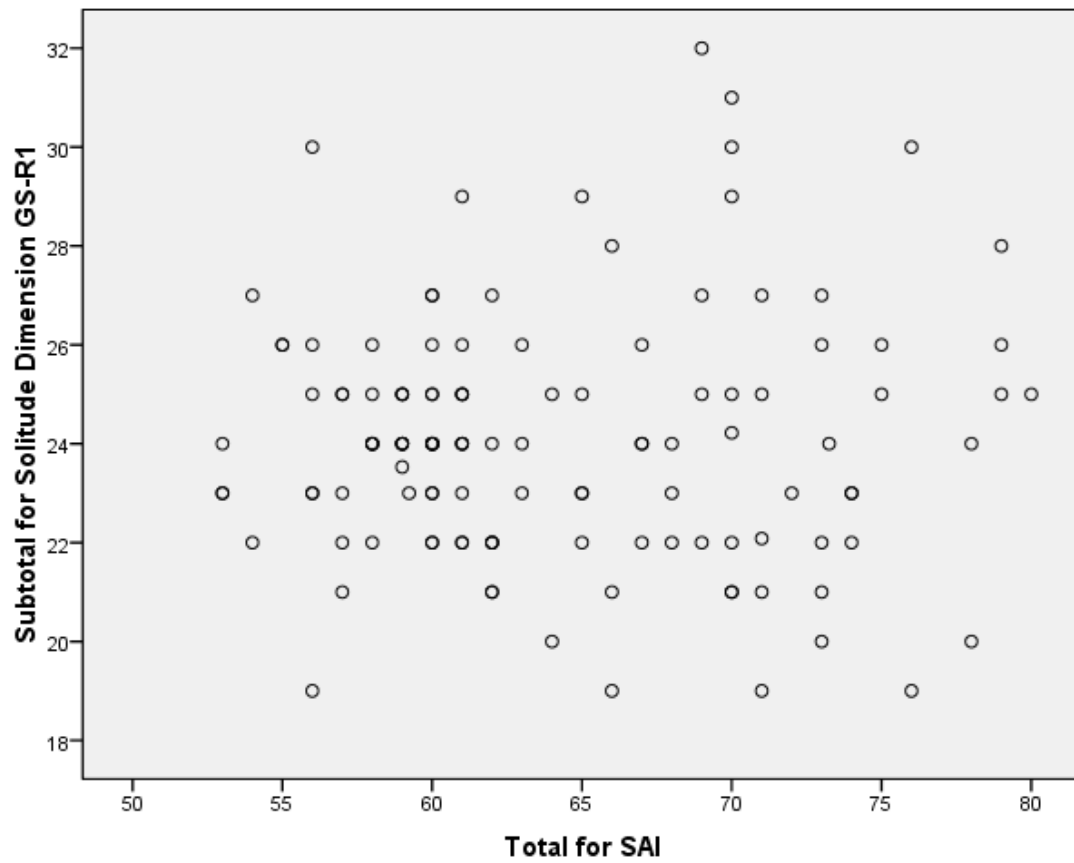**Figure F29.** *Scatterplot of Scores for Subscale Cosmic and SAI*

The x-axis represents scores on the SAI; the y-axis represents scores on Cosmic Transcendence (N=123).

Figure F30. *Scatterplot of Scores for Subscale Coherence and SAI*

The x-axis represents scores on the SAI; the y-axis represents scores on Coherence (N=123).

Figure F31. *Scatterplot of Scores for Subscale Solitude and SAI*

The x-axis represents scores on the SAI; the y-axis represents scores on Solitude (N=123).

APPENDIX G

FURTHER REVISED GEROTRANSCENDENCE SCALE (GS-RR)

Gerotranscendence Scale—Further Revised (GS-RR)

Please indicate how well each statement below agrees with your own personal

experiences and feelings by checking the appropriate column.

	Strongly Agree	Agree	Disagree	Strongly Disagree
Cosmic Transcendence				
1. I feel a connection with earlier generations.**				
2. Knowing that life on earth will continue after my death is more important than my individual life.**				
3. I feel a part of the entire universe.**				
4. I feel that I am a part of all God's creations. **				
5. I have less fear of death now than when I was younger.**				
6. Some things that happen in life can not be explained by logic and science and need to be accepted by faith.* **Continue next page.**				

	Strongly Agree	Agree	Disagree	Strongly Disagree
7. It is important to me that life on earth continues after my death.***				
8. Sometimes I feel like I live in the past and present at the same time.**				
9. I can feel the presence of people who are elsewhere.**				
10. I am interested in finding out about my family tree.***				
Coherence				
11. The life I have lived has meaning.**				
12. I like my life the way it is.**				
13. I do not take myself very seriously.***				
14. I do not think I am the most important thing in the world.***				
15. I find it easy to laugh at myself.*				
16. Dividing life into men's roles and women's roles does not matter much to me.***				
Continue to next page.				

Solitude	Strongly Agree	Agree	Disagree	Strongly Disagree
17. I like meeting new people less now than when I was younger.**				
18. At times I like to be by myself better than being with others.**				
19. I do not need something going on all the time in order to feel good.***				
20. I am not as quick to give other people advice as when I was younger. ***				
21. Quiet meditation is important for my well-being.**				
22. I am not quick to criticize other people's behavior.***				
23. I am comfortable asking questions in front of others.***				
24. Having material possessions is not among the most important things in my life right now. ***				
25. Other things are more important to me right now than work and activity.***				

*Items retained from original scale.
**Items revised for the GS-R.
***Items further revised for the GS-RR.