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The Measurement of Suicide Assessment and the Development of a Treatment Strategy for Elders: Durkheim an Approach

Stephen M. Marson, Ph.D.
University of North Carolina at Pembroke

Michin Hong, PhD, MSW
School of Social Work
Indiana University

Julia Bullard, BA
Department of Instructional Technology
Richmond County Schools

Abstract

The purpose of this study was to develop and validate Durkheim Suicide Assessment (DSA).The DSA was designed to measure suicide risk among older adults. Despite a major influence of Durkheim' theory in understanding suicide, little effort has been made to apply such theory in gerontological practice. Data were drawn from a survey of 380 older adults over the age of 65. Principal component analysis was conducted with the 80 items of the original DSA, which yielded the 26 items of the DSA. Furthermore we performed explore factor analyses to assess the factor structures of the DSA. Internal consistency reliability was examined using Cronbach's alpha. The results show that the DSA is a psychometrically sound measurement. Health care professionals can use the DSA to assess suicide potential and develop an effective treatment strategy based on the type of suicide in which the elder has the highest probability of pursuing.

Keywords: suicide, assessment, treatment, elderly, Durkheim, Factor Analysis

Introduction

Data from American Association of Sociology (AAS, 2011) suggests that suicide has decline but it continues to be a major social problem among elderly populations (Marson & Powell, 2012; Sinyor, Tan, Schaffer, Gallagher, Shulman & Tan, 2016). The experience is NOT uniquely American, but as De Leo and Spathonis (2004) and Kennedy, Ibrahim, Bugeja and Ranson (2014) demonstrate the high suicide rate among elders is an international phenomenon. The critical question is, "What can practitioners do create or nurture an environment that reduces the likelihood that an elder would want to pursue ***that*** course of action?"

Within a two-year study, Marson (2005) learned that there is a great deal of contempt and distrust between the world of academia and the world of human service practice. He contends that practitioners are distressed because publications and research generated within the world of academia has little use within the world where practitioners must solve "real problems." For example, professors will teach single system designs with fabricated nursing home data that complies with all statistical assumptions. Little guidance is afforded to practitioners who rarely see such clean data sets. The hallmark of our work with the Durkheim Suicide Assessment (DSA) instrument directly focuses on practical issues faced by practitioners.

Durkheim's Theory of Suicide

Over hundred years ago, Durkheim (1897) constructed an empirically based sociological theory that produced non-psychological/physical causes of suicide. The prominent feature of Durkheim's original work is the theory's practicality. Once a practitioner understands the theory, he/she can be guided to produce a meaningful interceptive strategy. Durkheim produced four suicidal dimensions that provide predictors for suicide which include: anomic, fatalistic, egoistic and altruistic. Marson and Powell (2012) provide a detailed theoretical description of these four central concepts. Their work provides the theoretical backdrop for our current study. However, each of the paired concepts is briefly described. Brief summaries are offered for the four dimensions.

Anomic – Fatalistic

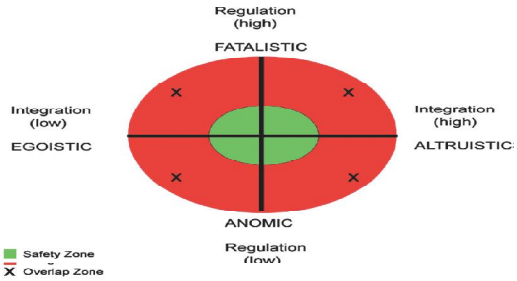
Durkheim (1897) created the basis for a continuum between two discrete concepts "anomic" and "fatalistic." By anomic suicide, Durkheim intended to describe a social structure that was dominated by social rules for which the person could not gain familiarity or could keep up with the rapid changing social rules. The unprecedented rapid changes in technology (particularly communications) can baffle an elderly person to the point of profound frustration. When such frustration becomes unrelenting and no foreseeable slowing, the pathway for suicide becomes cleared. Marson and Powell (2012) provide more in depth examples in our contemporary social structure in which our elderly cohort resides. Fatalistic suicide, of course, is the exact opposite of anomic suicide. Within a fatalistic social structure, the person is confronted with a social environment in which there is little to no changes in role expectations. Monotony is the centerpiece of such a social environment. The lack of and no hope of social stimulation becomes the catalyst for a desire to end one's life. Of Durkheim's four concepts, fatalistic suicide is the one which he offers little elaboration. This is somewhat ironic because within the arena of gerontology, fatalistic suicide would dominate. In fact, he limits his discussion of fatalistic suicide to a footnote on page276 (Durkheim, 1897). Again, more in depth examples of fatalistic suicide among elders can be found in the work of Marson and Powell (2012).

Egoistic – Altruistic

Durkheim (1897) created the basis for a continuum between two discrete concepts "egoistic" and "altruistic."By egoistic suicide, Durkheim envisioned a social structure in which the person survives in an isolated environment. Essentially, the person does not feel as part of a family, group, or has any sense of belongingness. The fertile soil for this type of environment is the nursing home where the resident has little to no visitation and where the facility is short staffed. Ultimately, the person's lack of connectedness and absence of role expectations evolves into an emotional state of hopelessness which in turn induces the person to contemplate a suicide option. More in depth examples of egoistic suicide among elders can be found in the work of Marson and Powell (2012).By altruistic suicide, Durkheim intended to describe a social structure that characterized with social suppression. The social world becomes a clinging vine that strangles the person into an uncompromising set of social roles and standards. Personal identity is stripped away; the group dominates the person. Although altruistic suicide more common among the general publication and *very common* within oriental cultures, we rarely find it within mainstream American society. The most common example within an elderly cohort is the person who accelerates his/her death to enable heirs to inherit as much of an estate before the cost health care bits into it. Again, more in depth examples of altruistic suicide among elders can be found in the work of Marson and Powell (2012).

Although an earlier version of Figure 1 has been published as part of the in depth theoretical description of Durkheim's work on suicide (Marson and Powell, 2012), the original intent for the graphic was illustrate the four dimensions for the Factor Analysis presented within this work.

Figure 1



The current factor analysis study is the first step to quantitatively identify where an elderly person moves from the safety zone (in the center) to the suicidal (red) zone.

Methodology

Two issues are prominent to our methodology these include instrument construction andsampling. Both issues are discussed.

Instrument Construction

Many efforts have been made to construct a reliable and valid instrument to measure anomic, egoistic and altruistic patterns. Examples can be found in the works of Fischer and Corcoran (2007a; 2007b), Miller and Salkind (2002) Robinson, Shaver and Wrights man (1991) Shaw and Wright (1967). Although Fischer and Corcoran (2008a; 2008b), Miller and Salkind (2002) Robinson, Shaver and Wrightsman (1991) Shaw and Wright (1967) offer items that captured the essence of Durkheim theoretical intent, none of them specifically address topical areas within the elderly population. On the other hand, Kane and Kane (2000) offer sample items that address issues for the elderly population, but failed to capture the Durkheimian position. As a result, the scales for anomic, egoistic and altruistic emerged out of a synthesis of reviewing works. Unlike the frequently cited scales for anomic, egoistic and altruistic, there has not been an interest in the development of fatalistic scales. No fatalistic scales could be identified for either the general population or more specifically for an elderly cohort. The fatalistic items were constructed from envisioning common scenarios within the context of Durkheim's theoretical construct and developing items. Because we did not have a theoretically based springboard for the development of the fatalistic items, we assumed that this subscale would emerge as the weakest of the four. It was not the weakest. During the time Durkheim wrote, he believed that fatalistic suicide was primarily a theoretical concept with little empirical support. His vision of fatalism discouraged his followers from constructing instruments to measure it. Within contemporary gerontological practice, fatalistic suicide appears to be the most common form.

The questionnaire was constructed by designing items consistent with Durkheim's four theoretical schemes. Since fatalism/anomie and egoism/altruism represent two continua, one might propose two factors. In the stages of planning this research, it was decided that nursing home practitioners would be able to manage their case recordings more effectively if subscales that reflect four separate domains of the Durkheim's theory were identified. United States federal audits are routinely completed in nursing homes and concerned was raised that two scales would be required more detailed notes to enable the auditors to understand the outcome of the instrument. Each *single item* in a subscale was designed and written to be uniquely suited for its subscale and *independent* from all other items in the other subscales. The final product evolved into 20 Likert style items for each dimension. The final product of 80 items can be found in the appendix.

Sampling and samples

Nonprobability sampling is used to increase feasibility of the research project. In particular, we employed a combination of volunteer samples (as required by our IRB) from a sampling frame and snowball samples. Each group we identify, we asked group members to recommend other membership groups. We have collected volunteers from the following organizations and clubs:

- Kirkland Club of the First Presbyterian Church of Lumberton, North Carolina;
- the Senior Center of Lumberton, North Carolina;
- the Senior Center of Hamlet, North Carolina;
- the Senior Center of Rockingham, North Carolina;
- the over 65 parishioners of the First Baptist Church of Rockingham, North Carolina;
- the AARP Chapter of Raleigh, North Carolina;
- residents of Wesley Pines Retirement Community of Lumberton, North Carolina;
- residents of Parkside at Wesley Ridge Columbus, Ohio;
- Mothers and Daughters Club of Raleigh, North Carolina
- Life Styles Fitness Center of Lumberton, North Carolina.
- North High School (Columbus, Ohio) Graduation class of 1963
- Elders of Silicon Valley, San José, CA

- Members of Saint MichaelsChurch, Broken Arrow, OK

We have derived subjects from7 to 45 from these organizations. Some of the organizations suggested other organizations to contact. A total of 371 older adults aged 65 or older were recruited for the survey and 332 completed it. The completed cases were included in data analyses. The average age of study participants was 72. 88 (range= 62-95, SD=7.377) and 65% of them were males. According to a conservative rule of thumb, 300 can be considered, 300 cases can be considered comfortable to conduct factor analysis (Tabachnick&Fidell, 2001).

Data analysis

Prior to performing statistical analyses, normality of the data was examined. A total of four items (item 39, 57, 65 and 75) were removed because of either its extreme skewness (skew greater than 3.0) or problematic kurtosis (Kurtosis greater than 10.0) (Kline, 2005). With 77 items, unrotated principal component analysis (PCA) was conducted. The main purpose of PCA is to reduce the number of items while keeping as much of the variances explained by the number of the original items (Worthington & Whittaker, 2006). Given the large number of items of DSA (i.e. 80 items), it is necessary to identify and remove either unnecessary or redundant items. Two criteria were used to decide which items remain: strong item with loading greater than .5 and single loading items.

Based upon the result of PCA, exploratory factor analysis (EFA) with varimax rotation was performed to identify the factor structure of the DSA. EFA is a statistical technique used to identify the underlying dimensions of a scale (Harrington, 2009). Cronbach's alpha was also examined to examine internal consistency reliability of the DSA. Cronbach's a of.70 or above is considered good internal consistency for a newly developed scale (Cortina,1993; Nunnally,1978). SPSS 18.0 was used to perform all statistical analyses.

Results

Prior to conducting PCA with unroasted solution, adequacy for factor analysis for the DSA was examined using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity. KMO was .860, exceeding the recommended value of .6 (Tabachnick & Fidell, 2001) and was statistically significant, χ^2 (3245) = 9913.910, $p < .001$, indicating that the data was factorable. The first unrotated PCA with 77 items yielded 22 components with eigenvalue greater than one accounting for 64.42% of the total variance. Non-strong items (i.e. loading less than .5) and multi-loaded items (i.e.loading on multiple components) were deleted, which result in 26items. Table 1 reported the result of PCA with unrotated solution.

Next, EFA with varimax rotation was conducted with 26 items selected from the PCA. EFA with 26 items yielded four factors with an eigenvalue greater than one, explaining 47.48% of the total variance. Factor 1, factor 2, factor 3, and factor 4 accounted for 16.43%, 14.66%, 9.94%, and 6.45 % of variance, respectively. A total of five items clearly loaded on factor 1 and six items on factor 2. Seven items loaded on factor 3 and the two items on factor 4. However, item 35, Item 36, Item 37, and Item 43 cross-loaded on factor 1 and factor 3. Item17 also cross-loaded on factor 1 and factor 2. Item 49 did not loaded on any factor with the factor loading of .22 on factor 1 and .20 on factor 2 and factor 4 (general cut off value of minimum loading =.32, Tabachnick & Fidell, 2001).Each factor seemed to tap into each domain of suicidal risks such as fatalistic (factor 1), factor 2 (anomic), factor 3 (egoistic), and factor 4 (altruistic). Table 2 presented the result of this initial EFA.

In order to develop the most parsimonious scale of the DSA, we performed the second EFA with varimax rotation after excluding a total of six unclearly loaded items: five cross-loading items (Item 17, 35, 36, 37,43) and a non-significant loading (Item 43). Table 2 reports the results of the second EFA with 20 items. The result revealed a clear four-factor structure. DSA with 20 items explained 48.12% of the total variance with factor 1 (Fatalistic), factor 2 (Anomic), factor 3 (Egoistic), and factor 4 (Fatalistic) accounting for 15.12%, 14.94%, 12.1%, and 6.0 % of variance, respectively. Item communalities range from .29 to .89.

Comfrey and Lee (1992) suggests that factor loadings of absolute values are greater than .55 (30% of overlapping variance) are regard as good and fair if they are above .45 (20% overlapping variance). Five items (item 31, 32, 33, 34, and 40) loaded on factor 1 with loadings greater than .55. Seven items (item 11, 13, 14, 15, 16, 17 and 20) loaded on factor 2 with loadings ranging from .45 to .70. Six items (item 2, 18, 25, 26, 28, and 56) loaded on factor 3with loadings ranging greater than .45. Two items (item 8 and 9) loaded on factor 4 with the loadings of .91 and .52. Except for item 11, all items loaded on each factor with loadings greater than .45, indicating fair level

of loadings. A factor with fewer than three items can be deleted to develop a scale with a better factor structure. However, because this study is an exploratory study to develop a scale based on Durkheim's theory, we decided to keep the factor 4 because it well represents the dimension of altruistic suicide.

Reliability of the 20 item of the DSA was examined using Cronbach's*alpha*. The result indicates the excellent internal consistency with a Cronbach's alphaof .90.In addition, internal consistency of four subscales was examined. Cronbach's alpha coefficients for fatalistic, anomic, egoistic, and altruistic domainsare .89, .84, .76, and .63, respectively. According to the most common rule of thumb for reliability (Cortina, 1993; Nunnally,1978), all subscales demonstrate good internal reliability except for the altruistic subscale. However, a low reliability for the altruistic subscale could be explained by its small number of items in the scale. The larger number of a scale has the higher internal consistency reliability (Tavakol &Dennick, 2011; Waltz, Strickland, &Lenz, 2005).

Table 1: Result of unroasted PCA with 80 items (Absolute value of Loadings)

	Component																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Item1	.01	.04	.38	.03	.16	.25	.13	.00	.23	.16	.15	.28	.03	.16	.09	.07	.09	.26	.08	.23	.12	.00
item 2	**.52**	.08	.02	.18	.10	.06	.27	.07	.31	.25	.20	.04	.18	.02	.12	.09	.02	.03	.05	.08	.06	.06
item 3	.49	.15	.00	.02	.03	.08	.33	.02	.21	.13	.13	.18	.17	.21	.27	.12	.07	.04	.07	.16	.06	.20
item 4	.19	.04	.20	.21	.11	.10	.28	.22	.43	.02	.22	.09	.08	.05	.07	.10	.08	.12	.02	.20	.22	.08
item 5	.48	.09	.05	.15	.14	.02	.10	.04	.20	.07	.09	.19	.23	.10	.08	.22	.06	.06	.21	.02	.12	.37
item 6	.11	.02	.38	.43	.04	.07	.02	.26	.04	.25	.03	.03	.14	.07	.08	.12	.03	.02	.21	.17	.05	.02
item 7	.26	.00	.48	.20	.12	.16	.05	.09	.03	.21	.08	.25	.08	.22	.09	.19	.10	.16	.04	.05	.04	.05
item 8	.06	.07	**.51**	.43	.13	.04	.10	.17	.08	.04	.05	.19	.03	.22	.07	.07	.01	.14	.19	.19	.05	.03
item 9	.25	.06	**.53**	.33	.16	.27	.02	.15	.08	.13	.00	.13	.09	.03	.05	.01	.13	.17	.08	.14	.08	.07
item 10	.18	.14	.15	.04	.03	.22	.29	.09	.40	.18	.20	.01	.24	.07	.03	.00	.18	.23	.05	.17	.04	.20
item 11	**.51**	.16	.08	.12	.11	.16	.03	.06	.05	.15	.10	.19	.03	.07	.18	.11	.10	.09	.17	.15	.04	.11
item 12	.46	.06	.01	.11	.06	.40	.14	.03	.07	.03	.14	.17	.02	.09	.32	.01	.12	.16	.02	.11	.03	.07
item 13	**.59**	.25	.05	.13	.03	.24	.14	.02	.06	.12	.00	.07	.11	.07	.04	.19	.09	.12	.07	.05	.13	.08
item 14	**.60**	.04	.01	.09	.12	.37	.02	.06	.21	.05	.12	.01	.08	.06	.07	.02	.01	.07	.06	.05	.06	.01
item 15	**.65**	.13	.02	.03	.15	.25	.08	.07	.15	.01	.07	.05	.12	.00	.11	.09	.14	.11	.07	.13	.00	.08
item 16	**.68**	.21	.07	.01	.14	.18	.10	.15	.12	.09	.03	.14	.09	.00	.02	.08	.15	.05	.00	.05	.17	.02
item 17	**.61**	.13	.04	.09	.12	.01	.09	.05	.05	.06	.10	.04	.08	.18	.02	.04	.15	.17	.08	.13	.15	.10
item 18	**.69**	.15	.10	.06	.07	.10	.09	.02	.09	.02	.03	.13	.08	.08	.06	.06	.01	.06	.09	.07	.18	.04
item 19	.37	.11	.00	.09	.41	.06	.03	.04	.01	.09	.17	.01	.03	.03	.16	.11	.11	.05	.21	.16	.08	.04
item 20	**.66**	.19	.09	.05	.03	.21	.01	.07	.01	.02	.01	.24	.12	.15	.02	.10	.09	.07	.03	.07	.04	.13
item 21	.41	.14	.10	.15	.33	.18	.14	.04	.14	.11	.28	.11	.07	.03	.04	.29	.08	.14	.05	.18	.12	.04
item 22	.49	.32	.06	.13	.16	.00	.01	.11	.20	.20	.16	.23	.02	.16	.02	.06	.04	.04	.12	.08	.08	.08
item 23	.16	.26	.01	.20	.24	.12	.11	.13	.08	.25	.17	.19	.05	.05	.29	.04	.18	.36	.03	.03	.09	.04
item 24	.50	.27	.08	.34	.39	.05	.03	.07	.02	.13	.03	.01	.12	.06	.07	.02	.01	.00	.07	.05	.10	.16
item 25	**.51**	.02	.18	.28	.48	.05	.06	.12	.04	.04	.04	.09	.12	.07	.01	.06	.02	.02	.08	.02	.00	.04
item 26	**.53**	.15	.05	.04	.22	.01	.13	.09	.05	.06	.00	.01	.03	.20	.16	.22	.12	.02	.03	.00	.29	.06
item 27	.30	.24	.09	.04	.15	.14	.16	.03	.31	.17	.17	.02	.08	.25	.15	.04	.05	.13	.21	.28	.14	.18
item 28	**.66**	.19	.07	.06	.12	.07	.10	.17	.14	.06	.03	.01	.11	.15	.05	.00	.04	.02	.03	.05	.13	.13
item 29	**.53**	.03	.04	.14	.09	.15	.13	.14	.09	.02	.02	.00	.01	.18	.13	.23	.09	.18	.03	.17	.05	.12
item 30	.42	.12	.09	.08	.29	.00	.07	.04	.00	.03	.30	.02	.01	.15	.18	.20	.17	.09	.14	.17	.17	.13
item 31	**.62**	.25	.03	.03	.21	.06	.08	.03	.11	.13	.22	.05	.00	.08	.12	.11	.08	.10	.05	.09	.10	.15
item 32	**.71**	.08	.00	.04	.31	.13	.09	.06	.20	.06	.14	.12	.07	.08	.08	.10	.02	.02	.09	.05	.05	.08

item 33	**.72**	.14	.09	.05	.18	.05	.08	.01	.05	.10	.04	.07	.07	.13	.09	.11	.00	.13	.14	.08	.03	.17
item 34	**.70**	.06	.09	.06	.24	.13	.18	.12	.04	.08	.10	.09	.23	.02	.03	.03	.14	.06	.01	-.02	.00	.19
item 35	**.73**	.12	.10	.07	.21	.18	.08	.08	.10	.05	.09	.07	.18	.01	.02	.06	.04	.03	.04	.04	.05	.13
item 36	**.69**	.14	.02	.09	.16	.17	.03	.02	.01	.02	.13	.12	.14	.11	.10	.01	.05	.02	.15	.00	.01	.00
item 37	**.72**	.11	.09	.06	.04	.07	.17	.01	.09	.08	.03	.08	.01	.10	.15	.06	.03	.05	.03	.01	.13	.11
item 38	.05	.10	.10	.06	.15	.09	.26	.04	.17	.11	.08	.20	.16	.29	.14	.00	.39	.22	.10	.24	.27	.05
item 40	**.65**	.09	.12	.01	.28	.18	.03	.09	.04	.02	.04	.02	.01	.03	.11	.00	.05	.06	.12	.01	.02	.16
item 41	.39	.50	.07	.13	.01	.15	.07	.01	.01	.02	.05	.10	.26	.16	.20	.05	.04	.10	.19	.02	.09	.13
item 42	.49	.05	.03	.05	.02	.41	.16	.10	.13	.17	.07	.07	.02	.12	.15	.10	.06	.22	.07	.10	.14	.16
item 43	**.51**	.08	.12	.19	.01	.31	.14	.17	.00	.07	.18	.22	.04	.05	.23	.10	.07	.03	.00	.16	.04	.22
item 44	.45	.09	.04	.43	.19	.07	.07	.33	.12	.07	.09	.25	.11	.14	.16	.11	.06	.07	.05	.02	.09	.09
item 45	.41	.14	.07	.41	.11	.05	.03	.14	.20	.15	.11	.20	.14	.03	.02	.06	.03	.18	.20	.14	.11	.18
item 46	.37	.07	.14	.28	.26	.02	.04	.12	.03	.00	.15	.28	.28	.01	.12	.15	.13	.00	.00	.12	.09	.09
item 47	.19	.26	.25	.25	.26	.38	.10	.20	.24	.05	.01	.12	.09	.11	.15	.05	.07	.11	.03	.04	.10	.15
item 48	.21	.25	.31	.11	.05	.07	.09	.33	.29	.25	.03	.23	.17	.07	.02	.21	.01	.20	.01	.15	.03	.14
item 49	.41	**.51**	.14	.18	.20	.11	.04	.06	.02	.11	.02	.11	.06	.16	.04	.06	.16	.04	.25	.03	.01	.06
item 50	.31	.20	.36	.08	.11	.05	.12	.16	.29	.03	.00	.04	.11	.07	.03	.15	.21	.08	.14	.16	.01	.04
item 51	.23	.35	.19	.01	.23	.08	.27	.06	.14	.36	.04	.10	.13	.06	.10	.17	.05	.12	.19	.00	.16	.01
item 52	.42	.07	.31	.20	.16	.03	.15	.02	.12	.14	.03	.23	.23	.03	.02	.09	.24	.06	.00	.00	.05	.06
item 53	.30	.38	.22	.07	.12	.21	.15	.07	.01	.41	.02	.11	.06	.09	.11	.03	.11	.11	.15	.02	.13	.14
item 54	.45	.28	.09	.15	.11	.14	.12	.06	.08	.16	.22	.22	.21	.00	.13	.05	.16	.26	.05	.04	.04	.09
item 55	.10	.42	.14	.26	.10	.06	.09	.08	.07	.03	.13	.12	.02	.02	.07	.23	.24	.05	.06	.05	.20	.18
item 56	**.63**	.07	.05	.09	.09	.16	.17	.10	.10	.21	.13	.05	.09	.02	.02	.11	.01	.01	.17	.07	.00	.01
item 58	.40	.08	.07	.05	.25	.07	.01	.09	.12	.35	.19	.08	.15	.25	.11	.06	.17	.04	.10	.23	.19	.12
item 59	.36	.44	.00	.15	.13	.05	.26	.13	.07	.10	.06	.13	.03	.03	.16	.01	.15	.11	.07	.17	.16	.14
item 60	.25	.31	.09	.36	.09	.04	.06	.03	.07	.16	.05	.18	.02	.05	.01	.01	.19	.01	.20	.02	.22	.17
item 61	.44	.10	.04	.14	.15	.10	.15	.09	.03	.08	.20	.12	.40	.04	.01	.05	.21	.07	.01	.12	.06	.22
item 62	.02	.11	.35	.12	.18	.09	.14	.28	.03	.02	.30	.08	.07	.32	.06	.07	.28	.10	.21	.12	.06	.06
item 63	.16	.00	.24	.37	.10	.14	.23	.09	.07	.02	-.30	.04	.06	.02	.12	.00	.18	.01	.08	.12	.32	.02
item 64	.34	.32	.15	.10	.09	.10	.10	.26	.04	.30	.00	.10	.10	.20	.05	.03	.07	.21	.18	.00	.23	.05
item 66	.24	.47	.25	.20	.02	.00	.02	.03	.02	.12	.07	.23	.12	.30	.03	.02	.16	.07	.08	.26	.07	.05
item 67	.18	.08	.36	.03	.13	.10	.22	.10	.00	.01	.01	.28	.05	.12	.41	.20	.03	.08	.07	.06	.11	.16
item 68	.07	.32	.20	.08	.08	.10	.38	.09	.18	.29	.14	.11	.09	.05	.09	.22	.02	.07	.17	.16	.05	.04
item 69	.03	.31	.22	.08	.17	.03	.00	.32	.13	.04	.27	.10	.17	.20	.22	.27	.18	.01	.08	.10	.11	.06
item 70	.23	.27	.25	.07	.07	.07	.25	.01	.02	.09	.17	.07	.13	.09	.15	.39	.02	.07	.02	.08	.02	.06
item 71	.39	.32	.11	.05	.04	.01	.04	.08	.00	.04	.28	.05	.21	.11	.10	.00	.09	.11	.02	.22	.05	.11
item 72	.20	.06	.16	.06	.02	.23	.31	.40	.14	.16	.24	.23	.21	.18	.04	.06	.04	.11	.05	.02	.13	.02
item 73	.12	.04	.27	.08	.17	.03	.39	.29	.25	.12	.01	.07	.04	.04	.00	.18	.29	.18	.11	.05	.15	.09
item 74	.15	.09	.16	.29	.18	.42	.07	.18	.01	.06	.21	.01	.20	.01	.17	.26	.08	.17	.12	.09	.06	.05
item 76	.49	.20	.21	.26	.16	.21	.02	.14	.04	.07	.01	.12	.11	.23	.07	.08	.07	.06	.07	.04	.03	.04
item 77	.22	.30	.26	.14	.17	.10	.00	.15	.07	.25	.12	.03	.31	.06	.03	.05	.22	.07	.22	.13	.27	.02
item 78	.21	.19	.29	.12	.23	.14	.06	.31	.15	.09	.36	.03	.11	.24	.19	.06	.07	.12	.02	.06	.09	.05
item 79	.45	.30	.25	.13	.00	.08	.16	.21	.04	.04	.17	.00	.12	.01	.06	.16	.00	.07	.17	.06	.01	.09
item 80	.28	.22	.22	.19	.11	.15	.07	.23	.02	.04	.07	.15	.07	.20	.24	.04	.01	.26	.35	.05	.02	.13

Table 2: Factor structure of the 26 item DSA

	Factor			
	Factor 1 (Fatalistic)	Factor 2 (Anomic)	Factor 3 (Egoistic)	Factor 4 (Altruistic)
34. I feel overwhelmed and defeated.	**.75**	.20	.26	-.15
32. I feel that my situation is hopeless.	**.72**	.32	.19	-.02
35. I feel that I am losing control of my life.	**.67**	.14	.51	.05
33. I feel excluded by others.	**.64**	.39	.19	-.17
31. I feel that nobody really cares about me.	**.59**	.34	.17	-.01
40. I have difficulty getting myself to stop thinking about how sad I am.	**.57**	.24	.33	.06
37. I feel I get pushed around more than others.	**.51**	.26	**.48**	-.01
36. I feel I bore people.	**.49**	.26	**.48**	.03
49. I am interested in learning new things.	.22	.20	.12	-.20
16. Most social relationships are meaningless.	.31	**.68**	.23	-.10
15. I am better off when I keep to myself.	.29	**.64**	.22	-.07
14. Everyone is out to manipulate you toward his own ends.	.22	**.62**	.22	.01
13. I try to avoid close relationships with people so that I will not be obligated to them.	.21	**.54**	.29	-.10
20. I long for a simple life in which no one needs me.	.23	**.50**	**.41**	.01
17. Most of my activities are determined by what society demands.	.38	**.42**	.24	-.04
11. I often feel alone when I am with other people.	.20	**.40**	.30	.07
18. Often when I interact with others, I feel insecure.	.34	.30	**.53**	-.03
56. I am bored with my life.	.34	.19	**.48**	-.02
26. I do not feel included in church activities.	.14	.28	**.48**	-.06
28. It is difficult to find someone to help me.	.26	.41	**.46**	-.13
2. I feel like I am a burden on my family.	.27	.17	**.43**	.00
29. I always keep the shades/blinds on my windows closed.	.10	.35	**.43**	-.04
25. I rarely visit others.	.12	.24	**.39**	-.16
43. Too many things are going on in my life.	.34	.12	.37	-.03
9. When I die, I don't want to leave any debts or burdens on my family.	-.08	.00	-.19	**.87**
8. I don't want my family to go on welfare in order to pay my medical expenses.	.02	-.04	.06	**.54**

Note: items are sorted by size and items with a loading of .32 and above are shown in bold.

Table 2: Factor structure of the 20 items DSA.

	Factor			
	Factor 1 (Fatalistic)	Factor 2 (Anomic)	Factor 3 (Egoistic)	Factor 4 (Altruistic)
32. I feel that my situation is hopeless.	**.75**	.27	.25	.00
34. I feel overwhelmed and defeated.	**.72**	.22	.28	-.13
33. I feel excluded by others.	**.64**	.36	.26	-.14
31. I feel that nobody really cares about me.	**.61**	.33	.16	.00
40. I have difficulty getting myself to stop thinking about how sad I am.	**.55**	.25	.35	.08
15. I am better off when I keep to myself.	.29	**.66**	.21	-.07
16. Most social relationships are meaningless.	.31	**.66**	.28	-.08
14. Everyone is out to manipulate you toward his own ends.	.21	**.61**	.26	.04
13. I try to avoid close relationships with people so that I will not be obligated to them.	.21	**.56**	.27	-.09
20. I long for a simple life in which no one needs me.	.23	**.49**	.43	.03
17. Most of my activities are determined by what society demands.	.26	**.47**	.19	-.05
11. I often feel alone when I am with other people.	.19	.41	.30	.07
26. I do not feel included in church activities.	.12	.25	**.53**	-.02
18. Often when I interact with others, I feel insecure.	.32	.31	**.53**	-.01
28. It is difficult to find someone to help me.	.29	.27	**.48**	-.10
25. I rarely visit others.	.11	.19	**.49**	-.10
56. I am bored with my life.	.33	.21	**.47**	-.09
2. I feel like I am a burden on my family.	.26	.16	**.45**	.02
9. When I die, I don't want to leave any debts or burdens on my family.	-.08	.01	-.24	**.91**
8. I don't want my family to go on welfare in order to pay my medical expenses.	-.01	-.04	.08	**.52**

Note: Items are sorted by size and items with loading greater than .32are shown in bold.

Discussion

Based upon the result of PCA with the 80 items, we selected 26 items that tapped into the suicide risks of older adults. The initial EFA identified the four-factor structure with each factor reflecting each domain of the Durkheim's theory such as fatalistic, anomic, egoistic, and altruistic. The EFA with the 26 item-DSA showed that five items cross-loaded on two factors. First, items 35, 36, 37, and 43 loaded on two factors 1(fatalistic) and 3 (egoistic).Within the fatalistic continuum, we see a social environment that is saturated with social stagnation coupled with hopelessness. Egoistic social environments are saturated by a loss of social connection, social isolation and an absence of role expectations. Within elderly populations, it is common to see an elderly person locked into both of these states. Fatalism and egoism do not share a continuum. They are not opposites. Thus aperson who has lost connection with his family and friends can easily envision his social situation as hopelessly locked into a cul-de-sac. In terms of being on the threshold of suicide, it is highly likely that an elderly person locked into social environments that can be best described as fatalistic/egoistic.

In addition, item 17 loaded on factor 1 (fatalistic) and 2 (anomic),fatalism and anomie are the opposite and share a continuum. Item 17 addresses role activity demands of others. Within theanomic environment, there are overwhelming demands that are constantly changing. Within a fatalistic social environment, the social demands are likely to exist but the social demands and expectations are *never* changing. The fatalistic environment secures the person in a social rut. There is no change and no hope for change. Both fatalistic and anomic social environments include social demands, but these demands have a different flavor. Item 17 was not adequately sensitive to identify the nuance of difference.

However, item 49 fail to load on any factor. We would expect item 49 to load on the anomic factor, it didn't. Two reasons exist: First, it didn't load because we had a sample that was skewed to the left (see Figure 2). We had an overabundance of subjects that are happy and are in socially stable environments. Second, of the four of Durkheim's concepts, anomie is least likely to be seen within an elderly population. In traditional Durkheimian thinking, anomic includes: "Too many things are going on in my life." Although this social characteristic can exist within an elderly population, we normally see social disengagement. The anomie that we see within elderly population would be characteristic by the statement: "Too many *bad* things are going on in my life." The restatement of this item would have a greater probably of loading within the anomic factor. With continuing research, the item should change.

The altruistic domain appeared to be the weakest factor, explaining around 6% of variance (6.45 % in the 26 items and 6.0 % in the 20 items). Given the fact that most study participants were white, this finding supports existing literature that suggested altruistic suicidesas a rare phenomenon in Western culture (Lester, 1994; Dong, Chen, Wong & Simon, 2014; Zhao, 2014).

However, unlike our assumption about fatalistic, the domain of fatalistic was the most salient concept among all four domains of Durkheim's theory. This finding might be caused by characteristics of our sample. Our sample was collected in elderly who participate in churches, senior centers, volunteers from nursing homes, and volunteers from a high school class reunion. As illustrated in Figure 2, our sampling distribution is skewed in a manner that suggests the subjects are far from the red zone as identified in Figure 1. The sample mean[1] is 224.26of the initial DSA with 80 items; while the expected mean[2] is 244.5.

[1] The sample mean was calculated by calibrating each Likert scale in the shared theoretical direction. Each scale was calibrated with values ranging from 1 to 5. A total score was summed for each research subject and then a mean was calculated from the entire subject pool.

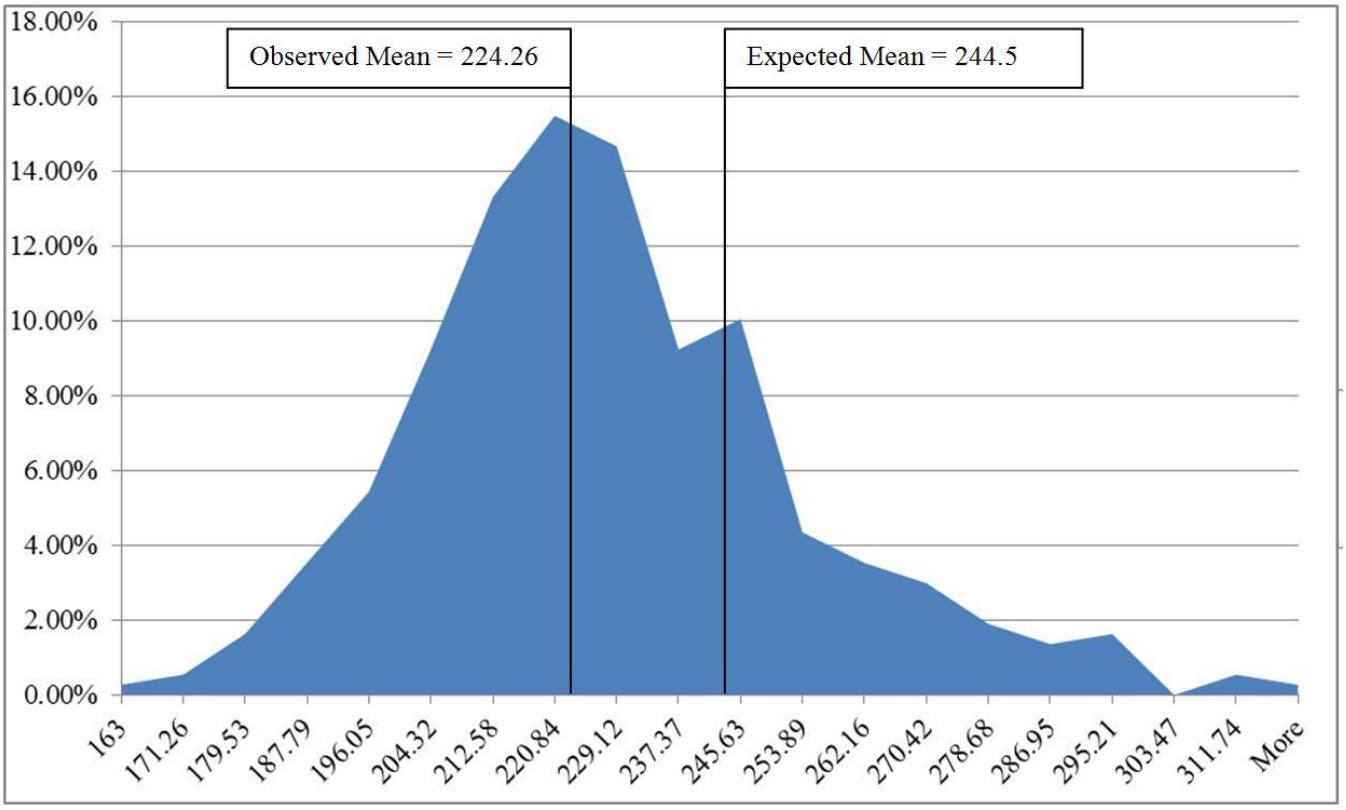
[2] The expected mean was estimated prior to sample collection. Using the highest and lowest possible score on the scale, the expected mean represents the midpoint of the theoretical distribution. In essence the expected mean is the median of the theoretical distribution. Since means and medians are expected to be close to each other in a normal distribution, we were anticipating the sample mean to be close to the theoretical mean (the median).

The expected mean lies beyond one standard deviation from the sample mean. Durkheim's theory, ties to social groups, as long as the ties are not extreme, reduces the probability of suicide. High scores suggest movement toward the danger zone (red); while low scores suggest movement in the safety zone (green).

Thus, unlike other scales developed based upon Durkheim's theory (Fischer and Corcoran (2008a; 2008b), Miller and Salkind (2002) Robinson, Shaver and Wrightsman (1991) Shaw and Wright (1967)), our findings might represent general conditions of socially connected elderly. Among four domains of Durkheim's theory, "fatalism" might be the most applicable concept that explains where general older adults are situated.

Figure 2

Histogram of Data



Implications for practice

Despite the influence of Durkheim's theory in understanding suicidal risks of elderly, no standardized scale based upon such theory is available. This study reported development and validation of the DSA. Initially we developed the 80 item-DSA scale reflecting four domains of Durkheim's theory and identified the 26 item- and the 20 item-DSA. Health care practitioners can use either the 26 item- or the 20 item-DSA to identify elderly at suicidal risk and implement necessary interventions for them. Given the relatively small number of scales (i.e., 26 or 20 items), either of them can effectively be used with elderly without causing survey fatigue.

Limitations and implications for future research

The central problem with any social science research project is assuring that the sample is an accurate portrayal of the universe of desired subjects. One way to assess the precision of a sample is to examine the distribution. One would expect a normal distribution to emerge from the data.

However, to successfully calibrate an instrument based on Durkheim's suicide theory, it would be necessary to include subjects who are socially disengaged and have stressful social environments. According to Figure 2, our sample is falling into the green zone. It is clear that because we collected our data within group settings we left out those who fall toward the red zone. In the end, because of the configuration of the distribution and the loading of the factors, Durkheim's theory is better supported.The big question is, "what could have been done to create a better sample?" With the constraints of the Institutional Research Board (IRB) and the inability to extract a random sample, it is unlikely we could do better. However, one alternative may improve the distribution. If we were able to collect a larger sample that would include individual living in the community without firmly established ties to a social group, the distribution (according to the theory) would move more toward the red zone. That is likely to be part of the next research. Most importantly, the weaknesses of uncovering the four factors *cannot* be attributed to a weak theory. Operationalizing these concepts is a Herculean task. The collection of a new sample is necessary. Researchers would be required to oversample on the right hand side of the distribution in Figure 2. In practical terms this would require to identify and enlist elderly who are socially isolated, overwhelmed with bad things in their lives, in hopeless social situations, and see themselves as a burden for the people around them. This type of sample would create the most effective instrument for addressing suicide issues. Will resampling be worthy of the time and expense. This is a philosophical question that can best be addressed by restating the question: *Do we need an instrument that can predict suicide potential while at the same time provide intervention guidance for the practitioner?*

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APPENDIX

The questionnaire that will be administered to elderly subjects is included below. For the subjects, the introduction and the questionnaire is printed in extra-large, Times New Roman font (14 pt) and on legal size paper.

Introduction:
I want to thank you for your willingness to participate in our research. It is important that you understand that your participation in this research is voluntary and you will not be penalized in any way for not completing the questionnaire. You may also refuse to answer any question that you don't feel comfortable answering, and you may decide at any time to withdraw your participation.

As you know, we are seeking a large group of people over the age of 65 to complete our questionnaire. Our mission is to determine if the questionnaire is well-written and complies with statistical standards.

Two issues are important:

First, as you respond to the items, ask yourself the question, "Does this make sense to me?" If it doesn't, circle the entire item. If you think you can help make the item clearer, let one of us know before you leave.

Second, we are **NOT** interested in examining how individuals responded to items, and we are **NOT** collecting any identifying information, such as names, so there is no need to put your name on the questionnaire. We will be examining how the individual responses are grouped together.

Do you have any questions?

If you have any questions that you don't feel comfortable to ask, you can contact Dr. Melanie Hoy, IRB Chair, at 910-775-4359 or at melanie.hoy@uncp.edu. This contact information is included at the end of the questionnaire.

Thank you for your help!

Case Number _____

1 Female 2 Male

Location: 1) Richmond 2) Robeson 3) Columbus 4) Other _____

Age _____

1. I don't want my family to see me in poor health.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
2. I feel like I am a burden on my family.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
3. My family visits me because they feel obligated to do so.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
4. My family is more important than I am.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
5. I am worth more dead than alive to my family.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree

6. If I am dying, I do not want to be put on life support.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
7. When I die, I want my family to inherit all my belongings.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
8. I don't want my family to go on welfare in order to pay my medical expenses.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
9. When I die, I don't want to leave any debts or burdens on my family.
   Strongly Agree Agree Not Sure Disagree Strongly Disagree
10. Self sacrifice on my behalf is good for my family.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
11. I often feel alone when I am with other people.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
12. Our society holds no worthwhile values or goals.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
13. I try to avoid close relationships with people so that I will not be obligated to them.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
14. Everyone is out to manipulate you toward his own ends.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
15. I am better off when I keep to myself.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
16. Most social relationships are meaningless.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
17. Most of my activities are determined by what society demands.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
18. Often when I interact with others, I feel insecure.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
19. Big parties are very unexciting for me.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
20. I long for a simple life in which no one needs me.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
21. I have few close friends.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
22. I rarely see my family.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
23. I enjoy my time alone.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
24. I rarely have company.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
25. I rarely visit others.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
26. I do not feel included in church activities.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
27. I enjoy driving my car.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
28. It is difficult to find someone to help me.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
29. I always keep the shades/blinds on my windows closed.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
30. I do not go out to eat as often as I would like.
    Strongly Agree Agree Not Sure Disagree Strongly Disagree
31. I feel that nobody really cares about me.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

32. I feel that my situation is hopeless.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

33. I feel excluded by others.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

34. I feel overwhelmed and defeated.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

35. I feel that I am losing control of my life.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

36. I feel I bore people.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

37. I feel I get pushed around more than others.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

38. I feel like companionship.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

39. People are around me but not with me.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

40. I have difficulty getting myself to stop thinking about how sad I am.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

41. I like technology.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

42. I can't keep up with changes in my life.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

43. Too many things are going on in my life.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

44. People expect too much of me.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

45. My family can not get along without me.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

46. There are too many changes in my church.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

47. The world relies to much on computers.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

48. I don't like using a debit card.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

49. I am interested in learning new things.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

50. I like the way things use to be.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

51. I have not given up trying to accomplish what's important to me.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

52. At times I am unable to stay seated and need to pace around.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

53. My daily life were full of things that were interesting to me during the past month.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

54. I experienced trouble understanding, concentrating or remembering.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

55. I find it easy to do things I use to do.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

56. I am bored with my life.

Strongly Agree Agree Not Sure Disagree Strongly Disagree

57. People often over look me.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
58. My life rarely changes.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
59. I am in very good health.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
60. I frequently travel.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
61. I enjoy staying in bed all day.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
62. I enjoy old TV shows.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
63. I have the same friends I had twenty years ago.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
64. I am tired of being sick.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
65. have to wait too long to see my doctor.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
66. I still enjoy the things I use to.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
67. I become annoyed when people talk on cell phones.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
68. I don't like to use an ATM.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
69. I enjoy paying my bills online.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
70. I can not figure out how to work a DVD player.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
71. I enjoy being physically active most days of the week.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
72. I like having certain family members involved in my medical care.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
73. I like having access to alternative medical providers-chiropractors, acupuncturists, etc.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
74. I enjoy contact with animals.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
75. I feel loved and needed.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
76. I have plans for the future.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
77. Little things bother me more now than in the past.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
78. In looking back, I feel that I have done most of the things that I've wanted to do.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
79. I am in good spirits most of the time.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
80. I can no longer make repairs around the house.
Strongly Agree Agree Not Sure Disagree Strongly Disagree
81. I walk shorter distances or stop to rest often.
Strongly Agree Agree Not Sure Disagree Strongly Disagree