Final Report to the Longer Life Foundation

The productive engagement of older adults: Impact on later life well-being

Project Team: Nancy Morrow-Howell, Michael Sherraden,
Jim Hinterlong, and Philip Rozario

Statistical Consultant: Ed Spitznagel

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Abstract

In the twenty-first century, an older adult may spend 20 to 30 years in formal retirement with limited access to roles that make social and economic contributions to society. Yet survey research has documented that older adults want to remain involved in meaningful roles, and evidence suggests that meaningful involvement is related not only to life satisfaction but also to health and mental health. Among the many meaningful activities in which older adults may engage (artistic, educational, spiritual, relational), productive activity has been defined as any activity that produces goods and services, whether paid for or not. In this definition, scholars have included working, volunteering, caregiving to dependent others, including grandchildren, and being involved in civic affairs. Previous research has demonstrated that substantial numbers of older adults are involved in productive activities, but they are not involved as they would like or have the potential to be. It is predicted that baby boomers will desire higher levels of engagement. Yet important research questions need to be addressed about productive engagement and its impact on late-life well-being. This study has addressed the impact of productive engagement (volunteering, working, and caregiving) on the health, mental health, and mortality of older adults.

We used an existing data set from the Americans' Changing Lives Study (ACLS), a national longitudinal panel survey, consisting of a multistage stratified probability sample of 3,617 adults in this country, with an oversampling of people over the age of 60. Data that include information about employment, caregiving, and volunteering as well as health, mental health, and life satisfaction were collected in 1986, 1989, and 1994 and a new wave of data collection is pending. These data sets are among the best available for research of this nature, given the high quality and level of support the ACLS has achieved.

Key findings from the analyses include the following:

- Volunteering has a positive effect on functional ability, self-rated health, and depression of older adults; more volunteer hours have an increasingly positive effect, although at higher levels of volunteering, the positive effect is not as great. When older adults are volunteering, the negative effect of increasing age on well-being is less.
- Older adults who volunteer and who perform more volunteer hours have lower mortality rates.
- Employment has a positive effect on functional ability and depression (but not self-rated health in this sample). When older adults are working, the negative effects of increasing age and limited informal support on well-being are less.
- When volunteers perceive greater benefit to others from the work, they report higher levels of functional ability and self-rated health. When workers perceive greater benefit to others from the work, they report higher levels of self-rated health.
- Older caregivers who take on other productive roles as volunteers or workers have better well-being outcomes. This effect is stronger from male caregivers than female.
- Engagement in a greater number of productive roles as well as more hours of engagement are significantly related to better functional health, higher self-rated health, and lower depression.

Brief Literature Review

Research on successful aging has led John Rowe and Robert Kahn (1998) to assert the importance of productive engagement to continued health and well-being for older adults. This research, funded by the MacArthur Foundation Study of Successful Aging, suggests that older adults want some balance of leisure and meaningful involvement that contributes to the welfare of others. Similarly, a recent survey by Peter D. Hart Research Associates (1999) documented that the majority of older Americans' satisfaction with life is driven by needs to feel active and vital, to maintain human connections, and to feel valued and needed. Only about 25% of the older respondents endorsed the idea that retirement is a time of leisure, a time to take it easy.

There are many types of meaningful engagement in which an older adult could engage -- continuing education, spiritual development, artistic pursuits, etc. Most scholarly attention has focused on the vital role of social engagement in regards to health and mental health in later life. But this study focuses on another type of meaningful engagement -- productive engagement. While many definitions of productive activity are offered in the literature, we use the definition of Caro & Bass (1995) who define productive activities as activities that produce goods and services, whether paid or unpaid. Our definition of productivity in later life includes volunteering, working, and providing assistance to dependent others (caregiving).

A long tradition in health and mental health research associates engagement in meaningful roles and social involvement with positive outcomes (see Berkman & Syme, 1979; Billings & Moos, 1982; Mendes de Leon, Glass, Beckett, Seeman, Evans, & Berkman, 1999; Moen, 1998). Some studies look specifically at the positive benefit of productive engagement in later life. For example, Herzog, House, & Morgan (1991) find that older people whose work patterns reflect personal preferences report higher levels of physical and psychological well-being than people whose work involvement is not under their control due to involuntary retirement or other factors. Moen, Dempster-McClain and Williams (1992) document that participating in volunteer work is positively related to health. Musick, Herzog, and House (1999) document that older adults who volunteer have lower mortality hazard than non-volunteers. Freedman (1994) reviews the evidence of the psychological and social benefits associated with participation in national service programs, including Senior Companions and Foster Grandparents, which show positive effects of participation on mental health, functioning and life satisfaction.

Musick, Herzog, & House (1999) demonstrate the importance of specification of conditions leading to positive outcomes by documenting that volunteers are not affected equally by their participation. This research reveals a curvilinear relationship between level of involvement and mortality, with moderate involvement offering the most benefit. Their work also suggests that volunteering has the most protective effect on those older adults with lower levels of informal social interaction. Similarly, Rushing, Ritter, & Burton (1992) report that for whites, being employed is a protective factor for mortality; whereas blacks, whether employed or unemployed, are at greater risk for poorer health.

Given evidence that there are positive and negative outcomes associated with caregiving, we need to better understand what conditions of engagement maximize well-being for caregivers. There is abundant evidence that caregiving for a dependent relative can negatively impact a person's well-being (Cantor, 1983; George & Gwyther, 1986; Doty & Miller, 1993). Therefore,

some individuals may benefit from a mix of productive activities, from respite from one type of productive engagement (e.g., caregiving) to engage in another that carries different benefits and costs for that person (e.g., employment). In summary, these studies demonstrate that future research on benefits of productive engagement to the individual must move toward specification of these relationships within the context of the individual's life.

Research questions that were addressed in this study

1) Do certain types and levels of engagement in productive activities affect health, mental health, and life satisfaction differentially?
2) Do certain mixes of productive activities affect these well-being outcomes differently?
3) Do certain characteristics of the older adult, like age, gender, ethnicity, and social contact, interact with these aspects of the engagement to produce differential outcomes?
4) Does the perceived benefit of the activity by the older adult affect well-being outcomes? Hypothesis: Productive activities involving more benefit to others (as assessed by the older adult engaged in the activity) produce greater health, mental health, and life satisfaction outcomes than those activities that do not produce as much social benefit.
5) Do types and levels of engagement in productive activities affect mortality?

Methods

Research questions were answered using data collected by a team of investigators associated with the Survey Research Center at the University of Michigan (House, 1997). The Americans' Changing Lives Study (ACLS) is a national longitudinal panel survey of 3,617 adults in this country, with an oversampling of people over the age of 60. Data that include information about employment, caregiving, and volunteering as well as health, mental health, and life satisfaction were collected in 1986, 1989, and 1994. The ACLS data set is among the best available for research of this nature, given the methodological attention to sampling, instrumentation, and data collection (House, Kessler, Herzog, et al., 1990). We subsetted the data to all individuals 60 years of age and older at the time of the first interview. In wave 1 (1986), there are 1,669 older adults to include in the analysis, and at wave 2 (1989), there are 1,279 older respondents. At wave 3 (1994), over 900 respondents were located and reinterviewed. All variables used in the analysis are presented in a chart that appears at the end of this report. Table 1 and 2 describes the sample and present descriptive statistics on major study variables.

Multiple imputation was used to address the problem of data missing due to non-response. This state-of-the-art technique generates completed data that can be analyzed as if there were no missing values or cases. Multiple imputation is superior to other imputation methods because it incorporates variation into the completed data that represents more accurately the uncertainty inherent in imputing missing values. Our major method of analysis was Generalized Estimating Equations. GEE (executed through SAS) is an effective way to use longitudinal data to estimate the tendency of a measure to vary over time. GEE can handle time-varying and non-time-varying covariates, while taking into account the covariance structure of the error terms. It was used to estimate interactions between independent variables as well as curvilinear relationships.

Findings

On the attached pages, we review each research question, present the analyses, and summarize the findings.

Table 1: Characteristics of older adults in the sample at wave 1

	Mean (standard deviation) range	Percentages
Age	70.1 yrs (7.4 yrs) 60-96 years	
Gender		67% female 33% male
Race		69% white 31% non-white
Education	10.3 yrs (3.7 yrs) 0-17 years	
Martial Status		51% married 49% not married
Informal social contacts	-.05 (1.07) -3.07-1.35	
Annual Income	$17,522 ($19,191) $2500-$110,000	

Table 2: Descriptive statistics on engagement variables and well-being outcomes

Variable	**Mean (standard deviation) range**	**Percentages**
Productive engagement		
Level of employment	340.6 (780.5) hrs/yr 0-4949	
Level of volunteering	24.63 (53.5) hrs/yr 0-200	
Level of caregiving	20.2 (56.0) hrs/yr 0-200	
Well-being:		
Functional ability		Severe impairment 8.8 Moderate 14.1 Mild 16.1 No impairment 61.0
Self-rated health	2.84 (1.14) 1-5	
Depression	.03 (1.0) -1.2-4.5	
Life Satisfaction	2.10 (.95) 1-5	

Questions:

Do certain types and levels of engagement in productive activities affect health, mental health, and life satisfaction differentially?

Do certain characteristics of the older adult, like age, gender, ethnicity, and social contact, interact with these aspects of the engagement to produce differential outcomes?

VOLUNTEER ENGAGEMENT

Table 3 Regression of volunteer engagement on well-being outcomes

	Function	Self-rated health	Depression
Age	-0.0202***	0.0051*	0.0068***
Gender	-0.0998**	0.0884**	0.0447
Race	0.0750*	0.0029	-0.1251***
Education	0.0066	-0.0145**	-0.0133**
Married	0.0411	0.0621	-0.0478
Informal social	0.0883***	-0.0520**	-0.0867***
Income	0.0092	-0.0097	-0.0228***
Well-being (previous wave)	0.6304***	0.6043***	0.5302***
Volunteer	0.1567***	-0.1736***	-0.1167***
Volunteer hours	0.0007**	-0.0011***	-0.0005*
Volunteer hours^2	-0.0000***	0.0000**	0.0000***
Volunteer*age	0.0138**	-0.0068	-0.0100**
Volunteer*gender	0.0754	-0.0728	-0.0238
Volunteer*race	-0.0946	-0.0657	0.0774
Volunteer*social	-0.0300	0.0545	0.0372

$p \leq .10$; $**p \leq .05$; $*** p \leq .01$

- Both volunteer status and volunteer hours are significantly related to functional ability, self-rated health, and depression.
- Curvilinear relationship is observed between volunteer hours and three well-being outcomes.
- The interaction between volunteer status and age is significant in relation to functional ability and depression.
- Certain demographic characteristics, i.e., age, gender, and race; informal social contact, and previous well-being are significantly related to functional ability.
- Certain demographic characteristics, i.e., age, gender, and education; informal social contact, and previous well-being are significantly related to self-rated health.
- Certain demographic characteristics, i.e., age, race, education, and income; informal social contact, and previous well-being are significantly related to depression.

WORK ENGAGEMENT

Table 4: Regression of work engagement on well-being outcomes

	Function	Self-rated health	Depression
Age	-0.0201***	0.0050	0.0037
Gender	-0.0807*	0.0992**	0.0443
Race	0.0640	0.0160	-0.1199**
Education	0.0082	-0.0182**	-0.0146***
Married	0.0494	0.0376	-0.0583
Informal social	0.1000***	-0.0700***	-0.1010***
Income	0.0125	-0.0120	-0.0238***
Well-being (previous wave)	0.6343***	0.5909***	0.5313***
Employed	0.1672***	-0.0854	-0.1610***
Employed hours	0.0001**	-0.0000	-0.0001***
Employed hours^2	-0.0000	0.0000	0.0000**
Work*age	0.0184*	-0.0075	-0.0123*
Work*gender	0.0371	0.0565	0.0905
Work*race	-0.1173	-0.0990	0.1103
Work*social	-0.1137**	0.1141*	0.1239***

$p \leq .10$; **$p \leq .05$; *** $p \leq .01$

- Work status and work hours are significantly related to functional ability and depression, and there is curvilinear relationship between employed hours and depression.
- The interaction between work status and age is significantly related to functional ability and depression.
- The interaction between work status and informal social contact is significantly related to all well-being outcomes.
- Certain demographic characteristics, i.e., age, and gender; informal social contact, and previous well-being are significantly related to functional ability.
- Certain demographic characteristics, i.e., gender, and education; informal social contact, and previous well-being are significantly related to self-rated health.
- Certain demographic characteristics, i.e., race, education and income; informal social contact, and previous well-being are significantly related to depression.

CAREGIVING ENGAGEMENT

Table 5a: Regression of caregiving engagement on well-being outcomes

	Function	Self-rated health	Depression
Age	-0.0203***	0.0052*	0.0073***
Gender	-0.0998**	0.0888**	0.0454
Race	0.0639	0.0146	-0.1134**
Education	0.0104*	-0.0184***	-0.0168***
Married	0.0518	0.0499	-0.0557
Informal social	0.1002***	-0.0651***	-0.0965***
Income	0.0108	-0.0114	-0.0245***
Well-being (previous wave)	0.6362***	0.6100***	0.5361***
Caregiving	0.0265	-0.0375	0.0735*
Caregiving hours	0.0002	-0.0006	0.0003
Caregiving hours^2	-0.0000***	0.0000	0.0000
Caregiving*age	0.0088	-0.0081	-0.0021
Caregiving*gender	0.0825	0.1408	-0.1077
Caregiving*race	-0.0105	-0.3248***	0.1418
Caregiving*social	-0.0137	0.0113	-0.0563
Multiple role status (care-plus)	0.2169**	-0.3332**	-0.1859*

* $p \leq .10$; ** $p \leq .05$; *** $p \leq .01$

- Caregiving status is marginally related to depression.
- Curvilinear relationship is observed between caregiving hours and functional health.
- The interaction between caregiving status and race is significantly related to self-rated health.
- Certain demographic characteristics, i.e., age, gender, and education; informal social contact, and previous well-being are significantly related to functional ability.
- Certain demographic characteristics, i.e., age, gender, and education; informal social contact, and previous well-being are significantly related to self-rated health.
- Certain demographic characteristics, i.e., age, race, education, and income; informal social contact, and previous well-being are significantly related to depression.
- Multiple role status is significantly related to all well-being outcomes, i.e., functional health, self-rated health, and depression.
- Certain demographic characteristic, i.e., education is significantly related to functional health; race and income are significantly associated with self-rated health. Previous well-being are significantly related to all well-being outcomes.

Question:
Does the perceived benefit of the activity by the older adult affect well-being outcomes?

Table 6a: Effects of perceived benefits on well-being outcomes for volunteers

	Function	Self-rated health	Depression
Age	-0.0003	-0.0072	-0.0048
Gender	-0.0997	0.1078	0.1275*
Race	-0.0151	0.0163	-0.0397
Education	0.0094	-0.0207	-0.0229**
Married	0.1279	-0.0480	0.0107
Informal social	0.0181	-0.0148	-0.0219
Income	-0.0032	0.0150	-0.0305**
Lag well-being	0.5021***	0.5847***	0.5223***
Benefit to others	0.0571*	-0.0859*	-0.0139

* p ≤ .10; ** p ≤ .05; *** p ≤ .01

- The perception that one's volunteering is beneficial to others is significantly related to functional ability and self-rated health.

Table 6b: Effects of perceived benefits on well-being outcomes for employees

	Function	Self-rated health	Depression	Satisfaction
Age	-0.0151*	0.0064	-0.0065	0.0014
Gender	-0.0221	0.0438	0.1294	0.1282
Race	-0.1127	0.0415	0.0213	0.0047
Education	0.0319**	-0.0242	-0.0064	0.0109
Married	0.0684	-0.3087**	-0.3708***	-0.1050
Informal social	-0.0435	-0.0063	-0.0517	-0.1276**
Income	-0.0001	0.0015	-0.0158	0.0075
Well-being (previous wave)	0.4546***	0.5784***	0.5123***	0.3765***
Benefits to others	0.0570	-0.1781***	0.0410	-0.0290

p ≤ .10; ** p ≤ .05; *** p ≤ .01

- The perception that one's working effort is beneficial to others is significantly related to self-rated health.

Question:
Do certain mixes of productive activities affect these well-being outcomes differently?

Table 7: Regression of role number of level of engagement on well-being

	Functional health	Self-rated health	Depression
Age	-0.017***	0.001	0.005**
Gender	-0.048	0.073	0.022
Race	-0.044	0.054	-0.044
Married	0.018	0.030	-0.007
Education	-0.011***	-0.014	-0.003
Lag well-being	0.610***	0.673***	0.570***
Informal social	0.077***	-0.057**	-0.084***
Income	-0.001	-0.009	-0.017*
Role number	0.070***	-0.043**	-0.030*
Total hours	0.000**	-0.000**	-0.000*
Total hours (SQR)	-0.000	-0.000	-0.000

$p \leq .10$; ** $p \leq .05$; *** $p \leq .01$

- Engagement in a greater number of productive roles is significantly related to better functional health, higher self-rated health, and lower depression, after controlling for demographic characteristics.
- More hours of engagement in productive roles is significantly related to better functional health, higher self-rated health, and lower depression, after controlling for demographic characteristics.
- Certain demographic characteristics, i.e., age, education, previous well-being, and informal social contact, are significantly related to functional health.
- Certain demographic characteristics, i.e., informal social contact, and previous well-being contact are significantly related to self-rated health.
- Certain demographic characteristics, i.e., age, previous well-being, and informal social contact, are significantly related to depression.

Question:
Do types and levels of engagement in productive activities affect mortality?

Table 8a: regression of volunteering status and mortality

	Mortality
Age	-0.0676***
Gender	1.0665***
Race	0.1722
Education	-0.0102
Married	0.0304
Informal social	0.0230
Income	0.1134***
Functional health	0.1580***
Self-rated health	-0.1909***
Depression	-0.0258
Volunteer	0.3703***
Volunteer hours	-0.0053***
Volunteer hours^2	-0.0000
Volunteer*age	-0.0038
Volunteer*gender	0.3825
Volunteer*race	-0.1387
Volunteer*social	-0.3403**

$p \leq .10$; ** $p \leq .05$; *** $p \leq .01$

- Volunteer status and levels are significantly related to mortality.
- The interaction between volunteer status and informal social contact is significantly related to mortality.
- Certain demographic characteristics, i.e., age, gender, and income, and two measure of well-being, i.e., functional health and self-rated health, are significantly related to mortality.

Table 8b: Regression of employment status and mortality

	Mortality
Age	-0.0405**
Gender	1.5492***
Race	0.0921
Education	-0.0382
Married	-0.2140
Informal social	-0.3707*
Income	0.2116***
Functional health	-0.0089
Self-rated health	-0.3329**
Depression	-0.1111
Employment	0.0236
Employment hours	-0.0001
Employment hours²	0.0000*
Employment*age	-0.0212
Employment*gender	-0.7895
Employment*race	1.2488*
Employment*social	-0.2667

$p \leq .10$; ** $p \leq .05$; *** $p \leq .01$

- Certain demographic characteristics, i.e., age, gender, and income; informal social contact, and self-rated health are significantly related to mortality.
- The interaction between employment status and informal social contact is significantly related to mortality.
- The curvilinear relationship is observed between employment hours and mortality.

Table 8c: Regression of caregiving status and mortality

	Mortality
Age	-0.1117***
Gender	0.5961
Race	0.3787
Education	0.0439
Married	-0.2354
Informal social	-0.1390
Income	-0.0045
Functional health	-0.2137
Self-rated health	-0.4989**
Depression	0.3032
Caregiving	-0.2636
Caregiving hours	0.0005
Caregiving hours²	0.0001**
Caregiving*age	0.0102
Caregiving*gender	-1.7775*
Caregiving*race	0.2284
Caregiving*social	-0.3374

p ≤ .10; ** p ≤ .05; *** p ≤ .01

- Curvilinear relationship is observed between caregiving hours and mortality.
- Age and self-rated health are significantly related to mortality.
- The interaction between caregiving status and gender is significantly related to mortality.

Discussion and Future Work

This study adds to the growing body of evidence that productive engagement in later life has positive benefits to older adults. Volunteering and working both are associated with improved well-being. Simply being in volunteer and work roles contributes to well-being outcomes, and having higher levels of engagement relates to more positive outcomes. As in previous work, we offer evidence that there may be an optimal level of volunteer involvement, after which health gains taper off. We also document that the negative impact of increased years of age and of limited informal social support are attenuated for older volunteers and workers. We found some evidence that caregivers involved in other productive roles in addition to caregiving have better health outcomes than caregivers who have no other engagement.

We must note the limitations of this study in regards to causality. The survey design does not allow us to interpret the relationship between productive role involvement and positive well-being as unidirectional. That is, older adults with higher levels of well-being are more likely to be volunteers and employees, and short of an experimental design, the effects of role involvement on well-being outcomes can not be isolated. However, the study is stronger than most previous studies in its ability to identify causal relationship. The study has several advantages that increase confidence in the findings; most notably, the use of multiple waves of data and the statistical control of previous levels of well-being. We will note our study's limitations in all publications.

In the next six months, our team will submit at least two articles for publication in peer-review journals. The first article focuses on older caregivers and the positive impact of volunteer and work roles on caregiver well-being (this article will be submitted to the *Journal of Gerontology: Social Sciences* by November). The second article focuses on the positive impact of volunteering and the various conditions that maximize the impact of volunteering. A third product will be produced in this time frame: a dissertation on the impact of various mixes of productive engagement. This work will yield one to two articles in the following year. We will present these findings this year at the annual conferences of the Gerontology Society of America and the Society for Social Work Research. We are very pleased to have been invited by Dr. Robert Butler of the International Longevity Center to present our work on productive aging in New York on September 20, 2001.

We believe that our study provides support for increasing the number and quality of volunteer and work roles for older adults in this society. Findings also suggest that programs and policies assisting caregivers in assuming volunteer and work roles could improve well-being outcomes for this vulnerable group of elders. Our society may benefit from improving the institutional structures that facilitate older adults assuming productive roles; and our future work will seek to increase understanding about the characteristics of productive roles and institutional factors that maximize engagement. Our work aims to support this general policy principle: for the benefit of older adults and society as a whole, the ultimate limiting factors for productivity in later life should be individual capacity and interest, not institutional capacity of our society to provide these roles (Morrow-Howell, Hinterlong, & Sherraden).

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Variables in the study

Variable	Operationalization
Productive engagement	
Level of employment	Number of hours working for pay in last 12 months
Type of employment	Four variables characterize employment: 1) job decision-latitude, capturing the amount of influence the individual has on job tasks; 2) physical demand index, capturing the physical strength and stamina required of the job; 3) psychosocial demand index, capturing stress, boredom, and recognition associated with the job; and 4) Census Occupation Codes
Level of volunteering	Number of hours volunteering in last 12 months
Type of volunteering	Five level categorical variable indicating sponsoring organization: 1) religious; 2) political; 3) educational; 4) senior citizen or related organization; and 5) other organizations (including hospital).
Level of caregiving	Number of hours providing care (to someone having trouble taking care of themselves due to physical or mental disability) in last 12 months
Type of caregiving	Three level categorical variable: 1) direct provision of care; 2) care arrangement and supervision; or 3) both
Perceived benefits of the engagement to self	Subjective rating of how much other people are better off because of activity on a scale of 1=no better off to 4=a great deal better off
Perceived benefits of the engagement to others	Subjective rating of how much the respondent is better off because of his/her activity on a scale of 1=no better off to 4=a great deal better off
Well-being:	
Functional ability	Self-reported limitations (1=limitation, 0=no limitation) in each of 12 activities of daily living (shopping, travel, taking medications, bathing); index ranges from 0, no limitations to 12, limitations in all areas
Self-rated health	Subjective rating of health from 1-5, excellent to poor
Depression	Modified Center for Epidemiological Studies of Depression Scale (CES-D); on each of 11 symptoms, 1-3 rating of frequency of symptom occurrence; higher scores indicating increased depressive symptoms
Life Satisfaction	Respondents use a 5 point scale to agree or disagree with four statement capturing life satisfaction (ex: My life could be happier than it is now.); index ranges from –2 to +3, with higher scores indicating more satisfaction
Other variables:	
Gender	1=male, 2=female
Age	Age at first interview, 60-96yrs.
Education	Years of formal education completed in 1986, ranges from 0-17 yrs.
Race	0=white, 1=black, 2=other
Marital status	1=married or currently living with another adult in intimate relationship; 2=separate/divorced; 3=widowed; 4=never married
Cognitive ability	A 7 item test for cognitive impairment, from 0 to 7, with higher scores indicating poorer cognitive function
Income	Household income in last 12 months, from $2,500 to $110,000
Social contact	Two items regarding contact with friends (telephone and in-person) rated on from 1=more than once a day to 6=never; summed score ranges from 2-12, with higher scores indicating less social contact