Published in final edited form as:
Am J Geriatr Psychiatry. 2011 August ; 19(8): 743–751. doi:10.1097/JGP.0b013e3182006a53.

Association of Personality Traits with Elder Self-Neglect in a Community Dwelling Population

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Abstract

Objective—Elder self-neglect is an important public health issue. However, little is known about the association between personality traits and risk of elder self-neglect among community-dwelling populations. The objectives of this study are: 1) to examine the association of personality traits with elder self-neglect and 2) to examine the association of personality traits with elder self-neglect severity.

Methods—Population-based study conducted from 1993–2005 of community-dwelling older adults (N=9,056) participating in the Chicago Health Aging Project (CHAP). Subsets of the CHAP participants (N=1,820) were identified for suspected self-neglect by social services agency, which assessed the severity. Personality traits assessed included neuroticism, extraversion, rigidity and information processing. Logistic and linear regressions were used to assess these associations.

Results—In the bivariate analyses, personality traits (neuroticism, extraversion, information processing, and rigidity) were significantly associated with increased risk of elder self-neglect. However, after adjusting for potential confounders, the above associations were no longer statistically significant. In addition, personality traits were not associated with increased risk of greater self-neglect severity. Furthermore, interaction term analyses of personality traits with health and psychosocial factors were not statistically significant with elder self-neglect outcomes.

Conclusion—Neuroticism, extraversion, rigidity and information processing were not associated with significantly increased risk of elder self-neglect after consideration of potential confounders.

Keywords

elder self-neglect; personality traits; population-based study

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Authors declare no conflict of interest and no disclosure to report.

Objectives

Elder self-neglect is a pervasive public health issue. The National Centers on Elder Abuse define self-neglect "…as the behavior of an elderly person that threatens his/her own health and safety. Self-neglect generally manifests itself in an older person as a refusal or failure to provide himself/herself with adequate food, water, clothing, shelter, personal hygiene, medication (when indicated), and safety precautions" (1). Evidence suggests elder self-neglect accounts for approximately 1.2 million cases within the US annually (1;2), and is associated with increased risk for morbidity and mortality (3;4). However, our existing knowledge about risk factors associated with elder self-neglect in the general population has mostly relied on case studies and case reports to the social service agencies. Although such reports make an invaluable contribution to the field, comprehensive and systematic studies are needed so the problem can be more precisely defined, better solutions developed, and appropriate policy established. This is particularly important because recent evidence suggests that reports of elder self-neglect to social services agencies are on the rise (5).

Some researchers have implicated particular personality traits in the development of elder self-neglect (6;7). Macmillan and Shaw first described elder self-neglect in a 1966 study (8), using the term "senile breakdown syndrome". They identified a pattern of pre-syndromal personality characteristics in self-neglecting older adults without identifiable psychiatric illness; these individuals were typically described as "unfriendly, stubborn, obstinate, aloof, aggressive, suspicious, secretive, and quarrelsome." Macmillan and Shaw viewed these personality traits as part of the typical symptomatology of self-neglect, and suggested they might be a risk factor for elder self-neglect. Clark and colleagues noted similar personality characteristics in self-neglecting older adults in their 1975 study, which defined the term "Diogenes Syndrome"(9), and described self-neglectors as "aloof, suspicious, emotionally labile, [and] aggressive". Ungvari and Hantz, analyzing published case studies of self-neglectors, hypothesized that lifelong personality traits gradually evolve into self-neglect and social withdrawal (10;11).

Prior case reports suggest the association between personality traits with older adults who self-neglect (12;13). Researchers have also identified several other possible shared risk factors between personality traits and elder self-neglect, including cognitive impairment, and lack of social support (6,7,14). Prior studies have identified neuroticism as a risk factor for depression (15–17) and cognitive impairment (18–20). Extraversion has been positively linked with greater levels of social support, increased likelihood to enact social support, and larger available social network (21;22). Certain cognitive styles have been linked to positive affect in older adults adapting to life transitions such as retirement (23).

Currently, there are significant limitations to our understanding of the association between personality traits and elder self-neglect in population-based studies. Furthermore, self-neglect, like many other geriatric syndromes, manifests along a continuum of severity, rather than in two discrete categories (24). However, most of our current understanding of elder self-neglect has been studied in categorical terms ("self-neglect yes" and "self-neglect no") (25) which has further hindered insights into the continuum of self-neglect severity. We are not aware of any population-based studies that have examined the association between personality traits and elder self-neglect along the continuum of its severity.

The objectives of this study were: 1) to examine the independent association of personality traits with the risk of elder self-neglect within the context of the epidemiological study, Chicago Health and Aging Project (CHAP); and 2) to examine the independent association of personality traits with the risk of elder self-neglect severity in the same population. We hypothesized that 1) elders referred to a social services agency for self-neglect would have

more neuroticism and rigidity, and less extraversion, than others in their cohort who are not self-neglecting, and that 2) those elders most strongly displaying neuroticism and rigidity, and low extraversion would have the most severe presentations of self-neglect.

Methods

Setting

The CHAP study is a study of the residents of three adjacent neighborhoods on the south side of Chicago: Morgan Park, Washington Heights and Beverly. More in-depth details of the CHAP study design have been previously published (26;27). Of the 7,813 age-eligible residents identified through the complete census of the above three community areas in 1993, 6,158 (78.9%) were enrolled for the baseline population interview. Data collection occurred in cycles, each lasting three years, with each cycle ending as the succeeding cycle began. Each cycle consisted of an in-person interview of all subjects in the subjects' homes. As of the third cycle in 2000, CHAP started to enroll successive age cohorts, consisting of community residents who had turned 65 since the inception of the study. Members of these “successive age cohorts” have the same pattern of data collection, and their data were combined with the original cohort in the proposed analyses. As of 2005, 9,056 older adults had participated in the CHAP study.

Subjects

Of the 9,056 CHAP participants who had an in-person interview, a subset of participants were reported to social services agency for suspected elder self-neglect (n=1,820) cumulatively between years 1993 to 2005. CHAP study invited all age eligible (65 or greater) community residents residing in these communities to participate. Enrollment interviews for the 9,056 were conducted using standardized survey methods that assess personality traits, health history, health behavior and psychosocial factors. Informed consent was obtained and the study was approved by the Institutional Review Board at Rush University Medical Center in Chicago.

Independent Variable: Personality Trait

Personality traits assessed included the brief measures of neuroticism, extraversion, rigidity and information processing. At baseline, the study administered selected measures of personality traits derived in part from the NEO personality inventory and the Need for Cognition Scale (28) (29), which have been tested in prior studies (30–34). Participants were asked total of 12 statements that best describe themselves. Neuroticism is the disposition to experience psychological distress and was assessed using 4 items by asking if the participants often felt tense and jittery, often described themselves as a worrier, often felt helpless and wanted someone else to solve their problems, or often get angry with the way people treat them. Extraversion refers to the tendency to be outgoing, energetic, and optimistic, and was assessed using 4 items by asking if the participant often felt bursting with energy, preferred to do things with others, laughed easily, and liked to have a lot of people around them. Information processing refers to cognitive style – the individual's preferred approach to learning and using information-- and was assessed using 2 items by asking if the participant often enjoyed learning how to do new things and enjoyed reading more than watching television in their spare time. Rigidity refers to the lack of active imagination and intellectual curiosity and was assessed using 2 items by asking if the participants often do not like big changes in their routine, and often tend to be set in their ways of doing things. All above questions were likely in the formats of: strongly disagree, disagree, neutral, agree and strongly agree.

Dependent Variable: Self-Neglect

Reporting of Self-Neglect—Elder self-neglect case reports in Chicago can come from a variety of sources, including health care and legal professionals, community faith-based organizations, city workers (e.g., postal workers, utility workers), family members, community members, concerned neighbors or friends, or any other agency that may have contact with community seniors. Currently, there are no mandatory reporting requirements for elder self-neglect and these above reports were from voluntary reporters. These cases were reported to the social services agency, and then an in-home assessment took place, which included acquisition of basic demographic information, and assessment of self-neglect severity of the older adult for the specific services that may be offered by the social services agency.

Assessment of Self-Neglect Severity—The continuum of self-neglect severity in this study was assessed based on cases reported cumulatively over a 13-year period to the social services agency (n=1,820), which assessed unmet needs in the domains of personal hygiene and grooming, household and environmental hazards, health needs and overall home safety concerns. Elder self-neglect severity is rated by the social services agency based on concerns for unmet personal health and safety needs. A total of 15 items were used to rate the degree of unmet needs and each items were scored on the scale of 0 to 3, with higher number indicating greater danger to health and safety. The details of this measure have been previously described (35;36). The maximum cumulative score was 45 points, with a higher score indicating greater self-neglect severity. Confirmed self-neglect in this study was operationalized by including those with unmet needs score of greater than 0. The score of 1 to 45 constituted the severity of elder self-neglect. Available information from the social services agency report (37) showed that the measure was tested using the Kappa Statistic Algorithm (38), and all variables had inter-rater reliability coefficients of great than 0.70. In addition, the internal consistencies of the items are high with Cronbach's alpha of 0.95 (39). Both face validity and content validity were evaluated using qualitative data from case managers and agency administrators. In addition, external validity of the measure was assessed and was shown to predict higher health care utilization (37) and increased risk of mortality (4).

Matching of Social Services Agency Data to CHAP Data—We began with total of 9,056 CHAP participants and matched this dataset with social services agency dataset from 1993 through 2005. We performed data matching and found total of 1,820 CHAP participants who had been reported to the social services agency. We used the date of birth, sex, race, exact home address, zip codes, and home phone number of each client to perform the match..

Sociodemographic, Health-Related and Psychosocial Variables—All of the sociodemographic, health related and psychosocial variables were uniformly ascertained through the parent CHAP study. Sociodemographic variables used in analyses included age (years), sex (men or women), race (non-Hispanic black or non-Hispanic white), levels of education (years) and level of income (Income Categories: 1=$0–4,999; 2=$5,000–9,999; 3=$10,000–14,999; 4=$15,000–19,999; 5=$20,000–24,999; 6=$25,000–29,999; 7=$30,000–34,999; 8=$35,000–49,999; 9=$50,000–74,999; 10=$75,000 and over).

Self-reported medical conditions were collected for hypertension, Diabetes Mellitus, stroke, heart disease, cancer, and thyroid disease. Cognitive function was assessed using the Mini-Mental State Examination (MMSE) (40), which is a widely used, 30-item screening tool for cognitive impairment. Physical function was assessed using the Katz Activities of Daily Living (ADL) scale, which measures limitations in an individual's ability to perform basic

self-care tasks (41). It consists of six items; an ADL score is created by adding the individual items (range 0–6).

Social network was assessed by asking questions about the number of children, relatives, and friends according to the distance between their domicile and the elder's domicile and the frequency that they saw the elder, as was done in the EPESE study (42). Social engagement was assessed by asking how often older adults participate in social activities outside of house; religious activities, museums, library and senior centers.

Analytic Approach

Descriptive analyses on the personality traits were reported for the total cohort, those with reported self-neglect, and those without reported self-neglect. Mean, median, inter-quartile range (IQR), 90%, 10% of the personality traits scores were reported for each group. Statistical tests (t-test) were performed to compare the 1,820 participants with reports of elder self-neglect with the 7,559 participants without reports of elder self-neglect, with respect to each of the personality traits. Logistic regression was used to examine the independent association of personality traits with risk of reported self-neglect. In the first model (Model A), we included the core variables of age, sex, race, education and income. In the second model (Model B), we added health related variables as potential confounders (medical conditions, cognitive impairment, physical disability. In the final model (Model C), we added social factors of social network and social engagement as potential confounders between personality traits and reported elder self-neglect. Moreover, we repeated the above models (A–C) for confirmed cases of elder self-neglect.

In order to examine the association between personality traits and self-neglect severity, we used linear regression models and repeated models (A–C) for each of the personality traits, adjusting for same potential confounders. Lastly, we used interaction terms (i.e., Personality Traits × Medical Conditions, etc) to further assess the potential modifying factors for the relationship between personality traits and elder self-neglect. Interaction terms included medical conditions, cognitive function, physical function, social network, social engagement, race/ethnicity, education, and income. Interaction terms were adjusted for the core variables for all analyses and included each of the interactions terms (i.e, cognitive function, personality traits, and cognitive function × personality traits). Odds Ratio (OR), 95% Confidence Interval (CI), Wald Chi-square, degree of freedom and p values were reported for logistic regression models. Parameter estimate (PE), standard error (SE), t-test and p values were reported for linear regression models and interaction term analyses. Analyses were carried out in SAS®, Version 9.2 (SAS Institute Inc., Cary, NC).

Results

Characteristics of Elder Self-Neglect

Of the 9,379 participants in the CHAP cohort, 1,820 participants were reported to the social services agency and 7,599 participants were not reported. The mean neuroticism score was 5.8 (standard deviation [SD]: 2.3) for those with reported self-neglect and 5.4 (2.3) for those without self-neglect. For extraversion, mean score was 8.1 (2.1) for those with reported self-neglect and 8.5 (2.2) for those without self-neglect. For information processing, the mean score was 4.8 (1.5) for those with reported self-neglect and 5.1 (1.5) for those without self-neglect. For rigidity, the mean score was 5.2 (1.4) for those with reported self-neglect and 5.1 (1.5) for those without self-neglect (Table 1).

Associations of Personality Traits with Elder Self-Neglect

After adjusting for the core variables (Table 2, Neuroticism, Model A), higher levels of neuroticism were associated with increased risk of reported self-neglect (OR, 1.03, 95% CI, 1.00–1.05). After addition of health-related variables to the core model, neuroticism was no longer associated with reported self-neglect (OR, 1.01, 95% CI, 0.99–1.04) (Model B). In the subsequent model (Models C), after addition of social factors, neuroticism was not statistically associated with increased risk of reported self-neglect. Similar findings for confirmed self-neglect are shown in Table 2.

With respect to extraversion, after considering for the core variables (Table 2, Extraversion, Model A), higher levels of extraversion were associated with decreased risk of reported self-neglect (OR, 0.97, 95% CI, 0.94–0.99). After considering additional health related variables and psychosocial factors (Model C), higher levels of extraversion were no longer associated with reported self-neglect (OR, 0.98, 95% CI, 0.95–1.01). Similar finding for confirmed self-neglect are shown in Table 2.

With respect to information processing, after adjusting for core variables (Table 2, Information Processing, Model A), higher levels of information processing were associated with decreased risk of reported self-neglect (OR, 0.96, 95% CI, 0.93–0.99). After considering additional health related and psychosocial factors, higher levels of information processing were not associated with increased risk of reported self-neglect (OR, 0.98, 95% CI, 0.94–1.02). Similar findings for confirmed self-neglect are shown in Table 2.

With respect to rigidity personality trait, after adjusting for core variables, higher levels of rigidity were not associated with increased risk of reported self-neglect. Similar findings for confirmed self-neglect are shown in Table 2. In addition, we considered the time of the personality traits assessment to the identification of elder self-neglect as a covariate, and inclusion of this variable did not alter the results of our findings.

Personality Traits and Self-Neglect Severity

The study examined the association between personality traits and risk of greater self-neglect severity. In the core models (Table 3, Model A), higher scores in neuroticism, extraversion and information processing, and rigidity were not associated with increased risk of greater self-neglect severity. The association between personality traits and greater self-neglect severity remain non-statistically significant after adjusting for health-related variables and psychosocial factors.

Interactions of Personality Traits with Health and Psychosocial Factors

Interaction terms (i.e., Personality Traits × Medical Conditions) were used to further assess the potential confounding factors between different personality traits and elder self-neglect. Higher number of medical conditions could be a modifying factor between neuroticism and increased risk of greater elder self-neglect severity. Table 4 indicates that there are no significant interactions between other personality traits with health or psychosocial factors and the risk of elder self-neglect outcomes.

Conclusions

In a population-based cohort of older people, we found a significant bivariate association between personality traits and elder self-neglect. However, after considering potential confounders, these significant associations were no longer present. In addition, we found that among those reported for elder self-neglect, personality traits were not associated with greater self-neglect severity.

We believe that the present study expands the field's understanding of elder self-neglect. First, our study is the largest population-based study to examine the association between personality traits and elder self-neglect. The study population has been well characterized for more than 15 years, which contribute to the generalizability of our study findings. Second, this study is the first to examine the association between personality traits and the continuum of elder self-neglect severity, which provided the improved knowledge about the gradient association between personality traits and self-neglect severity. Third, although there were significant associations between personality traits and elder self-neglect in the bivariate analyses, consideration of health and social factors ameliorated the statistically significant associations. This finding contrasts with prior studies and challenges the beliefs of the association between personality traits and elder self-neglect.

Since the syndrome of elder self-neglect was first described in the literature, pre-morbid personality traits have been thought to be a major risk factor for elder self-neglect (8–12). While personality appears to be related to a variety of health outcomes in older adults, the nature of the association is poorly understood (30;31;43). Prior study suggest that comorbid disordered personality traits may lead to decline in physical functioning and quality of life (43). In addition, greater psychological wellbeing have been associated with increased risk of elder self-neglect (6;44). Moreover, neuroticism was found to be negatively associated with several domains of cognitive performance of community-dwelling older adults (45). The complex interaction of personality with cognitive function also makes it difficult to delineate the unique role of personality traits with the risk of elder self-neglect (46). In our present study, we considered an extensive number of health and social factors, and our interaction term analyses suggested that cognitive impairment were not confounding factors between personality traits and elder self-neglect. Future longitudinal studies are needed to elucidate more precise causal mechanism.

Our study has limitations. First, elder self-neglect is under-reported, and although the rate of under-reporting is unknown, there are most likely CHAP cohort members who have been self-neglectful over time and who were not reported to the social services agency. Second, the measurement of self-neglect severity has been designed for practical use within the social services agency, which could contribute to the variability in the measurement of self-neglect severity. Third, we did not have comprehensive measures of personality traits and there are likely other personality traits (conscientiousness, openness, and agreeableness, etc) that may be associated with elder self-neglect. Unfortunately, we do not have these measures in the CHAP data to examine these precise relations.

Fourth, this was a cross-sectional study. Further explorations of such temporal relations are now needed to understand better the associations of personality traits with elder self-neglect. Fifth, there are other potential factors (executive dysfunction, detailed psychiatric diagnosis, or assessment of decision making capacity, etc) associated with self-neglect that are not considered in this manuscript. Sixth, we did not have specific indicators of self-neglect to further explore the relations between personality traits with specific phenotypes of self-neglect. Prior work by McDermott et al (47) has also suggested the values of understanding specific behaviors of self-neglect. Lastly, our study definition for elder self-neglect differs from prior studies. Our study captured more settle forms of elder self-neglect which permit the examination of self-neglect severity in this cohort. However, we believe that our present findings will set the groundwork for future studies to rigorously investigate these issues.

This study has potential practical and research implications. Health care professional should be aware that the reasons for the self-neglecting behaviors may not solely due to specific personality traits. It will be critical to further assess the health and psychosocial wellbeing of these older adults as potential contributing factors. Social services agency should be aware

of the health and psychosocial wellbeing of those who self-neglect. Even though older adults who self-neglect may have pronounced specific personality traits, geriatric and psychiatric referrals are needed to explore other factors that might contribute to self-neglecting behaviors. Future research efforts are needed to explore the association between other personality traits and elder self-neglect. Additional studies are needed to elucidate these relationships in other racial/ethnic groups. Future studies are also needed to examine the psychological and psychiatric consequences of elder self-neglect.

In conclusion, our findings indicate that the apparent association between personality traits and elder self-neglect are no longer statistically significant after consideration for other potential confounding factors. Dataset matching of CHAP and social services agency provides a novel opportunity to explore this vastly difficult area of research in a racially/ethnically and socioeconomically diverse community. Future longitudinal studies are needed to uniformly collect self-neglect data for the entire CHAP cohort in order to explore the temporal associations between personality traits and elder self-neglect.

Acknowledgments

The authors wish to thank Ms Ann Marie Lane for community development and oversight of project coordination, Ms. Michelle Bos, Ms. Holly Hadden, Mr. Flavio LaMorticella, and Ms. Jennifer Tarpey for coordination of the study. We further thank George Dombrowski, MS, for data management support.

Funders: This work was supported by National Institute on Aging grant (R01 AG11101), Paul B. Beeson Career Development Award in Aging (K23 AG030944), The Starr Foundation, John A. Hartford Foundation and The Atlantic Philanthropies.

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Table 1

Characteristics of Personality Traits and Elder Self-Neglect in CHAP

	Total Cohort N=9,379	No Self-Neglect N=7,559	Self-Neglect N=1,820	t-Test	DF	P value
Neuroticism (range 0–15)						
Mean, (SD)	5.5 (2.3)	5.4 (2.3)	5.8 (2.3)	−7.26	9161	<0.001
Median (IQR)	5.0 (4.0–7.0)	5.0 (4.0–6.0)	6.0 (4.0–7.0)			
90%	8.0	8.0	9.0			
10%	3.0	3.0	4.0			
Extraversion (range 0–16)						
Mean, (SD)	8.4 (2.2)	8.5 (2.2)	8.1 (2.1)	5.82	9165	>0.001
Median (IQR)	8.0 (7.0–10.0)	8.0 (7.010.0)	8.0 (7.010.0)			
90%	11.0	11.0	11.0			
10%	6.0	6.0	6.0			
Information Processing (range 0–8)						
Mean, (SD)	5.0 (1.5)	5.1 (1.5)	4.8 (1.5)	6.82	9149	<0.001
Median (IQR)	5.0 (4.0–6.0)	5.0 94.0–6.0)	5.0 (4.0–6.0)			
90%	7.0	7.0	7.0			
10%	3.0	3.0	3.0			
Rigidity (range 0–8)						
Mean, (SD)	5.1 (1.5)	5.1 (1.5)	5.2 (1.4)	−2.50	9128	0.013
Median (IQR)	6.0 (4.0–6.0)	6.0 (4.0–6.0)	6.0 (4.0–6.0)			
90%	7.0	7.0	6.0			
10%	3.0	3.0	3.0			

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Table 2

Association (Odds Ratio and 95% Confidence Interval) of Personality Traits with Elder Self-Neglect

	Reported Self-Neglect			Confirmed Self-Neglect		
	A	**B**	**C**	**A**	**B**	**C**
Neuroticism	1.03 (1.00–1.05)	1.01 (0.99–1.04)	1.01 (0.98–1.02)	1.02 (1.00–1.05)	1.01 (0.98–1.04)	1.00 (0.98–1.03)
Wald chi-squared, P	4.78, 0.03	0.99, 0.32	0.22, 0.54	2.79, 0.09	0.40, 0.81	1.01, 0.31
Extraversion	0.97 (0.94–0.99)	0.98 (0.95–1.00)	0.98 (0.95–1.01)	0.96 (0.93–0.99)	0.97 (0.94–0.99)	0.97 (0.94–1.00)
Wald chi-squared, P	5.71, 0.02	3.31, 0.07	2.04, 0.15	7.61, 0.01	5.55, 0.02	3.47, 0.06
Information Processing	0.96 (0.93–0.99)	0.97 (0.93–1.01)	0.98 (0.94–1.02)	0.95 (0.91–0.99)	0.95 (0.91–0.99)	0.96 (0.92–1.00)
Wald chi-squared, P	3.87, 0.05	2.48, 0.12	1.31, 0.22	5.63, 0.02	4.81, 0.03	2.72, 0.07
Rigidity	1.01 (0.97–1.05)	0.99 (0.96–1.04)	0.99 (0.95–1.04)	1.02 (0.98–1.06)	1.01 (0.97–1.06)	1.01 (0.96–1.05)
Wald chi-squared, P	0.24, 0.63	0.00, 0.96	0.09, 0.75	0.07, 0.40	0.23, 0.63	0.03, 0.82

Logistic regression analyses were used for elder self-neglect outcomes

A. age, sex, race, education and income

B. A + medical comorbidities, cognitive function and physical function

C. B + social network and social engagement

Note: DF = 1 for all tests in Table 2

Table 3

Association of Personality Traits and Elder Self-Neglect Severity

Models:	Parameter Estimate[a]	Standard Error[b]	t-value	df	P value
Neuroticism					
A	0.06	0.09	0.66	1324	0.51
B	−0.00	0.09	−0.04	1269	0.97
C	0.04	0.09	0.31	1264	0.67
Extraversion					
A	−0.12	0.09	−1.27	1324	0.21
B	−0.11	0.09	−1.18	1269	0.24
C	−0.16	0.09	−1.74	1264	0.09
Information Processing					
A	−0.11	0.14	−0.81	1318	0.42
B	−0.07	0.14	−0.50	1263	0.62
C	−0.13	0.15	−1.00	1258	0.36
Rigidity					
A	−0.09	0.14	−0.61	1321	0.55
B	−0.11	0.15	−0.72	1266	0.47
C	−0.08	0.15	−0.60	1261	0.58

Models:

A. age, sex, race, education and income

B. A + medical comorbidities, cognitive function and physical function

C. B + social network and social engagement

Note: Linear regression was used in these analyses of personality traits and self-neglect severity

df = Degrees of Freedom

[a] Parameter estimates refers to the change in slope of unit change in personality trait scores to the risk of self-neglect severity

[b] Standard error refers to the variability of the parameter estimates stated above.

Table 4

Interaction Terms of Personality Traits with Health, Psychological and Social Factors

	Reported Self-Neglect				Self-Neglect Severity				
Interaction Terms:	**PE**	**SE**	**Wald Chi-Sq**	**P**	**PE**	**SE**	**t-value**	**df**	**P**
Neuroticism X									
Medical Conditions	0.02	0.01	3.27	0.07	0.21	0.09	2.42	1322	0.02
Cognitive Function	0.00	0.00	2.39	0.12	−0.03	0.02	−1.31	1270	0.19
Physical Function	−0.01	0.01	0.40	0.53	0.08	0.08	1.06	1322	0.29
Social Network	−0.00	0.00	0.36	0.55	−0.00	0.01	−0.29	1322	0.77
Social Engagement	0.00	0.01	0.26	0.61	−0.07	0.05	−1.36	1321	0.17
Extraversion X									
Medical Conditions	−0.01	0.01	0.39	0.53	−0.01	0.09	−0.70	1322	0.48
Cognitive Function	−0.00	0.00	1.49	0.22	0.02	0.02	0.96	1270	0.33
Physical Function	0.01	0.01	0.47	0.49	−0.07	0.08	−0.88	1322	0.38
Social Network	−0.00	0.01	0.00	0.99	−0.01	0.02	−0.27	1322	0.79
Social Engagement	0.00	0.01	0.05	0.82	0.09	0.06	1.48	1321	0.14
Information Processing X									
Medical Conditions	−0.00	0.02	0.00	0.94	0.02	0.14	0.14	1320	0.89
Cognitive Function	−0.01	0.00	3.81	0.05	0.03	0.03	1.10	1267	0.27
Physical Function	0.03	0.02	2.12	0.15	−0.07	0.11	−0.61	1319	0.54
Social Network	0.00	0.00	0.06	0.81	−0.01	0.02	−0.24	1319	0.81
Social Engagement	0.00	0.01	0.01	0.92	0.07	0.08	0.83	1318	0.41
Rigidity X									
Medical Conditions	0.00	0.02	0.04	0.84	0.21	0.14	1.47	1316	0.14
Cognitive Function	−0.01	0.00	1.71	0.19	0.03	0.03	0.99	1264	0.32
Physical Function	0.00	0.02	0.01	0.92	−0.02	0.12	−0.15	1316	0.88
Social Network	0.00	0.00	0.03	0.87	−0.02	0.02	−0.93	1316	0.35
Social Engagement	0.02	0.01	2.22	0.14	0.06	0.08	0.76	1315	0.45

All Interactions terms were adjusted for the core variables of age, sex, race, education and income, specific personality trait and the specific health related variables, and interaction terms (personality traits × health related variables)

Logistic regression analyses were used for the reported elder self-neglect outcomes (df=1 for these tests)

Linear regression analyses were used for the self-neglect severity outcomes

PE: Parameter Estimates

SE: Standard Errors