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Social Networks, Role-Relationships, and Personality in Older Adulthood

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Abstract

Objectives: This article examines the implications of personality traits for social network connectedness in older adulthood, across different social relationships.
Methods: This article uses data from the National Social Life Health and Aging Project (NSHAP), a nationally-representative, longitudinal survey of community-dwelling older Americans (*N* = 2,261). Network characteristics were predicted using Poisson and negative binomial regression (for network size) as well as multilevel identity-linked and ordinal-logit-linked regressions (for tie strength).
Results: Extraversion and agreeableness were associated with tie strength, and extraversion was weakly associated with friend network size. Few trait-by-role-relationship interactions emerged, although more-neurotic persons were more likely to talk about their health with friends.
Discussion: Personality traits impact the strength of social network ties in older adulthood. However, traits may have minimal impact on network size. The consequences of personality also appear to be largely consistent across different social relationships.

Keywords: Family, Friendship/Social networks, Personality, Personal relationships

Social connectedness is an important component of overall quality of life for older adults. A large and still-growing field of research has shown that social networks are linked to a variety of consequential outcomes ranging from physical health (Berkman & Syme, 1979; Holt-Lunstad, Smith, & Layton, 2010), to instrumental and emotional support (Thoits, 2011). Therefore, researchers often ask why it is that some older adults have strong, helpful, and supportive connections, while others do not (Cornwell, Laumann, & Schumm, 2008; Laakasuo, Rotkirch, Berg, & Jokela, 2017; McPherson, Smith-Lovin, & Brashears, 2006; Molho, Roberts, de Vries, & Pollet, 2016; Small, 2010). Within social gerontology, this line of research has made great strides in recent decades, in part because of more and better social network data (Cornwell et al., 2008). During this

same period of growth, research on personality has demonstrated that personality traits impact social networks (Burt, 2012; Mehra, Kilduff, & Brass, 2001). However, personality can vary by role contexts (Wood & Roberts, 2006); therefore, this article investigates how personality relates to social networks in older adulthood, as well as how this relationship varies by role context.

This intersection of social networks and personality may be particularly important in older adulthood, when both personality and social roles are undergoing noteworthy transitions. First, personality traits such as the Big Five (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) may undergo changes in older adulthood, on average shifting towards lower scores on Neuroticism, higher on Agreeableness, and stable

or declining scores on Extraversion (although considerable variability in personality trajectories exists; Lucas & Donnellan, 2011; Soto, John, Gosling, & Potter, 2011). These traits may all have implications for building or maintaining social relationships, discussed in more detail below. At the same time as they are undergoing these trait changes, older adults may be disinvesting in some relationships while more strongly investing in others, as they transition towards retirement, moving away from work contacts, and becoming more heavily involved with friends and family (Carstensen, 2006; Wrzus, Hänel, Wagner, & Neyer, 2013). Involvement in social relationships can shape personality in older adulthood (Lodi-Smith & Roberts, 2012), and because trait expression can be different across social roles (Wood & Roberts, 2006), the growing importance of friendship and family during this stage of life could mean that traits are differentially expressed in these two kinds of social relationships.

Before proceeding, it may be helpful to clarify why this article considers the impact of personality on networks, rather than the reverse. Although personality appears stable in older adulthood, personality can change at any age (Roberts, Walton, & Viechtbauer, 2006), and recent work has shown that towards the end of life, older adults' personalities may begin experiencing noteworthy changes (Lucas & Donnellan, 2011). Nevertheless, Lucas and Donnellan also showed that stability remains high even in later life, and that "even at the lowest estimates, individual differences in the Big Five domains are still fairly consistent" (857). Other studies have shown that network stability tends to be much lower in this same age group (i.e., aged 65 years or older; Cornwell, Schumm, Laumann, Kim, & Kim, 2014). Studying the impact of personality on networks is therefore tractable in this age group, but it is not necessarily reasonable to infer causality on the basis of any observed associations. In the article below I begin with a review of the existing literature, before proceeding to my analysis and discussion, but I return to this crucial issue in the limitations.

Personality Traits and Social Networks

Presently, an active line of research is engaged with studying the associations between social networks and personality traits. A central finding of this literature is that the structure and content of individuals' social networks is at least partially attributable to their personalities (Clifton, Turkheimer, & Oltmanns, 2009; Fang et al., 2015).

Although all Big Five traits might have important implications for social networks, Extraversion may be particularly key, and this trait will be the focus for hypotheses in this study. More-extraverted people's personal social networks tend to be larger, in part because more-extraverted people may consciously seek out social ties (Vanbrabant et al., 2012). Extraversion can also describe differences in nonpurposive aspects of social behavior, such as levels of energy, or characteristic positive affect, which could create more opportunities for meeting and befriending new people (Klein, Lim, Saltz, & Mayer, 2004; Wilson, Harris, & Vazire, 2015). This could produce particularly *close* connections, since Extraverts may seek out relationships that promise close and intimate bonds, or feel more positively about the connections that they already have; although there is limited literature to support this speculation, it follows theoretically that more-extraverted people would seek out and maintain close bonds, through their perduring positive affect in social interaction. Finally, Extraversion could also lead people to take more of an interest in their social world, and have more accurate information about it (Casciaro, 1998). For this reason, more-extraverted people may be more likely to acquire and share salient information, such as about their health. Given the relatively high rate of health conditions in older adulthood, this could make more-extraverted persons more likely to speak about their health with confidants. Therefore I hypothesize that more-Extraverted people will have larger and stronger social networks.

As stated, other Big Five traits can also provide researchers with plausible accounts of the associations between personality traits and network characteristics. Openness, for example, may lead individuals to be more open in conversation about their health. Neuroticism may have similar consequences, through relentless introspection leading to greater confession of one's health worries (similar to the so-called "Woody Allen effect;" see Frank, McGuire, Normand, & Goldman, 1999; Friedman, 2000). At the same time, the characteristic negative affect associated with Neuroticism may reduce feelings of closeness to network members (Wilson et al., 2015). Conscientious individuals may diligently seek out health information from their contacts, but also might have more and closer ties because they are better at maintaining relationships (Jackson et al., 2010). Finally, Agreeableness comprises being communally-oriented as well as sympathetic and kind (Graziano, Habashi, Sheese, & Tobin, 2007), and for this reason, more-agreeable persons may have larger networks with closer ties. Therefore although Extraversion is the focus for the hypotheses of this article, the article also considers the other four Big Five traits. However, the social network benefits of personality may only accrue to particular sectors of the network, as discussed below.

Role-Relationships in the Study of Traits and Networks

The question of how personality operates in different social domains is still an open one. Sociologists often consider the importance of *role-relationships* (socially-recognized types of relationships; Fuhse, 2009), which create normative expectations of social behaviors that are appropriate to that relationship. Personality theorists have also proposed that general traits can be partially decomposed into

role-specific personality characteristics (Wood & Roberts, 2006), which may bear a resemblance to a person's general traits, but differ based on social expectations surrounding that role. Older adulthood may also be a stage where the motivation to engage with friends versus family may be declining for the former and increasing for the latter, creating differences in the association between traits and connectedness to friends versus family (Carstensen, 2006). This invites consideration of how social expectations surrounding friends and family may change the expression of personality traits in two different relational contexts.

In terms of their general qualities, family ties tend to be strong, close, and reliable (Verhaeghe, Pattyn, Bracke, Verhaeghe, & Van de Putte, 2012). Family ties are also generally more effective than other kinds of ties at exerting social control, and applying sanctions against antisocial behavior (Umberson, 1987). Consequently, a more-introverted person may forgo his or her preferences for less social interaction, in order to remain in the good graces of family. Furthermore, family may also be more likely to retain close bonds even when the behavior of those involved is frustrating. In support of this, one study found that respondents were more likely to label family as someone who was both bothersome and important to them (Fingerman, Hay, & Birditt, 2004). A more shy and reserved person, who is difficult to coax into social interaction, may therefore be motivated by the normative obligations surrounding family to maintain family ties. Furthermore, strong norms surrounding social control may induce people to be more open about their family with their health, as interested parties who have long guarded their family member's wellbeing. Therefore it seems reasonable to hypothesize that social expectations surrounding family may create close ties, with frequent contact, and open conversation about one's health, regardless of a focal person's level of Extraversion.

Unlike family, for a friendship to be considered "real," two people should ideally have a reciprocally-pleasurable relationship. Friendships are typically defined by sharing humor, support, emotional understanding, and enjoyment (Adams & Plaut, 2003; Fischer, 1982). Unlike family, which is an ascribed relationship, friendships are achieved, and thus are often recognized as the domain of personal choice, where individuals seek out others with whom they share a rewarding rapport (Bellotti, 2008). Friends may also share some hobby or activity, which may lead them to positively value one another as someone with shared skills or interests, directing their conversation to topics that are relevant for their activities (Small, 2010). This experience of one another as good company, with whom one chooses to speak freely about topics of common interest or concern, is therefore a key part of what defines a friendship in American culture (Fischer, 1982). Friends can also provide instrumental support to one another (Boerner & Reinhardt, 2003), but the category typically describes sociable, and not merely instrumental, involvement (Fischer, 1982). Work comparing the impact of personality on friend versus family relationships

is rare, although one recent study in the United Kingdom found that respondents were less likely to list a close contact as a relative if the respondent was more-extraverted (Laakasuo et al., 2017). Therefore, this article hypothesizes that the associations between Extraversion and network size, and all measures of tie strength, will be weaker when considering family ties, compared to friends.

A counterpoint to this hypothesis would be that by older adulthood, many other adults, no matter their personality, may have mostly long-lasting established friendships, which are almost as strong as family. These competing plausible accounts may be arbitrated by an empirical investigation, which begins below.

Data and Methods

The data for this study came from two waves of the National Social Life Health and Aging Project (NSHAP), which is a nationally representative longitudinal probability sample of older adults in the United States, with waves collected in 2005 and 2010. The study benefits from a high response rate; 75.5% of those contacted for interviews agreed to participate in Wave 1, and in Wave 2, 2,261 persons returned for follow-up (75.2%). Among those who did not return, 318 were deceased and 456 were in too poor health or refused for other reasons. This article considers cross-sectional associations between personality and networks at Wave 2, since personality was only assessed in this wave. As shown in Table 1, the sample was slightly more female than male (52%), likely because men have higher mortality rates at older ages than women (Rogers, Hummer, & Nam, 2000), and likewise, the sample was fairly well-educated (58.3% with college or more). The sample was also mostly retired (73%), and married (58.5%).

Dependent Variables

NSHAP includes a version of the "important matters" name-generator roster, which asks respondents to list up to five individuals with whom respondents discussed "*things that are important to them*" over the past 12 months (Burt, 1984). If not listed in their top five, respondents were asked to list their spouse in a sixth slot, and "*anyone else who is very important to you*" in a seventh slot. These were excluded since they use different question wording from the top 5. The roster was placed at the head of the survey in order to ameliorate response burden, which may have led to serious distortions in previous studies using this instrument (Paik & Sanchagrin, 2013). After listing up to five confidants, respondents were then asked to assign them attributes such as age, gender, how much time the respondent spends with them, how close they feel to them, and the relationship they share. Respondents were given a list of possible relationships, and asked to check one box that best-described their relationship to each confidant. The categories were: spouse, ex-spouse, romantic/sexual

Table 1. Respondent-Level Variables Used in Analysis (unweighted N = 2,261; weighted N = 2,068); all descriptive statistics weighted

	Possible range	Mean (*SD*)/ number (%)
Outcomes:		
Overall confidant network size	0–5	3.78 (1.38)
Number of "confidant" friends	0–5	1.09 (1.29)
Number of "confidant" family	0–5	1.97 (1.40)
Personality traits (factor scores):		
O	–4–4	0.00 (1.03)
C	–4–4	–0.01 (1.02)
E	–4–4	–0.01 (1.02)
A	–4–4	0.02 (1.01)
N	–4–4	–0.06 (1.01)
Controls:		
Gender (female)	0 or 1	1,076 (52.02%)
Age	62–91	72.25 (7.27)
Race/ethnicity:		
Black, non-Hispanic	0 or 1	203 (9.84%)
Hispanic	0 or 1	139 (6.75%)
College or BA	0 or 1	1,205 (58.26%)
Retired	0 or 1	1,508 (73.02%)
Married	0 or 1	1,161 (56.17%)
Social participation	0–6	2.92 (1.69)
Physical health	1–5	3.26 (1.07)
Probability of retention	0–1	.80 (.12)

Note: Probability of retention is the predicted probability of a respondent returning from W1 to be interviewed in W2 of NSHAP.

partner, parent, child, sibling, grandchild, other relative, in-law (parent, step-child other in-law), friend, neighbor, coworker, clergy, counselor/psychiatrist/psychologist, caseworker/social worker, housekeeper/home-care provider, and "other."

    This study considered four outcomes derived from the "important matters" name generator in the 2010 wave of NSHAP: network size, time spent with confidants, closeness to confidants and how likely the respondent is to discuss health with his or her confidants. Size was calculated by counting the number of people that the respondent listed in the roster. This is defined as the respondent's *confidant* network throughout this article. Time spent with confidants was originally a seven-point ordinal scale, which I recoded into a continuous variable in order to represent days per year ("every day" = 365; "once a month" = 12 etc.). There is precedent for this in previous analyses using NSHAP data (Cornwell, Schumm, Laumann, & Graber, 2009), but the robustness of the findings were checked by examining this variable with and without recoding. Closeness was rated on a four-point scale ranging from "not at all close" to "extremely close." Respondents were also asked how likely it would be that they would discuss health with each person, with three response categories: "Not likely," "somewhat likely" and "very likely." Time spent, closeness

and talking about health were treated as confidant-level variables. I use the term *"family"* to refer to the aggregation of blood kin and in-laws. Spouses were not included among family because there was almost no variance in the outcomes of interest for spouses: almost all spouses saw the respondent every day (98.9%), said they were extremely close or very close with them (96.9%), and would talk to them about health (95.6%).

Independent Variables

Personality

NSHAP used the Midlife Development Inventory (MIDI) to measure the Big Five personality traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism). Unfortunately, the MIDI was only used at Wave 2 of NSHAP, meaning there is no opportunity to test the effect of personality change on network change. The battery comprised 21 adjectives, where the respondent was asked to say how much an adjective described them, ranging from "not at all" to "a lot." For example, the adjectives for Extraversion were "*lively*" "*outgoing*" "*friendly*," "*lively*," "*active*" and "*talkative*." Adjectives were selected by the national survey of Midlife Development in the United States (MIDUS) investigative team based on the strength of factor loadings, and high correlations with other theoretically-relevant adjectives (Goodwin & Gotlib, 2004). The Big Five were measured using varimax-rotated factor scores (for details, see Iveniuk, Laumann, Waite, McClintock, & Tiedt, 2014).

Life-course factors

Two life-course factors that might confound the associations between personality and social network characteristics are retirement and being married. For some older adults, retirement initiates a shift in opportunities for social interaction. A recent study using NSHAP found that retirement increased overall network size for older Americans, meaning at least some older adults' social lives may flower following retirement (Cornwell et al., 2008). Not having a spouse, in Wave 1 of this same study, predicted smaller social networks and less time interacting with confidants (Cornwell et al., 2008). In order to proxy life circumstances associated with these two life-course factors, I included a dichotomous variable for each factor, based on respondents' reports at Wave 2.

Health

Health effects on social networks are not as well-understood as effects of social networks on health (Berkman, Glass, Brissette, & Seeman, 2000). However, worse physical health predicts spending less time with and feeling less close to one's confidants (Schafer, 2013). Therefore I used a self-report of overall physical health. This measure had five levels: excellent, very good, good, fair and poor. I treated

this as a continuous measure, and found no significant non-linear associations.

Social participation

Regularly attending social organizations may provide respondents with opportunities to meet individuals who could be drawn into their social network, due to a common set of interests, or simple propinquity (Small, 2010). Therefore this study also included a control for participation in social organizations, formed from a three-item scale: how often respondents go to church, how often they volunteer, and how often they attend local meetings (α = .71).

Household size

Since household size could confound closeness and number of confidants, by setting respondents in a situation where they have to see certain people on a daily or regular basis, regressions included a control for household size. Respondents were also asked to list the people that they live with, which is included as a continuous count variable in the models below.

Sociodemographic characteristics

Regressions below also controlled for differences in age, gender, education and ethnicity. Ethnicity was recoded as non-Hispanic black, Hispanic, and white/other ("white/other" is 97.7% white). Education is coded as: less than high school, high school or GED, some college/vocational school/associates degree and finally a BA or more. The reference group for gender was male. Based on previous work using this sample, age is associated with small declines in connectedness at older ages, and both Hispanics and African Americans are less likely to have large networks than whites; women are more likely to have larger networks (Cornwell et al., 2008). Note that there were no nonlinear associations with age, and therefore the models do not employ a squared term.

Modeling Strategy

Because this analysis used data from the second wave of NSHAP, nonrandom survivorship could distort the analyses. Following previous studies that have used NSHAP data, this article uses a propensity score for the probability of returning from Wave 1 to Wave 2 to address this issue (Austin, 2011). A logit-linked regression model was used to predict whether the respondent returned for the second wave, estimating the probability of retention using the following Wave 1 variables: postsecondary education, gender, age, race/ethnicity, partnered, poor/fair physical health, comorbidities, network size, and an interviewer rating of how candid the respondent was. Regressions included predicted probabilities as a control, in order to ensure that results held across propensities to attrit. All models were fit with and without this control; in either case there were very similar results.

The analyses in this article proceeded in two stages. In the first stage, associations between personality traits, as measured using predicted factor scores, and network outcomes at the respondent level (i.e., considering qualities of the respondent's entire social network, and not focusing on specific confidants) were examined. Regressions were used to analyze the count of all confidants, then friends, then family, then all other confidant types. The article compares coefficients across regressions in order to test whether associations between traits, particularly Extraversion, and network size differ by role-relationship. Count variables from the confidant network were modeled with Poisson regression, and negative binomial regression where the outcome was overdispersed.

In the second stage, tie strength (time spent, closeness, talking about health) was modeled as a confidant-level variable, nesting confidants within respondents, predicting the outcome in a hierarchical linear model where the intercept was allowed to randomly vary across respondents. Predictors in these models included confidant-level variables (the role-relationship shared by the respondent and confidant is family, friend, or otherwise), respondent-level variables (personality, plus other controls mentioned above), as well as cross-level interaction terms between role-relationships and personality traits. Closeness to confidants, and talking to them about health, were both modeled as ordinal dependent variables. Note that these interaction terms are used to test the hypothesis that associations between Extraversion and network size, and measures of tie strength, will be weaker when considering family ties, compared to friends.

All analyses were run using multiple imputation with chained equations, with 10 imputations, including all independent variables in the imputation equation. Dependent variables were not imputed. Note that for all results I provide confidence intervals in order to call attention to the uncertainty around point estimates, which would otherwise be obscured by reporting *p* values alone (Cumming, 2014). To facilitate comparisons of effect sizes, I also standardize all continuous predictors.

Results

Descriptive Statistics

Table 1 shows the variables that were used in this analysis. The older adults in this sample generally had large confidant networks, with an average confidant network size of 3.8. Note the differences for friends and family: respondents generally reported more family than friends. Extraversion was correlated with confidant network size ($r = 0.10$, $p < .001$; 95% CI = 0.05, 0.15), but was more strongly associated with number of confidant friends ($r = 0.10$, $p < .001$; 95% CI = 0.06, 0.15) than number of confidant family ($r = 0.00$, n.s.; 95% CI = −0.05, 0.07).

Table 2 shows descriptive statistics for confidants in the confidant networks. Individuals show a high degree

Table 2. Confidant-Level Variables Used in Analysis (unweighted *N* = 8,534; weighted *N* = 8,864); All Descriptive Statistics Weighted

	Possible range	Mean (*SD*)/ number (%)
Outcomes:		
Time spent with confidant (days/year)	0–365	181.17 (141.11%)
Closeness to confidant	1–4	
Not very close		151 (1.71%)
Somewhat close		1,791 (20.31%)
Very close		4,307 (48.80%)
Extremely close		2,578 (29.18%)
Talks health with confidant	1–3	
Not likely		981 (11.1%)
Somewhat likely		2,122 (24.04%)
Very likely		5,726 (64.86%)
Role-relationships:		
Family	0 or 1	4,548 (51.41%)
Friends	0 or 1	2,490 (28.14%)
Spouse	0 or 1	1,101 (12.44%)
Other	0 or 1	708 (8.00%)

of variability in how many days per year they spend with their confidants (141 days/year around a mean of 181 days per year), but are generally close to their confidants and are likely to talk to them about health. Furthermore, about half the confidants in the sample are classified as family (51.41%).

Multivariate Findings

Table 3 shows the results of regression models predicting overall social network size, as well as the number of friends and family listed in respondents' networks. Number of friends was fit with a negative binomial link function due to a significant test for over-dispersion. Personality traits generally had weak associations with overall network size, and network size was negatively associated with Conscientiousness. There were no associations between overall size and Extraversion or Agreeableness. Decomposing these associations into friend and family networks, one can see that Extraversion was moderately and positively associated with number of friends in the network, but had no association with number of family in the network. Substantively, this means that comparing two people from the sample, if a person had one standard deviation higher Extraversion than another person, the more-extraverted person had 1.07 times as many confidant friends on average—a small effect. There was also no support for the hypothesis that associations differed by relationship type. There were no significant associations between traits and relationships that were neither friends nor family.

Turning now to tie strength, Table 4 shows the results of models predicting time spent with confidants, closeness,

and talking about health. In these models, friends generally had weaker tie strength to the respondent when compared to family. Extraversion was also associated with feeling closer to confidants and being more likely to talk to them about health. There was no association between Extraversion and time spent with confidants, although Agreeableness was associated with time spent, and closeness. There were few trait-by-role-relationship interactions: Extraversion was more strongly associated with talking to friends about health. Furthermore, Extraversion was more strongly associated with closeness to confidants who were neither friends, family, nor spouses, when compared to family. Agreeableness was more weakly associated with time spent with spouses, when compared to family, however, this association did not persist when "time spent" was treated as ordinal rather than continuous (all other findings were consistent). More-neurotic individuals were also more likely to talk to their friends about their health.

Main findings are visualized in Figure 1, using predicted values from the preceding regressions. Note that y-axes display the entire possible ranges of each variable. This shows in even greater clarity that the effects of extraversion on tie strength are either very weak (time spent) generally consistent across role-relationship (closeness), or with only minor differences in slope across role-relationship (talking about health).

Supplementary Analyses

Models in Tables 3 and 4 were refit as lagged dependent variable models, and these showed very similar patterns of associations, suggesting that the results are robust to controls for previous states of the network. This article also examined change at the confidant level, by investigating associations between traits and tie strength, net of the respondent's tie strength to that same confidant at Wave 1 (thereby fitting an confidant-level lagged dependent variable model). In these models, no trait-by-role-relationship interactions were significant, except that more-agreeable persons spent slightly fewer days per year with their spouse ($\beta = -7.14$, $p < .01$; 95% CI = −14.10, −0.19). Extraversion still had a significant association with closeness to confidants in these models ($\beta = 0.21$, $p < .01$; 95% CI = 0.07, 0.35). There were no other significant associations between traits and varieties of tie strength.

All the preceding analyses were also rerun adjusting the *p* values for number of analyses run, in order to assure that the findings are robust to Type 1 error. Given there were seven regressions run in this analysis, *p* values were multiplied by seven. Only two associations between network outcomes and personality traits, or interactions with personality traits, were still significant at the $p < .05$ threshold after this adjustment—the association between Extraversion and closeness to confidants (raw *p* value: .005; adjusted *p* value .035) and the association between Agreeableness and closeness to confidants (raw

Table 3. Impact of Personality Traits on Overall Confidant Network Size, and Number of Different Kinds of Confidants Named in Respondents' Confidant Networks (Poisson and negative binomial regressions; multiple imputation of all independent variables; $N = 2{,}261$ for All Regressions)

Outcome	Model 1 Overall confidant network size	Model 2 Number of confidant friends	Model 3 Number of confidant family	Model 4 Number of confidants from all other role-relationship	t test for equal coefficients. In Models 2,3
Link	Poisson	NBreg	Poisson	Poisson	
Respondent's personality					
Openness	0.01 (−0.02, 0.02)	0.02 (−0.06, 0.08)	−0.03 (−0.06, 0.01)	0.02 (−0.01, 0.07)	1.34
Conscientiousness	−0.03** (−0.05, −0.01)	−0.07 (−0.14, 0.01)	−0.03 (−0.06, 0.01)	0.01 (−0.04, 0.05)	−1.31
Extraversion	0.02 (0.00, 0.04)	0.07* (0.01, 0.12)	0.00 (−0.06, 0.01)	−0.01 (−0.07, 0.05)	1.71
Agreeableness	0.02 (0.00, 0.04)	0.01 (−0.05, 0.08)	0.03 (−0.04, 0.05)	−0.01 (−0.06, 0.04)	−0.33
Neuroticism	0.02 (0.00, 0.04)	0.01 (−0.06, 0.08)	0.03 (−0.01, 0.07)	−0.01 (−0.06, 0.04)	−0.28
Controls					
Female	0.08*** (0.04, 0.12)	0.20* (0.02, 0.37)	0.15*** (0.08, 0.22)	−0.26*** (−0.38, −0.14)	0.41
Age	0.01 (−0.01, 0.03)	−0.08* (−0.18, −0.01)	0.08* (0.02, 0.13)	−0.01 (−0.07, 0.06)	−2.84**
Race/eth. (Ref. = White and other)					
Black	−0.10*** (−0.15, −0.06)	−0.30** (−0.46, −0.13)	0.00 (−0.07, 0.08)	−0.12 (−0.25, 0.01)	−3.02**
Hispanic	−0.06 (−0.13, 0.01)	−0.24* (−0.45, −0.03)	0.08 (−0.02, 0.19)	−0.25* (−0.43, −0.07)	−2.38*
College, BA or more	0.04* (0.00, 0.09)	0.28*** (0.14, 0.43)	−0.13** (−0.23, −0.04)	0.19** (0.08, 0.29)	3.83***
Married	0.01 (−0.03, 0.04)	−0.17* (−0.33, −0.02)	−0.13** (−0.21, −0.06)	0.77*** (0.60, 0.96)	−0.40
Retired	0.03 (−0.01, 0.08)	0.06 (−0.08, 0.20)	0.05 (−0.02, 0.11)	−0.03 (−0.15, 0.09)	0.17
Physical health	0.01 (−0.01, 0.03)	0.02 (−0.04, 0.09)	0.00 (−0.04, 0.03)	0.03 (−0.01, 0.08)	0.58
Social participation	0.03** (0.01, 0.05)	0.13*** (0.06, 0.19)	0.05** (0.01, 0.09)	0.01 (−0.04, 0.07)	3.15**
Household size	0.01 (−0.01, 0.03)	−0.11** (−0.18, −0.03)	0.11** (0.04, 0.19)	0.02 (−0.04, 0.08)	−3.31**
Pr. prob. of retention	0.07*** (0.03, 0.11)	0.04 (−0.07, 0.15)	0.11** (0.04, 0.19)	0.02 (−0.09, 0.14)	−0.97
Constant	1.23*** (1.16, 1.29)	−0.18 (−0.42, 0.05)	0.67*** (0.56, 0.79)	−0.77*** (−0.97, −0.57)	−5.48***
Overdispersion parameter	N/A	−0.82*** (−1.07, −0.57)	N/A	N/A	N/A

Note: All continuous predictors standardized.

*$p < .05$; **$p < .01$; ***$p < .001$; 95% CI given in brackets below coefficient.

Table 4. Impact of Personality on Tie Strength With Particular Confidants (Hierarchical linear models, confidants nested in respondents; multiple imputation of all independent variables)

	Model 7	Model 8	Model 9
Outcome	Time spent	How close	Talks health
Link	Identity	O-Logit	O-Logit
Respondent's related to confidant (Ref. = family)			
Spouse	203.30*** (193.95, 212.65)	2.05*** (1.82, 2.29)	2.92*** (2.47, 3.35)
Friend	−38.69*** (−49.00, −28.37)	−1.85*** (−2.03, −1.67)	−1.36*** (−1.51, −1.21)
Other	−2.96 (−17.79, 11.87)	−2.41*** (−2.66, −2.17)	−1.34*** (−1.60, −1.08)
Respondent's personality			
Openness	2.39 (−3.85, 8.63)	0.07 (−0.04, 0.19)	0.02 (−0.10, 0.16)
Conscientiousness	−1.75 (−8.20, 4.68)	−0.03 (−0.17, 0.12)	0.01 (−0.12, 0.15)
Extraversion	0.60 (−5.69, 6.89)	0.15** (0.04, 0.26)	0.16** (0.04, 0.27)
Agreeableness	8.60** (2.62, 14.59)	0.16* (0.04, 0.29)	0.04 (−0.10, 0.18)
Neuroticism	0.90 (−5.01, 6.82)	−0.01 (−0.12, 0.10)	−0.02 (−0.15, 0.11)
Interactions with Openness			
Spouse	−4.45 (−14.01, 5.11)	−0.09 (−0.32, 0.14)	−0.03 (−0.44, 0.38)
Friend	2.06 (−5.49, 9.62)	−0.06 (−0.23, 0.10)	0.10 (−0.20, 0.35)
Other	10.00 (−3.69, 23.69)	0.17 (−0.12, 0.47)	0.07 (−0.20, 0.35)
Interactions with Consci.			
Spouse	3.80 (−6.35, 13.95)	−0.01 (−0.23, 0.22)	0.32 (−0.15, 0.81)
Friend	−2.16 (−12.70, 8.38)	0.04 (−0.23, 0.31)	−0.08 (−0.27, 0.12)
Other	3.54 (−12.76, 19.86)	0.17 (−0.42, 0.13)	−0.23 (−0.53, 0.07)
Interactions with Extra.			
Spouse	1.09 (−7.45, 9.63)	0.05 (−0.17, 0.29)	0.08 (−0.51, 0.68)
Friend	3.91 (−5.98, 13.80)	0.17 (−0.01, 0.37)	0.16* (0.01, 0.32)
Other	7.80 (−6.24, 21.85)	0.31* (0.07, 0.54)	0.14 (−0.11, 0.40)
Interactions with Agree.			
Spouse	−11.49* (−20.41, −2.57)	−0.11 (−0.36, 0.14)	−0.25 (−0.71, 0.21)
Friend	−3.25 (−11.96, 5.45)	0.06 (−0.12, 0.24)	0.02 (−0.15, 0.19)
Other	−6.93 (−20.04, 6.19)	0.05 (−0.23, 0.34)	0.01 (−0.27, 0.29)
Interactions with Neuro.			
Spouse	−1.33 (−9.73, 7.06)	−0.07 (−0.27, 0.31)	−0.04 (−0.45, 0.37)
Friend	−1.63 (−10.40, 7.12)	0.02 (−0.16, 0.20)	0.19* (0.03, 0.35)
Other	−7.56 (−23.57, 8.46)	0.18 (−0.10, 0.47)	0.15 (−0.16, 0.46)
Respondent–level controls			
Female	25.54*** (18.03, 33.06)	0.59*** (0.41, 0.78)	0.79*** (0.59, 0.99)
Age	−5.55* (−10.77, −0.34)	−0.13 (−0.26, 0.00)	−0.20*** (−0.34, −0.06)
Race/eth. (Ref. = White and other)			
Black	45.10*** (33.52, 56.67)	0.46** (0.14, 0.78)	0.27 (−0.04, 0.58)
Hispanic	38.10*** (23.22, 52.99)	−0.35* (−0.67, −0.04)	0.32 (−0.03, 0.66)
College, BA or more	−14.33*** (−22.38, −4.08)	−0.07 (−0.26, 0.12)	−0.13 (−0.35, 0.09)
Retired	−12.69** (−21.31, −4.08)	−0.20 (−0.43, 0.03)	−0.13 (−0.37, 0.11)
Physical health	0.29 (−31.19, 3.79)	0.12* (0.03, 0.21)	−0.03 (−0.14, 0.07)
Social participation	0.49 (−3.80, 4.80)	−0.02 (−0.10, 0.06)	0.11* (0.02, 0.20)
Household size	7.15*** (3.51, 10.79)	−0.01 (−0.11, 0.07)	0.02 (−0.07, 0.12)
Pr. prob. of retention	−18.39*** (−25.29, −11.50)	−0.02 (−0.20, 0.16)	−0.09 (−0.33, 0.14)
Constant	170.76*** (157.80, 183.74)		
Cut 1	N/A	−5.73*** (−6.08, −5.38)	−2.85*** (−3.16, −2.54)
Cut 2	N/A	−2.21*** (−2.47, −1.95)	−0.81*** (−1.08, −0.53)
Cut 3	N/A	1.09*** (0.83, 1.36)	N/A
Number of confidants	8,505	8,507	8,497
Number of respondents	2,241	2,241	2,241

Note: All continuous predictors standardized.
*p < .05; **p < .01; ***p < .001; 95% CI given in brackets below coefficient.
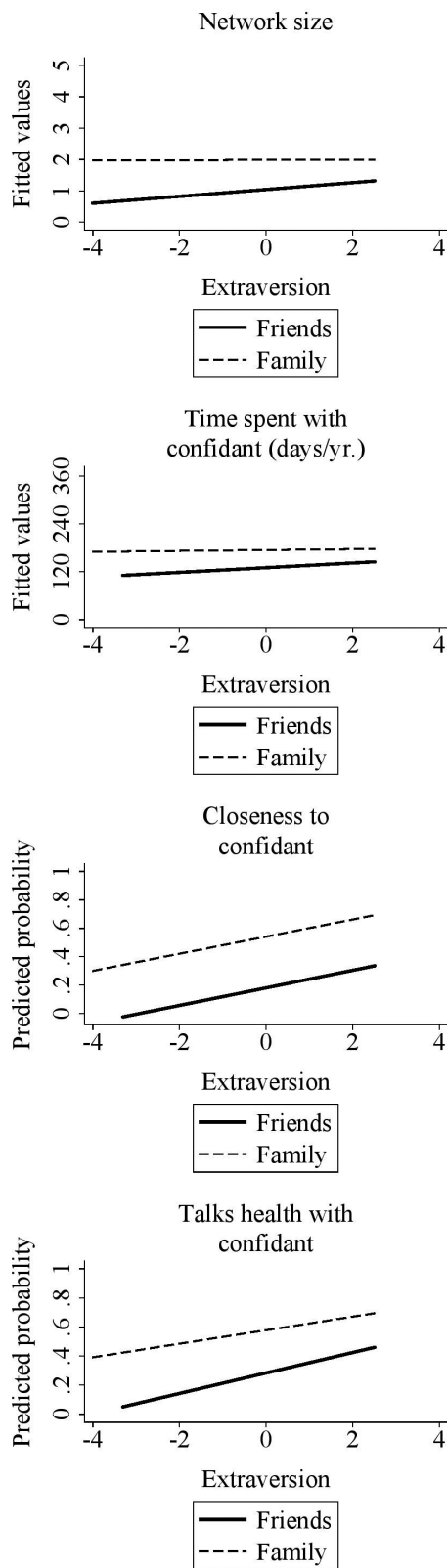
Figure 1. Associations between Extraversion and network properties in a national sample of older adults. Predicted values from models in Tables 3 and 4. Note: "Predicted probability" is the probability of becoming more close or being more likely to talk about one's health with one's confidant (i.e., rising one point on the ordinal scale).

p value: .005; adjusted p value .035). Interaction effects were no longer significant.

Finally, all tabled results were repeated including the sixth possible network confidant (someone else "very important" to the respondent, but not in the top five). Results were very similar, except that Agreeableness was now significantly associated with family network size (β = 0.03, p < .05; 95% CI = 0.01, 0.07). Including the "special friend" roster therefore exerted minimal influence on findings.

Discussion

Recent articles have argued that personality traits may help to build individuals' social networks, and have made strong claims about the importance of personality for network connectedness (Laakasuo et al., 2017; Molho et al., 2016). However, the results in this article showed weak or non-significant associations between personality and confidant network size. Associations between Extraversion and some varieties of confidant tie strength (closeness, talking about health) were significant and comparable in magnitude to most associations documented between personality traits and behavioral outcomes (Gignac & Szodorai, 2016). In short, when considering respondents' confidant network, the results provided weak support for the hypothesis that Extraversion is associated with confidant network size in older adults. Associations between Extraversion and varieties of tie strength were stronger and more significant, and the association between Extraversion and closeness to confidants also survived a p-value correction for number of analyses performed. There were also relatively few interactions with role-relationships. The findings for Neuroticism and friendship are suggestive and it may be that individuals who are more prone to worry tend to seek out friends as a source of support, attempting to find clarity in the midst of their hyper-vigilance, but the fact that this interaction effect does not persist after correcting for number of analyses performed should lead researchers to interpret this result with caution.

The above findings have several implications. First, in general, Big Five personality traits made a much stronger contribution to particular dimensions of tie strength than to network size; even where this article found significant effects on size, the association was very small. This suggests that an older adult's personality may do more to impact their subjective experience of a relationship, whereas frequency of contact may be driven by other, non-psychological factors such as social participation and demographics. In older adulthood, personality may allow one to do more with the social connections one has, rather than making new connections, or increasing the frequency with which one sees others (which may be dependent upon that other person's health and schedule). Second, the lack of trait-by-role interactions was not what would be expected given

social network theories, or personality theories, which would both have predicted that the effects of personality would be greater in domains of friendship. Therefore older adults who are more-extraverted may build stronger social network connections across different social domains, potentially deepening their relationships to friends and family equally.

This study unfortunately had several limitations that it was unable to overcome. First, although NSHAP has a high response rate and high retention rate, nonresponse and attrition may still mar the generalizability of the findings here. Second, the "top five" system may create ceiling effects constraining the available variance (network size tended to be quite large), and also limit listed friends and family to only those who are closest to the respondent (personality might be most consequential for ties not in the top five). Third, as mentioned in the introduction, this article cannot establish causal order. Although it would be possible to switch the dependent and independent variables here, and examine the impact of networks upon traits using longitudinal network data, even this would not necessarily provide an unambiguous test of causal direction. Personality traits can also help a person to acquire or shed social network contacts, leading to network change (Bhardwaj, Qureshi, Konrad, & Lee, 2016). Therefore, because of the relatively high stability of traits, personality at Wave 1 could be a strong confounder between network change and personality at Wave 2.

In order to more properly identify causal direction, any future investigations into this topic will ideally be accompanied by longitudinal data. Such data will be crucial for many reasons, including studying selection processes. For instance, traits may lead individuals into social spaces where they may have more or less opportunity to cultivate certain kinds of relationships, heightening or reducing the effect of their traits on connectedness (Lodi-Smith & Roberts, 2007). Furthermore, longitudinal data may also allow researchers to consider how the associations documented here may vary by stage of one's life-course. Different kinds of relationships can become more or less salient at different points in one's life, and work or school contacts may become uniquely important in emerging, or early adulthood. NSHAP is currently in the field collecting a third wave of data, and changes in traits among older adults will be a subject of future investigations of older adulthood, but researchers should also consider the questions laid out in this article using datasets that consider younger adults and midlife. Hopefully the precedent of this article will be useful for those investigations.

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Conflict of Interest

None reported.

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