









Neuroticism and satisfaction with relationships and with life in old age

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Abstract

Objectives: To investigate the association between neuroticism and life satisfaction and social support in married older people; in addition to verifying whether satisfaction with marriage and with family and friendship relationships are mediators of these associations. **Method:** A cross-sectional study was carried out with data from the Fragility in Older Adult Brazilians (FIBRA) study. A total of 194 older people recruited from residential households participated in the survey. Instruments used included a sociodemographic questionnaire; the NEO-PI-R-Neuroticism scale from the Big Five Personality Inventory; five items semantically adapted from the ISEL (Interpersonal Support Evaluation List) and single items rated on scales (five points each) for the variables satisfaction with marital, family, and friendship relationships and for satisfaction with life. Structural equation modelling via path analysis was performed. **Results:** The sample comprised individuals who were predominantly men (54.6%), and that reported being satisfied or highly satisfied with life, marriage, friendships, and family relationships. Participants with lower neuroticism scores had higher satisfaction with life, marriage, friendships, and family relationships. Greater satisfaction with marriage and friendships was directly associated with better social support. Satisfaction with family members and friends were variables mediating the association between neuroticism and life satisfaction. **Conclusion:** Individuals with higher levels of neuroticism are less satisfied with their relationships and with life. Longitudinal research is needed to explain the relationships observed.

Keywords: Older adults. Neuroticism. Marriage. Friends. Social support. Family Relations.

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INTRODUCTION

Social relationship networks and social support are a focus of investigation in various different areas. In the field of gerontology, these social aspects are studied predominantly for their role in health and psychological wellbeing of older adults¹. According to the convoy model of social relationships, individuals are surrounded by significant people, more commonly family and friends, who accompany and support them throughout the life course. The strength of these relationships varies according to closeness (e.g. geographical, contact frequency), quality (e.g. positive, negative), function (e.g. help, affect, information sharing) and structure of social networks (e.g. number of components in group)².

The theory of selectivity holds that perceived passage of time and chronological age play a central role in prioritizing activities and in choosing social partners. In later life, individuals actively change their social networks, selecting emotionally positive relationships as an adaptation mechanism which favors well-being³. In this context, couples that stay together in late life tend to be inclined to experience the positive aspects of the relationship and enjoy greater marital satisfaction. These individuals tend to have greater control over their emotions when interacting with one another, seeking to experience the present, appreciate the good, while forgetting concerns and prioritizing meaningful experiences⁴.

Social support denotes the support given and/or received, encompassing instrumental, emotional or affective aspects and affirmation or confirmation of values or beliefs of an individual. Satisfaction with support can be defined as the assessment people make of the support received¹; the manner in which they perceive this may favor or otherwise coping with the stressors associated with aging⁵. Previous studies^{6,7} have shown that older people who have greater perceived social support tend to be more satisfied with life.

Satisfaction with life is influenced by marital, family and friendship relationships^{8,9}. The quality of close personal relationships can have direct effects on physical and mental health outcomes, and also exert an indirect impact on health through social

support received¹⁰. Satisfaction with life and with relationships are influenced by personality traits, including neuroticism¹¹. This personality factor is defined operationally by items related to anxiety, hostility, depression, excessive self-consciousness, impulsiveness and vulnerability, intercorrelated on factor analyses¹².

On the five-factor model of personality (Big Five) described by Costa and McCrae¹², neuroticism was consistently identified as having a greater effect on relationships than the other four factors (extroversion, openness to experience, agreeableness and conscientiousness). Individuals with a high level of neuroticism tend to focus on negative aspects of themselves, of others and of social, family and marital relationships. These individuals often experience negative affect and have limited capacity to deal with stress adaptively^{13,14}.

According to the integrated Vulnerability-Stress-Adaptation model¹⁴, marriages in which couples have high neuroticism scores are more susceptible to stress, vulnerability and to less resilient adaptive processes. Studies involving married people of different age groups^{15,16}, including older couples¹⁷, have shown neuroticism to be a negative predictor of marital satisfaction. Individuals with high neuroticism scores display greater insecurity in relationships, are more critical of their partner, disdainful and defensive¹⁵. They also show less tolerance and empathy, act more negatively in marital relationships, and divorce more than individuals with low levels of neuroticism¹⁸. With aging, personality traits tend to have a significantly greater influence on marital satisfaction of men than of women¹⁷.

There is a dearth of Brazilian studies investigating the influence of neuroticism on marital relationships of older adults, and also a lack of psychometric studies of instruments involving these variables. Such studies are important, not least because close personal relationships are considered central aspects in the life course, and marital life constitutes one of its most complex experiences. Thus, the objectives of the present study were to investigate the associations among neuroticism, life satisfaction and social support in married individuals, and to determine whether the variables satisfaction with married life,

family relationships and friendship relations are mediators of these associations.

METHOD

A population-based cross-sectional study was conducted of follow-up data from a cohort of older participants of the FIBRA (Fragility in Older Adult Brazilians) study for the 2008-2009, 2016-2017 waves in Campinas city and subdistrict of Ermelino Matarazzo, São Paulo state, Brazil¹⁹. Details on the sampling, variables and measurements at study baseline (2008-2009) and follow-up (2016-2017) can be found in Neri et al.^{19,20}.

Inclusion criteria were: agreeing to take part in the follow-up (2016-2017) of the FIBRA study; being married, having records available of responses about marital satisfaction; and score above cut-off for dementia screening on the Mini-Mental State Exam (MMSE)²¹, adjusted for years of education (17 points for illiterate subjects, 22 for 4 years of formal education, 24 for 5-8 years, and 26 points for ≥ 9 years of education).

Recruitment of participants for the follow-up of the FIBRA study (2016-2017) was performed using the lists of household addresses held on the baseline database (2008-2009; N=1,284). Trained recruiters carried out an active search of these individuals with a maximum of 3 tries at the available addresses to invite them to join the follow-up sample. At this stage, of the 1,284 respondents at baseline, 549 (42.7%) were located and fully re-interviewed; 192 (14.9%) had died and 543 (42.4%) were lost to follow-up: 59.9% not found, 34.5% refusals; 5.5% FIBRA exclusion criteria; 1.6% halted session; and 0.5% interviewer safety risk.

Of the 549 participants interviewed, only 194 were included in the present sample. Individuals who were not married at the time of follow-up interview (n=301) and couples with no responses available for the item on marital satisfaction (n=54) were excluded.

Sociodemographic variables included sex, age, years of education and marital status and were assessed based on self-report items. The Neuroticism trait was measured using the NEO Personality

Inventory-Revised (NEO PI-R) – Neuroticism scale¹¹, semantically validated for Portuguese by Flores-Mendoza²², comprising 12 items scored on a Likert-type scale (totally agree to totally disagree). Given the absence of parameters obtained by psychometric studies for Brazilian older adults, responses were categorized into ranges for scores attained by the respondents. Scores in the 30-48 range were taken to indicate a high level of neuroticism; 24-29 as intermediate level; and 11-23 as low level.

Perceived social support was assessed using 5 questions selected and semantically adapted from the ISEL (Interpersonal Support Evaluation List), addressing instrumental, material, informative, social and emotional support²³, namely: “*When you feel lonely, are there several people you can talk to?*”; “*Do you meet or talk with friends and family?*”; “*If you were sick, would you easily find someone to help you with your daily chores?*”; “*When you need suggestions on how to deal with a problem, do you know someone you can turn to?*”; “*is there at least one person you know whose advice you really trust?*”. The following scores were attributed to the responses: 1 - “never”, 2 - “sometimes”, 3 - “most of the time”; and 4 - “always”. The mean of scores on the scale was calculated.

Marital satisfaction was assessed using the item “*how satisfied are you with your marriage?*” (responses from 1- 5, where 1 - “not at all”, 2 - “somewhat”, 3 - “fairly”, 4 - “very”; and 5 - “completely”), as proposed by Umberson et al.²⁴ Mean scores on the scale were determined.

Satisfaction with family and friendship relationships was assessed by applying the 2 items (*How satisfied are you with your friendship relationships?* *How satisfied are you with your family relationships?* with responses 1-5 (1-“highly dissatisfied”, 2-“dissatisfied”; 3-“neither satisfied nor dissatisfied”, 4-“satisfied”, or 5-“highly satisfied”), as proposed by Ferring et al.²⁵. The mean of scores on the scale was calculated.

Satisfaction with life was measured using the question “*How satisfied are you with your life?*”, as devised by Neri²⁶. Responses were 1-“highly dissatisfied”, 2-“dissatisfied”; 3-“neither satisfied nor dissatisfied”, 4-“satisfied”, or 5-“highly satisfied”. The mean of scores on the scale was calculated.

The present study was approved by the Research Ethics Committee of the Universidade Estadual de Campinas on 23/11/2015 (permit no. 1.332.651), and on 17/09/2018 (permit no. 2.899.393), for the Campinas and Ermelino Matarazzo follow-ups, respectively. All participants signed the Free and Informed Consent Form prior to interview.

The sample was characterized by a descriptive analysis, with categorical variable expressed as absolute and relative frequency, and quantitative variables as mean and standard deviations. Percentage distributions and respective 95% confidence intervals were estimated.

Structural equations modeling (path analysis) was used to determine the relationship among the variables of interest according to the theoretical model outlined (Figure 1). This type of analysis serves as an extension of the regression model and is employed to explore multiple relationships among variables. The approach allows the identification of direct or indirect associations among independent and dependent variables. After adjusting for indicators and applying tests of significance, the final paths analysis model is produced, retaining or removing associations from the previous theoretical model.

Tests of significance for path coefficients, expressed as betas, were performed to analyze the goodness-of-fit of the data to the proposed model. Absolute values of $t > 1.96$ show the path has a statistically significant coefficient. The level of significance adopted for the tests was 5% or $p < 0.05$. The parameters adopted for acceptance of the model were: chi-square test for goodness-of-fit > 0.05 ; chi-square ratio (X^2/DF) < 2 ; SRMR (Standardized Root Mean Square Residual) ≤ 0.10 ; RMSEA (Root Mean Square Error of Approximation) ≤ 0.08 ; CFI (Comparative Fit Index) ≥ 0.90 ; and TLI (Tucker-Lewis Index) ≥ 0.90 .

RESULTS

For the overall sample ($n=194$), participants were predominantly men (54.6%) and had 1-4 years of education (57.2%). Participants had mean age of 79.3 ± 4.09 . Neuroticism score was in the 12-49 range and had a mean of 25.9 ± 7.38 , while perceived social support was in the 5-25 range with a mean of 18.0 ± 4.76 . The majority of respondents reported being satisfied or highly satisfied with life, marriage, friendships and family relationships. More detailed information is given in Table 1.

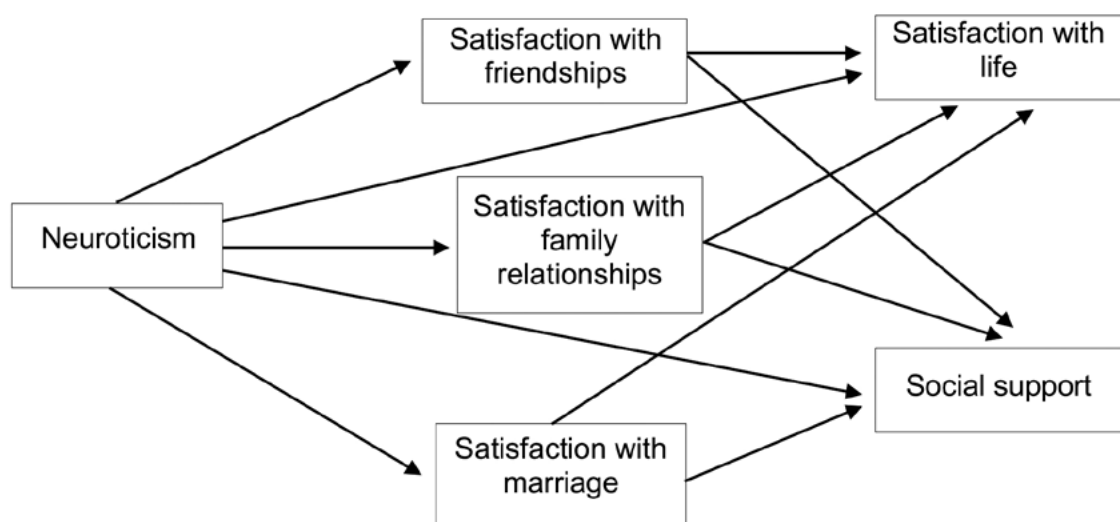


Figure 1. Hypothetical model of associations of neuroticism with life satisfaction and with social support. Fibra Study, Older Adults, Campinas and Ermelino Matarazzo, São Paulo state, Brazil, 2016-2017.

Table 1. Characteristics of participants. Fibra Study. Older adults, Campinas, São Paulo state, 2016-2018.

Variables	n (%) or Mean \pm SD
Age, Mean \pm SD [n=194]	79.3 (\pm 4.1)
Sex	
Female	88 (45.4%)
Male	106 (54.6%)
Education (years) [n=194]	
Illiterate	32 (19.5%)
1-4	111 (57.22%)
5-8	33 (17.0%)
\geq 9	18 (9.3%)
Neuroticism, Mean \pm SD [n=194]	25.9 (\pm 7.4)
Satisfaction with friendships [n=172]	
Highly dissatisfied	2 (1.2%)
Dissatisfied	7 (4.1%)
Neither satisfied nor dissatisfied	14 (8.1%)
Satisfied	101 (58.7%)
Highly satisfied	48 (27.9%)
Satisfaction with family [n=172]	
Highly dissatisfied	2 (1.2%)
Dissatisfied	4 (2.3%)
Neither satisfied nor dissatisfied	17 (9.8%)
Satisfied	88 (51.1%)
Highly satisfied	61 (35.5%)
Satisfaction with marriage [n=194]	
Not at all	4 (2.0%)
Somewhat satisfied	10 (5.1%)
Fairly satisfied	29 (14.9%)
Very satisfied	67 (34.5%)
Completely satisfied	84 (43.3%)
Satisfaction with life [n=172]	
Highly dissatisfied	2 (1.1%)
Dissatisfied	2 (1.1%)
Neither satisfied nor dissatisfied	24 (13.9%)
Satisfied	84 (48.8%)
Highly satisfied	60 (34.8%)
Social support [n=144]	18.0 (\pm 4.7)

The first revision included covariation between the variables satisfaction with friendships and with family relationships. In the second revision of the paths, significant acceptable values were obtained for all goodness-of-fit criteria ($p < 0.05$) (Table 2). The

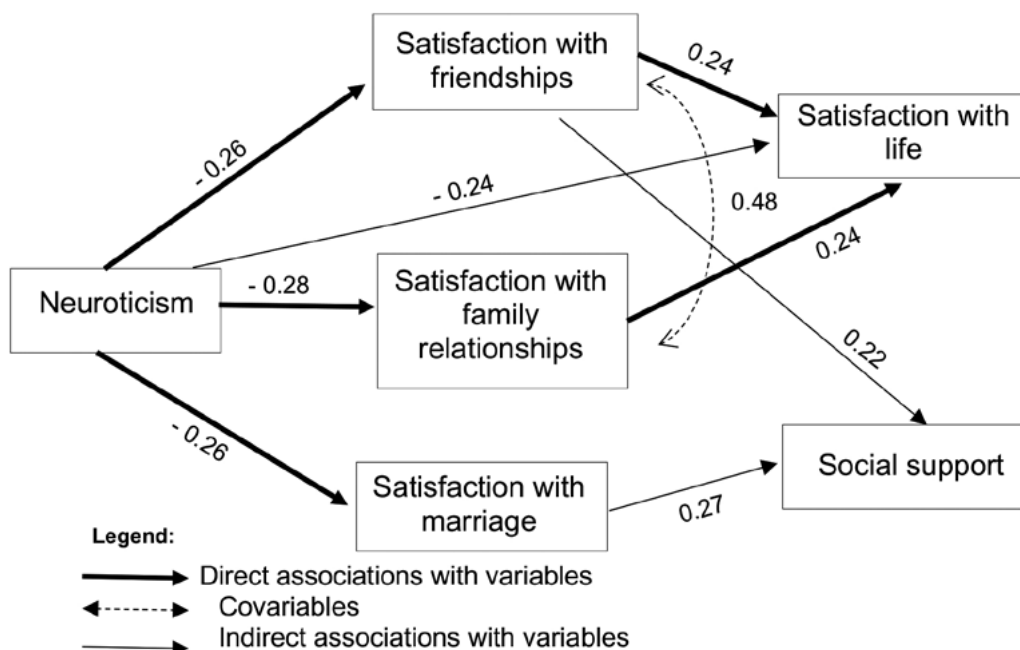
changes made to the final model removed the direct associations between neuroticism and perceived social support; satisfaction with family relationships and perceived social support; satisfaction with marriage and satisfaction with life.

Table 2. Measures of goodness-of-fit for variables investigated in paths analysis. Fibra Study, Older Adults, Campinas and Ermelino Matarazzo, São Paulo state, Brazil, 2016-2017.

Goodness-of-fit criteria	Initial model	After 1 st revision	After 2 nd revision
Chi-square test for goodness-of-fit	<0.001	<0.001	0.418
Chi-square ratio (c2/GL)	<0.001	<0.001	<0.001
TLI (Tucker-Lewis Index)	-0.035	0.395	0.999
CFI (Comparative Fit Index)	0.724	0.718	1.000
SRMR (Standardized Root Mean Square Residual)	0.111	0.119	0.049
RMSEA (Root Mean Square Error of Approximation)	0.249	0.191	0.008

The outcome of the paths analysis is depicted in Figure 2. The main findings of the analysis were: lower neuroticism scores were associated with higher levels of satisfaction with life, marriage, friendships and family relationships; higher levels of satisfaction with friendships and with family relationships were associated with greater levels of life satisfaction; and higher levels of satisfaction with marriage and with friendships were directly correlated with better perceived social support.

On the final paths analysis model, satisfaction with friendships and with family relationships were variables partially mediating the association between neuroticism and satisfaction with life. The relationship between neuroticism and perceived social support was mediated by the variables satisfaction with marriage and satisfaction with friendships (Figure 2).

**Figure 2.** Final model of associations of neuroticism with life satisfaction and with social support according to path analysis. Fibra Study, Older Adults, Campinas and Ermelino Matarazzo, São Paulo state, Brazil, 2016-2017.

DISCUSSION

For the sample studied, participants were predominantly male, aged ≥ 70 years, and had education of 1-4 years. Overall, participants reported being satisfied or highly satisfied with life, marriage, friendships and family relationships. A previous study²⁷ revealed that married older adults reported greater satisfaction with life than individuals who were divorced or had lost their partner, especially those who benefited from group activities and emotional support. In the present study, no statistically significant association between marital satisfaction and satisfaction with life was found.

According to the integrated vulnerability-stress-adaptation model of Karney and Bradbury¹⁴, personality traits influence marital functioning and satisfaction over time, acting as a vulnerability factor or protective factor for the relationship and well-being. In the present study, participants with lower neuroticism scores reported higher satisfaction with marriage, mirroring the results of previous studies¹⁶⁻¹⁸.

High neuroticism score is associated with negative cognitive, behavioral and emotional aspects for marital relationships¹⁵. By contrast, individuals with low neuroticism are more likely to forgive their partner's faults, interact more positively with them, have higher levels of sexual satisfaction and be more satisfied with marital relations¹⁷. In the present study, lower neuroticism scores were associated with greater satisfaction with life, friendships and family relationships. Greater satisfaction with friendships and with family relationships were associated with greater satisfaction with life. These results are consistent with the principles of the convoy model of social relationships. In later life, social convoys involving good quality relationships and providing support when needed favor satisfaction with life¹.

Satisfaction with family relationships and friendships were found to mediate the association between neuroticism and satisfaction with life, in congruence with the theoretical model proposed. Greater satisfaction with marriage and with friendships was directly associated with better perceived social support, echoing the findings of Sullivan et al.²⁸. Satisfaction with family relationships

showed no direct association with social support, and the association between neuroticism and social support was mediated by the variables satisfaction with marriage and with friends, but not by satisfaction with family relationships.

The literature emphasizes the importance of differentiating satisfaction with family relationships from satisfaction with friendships. The effects of these relationships on perceived social support and satisfaction with life differ in as far as family relationships are obligatory, whereas those with friends are based on freely chosen criteria, being potentially more positive than relationships maintained by obligation^{1,28,29}.

The family is often elected as the source of social support, but has more potential for causing stress than relationships with friends. The companionship, reciprocity and social support of friends, often understood as "chosen parents" (e.g. brotherly friends), can serve as socioemotional resources that can cushion the negative effects of conflicting family interactions on the psychological wellbeing of older individuals^{30,31}. These results can be interpreted in the context of the theory of socioemotional selectivity^{2,3}, according to which, as individuals age, they tend to prefer social relationships that provide more satisfactory and high affective quality social interactions over interactions to acquire knowledge or social status.

The results help promote reflection on the dynamic of interpersonal relationships that include neuroticism and contribute toward furthering understanding of the psychological mechanisms underlying the interaction between personality in later life and satisfaction with close personal relationships. Given that personality traits are relatively stable over the lifespan, they can be used to predict behaviors of an individual in different life situations, including marital, family and friendship relationships.

Assessing the personality traits of older married couples can yield knowledge on low marital satisfaction, which can increase the risk of "gray divorce" (divorces in couples aged ≥ 50 years) and of worse health status in late life. These findings can aid professionals in the areas of Geriatrics, Gerontology

and Psychology to develop health promotion strategies, besides social and clinical interventions which can strengthen affective bonds of older individuals with their partners, family members and friends. This study has some limitations, most notably the small sample size and high attrition of participants between baseline and follow-up.

CONCLUSION

The present study revealed the mediating influence of satisfaction with family and with friends on the associations between neuroticism and satisfaction with life; and of satisfaction with marriage and friends on the associations between neuroticism

and social support in married community-dwelling older adults. The majority of respondents reported being highly satisfied with life, marriage, friendships and family relationships, particularly those with lower neuroticism scores. Moreover, respondents with higher levels of satisfaction with marriage and friendships had better perceived social support. Longitudinal studies are needed to elucidate the associations found. Mediation of these associations by protective factors promoted by education on aging and psychoeducation for couples and families are areas warranting further research, together with investment in public policies and health promotion actions during the life course.

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