

Personality Factors and Health Aspects in Older Adults: A Longitudinal Study

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Abstract

The Big Five Personality Factors Model is a contemporary theory that effectively assists in understanding an individual's personality features. Therefore, the present study sought to compare the older adults' big five personality factors (neuroticism, conscientiousness, openness to experience, agreeableness, and extraversion) before and after a four-year interval and to identify the predictive effect of these factors on health variables. This is a quantitative and longitudinal study. The sample consisted of 60 older adults with a mean age of 73.17 years ($SD = 5.99$). The following instruments were applied: 1) Sociodemographic and Clinical Data Questionnaire; and 2) Personality Factorial Battery (PFB). The main findings revealed significant changes in the scores of three personality factors over four years: extraversion, conscientiousness, and agreeableness. In this context, the time variable had a significant influence on personality factors.

Keywords: older adults, personality, big five, longitudinal, health

FATORES DE PERSONALIDADE E ASPECTOS DE SAÚDE EM IDOSOS: UM ESTUDO LONGITUDINAL

Resumo

O Modelo dos Cinco Grandes Fatores de Personalidade é uma teoria contemporânea que efetivamente auxilia no entendimento das características da personalidade de um indivíduo. Portanto, o presente estudo procurou comparar os cinco grandes fatores de personalidade (neuroticismo, consciência, abertura à experiência, concordância e extroversão) dos idosos antes e depois de um intervalo de quatro anos e identificar o efeito preditivo desses fatores nas variáveis de saúde. Este é um estudo quantitativo e longitudinal. A amostra foi constituída por 60 idosos com idade média de 73,17 anos ($DP = 5,99$). Os seguintes instrumentos foram aplicados: 1) Questionário de Dados Sociodemográficos e Clínicos e 2) Bateria Fatorial de Personalidade (BFP). As principais descobertas revelaram mudanças significativas nos escores de três fatores de personalidade ao longo de quatro anos: extroversão, consciência e aceitação. Nesse contexto, a variável tempo influenciou significativamente os fatores de personalidade.

Palavras-chave: idosos, personalidade, cinco grandes, longitudinal, saúde

FACTORES DE PERSONALIDAD Y ASPECTOS DE SALUD EN ADULTOS MAYORES: UN ESTUDIO LONGITUDINAL

Resumen

El Gran Modelo de los Cinco Factores de la Personalidad es la teoría contemporánea que efectivamente ayuda a comprender las características de la personalidad de un individuo. Por lo tanto, el presente estudio buscó comparar los cinco grandes factores de personalidad (neuroticismo, conciencia, apertura a la experiencia, amabilidad y extraversión) de los adultos mayores antes y después de un intervalo de cuatro años e identificar el efecto predictivo de estos factores en las variables de salud. Este es un estudio cuantitativo y longitudinal. La muestra consistió en 60 adultos mayores con una edad media de 73.17 años ($DE = 5.99$). Se aplicaron los siguientes instrumentos: 1) Cuestionario de Datos Sociodemográficos y Clínicos; y 2) Bateria Fatorial de Personalidad (BFP). Los principales hallazgos revelaron cambios significativos en las puntuaciones de tres factores de personalidad durante cuatro años: extraversión, conciencia y amabilidad. En este contexto, la variable tiempo tuvo una influencia significativa en los factores de personalidad.

Palabras clave: adultos mayores, personalidad, cinco grandes, longitudinal, salud

Personality factors are considered durable individual characteristics associated with tendencies, styles, and preferences, considering the meaning of behavior within context, culture, and values (McCrae & Costa, 2003). Personality factors are stable throughout the life cycle. The Big Five theory has advanced gradually and is currently one of the most widely used models in health sciences, found in several Brazilian samples (Iwasa et al., 2009; Silva & Nakano, 2011).

The Big Five factor model is widely recognized in the scientific literature (Nunes et al., 2010) and is composed of the following factors and subscales: neuroticism and the subscales depression, emotional instability, vulnerability, and passivity/lack of energy; extraversion and the subscales social interaction, pride, level of communication, dynamism/assertiveness; agreeableness and the subscales kindness, trust in people, and pro-sociality (Nunes et al., 2010); conscientiousness and the subscales competence, weighting/caution, and engagement/dedication; and openness to experience and the subscales openness to ideas, liberalism, and the search for novelties (Silva & Nakano, 2011).

The authors of the Big Five model published in 2019 a study addressing the role of the model in aging. In this study, they report that one of the possible explanations for personality stability may be due not only to genetics but also to a stable environment and lifestyle. Additionally, they noted that, over the years, there may be a decrease in neuroticism, increased conscientiousness, and agreeableness under favorable conditions (Costa et al., 2019).

Several studies demonstrate the relationship between personality characteristics and psychopathologies, such as depression, anxiety, somatic problems, and dementia (Allegrí et al., 2007; Wongpakaran & Wongpakaran, 2014). Personality factors predict well-being conditions in older adults; for instance, neuroticism has a negative effect on them, and extraversion and conscientiousness have positive ones (Meléndez et al., 2019). The systematic review by Farina et al. (2016) identified a relationship between personality factors and health satisfaction in older adults. Also, personality factors are related to health conditions, happiness, generativity, and longevity in this population (Costa et al., 2019).

In the literature, there is a lack of longitudinal studies that investigate personality and associated clinical issues in older Brazilian adults. This paper aims to compare the personality of older adults before and after a four-year interval, using as a basis the big five personality factors (neuroticism, conscientiousness, openness to experience, agreeableness, and extraversion). In addition, to identify the predictive effect of these personality factors (baseline) on health variables (health issues, medication, withdrawing from activities, hospitalization, mental disease, the occurrence of dementia in the family, and psychotherapeutic/psychiatric follow-up), which were evaluated after the four-year interval.

Method

Sample

This is a prospective and longitudinal study. In the first phase, a sample consisted of 108 older adults from Southern Brazil was recruited through convenience sampling. All of them

were evaluated in 2013. In the second phase, participants were excluded if the phone number was outdated or unable to receive calls ($n = 20$), the individual refused to participate in the second phase ($n = 13$), the individual presented symptoms of dementia, according to family information ($n = 4$), the participant was not available at the time of the collection of the data ($n = 7$) or did not complete all instruments ($n = 4$). Therefore, 48 participants were excluded in this phase. In the end, 60 participants were evaluated for a second time within four years (in 2013 and 2017).

Instruments

- Sociodemographic and Clinical Data Questionnaire: a structured interview that investigated gender, age, education level, and clinical conditions (health issues, medication, withdrawing from activities, hospitalization, mental disease, the occurrence of dementia in the family, and psychotherapeutic/psychiatric follow-up).
- Personality Factorial Battery (PFB): a Brazilian psychological instrument developed to assess personality based on the Big Five Personality Factors model. The instrument has 126 items, answered on a seven-point Likert scale. The Cronbach's alpha found for each factor was 0.89 for neuroticism, 0.84 for extraversion, 0.85 for agreeableness, 0.83 for conscientiousness, and 0.74 for openness. In the first phase of this study, Cronbach's alpha values for all factors were 0.85 for neuroticism, 0.74 for extraversion, 0.71 for agreeableness, 0.75 for conscientiousness, and 0.59 for openness. In the second phase, the values were, respectively, 0.65, 0.64, 0.61, 0.75, and 0.37 (Nunes et al., 2010).

Procedures

The Ethical Research Committee of the Pontifical Catholic University of Rio Grande do Sul (Brazil) approved the research under No. 63196816.8.0000.5336. The data were collected two times, before and after a four-year interval. In both phases (I and II), a psychologist and undergraduate Psychology students carried out the assessment. A psychological health center and available and adequate rooms inside the University were used when the instruments were applied. In both phases, the older adults were invited to participate in the study and, after acceptance, they signed the Free and Informed Consent Form. Ethical procedures are based on the Human Research Guidelines and Regulatory Standards (National Health Council Resolutions 510/16 and 466/12).

Data analysis

SPSS statistical software, version 23 for Windows, was used when analyzing the data. Moreover, to check the data distribution, descriptive statistics and the Kolmogorov-Smirnov test were used. Personality indices were calculated from each factor's score in the first assessment (PFB1). The comparison between personality factors was made based on the following calculation: the PFB2 (phase 2) scores minus the PFB1 scores (phase 1) – baseline scores, representing the

change in personality factors over time. Paired Student’s *t*-test and effect size by Cohen’s *d* verified the matching between PFB1 and PFB2 scores.

The predictive effect of personality factors on each health variable after the four-year interval was verified by multiple linear regression (stepwise method). The health variables were analyzed through the following code: 0 = no and 1 = yes. Durbin–Watson analysis was used when investigating the independence of observations, adopting values between 1 and 3 (Field, 2009). A *p*-value < 0.05 was considered statistically significant.

Results

The mean age of participants in phase I was 69.13 years (*SD* = 5.99) and, in phase II, 73.17 years (*SD* = 5.99). The difference between phases was significant (*t* = -5.570; *p* ≤ 0.001). Most of the sample were women (*n* = 49, 82%), and the mean formal education level was 12.68 years (*SD* = 5.34).

Extraversion, agreeableness, and conscientiousness factors presented significant changes over the four years. The sample demonstrated higher scores on these factors in the second assessment compared to the first, and the agreeableness factor revealed the greatest difference. Neuroticism and openness to experience were stable over time (Table 1).

Table 1
PFB Traits and Facets Scores Mean and Comparison Between PFB1 and PFB 2 with the Paired t-Test.

Traits and facets	PFB1		PFB2		Mean of difference (SD)	Minimum and maximum difference	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Neuroticism	3.20	.79	3.05	.77	-.15 (.86)	-2.23 – 2.17	1.38	.172	
Extraversion	4.34	.70	4.51	.61	.17 (.61)	-1.28 – 1.41	-2.13	.037	.259
Agreeableness	3.97	.47	5.89	.47	1.92 (.66)	.39 – 3.22	-22.65	≤ .001	4.085
Conscientiousness	4.85	.61	5.04	.65	.19 (.64)	-1.56 – 1.44	-2.37	.021	.301
Openness	4.24	.65	4.32	.63	.07 (.80)	-2.08 – 2.08	-.72	.477	

Note. PFB1 = Personality Factorial Battery – phase 1; PFB2 = Personality Factorial Battery – phase 2; *M* = mean; *SD* = standard deviation.

Table 2 presents the regression models of personality factors and health variables that demonstrate significant predictors. The levels of conscientiousness decreased in the first evaluation (PFB1). They were predictors of lower performance in activities. Higher levels of neuroticism predicted more cases of mental disease after four years. Lower extraversion and openness levels and higher levels of neuroticism predicted the increased occurrence of dementia in the family. The variables of health issues, medication, and hospitalization did not present significant predictors.

Changes in personality factors (PFB2–PFB1) indicated that increased levels of conscientiousness and reduced levels of openness to experience predicted higher medication use. Beyond that, the increase in extraversion levels (in both phases) predicted a higher occurrence of dementia in the family. The variables of health issues, withdrawal from activities, hospitalization, and mental disease did not present significant predictors.

Table 2
Linear Regression Models: Predictors of Personality Factors and Personality Change for Health Variables

		Predictors	B ± SE	B	t	p	R	R² a
Personality (PFB1)	Withdrawal from activities	Conscientiousness	-.232 ± .089	-.323	-2.601	.012	.323	.089
	Mental disease*	Neuroticism	.125 ± .057	.275	2.177	.034	.275	.060
	Family history of dementia*	Extraversion	-.182 ± .083	-.279	-2.199	.032	.447	.157
		Neuroticism	.188 ± .072	.328	2.604	.012		
		Openness	-.180 ± .088	-.257	-2.051	.045		
Personality change (PFB2–PFB1)	Medication*	Conscientiousness	.203 ± .071	.376	2.870	.006	.395	.126
		Openness	-.138 ± .056	-.324	-2.473	.016		
	Family history of dementia*	Extraversion	.261 ± .091	.351	2.854	.006	.351	.108

Note. PFB1 = Personality Factorial Battery – phase 1; PFB2 = Personality Factorial Battery – phase 2.

* health variables are from phase 2.

Discussion

The main goal of this study was to compare the mean of the big five personality factors of older adults before and after a four-year interval. Extraversion, agreeableness, and conscientiousness factors indicated significant changes over four years; that is, there was an increase in these factors in the sample. This result can be considered positive for aging, considering that individuals with higher extraversion tend to be more sociable, kind, and active, and individuals with higher levels of agreeableness are more altruistic and have social interaction skills.

Besides, high conscientiousness levels indicate organized individuals (McCrae & Costa, 2003), who generally react more adaptively to stressful situations (Carver & Connor-Smith, 2010). Higher levels of conscientiousness and openness were associated with a lower risk of cognitive decline in longitudinal studies with older adults (Nishita et al., 2016), i.e., higher levels of these factors are associated with better cognitive health, which contributes to a better quality of life as they age. The factors neuroticism and openness to experience demonstrated more stability over time.

The study presented data concerning personality (baseline) and indicated which clinical conditions are related to personality change in older adults within four years. The “most positive”

personality factors – extraversion, agreeableness, and conscientiousness – increased during this period. Some clinical conditions were identified as significant variables, as they present association with personality in aging: failing to perform activities due to health issues, life-long mental diseases, family history of dementia, and medication.

The literature describes a relationship between high levels of neuroticism, low levels of openness, and high levels of cortisol (Ouanes & Popp, 2019). Individuals with this personality profile may be more liable to psychosocial stressors due to the high cortisol and, therefore, may contract diseases more easily (García-Banda et al., 2014). Considering that, in the present study, the older adults' levels of neuroticism and openness settled down, the sample did not present statistically significant clinical differences and remained with preserved levels regarding health issues.

The present study also aimed to identify the predictive effect of personality factors (baseline) on older adults' health variables after a four-year interval. The findings suggest that neuroticism predicts the occurrence of mental illness; that is, the higher the level of neuroticism, the greater the chance of a mental disease happening during lifetime. Low levels of extraversion and openness to experience, combined with high levels of neuroticism, were identified as predictors of higher family history of dementia.

These findings corroborate the results of recent research, which have demonstrated that experiencing life-long adversity and traumatic events can speed up the impacts of cognitive aging on personality (Tasseli et al., 2018). Besides, it indicates that neuroticism predicts poor performance in cognitive functions (attention and information processing) regardless of age and sociodemographic variables. Older adults with high levels of neuroticism also present higher levels of negative affection (sadness, anger, and hopelessness) (Munoz et al., 2020).

In this context, besides neuroticism, negative affection and hopelessness are also influenced by age and are noticed as significant predictors of depression (Kim et al., 2016; Munoz et al., 2020). Other studies have also examined the relationship between neuroticism and psychopathology in aging (Sweeney et al., 2019; Yoneda et al., 2018) and found that depression, anxiety, and stress are considered risk factors for dementia (Chételat et al., 2018).

This study found that there were changes in conscientiousness rates between baseline and posttest and that this factor predicts less involvement in activities. This finding corroborates the results of previous studies, which presented that some personality traits of older adults (≥ 63 years old) remained similar to those manifested during adolescence, although authors recognize that personality may change over time (Harris et al., 2016). The extraversion and conscientiousness rates tend to increase over the decades more than openness, agreeableness, and neuroticism indices (Harris et al., 2016).

The results also show that participants with a family history of dementia demonstrated an increase in extraversion over time. One explanatory hypothesis is that these individuals needed to access/develop a support network to assist family members with dementia. Another study found that formal caregivers, who have greater levels of resilience, tend to have higher

scores on extraversion, which helps them to search for a support network to take care of older adults with dementia (Fernández-Lansac et al., 2012).

The neuroticism factor in older adults is still discussed, and further studies need to be conducted to corroborate or refute what is already known, especially studies comparing the impacts of neuroticism with possible interventions in multiple age groups (Elliot et al., 2019; Munoz et al., 2020). As limitations, the sample size and standard error are considered, as well as the alpha estimates are low in the instrument that measured the personality-openness factor. Future directions may also include a third sample to allow for more advanced models. In conclusion, this paper observed significant changes in the scores of three personality factors over four years: extraversion, conscientiousness, and agreeableness. In this context, the time variable significantly influenced personality factors.

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