

Research report

Editor:

Giselle Pianowski

Conflict of interest:

The authors declare that there are no conflicts of interest.

Received: 12/02/2025

Final Version: 30/06/2025

Approved: 09/09/2025

<https://doi.org/10.1590/1413-8271202530e294176>



DATA AVAILABILITY
STATEMENT

The research data are not available.

Psychological intervention focused on personality: Is it possible to pursue your best version?

Jeferson Gervasio Pires¹

Fabiano de Araujo Narciso¹

Carlos Henrique Sancineto da Silva Nunes²

Maiana Farias Oliveira Nunes²

Ellen Pittiaglini Martins¹

Luiz Eraldo Almeida Silva¹

Maria Eduarda Alexandre de Souza¹

João Batista Rios Machado¹

Letícia Isabele da Silva¹

Thalita Moreira¹

¹Faculdade Anhanguera, São José, Santa Catarina, Brazil

²Universidade Federal de Santa Catarina, Florianópolis, Santa Catarina, Brazil

Abstract

The present study investigated the validity of a psychological intervention for university students, focusing on personality development and the promotion of healthy aging. A total of 42 students (83% women, $M=27$ years) participated, randomly assigned to an experimental group (EG) and a control group (CG). The intervention aimed to modify the personality profile by fostering psychological maturity. Repeated measures analysis of variance and structural equation modeling were conducted. The results indicated significant reductions in depression symptoms ($B=-112.62$, $p < 0.001$) and in the distance to the healthy personality profile ($B=-0.58$, $p=0.019$) in the EG, with effects mediated by maturity. A decrease in Neuroticism was also observed ($B=-0.39$, $p=0.0003$), a trait associated with emotional suffering. The findings demonstrate the possibility of intentional personality change through structured interventions, as well as the fact that preventive programs may contribute to healthier aging, promoting emotional regulation and psychological adaptation throughout life.

Keywords: personality traits; change; health psychology; emotional maturity.

Intervenção psicológica com foco em personalidade: é possível buscar sua melhor versão?

Resumo

A presente pesquisa investigou a validade de uma intervenção psicológica para universitários, com foco no desenvolvimento da personalidade e na promoção do envelhecimento saudável. Participaram 42 estudantes (83% mulheres, $M=27$ anos), randomizados em grupo experimental (GE) e controle (GC). A intervenção visou modificar traços de personalidade com o intuito de promover amadurecimento psicológico. Foram realizadas análises de variância com medidas repetidas e modelagem de equações estruturais. Os resultados indicaram reduções significativas nos sintomas de depressão e na distância em relação ao protótipo de personalidade saudável, com efeitos mediados pelo amadurecimento. Também foi observada diminuição no neuroticismo, traço comumente relacionado a sofrimento emocional. Os achados demonstram a possibilidade de realizar mudanças intencionais na personalidade por meio de intervenções estruturadas. Conclui-se que programas preventivos podem contribuir com o envelhecimento saudável, favorecendo a regulação emocional e a adaptação psicológica ao longo da vida.

Palavras-chave: traços de personalidade; mudança; psicologia da saúde; maturidade emocional.

Intervención psicológica centrada en la personalidad: ¿es posible buscar tu mejor versión?

Resumen

El presente estudio investigó la validez de una intervención psicológica para estudiantes universitarios, enfocándose en la personalidad y la promoción del envejecimiento saludable. Participaron de 42 estudiantes (83% mujeres, $M=27$ años), asignados a un grupo experimental (GE) y a un grupo de control (CG). La intervención tuvo como objetivo modificar rasgos de personalidad, fomentando la maduración psicológica. Se realizaron análisis de varianza con medidas repetidas y modelado de ecuaciones estructurales. Los resultados indicaron reducciones significativas en la depresión ($B=-112.62$, $p < 0.001$) y la distancia al perfil de personalidad saludable ($B=-0.58$, $p=0.019$) en el GE, con efectos mediados por la madurez. También se observó una disminución en el neuroticismo ($B=-0.39$, $p=0.0003$). Los resultados demuestran la posibilidad de cambios intencionales en la personalidad a través de intervenciones estructuradas. Se concluye que los programas preventivos pueden contribuir a un envejecimiento saludable, favoreciendo la adaptación psicológica a lo largo de la vida.

Palabras clave: rasgos de personalidad; cambio; psicología de la salud; maduración emocional.

Introduction

Estimates from the Brazilian Institute of Geography and Statistics (IBGE) for 2018 indicate that, by 2060, the Brazilian population will have a large contingent of elderly people. In addition, life expectancy at birth, which was 76.3 years in 2018, shows a trend of continuous growth. This scenario highlights the importance of preparing new generations for healthy aging from an early age, considering that habits, behaviors, and characteristics developed and acquired over time influence quality of life throughout the entire life cycle. However, evidence from the field of personality indicates that, after the age of 60, there is a tendency toward a reduction in levels of openness to experiences, sociability, and agreeableness, indicating that individuals become more dogmatic, less agreeable, and less sociable as they age (Bleidorn et al., 2021; Roberts et al., 2017). Thus, it is understood that the aging process may be negatively impacted if the adaptive personality traits are not developed from youth.

In the Five Factor Model (FFM) of personality, different traits have been associated with indicators of physical and psychological health across the life cycle. For example, high levels of positive personality traits (Conscientiousness, Extraversion, Openness, and Agreeableness) are associated with healthy behaviors, flexibility, social support, and longevity, whereas high levels of the emotional personality trait, Neuroticism (N), are related to emotional instability, greater risk of anxiety and depressive disorders, and mortality (Lahey, 2009; Kotov et al., 2010). It is known that a 1 standard deviation increase in N is associated with a 10% increase in the risk of overall mortality, which characterizes this trait as a robust predictor of psychological distress (Song et al., 2024).

Although neuroticism is often associated with psychological distress, there is evidence that it can be influenced by changes in other personality traits (Hudson et al., 2020; Roberts et al., 2017). Studies indicate that the strengthening of positive personality traits may promote emotional regulation and symptom reduction, contributing, including to an indirect decrease in N (Hudson et al., 2020; Roberts et al., 2017). This may occur because positive traits can function by modulating the emotional experience. For example, more extroverted individuals tend to experience greater positive affect and social engagement. In turn, people with higher levels of conscientiousness demonstrate greater self-control and emotional regulation, and those with

higher levels of agreeableness foster secure bonds and interpersonal support. Thus, even when the focus of the intervention is not directly on the N trait, strengthening other personality factors can promote positive effects on emotional adjustment in an integrated manner.

In this sense, international programs such as PEACH (Stieger et al., 2021), developed in Germany, and TESSERA (Wrzus & Roberts, 2017) in the United States, which aim to promote personality changes, have shown that structured interventions, focusing on behavioral goals and repetition of situational experiences, can induce intentional changes in individual functioning patterns, with lasting results. Learned and automated behaviors can become habitual, even influencing the individual's biology. (Bleidorn et al., 2019; Wrzus & Roberts, 2017). Despite the advances promoted by these programs, their studies have focused on digital interventions, with little consideration of the impacts on the overall personality profile. Moreover, there is a lack of empirical evidence in distinct cultural contexts, such as the Brazilian one, particularly with face-to-face and personalized interventions. All of the above-mentioned highlights gaps in the field of personality psychology, especially in Brazil.

An innovative approach to assessing personality changes with a focus on healthy aging is to consider how closely an individual's profile matches a pattern empirically associated with longevity. Instead of focusing on isolated traits, this approach uses Euclidean distance as a metric to measure the discrepancy between the current personality profile and a theoretical prototype of healthy personality, developed based on meta-analyses of data from people who are centenarians (Ghiami et al., 2023). This perspective understands that there is no single path to healthy aging, but rather multiple adaptive trajectories, in which different combinations of trait levels can result in good psychological functioning and quality of life (Wright & Jackson, 2024). Thus, the distance-to-prototype metric allows us to assess whether an individual's personality is becoming more functional and adjusted over time, respecting their particularities rather than imposing a fixed standard.

A relevant construct for understanding the processes of personality change promoted by these interventions is maturity, defined as the attitude of valuing lifetime, seeking satisfaction of desires, and performing previously avoided activities with responsibility and healthy choices in daily life (Pires, 2020). Maturity has been understood as a mediator between personality traits and emotional adjustment (Mroczek & Shapiro,

2007; Soto & Tackett, 2015). More mature individuals tend to exhibit greater emotional regulation, a sense of purpose, and effective coping strategies. (Hudson et al., 2020). This involves taking responsibility for oneself, developing emotional autonomy, and acting consistently with personal values and goals. High levels of maturity have been associated with profiles that are less vulnerable to psychological distress, serving as a protective factor against the impacts of maladaptive traits such as N (Mroczek & Spiro, 2007; Soto & Tackett, 2015). In this sense, increasing positive traits and reducing N may be an effective way to mitigate emotional symptoms and strengthen adaptation to healthy aging, that is, to promote maturity.

Based on this theoretical framework and considering the scarcity of studies that have proposed interventions for personality changes and that have used integrative metrics to measure overall changes in individual functioning, the present study aimed to investigate the effects of a structured psychological intervention aimed at personality development with a focus on healthy aging.

As an outcome related to personality change, in the present study, it was considered the distance from the healthy personality prototype, an integrative metric composed of all five major factors. As an outcome related to the level of emotional distress, participants had their symptoms of anxiety and depression monitored during the intervention period. Complementarily, we evaluated trait N in isolation, given its strong relationship with psychological distress (Song et al., 2024) and evidence that the effect size for psychotherapeutic interventions is higher when focusing only on this trait (Roberts et al., 2017). Additionally, we examined the role of maturity as a mediator of the effects of the intervention on these outcomes.

As expected outcomes, the first hypothesis was that, at the fourth assessment, participants in the EG would exhibit lower emotional distress, reflected by lower scores in anxiety and depression symptoms, as well as possible adjustments in traits related to psychological distress, particularly in the emotional pattern of personality. The second hypothesis was that, in the fourth assessment, the EG participants would be closer to the healthy personality profile, resulting in a shorter distance from the prototype, when compared to the CG participants. The third hypothesis was that, in the fourth assessment, the EG participants would obtain higher scores in maturity compared to the CG participants. Finally, the fourth hypothesis was that maturity would

be the mediating factor in the relationship between the intervention and the evaluated outcomes.

Method

Participants

Forty-two undergraduate students from an institution located in southern Brazil participated in the study, 83% of whom were female ($n = 35$), aged between 18 and 55 years ($M = 28$, $SD = 9.83$; $MD = 23$), with 29 (70%) aged 30 years or younger. The exclusion criteria were: being under 18 years of age, using psychiatric medication, or undergoing psychiatric or psychological treatment. More information is provided in Table 1.

Recruitment and randomization of participants

On August 19, 20, and 21, 2024, the research team visited several undergraduate classrooms at a university, presenting the study and inviting students to participate in a personal development program focused on healthy aging. Interested individuals were asked to fill out a form through a QR code provided in the classroom, registering their availability for the program and providing their phone number and email address for contact purposes. Through this method, 146 people expressed interest in participating. A list containing the names and contact details of these individuals was distributed among the research team members, who contacted those interested via WhatsApp to schedule the first session.

The research team was composed of Psychology students from the sixth to the tenth semesters, who had already completed the course in Psychological Measurement, and who received training in the intervention program from the principal researcher as part of an undergraduate research project. From the list of interested individuals in the program, 68 people confirmed their attendance at the first session. Participants on this list were assigned an identification number, from 1 to 68, in ascending order according to their appearance on the scheduling spreadsheet for the first session. With the assistance of the website *Research Randomizer*, an online tool that generates random numbers to support participant randomization in research, two randomized sets of 34 participants each were generated from the 68 individuals scheduled for the first session, half being allocated to the EG and the other half to the CG. Of those, 19 participants did not attend the first session, and another seven dropped out before the second assessment, leaving, in

Table 1.

Sociodemographic Information of the Research Participants

Sociodemographic Variables		CG	EG
Gender	Female	14	19
	Male	6	3
Age	Average	25,61	27,71
	Standard deviation	8,19	10,88
Marital status	Single	11	14
	Married/Cohabiting	8	7
	Divorced/Widowed	1	1
Education	Incomplete higher education	17	19
	Complete higher education	3	0
	Complete postgraduate education	0	3
Physical activity	Does not exercise at all	4	4
	1 to 2 times a week	7	5
	3 to 5 times a week	5	8
	5 to 7 times a week	4	5

the end, 20 participants in the CG and 22 in the EG. It is worth noting that the participants did not know which group they were assigned to.

Ethical aspects

This study was approved by the Human Research Ethics Committee of a university located in southern Brazil (CAAE: 79018924.8.0000.5357). It was also prospectively registered in the Brazilian Clinical Trials Registry (REBEC: omitted). All participants signed an informed consent form before the beginning of the study.

Instruments

Big Five Inventory-2 (BFI-2): a self-report inventory designed to measure personality traits within the Five-Factor Model (FFM), consisting of 60 items. The subscales are Openness ($\alpha = .78$), Conscientiousness ($\alpha = .84$), Extraversion ($\alpha = .88$), Agreeableness ($\alpha = .80$), and Neuroticism ($\alpha = .89$) (Pires et al., 2023).

Gold Inventory (GI): self-report scale used to measure Maturity, Transcendence, Fear of Death and Aging, Altruism, and Acceptance (Pires, 2020). In this study, only the Maturity subscale ($\alpha = 0.83$) was applied, which pertains to the attitude of valuing and enjoying life, seeking the fulfillment of desires, and allowing oneself to engage in activities or adopt behaviors that

were previously unattainable. It involves a commitment to responsible behaviors and healthy choices in daily life and is assessed through 35 items.

Beck Anxiety Inventory (BAI): a 21-item instrument ($\alpha = 0.92$) designed for the diagnosis, monitoring, and treatment of anxiety disorders. (Beck, Steer, & Brown, 1990).

Beck Depression Inventory-2 (BDI-2): a scale for measuring depressive symptoms in recent days (Gorestein et al., 2011), consisting of 21 items ($\alpha = 0.95$).

Revised Neo Personality Inventory (Neo Pi-R) (Flores-Mendoza et al., 2007): An instrument for assessing personality Five-Factor Model (FFM) and its 30 facets, consisting of 240 items. Their scores were generated through the publisher Vetor's online platform, making it impossible to identify the accuracy of the instrument. It is worth noting that this instrument was not used to measure outcomes, but as a resource to personalize the intervention, being applied only in the EG. The comparability of outcomes between the groups (CG and EG) was only achieved with the BFI-2.

Data collection procedures

The data were collected longitudinally across four assessment points and included only the first four instruments described in the Instruments section. Assessment 1 took place one week before the intervention began (August 2024). Assessment 2 occurred

one month after the start of the intervention (October 2024). Assessment 3 took place during the week of the intervention's completion (November 2024). Assessment 4 occurred two months after the intervention ended (January 2025). All assessments were conducted online through a link sent to the participant. To ensure anonymity, all participants received an ID to use for identification in all assessments.

Details of the interventions applied

Participants in the EG received the intervention program tested in the present study, which aimed to promote changes in specific personality traits with a focus on healthy aging. The program lasted 10 weeks, with one weekly session of approximately 50 minutes. The sessions were face-to-face, individual, and took place in the offices of a university Psychology teaching clinic. Some sessions, exceptionally, had to be conducted online due to illness or the participant's inability to attend in person. The intervention applied in the EG is shown in more detail in Table 2.

In the intervention tested in this study, it is understood that changes will occur systematically and will be the sum of small, continuous efforts made in the short and medium term, according to the conceptual and practical framework described in Pires and Narciso (2022). The intervention initially involves psychoeducation on personality and healthy aging, followed by an analysis of the participant's current personality profile (using the NEO PI-R test). This assessment allows for the selection of characteristics that are unfavorable to the healthy aging prototype (Pires et al., under review) and enables the implementation of day-to-day behaviors related to these characteristics. Participants in the EG, with the assistance of the facilitator, selected which personality traits they wished to develop during the intervention, based on the NEO PI-R results and the initial feedback. This means that, in practice, different aspects of all Five-Factor Model (FFM) traits were addressed in a personalized manner.

In addition, participants' resistances and difficulties with the implementations are analyzed, intentionally applying the assumptions for change proposed by Hannecke et al. (2014). Implemented behaviors are expected to increase in level as the weeks of the intervention progress (Hudson et al., 2019), starting at an easy level (e.g., in the case of low Extraversion: *saying hello to a stranger*), moving to a medium level (*initiating a brief conversation with someone*), and progressing to a difficult level (*attending a social event*).

A distinguishing feature of the intervention tested in this study, compared to PEACH and TESSERA, concerns the development of the therapeutic alliance, which allows for better management of resistances that arise in participants during the change process. Currently, interventions based on PEACH and TESSERA have been implemented through digital applications, with no evidence of adaptation for implementation in face-to-face sessions, such as in psychotherapy. Furthermore, reinforcement of information regarding the conditions for personality change (assumptions by Hannecke et al., 2014) provided throughout the program anticipates difficulties and resistance in the change process, favoring the participant's involvement with the proposed tasks. Furthermore, the psychoeducation provided at the beginning of the program on personality and healthy aging, combined with the information obtained from the NEO PI-R, generates motivation by allowing the formulation of objective change goals aligned with each individual's characteristics.

Participants in the CG received a placebo intervention, consisting of three sessions. In the first session, they were informed that they would be monitored for five months and that they would be required to complete personality instruments so that, at the end, it would be possible to provide them with an overview of how to adjust their behaviors to align more closely with a healthy aging prototype. In the second session, participants reflected on their personal medium- and long-term goals, with one of the purposes of the session being to prevent dropout. In the third session, which took place two months after the end of the intervention with the EG, a report on their personality traits over the five months was presented. It is worth noting that CG participants did not receive structured behavior change tasks.

Data analysis

Analyses were conducted in Stata 17 (Stata-Corp, 2023), using mixed linear regression models with restricted maximum likelihood (REML) for repeated-measures ANOVAs. The group (control and experimental) and time (1, 2, 3, and 4) factors were included as fixed effects, in addition to their interactions, and the participant identifier (id) as a random effect.

The effectiveness of the program was evaluated based on four main outcomes: distance to the healthy personality prototype (as an overall indicator of personality change), symptoms of anxiety and depression, and, exploratively, the trait of Neuroticism. These

Table 2.

Summary of the intervention tested in this study and applied in the Experimental Group

Session	Objective	Practice or activity performed in the office and/or at home
1	Introduction and Alliance	Introduction to the program and development of the therapeutic alliance. Administration of the NEO PI-R test.
2	Psychoeducation	Explanation about personality and healthy aging, as well as the healthy aging prototype. Presentation of the assumptions of Hannecke et al. (2014), and establishment of a commitment agreement.
3	Perception of personal traits	Feedback on the personality profile assessed with the NEO PI-R. Identification of <i>very high</i> or <i>very low</i> facets in the NEO PI-R. Task: observe and record behaviors during the week that illustrate these maladjustments.
4	Identification of Maladaptive Traits	Explanation of the participant's current personality traits and how distant they are from the prototype of healthy aging. Discussion of behaviors observed during the week.
5	Selection of Change Goals	Selection of personality facets as targets for change. Homework: daily practice of easy-level behaviors related to the selected goals.
6		Discussion of the task performed and identification of resistances, with adjustments to make them feasible. Homework: practice of medium-level behaviors related to the selected goals.
7		Discussion of the task performed and identification of resistances, with adjustments to make them feasible Homework: practice of medium-level behaviors related to the selected goals.
8	Discussion of the task performed. Identification of Resistances. Selection of New Goals, Increasing Difficulty.	Discussion of the task performed and identification of resistances, with adjustments to make them feasible Homework: practice of difficult-level behaviors related to the selected goals.
9		Discussion of the task performed and identification of resistances, with adjustments to make them feasible Homework: practice of medium-level behaviors related to the selected goals.
10	Feedback	Conclusion of the practices. Comparison of the initial profile with the final profile.

outcomes were selected due to their robust association with psychological distress and risk for chronic diseases across the life cycle.

It is worth emphasizing that in the present study, although all Five-Factor Model (FFM) traits were addressed in the interventions, personality changes were not evaluated considering each trait separately, but rather they were assessed based on the distance between the participant's current personality profile, which encompasses all FFM traits, in relation to a theoretical prototype of healthy personality, which was defined based on a meta-analysis (Pires et al., under review). This prototype reflects patterns observed in centenarians, whose O, C, E, and A traits are at medium to high levels, while N remains at a low level. For the organization of this prototype, cut-off points for the FFM traits were established based on the normative data of the participant sample in the BFI-2 validity evidence study in Brazil (Pires et al., 2023), in relation to the findings of the meta-analysis by Pires et al. (under review).

The distance between the current profile and the prototype was calculated by applying the *Euclidean distance* formula, in which the difference between the observed scores and the ideal values was squared, added up, and then square-rooted, resulting in a continuous metric that reflects the degree of deviation from the personality prototype. This metric was used as a dependent variable in mixed regression models to investigate changes in distance from the prototype over time and between groups (EG and CG). In summary, distance to the prototype refers to the proximity to the personality profile characteristic of healthy longevity, which allows for the assessment of the integrated impact of the intervention on the overall personality profile, serving as an indicator of personality change.

Additionally, structural equation modeling (SEM) was used to investigate the relationships between *maturity*, group, time, and dependent variables, with a mediation analysis conducted to test whether maturity explained the effects of the intervention on the outcomes. The mediation hypothesis suggests that the intervention would increase *maturity*, leading to reductions in *anxiety and depression* symptoms, *Neuroticism*, and distance from the healthy prototype. Thus, maturity was included as a mediating variable based on evidence that more mature individuals exhibit greater emotional regulation and well-being (Hudson et al., 2020).

Prior to the analyses, statistical assumptions were evaluated to ensure the adequacy of the models

(West et al., 2022). The anxiety and depression variables, which violated normality in some assessments, were transformed using a quadratic function. Raw data and analysis codes are available upon request to the lead author, in accordance with ethical guidelines for research in Psychology.

Results

In the first assessment, that is, before the start of the intervention, participants in both groups exhibited similar levels of anxiety, depression, Neuroticism, maturity, and distance to the healthy personality prototype. The descriptive statistics (Table 3) show that, in the CG, scores of O, C, A, and N exhibited a slight decline across assessments, except for E, which remained stable. In the IG, there was a progressive increase in scores of O, C, and E, while A remained stable and N decreased over time. In turn, maturity scores in the CG remained stable across assessments, despite some variation, whereas in the EG, there was a progressive increase. Mean scores of depression and anxiety decreased more markedly in the EG, whereas in the CG, the variations were less pronounced. From the second assessment onward, distance to the healthy personality prototype showed a linear increase in the CG and a linear decrease in the EG.

The repeated-measures ANOVAs revealed significant effects of the intervention on the tested outcomes. The distance to the healthy personality prototype decreased significantly in the EG and increased in the CG, with a large effect size for the EG ($d = -0.78$) and a moderate effect size for the CG ($d = 0.45$). The group $\times$ time interaction was significant ($B = -0.58$, IC *bootstrap* 95% [-1.08, -0.10], $p = 0.019$), with a small effect size ($\eta^2_p = 0.0464$).

Scores for depression symptoms showed a significant reduction over time in both groups, with a large effect size for the IG ($d = -1.60$) and a small effect size for the CG ($d = -0.22$). The group $\times$ time interaction was significant, indicating that the EG had lower depression scores compared to the CG at the end of the intervention ($B = -112.62$, IC *bootstrap* 95% [-18.48, -4.04], $p < 0.001$), with an effect size close to large ($\eta^2_p = 0.134$).

Anxiety symptom scores decreased over time, with a large effect size for the EG ($d = -1.08$) and a medium effect size for the CG ($d = -0.44$). The group $\times$ time interaction was significant ($B = -51.42$, IC *bootstrap* 95% [-14.88, 4.60], $p = 0.0022$), with a very

small effect size ($\eta^2_p = 0,011$). However, as the confidence interval includes zero, this result should be interpreted with caution, as there is no clear evidence of a reliable effect.

There was a significant reduction in Neuroticism levels in the EG. The effect size in the EG was small ($d = -0.29$), indicating a slight decrease in N levels after the intervention. In the CG, there was a slight increase in N levels, with a small effect size ($d = 0.33$). The group x time interaction was significant ($B = -0.39$, 95% *bootstrap* CI [-0.76, -0.01], $p = 0.0003$), with a small effect size ($\eta^2_p = 0,067$).

The *maturity* scores resulted in a significant increase in EG over time, with a large effect size for this group ($d = 0.86$) and a very small effect size for the CG ($d = 0,09$). The group x time interaction was significant at the threshold of statistical significance ($B = 0.127$, 95% *bootstrap* CI [0.003, 0.265], $p = 0.050$), indicating a tendency toward greater *maturity* in the EG compared to the CG, and a moderate effect size ($\eta^2_p = 0,065$).

SEM analysis (Table 4) showed that maturity mediated the effects of the group x time interaction on psychological symptoms and proximity to the healthy personality prototype. The mediation coefficients indicated that increased maturity is significantly associated with reduced symptoms of depression ($B = -5,25$, $p < 0,001$), anxiety ($B = -7,93$, $p < 0,001$), neuroticism ($B = -0,44$, $p < 0,001$), and distance from the healthy personality prototype ($B = -0,70$, $p < 0,001$). The effect of time on this distance was not significant. ($B = 0,014$, $p = 0,895$).

Discussion

The results of this study provide preliminary evidence for the efficacy of a structured psychological intervention aimed at personality development with a focus on healthy aging in a sample of university students. Participants in the EG presented significant reductions in depression, anxiety, and neuroticism scores, as well as a reduced distance from the healthy personality prototype, the primary metric of personality change considered in this study, when compared to participants in the CG. These results, in addition to being expected, support the hypothesis that intentional changes can be promoted in patterns of psychological functioning, with positive impacts on well-being and adaptation across the lifespan. (Hudson et al., 2020; Roberts et al., 2017).

In relation to the symptoms of depression, a significant reduction was observed over time, both in the CG and the EG, although with a more pronounced effect in the latter. This result was expected and corroborates the hypothesis that the intervention would have a greater impact on depressive symptomatology. The structure of the intervention, which combined psychoeducation, behavioral goal setting, and encouragement of psychological maturity, may have contributed to this outcome. As discussed in the literature, more mature individuals tend to exhibit greater emotional stability, greater regulation of affect, and lower vulnerability to stress, factors that contribute to the prevention and reduction of depressive symptoms (Pires & Narciso, 2022; Hudson et al., 2020). Thus, it is understood that

Table 3.

Descriptive statistics of the variables and outcomes tested in this study, separated by group

Variables	Control Group				Experimental Group			
	Assessment 1	Assessment 2	Assessment 3	Assessment 4	Assessment 1	Assessment 2	Assessment 3	Assessment 4
Openness	1,18 (0,58)	1,23 (0,50)	1,07 (0,55)	0,87 (0,41)	1,19 (0,66)	1,05 (0,63)	1,26 (0,60)	1,37 (0,56)
Conscientiousness	1,10 (0,68)	0,64 (0,63)	0,70 (0,57)	0,68 (0,61)	0,96 (0,81)	0,75 (0,68)	0,96 (0,60)	1,06 (0,57)
Extraversion	0,93 (0,80)	1,18 (0,57)	1,01 (0,62)	0,94 (0,59)	0,80 (0,98)	0,94 (0,61)	1,13 (0,70)	1,24 (0,70)
Agreeableness	1,13 (0,59)	1,16 (0,30)	1,09 (0,47)	1,02 (0,43)	1,39 (0,56)	1,18 (0,59)	1,33 (0,45)	1,35 (0,48)
Neuroticism	0,08 (0,71)	0,17 (0,58)	0,22 (0,62)	0,29 (0,53)	-0,07 (0,58)	-0,15 (0,75)	-0,19 (0,54)	-0,25 (0,66)
Maturity	3,37 (0,50)	3,54 (0,56)	3,50 (0,60)	3,42 (0,54)	3,47 (0,64)	3,63 (0,68)	3,82 (0,43)	3,87 (0,50)
Depression	19,88(11,01)	19,11(11,94)	15,94(10,62)	17,38(11,26)	21,09(10,70)	12,10(10,74)	9,23 (7,94)	7,33 (5,76)
Anxiety	22,38(17,40)	18,83(16,48)	15,02(12,00)	16,05(10,27)	20,14(11,42)	15,19(12,74)	15,00(13,24)	8,66(9,74)
Healthy prototype	8,76 (0,62)	8,61 (0,63)	8,91 (0,73)	9,07 (0,72)	8,76 (0,81)	8,87 (0,79)	8,61 (0,76)	8,49 (0,76)

psychological maturity acted as an intermediary mechanism between the intervention and the observed clinical improvement, as corroborated by the mediation analysis mentioned as detailed below.

Regarding anxiety symptoms, a significant reduction in scores was also observed over time in both groups, although the effect was more pronounced in the EG. Nevertheless, as the confidence interval for the group x time interaction included zero, this finding should be interpreted with caution. One possible explanation for the reduction in anxiety in both groups is the influence of the placebo effect, which has been widely documented in studies of anxiety symptoms (Fernández-López et al., 2022). The mere expectation of receiving psychological attention or care can lead to a temporary reduction in symptoms, especially in university contexts, where academic stress tends to fluctuate throughout the semester. Moreover, anxiety may require a longer intervention period for changes in traits related to emotional reactivity to consolidate, as suggested by the TESSERA model (Wrzus & Roberts, 2017).

The analysis of the N trait, considered a complementary outcome, shows a significant reduction in its levels in the EG, albeit with a small effect size. This result, considering that Neuroticism is directly associated with emotional instability, greater reactivity to stress, and greater risk for symptoms of anxiety and depression (Kotov et al., 2010; Ormel et al., 2013), indicates that a reduction in this trait indicates improvement in emotional self-regulation and overall psychological functioning. Furthermore, the fact that it is associated with mortality (Song et al., 2024) indicates that its reduction may indirectly contribute to

longevity. On the other hand, the slight increase in N observed in the CG may be related to the absence of structured coping strategies, combined with the potentially stressful academic context. These results indicate the potential of the intervention in the prevention and promotion of mental health.

One of the most relevant findings of this study concerns the reduction in distance between the personality profiles of EG participants and the healthy personality prototype. Considering that this metric reflects the degree of alignment of the individual profile with standards empirically associated with longevity and psychological well-being, the reduction observed in the EG indicates that participants started to present individual functioning more aligned with the prototype. This result, in addition to being expected, is coherent with studies that demonstrate the possibility of modifying personality traits through systematic interventions (Hudson et al., 2020; Stieger et al., 2021). In turn, the increase in distance observed in the CG suggests a maladjustment over time, possibly influenced by contextual factors or the absence of specific support during the academic term. All these findings warrant further investigation in the future to confirm their validity.

The promotion of a more adaptive personality profile, i.e., one whose trait levels are not extreme, may contribute to developmental trajectories aligned with the patterns observed in centenarians (Ghiami et al., 2021). However, it is important to emphasize that interventions for this purpose do not seek to standardize personality, but rather to promote healthy and flexible functioning, respecting individual particularities. The aim is not to create a single individual profile, but to support development within the possibilities and

Table 4.

Mediational effect coefficients of psychological maturity on symptoms and distance from the healthy personality prototype

Models	Maturity Outcome	Group Maturity	Time Maturity	Group Outcome	Time Outcome
	B (p)	B (p)	B (p)	B (p)	B (p)
Maturity + BDI-2	-5,250 (p<0,001)	0,238 (p<0,001)	0,081 (p<0,001)	-4,370 (p<0,001)	-2,452 (p<0,001)
Maturity + BAI	-7,928 (p<0,001)	0,238 (p<0,001)	0,081 (p<0,001)	-1,434 (p=0,468)	-2,279 (p<0,001)
Maturity + Neuroticism	-0,436 (p<0,001)	0,238 (p<0,001)	0,081 (p<0,001)	-0,264 (p<0,001)	0,035 (p<0,001)
Maturity + Distance from the healthy prototype	-0,702 (p<0,001)	0,238 (p<0,001)	0,081 (p<0,001)	0,014 (p=0,895)	0,056 (p<0,001)

Note. B values represent the regression coefficients from the mediational analysis, with confidence intervals adjusted using the bootstrap method. The coefficients represent the estimated effects in the SEM analysis. p values indicate the significance level for each predictor in the model.

desires of each individual, ensuring that the process is centered on the person and not imposed externally.

It is important to highlight that individual trajectories in personality trait changes present variations, which means that different combinations of trait levels can be equally adaptive, and deterministic models do not capture this complexity (Wright & Jackson, 2024). Thus, adaptation may occur in different ways: for example, the transition from very low to low in C may indicate positive adjustment, as may the reduction of N from very high to high. Furthermore, for some individuals, maintaining C at a moderate level, and not necessarily a high level, may be associated with quality of life. Therefore, interventions focused on personality should be understood as an opportunity for those who wish to improve specific aspects of their psychological functioning, without any external requirement or fixed standard to be achieved.

Maturity showed a significant increase in the EG, with a mediating effect on the other outcomes analyzed. This corroborates the hypothesis that maturity acts as a possible central mechanism in the transformation of emotional and behavioral patterns, as indicated in previous studies (Hudson et al., 2020; Mroczek & Spiro, 2007). By favoring greater reflectiveness, responsibility, and coherence between personal goals and values, maturity tends to facilitate emotional self-regulation and adaptive coping with stressors. These resources, in turn, positively impact the reduction of psychological symptoms and emotional stability. The findings of this study suggest that interventions focused on promoting maturity may be particularly effective in young populations that are transitioning into adulthood.

Despite the promising results, some limitations in the present study should be considered. The sample was small and predominantly composed of women, university students, and physically active individuals, which limits the generalizability of the findings. Furthermore, participants voluntarily adhered to the program, indicating a motivation-for-change bias, which may have amplified the observed effects.

It is important to emphasize that, although the intervention worked with personalized goals involving different traits, the primary metric of change used to assess overall effects was the distance from the healthy personality prototype. Furthermore, trait N and emotional symptoms were analyzed separately as complementary outcomes. Moreover, although the integrative metric considers all traits together, the specific effects on each individual personality factor were

not examined separately in this study, except for trait N. Future studies may further investigate the specific effects on each individual trait, complementing the findings obtained with the integrative metric of distance to prototype.

Another relevant limitation is the absence of prolonged longitudinal follow-up. Personality changes may continue to evolve after the end of the intervention (Wrzus & Roberts, 2017), and it would be desirable to examine whether the effects obtained are maintained, amplified, or dissipate over time. Future studies should consider follow-ups at intervals of six months, one year, or longer to assess the durability of changes. It would also be useful to expand the scope of the sample, diversifying gender, age group, and socioeconomic levels, in order to test the applicability of the intervention in other contexts. Por fim, adaptações do protocolo para formatos híbridos ou digitais, à semelhança do PEACH (Stieger et al., 2021), podem ampliar a acessibilidade da proposta, contribuindo para sua disseminação em larga escala.

In summary, the results indicate that it is possible to produce adaptive changes in psychological functioning patterns through brief, structured interventions focused on maturity and reducing the distance from the healthy prototype. These findings reinforce the relevance of preventive strategies focused on the development of personality as a possible way to promote mental health and to prepare individuals at all stages of the life cycle for healthy aging.

Final Remarks

This research provides initial evidence that it is possible to modify personality traits through a brief, structured intervention with university students, promoting beneficial changes in psychological adaptation through maturity. The findings reinforce the idea that early and short-term interventions can have positive effects on the trajectory of personality development, contributing to healthy aging in the population. Furthermore, the brevity of the intervention highlights its potential for accessibility and applicability, allowing a greater number of individuals to benefit from these changes without the need for prolonged interventions. Despite the limitations of this study, preliminary results point to promising directions for future research and applications in the practice of Brazilian psychologists, especially in accessible interventions focused on promoting mental health.

This research is considered to advance the proposal and testing of an intervention protocol focused on personality development. The data found suggests that the protocol promotes positive effects on psychological maturity and the reduction of emotional symptoms. Moreover, an integrative metric is proposed to assess the alignment of young adults' personality profiles with the healthy aging prototype described in the literature, which is relevant for future studies that aim to monitor processes of personality change or adaptation. Furthermore, future studies may investigate the effects of the intervention on each personality trait individually, deepening our understanding of the mechanisms involved in the intervention.

References

- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In Baltes, P.B., & Baltes, M. M. (Eds.). *Successful aging: Perspectives from the behavioral sciences* (1–34). Cambridge University Press. <https://doi.org/10.1017/CBO9780511665684.003>
- Beck, A. T., & Steer, R. A. (1996). *Inventário de Ansiedade de Beck - BAI*. São Paulo: Hogrefe.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1990.). *Inventário de Depressão de Beck - BDI-II*. São Paulo: Hogrefe
- Bleidorn, W., Hill, P. L., Back, M. D., Denissen, J. J. A., Hennecke, M., Hopwood, C. J., Jokela, M., Kandler, C., Lucas, R. E., Luhmann, M., Orth, U., Wagner, J., Wrzus, C., Zimmermann, J., & Roberts, B. (2019). The policy relevance of personality traits. *American Psychologist*, 74(9), 1056–1067. <https://doi.org/10.1037/amp0000503>
- Bleidorn, W., Hopwood, C. J., Back, M. D., Denissen, J. J. A., Hennecke, M., Hill, P. L., Jokela, M., Kandler, C., Lucas, R. E., Luhmann, M., Orth, U., Roberts, B. W., Wagner, J., Wrzus, C., & Zimmermann, J. (2021). Personality Trait Stability and Change. *Personality Science*, 2(1), 1-20. <https://doi.org/10.5964/ps.6009>
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2ª ed.). Routledge.
- Fernández-López, R., Riquelme-Gallego, B., Bueno-Cavanillas, A., & Khan, K. S. (2022). Influence of placebo effect in mental disorders research: A systematic review and meta-analysis. *European journal of clinical investigation*, 52(7), e13762. <https://doi.org/10.1111/eci.13762>
- Flores-Mendoza, C. E., Primi, R., Nascimento, E., & Nunes, C. H. S. S. (2007). *Inventário de Personalidade Neo Revisado: manual Profissional*. 1. Editora Vetor.
- Ghiarni, C., Norberg, M., Sjöström, A., & Wennberg, P. (2023). Big Five personality traits and health-related quality of life among older adults: A population-based study. *Journal of Happiness Studies*. <https://doi.org/10.1007/s10902-023-00700-z>
- Gorenstein, C., Wang, Y.-P., Argimon, I. L., & Werlang, B. S. G. (2011). *Manual do Inventário de Depressão de Beck - BDI-II* (A. T. Beck, R. A. Steer, & G. K. Brown, Eds.). São Paulo: Casa do Psicólogo.
- Hennecke, M., Bleidorn, W., Denissen, J. J. A., & Wood, D. (2014). A Three-Part Framework for Self-Regulated Personality Development across Adulthood. *European Journal of Personality*, 28(3), 289–299. <https://doi.org/10.1002/per.1945>
- Hudson, N. W., Briley, D. A., Chopik, W. J., & Derringer, J. (2019). You have to follow through: Attaining behavioral change goals predicts volitional personality change. *Journal of Personality and Social Psychology*, 117(4), 839–857. <https://doi.org/10.1037/pspp0000221>
- Hudson, N.W., Fraley, R.C., Chopik, W.J., & Briley, D.A. (2020). Change Goals Robustly Predict Trait Growth: A Mega-Analysis of a Dozen Intensive Longitudinal Studies Examining Volitional Change. *Social Psychological and Personality Science*, 11, 723–732. <https://doi.org/10.1177/1948550619878423>
- Instituto Brasileiro de Geografia e Estatística. (2018). Projeções e estimativas da população do Brasil e das Unidades da Federação. Rio de Janeiro: Estudos e pesquisas. Retirado de: <https://www.ibge.gov.br/apps/populacao/projecao/>.
- Pires, J. G. (2020). Traços de personalidade ao longo do ciclo vital: especificidades da última etapa do desenvolvimento humano. [Tese de Doutorado, Programa de Pós-graduação em Psicologia- Universidade Federal de Santa Catarina]. <https://repositorio.ufsc.br/handle/123456789/216262>
- Pires, J. G., & Narciso, F. de A. (2022). Personalidade e envelhecimento saudável: quais pontos faltam

- conectar? *Psicologia e Saúde em Debate*, 8(2), 11-25. <https://doi.org/10.22289/2446-922X.V8N2A11>
- Pires, J. G., Narciso, F. A., & Nunes, C. H. S. S. (em revisão). Protótipo de Personalidade Associado à Longevidade: Uma Revisão Meta-analítica de Pessoas Centenárias. *Estudos Interdisciplinares sobre o Envelhecimento*.
- Pires, J. G., Nunes, C. H. S. S., Nunes, M. F. O., & Primi, R. (2023). Preliminary validity for the Big Five Inventory-2 in Brazilian adults. *Psico-USF*, 28(1), 91-102. <https://doi.org/10.1590/1413-82712023280108>
- Quintus M, Egloff B, & Wrzus C. (2021) Daily life processes predict long-term development in explicit and implicit representations of Big Five traits: Testing predictions from the TESSERA (Triggering situations, Expectancies, States and State Expressions, and ReActions) framework. *J Pers Soc Psychology*. 120(4):1049-1073. <https://psycnet.apa.org/doi/10.1037/pspp0000361>
- Richardson, J. T. E. (2011). Eta squared and partial eta squared as measures of effect size in educational research. *Educational Research Review*, 6(2), 135–147. <https://doi.org/10.1016/j.edurev.2010.12.001>
- Roberts, B. W., Luo, J., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin*, 143(2), 117–141. <https://doi.org/10.1037/bul0000088>
- Song, Y., Li, L., Ma, Y., Wang, Y., Zhang, C., Zhang, S., & Zhang, Y. (2024). *Association between neuroticism and mortality: A 17-year cohort study of 43,394 participants in the United States*. *Scientific Reports*, 14, 9785. <https://doi.org/10.1038/s41598-024-57779-y>
- StataCorp. (2023). *Stata Statistical Software: Release 18*. College Station, TX: StataCorp LLC.
- Stieger M, Flückiger C, Rügger D, Kowatsch T, Roberts BW, & Allemand M. (2021) Changing personality traits with the help of a digital personality change intervention. *Proc Natl Acad Sci*, 23;118(8). <https://doi.org/10.1073/pnas.2017548118>
- West, B. T., Welch, K. B., & Galecki, A. T. (2022). *Linear Mixed Models: A Practical Guide Using Statistical Software* (3rd ed.). Chapman and Hall/CRC. <https://doi.org/10.1201/9781003181064>
- Wright, A. J., & Jackson, J. J. (2024). Individual differences in the forms of personality trait trajectories. *Journal of Personality and Social Psychology*. Advance online publication. <https://psycnet.apa.org/doi/10.1037/pspp0000520>
- Wrzus, C., & Roberts, B. W. (2017). Processes of Personality Development in Adulthood: The TESSERA Framework. *Pers Soc Psychol Rev*. 21(3):253-277. <https://doi.org/10.1177/1088868316652279>

About the authors:

Dr. Jeferson Gervasio Pires holds a Ph.D. in Psychology and is a professor at Faculdade Anhanguera de São José, SC, and a researcher at the Federal University of Santa Catarina (UFSC), Florianópolis, SC, Brazil. His research interests include Psychological Assessment, Personality Development across the Lifespan, and the relationship between Personality and Healthy Aging.

ORCID: <https://orcid.org/0000-0001-8121-8922>

E-mail: jefersongp@gmail.com

Fabiano de Araujo Narciso is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0000-0001-9459-3991>

E-mail: fabianonarciso@hotmail.com

Dr. Carlos Henrique Sancineto da Silva Nunes holds a Ph.D. in Psychology and is a professor and researcher at the Federal University of Santa Catarina (UFSC), Florianópolis, SC, Brazil. He has worked on the development of personality assessment tests and the adaptation of cognitive tests. His experience includes Psychological Assessment with an emphasis on personality, intelligence, educational evaluation, and psychometrics.

ORCID: <https://orcid.org/0000-0002-7769-6937>

E-mail: carloshnunes@mac.com

Dr. Maiana Farias Oliveira Nunes holds a Ph.D. in Psychology and is a professor and researcher at the Federal University of Santa Catarina (UFSC), Florianópolis, SC, Brazil. She has experience in Psychology with an emphasis on Test Construction and Validity, focusing on topics such as psychological assessment, psychological testing, career counseling, self-efficacy, personality, and vocational interests.

ORCID: <https://orcid.org/0000-0003-4891-5982>

E-mail: maiananunes@mac.com

Ellen Pittiaglini Martins is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0009-0005-6679-3693>

E-mail: eutonaonda@hotmail.com

João Batista Rios Machado is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0009-0006-7472-0520>

E-mail: jbrm5934@gmail.com

Letícia Isabele da Silva is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0009-0005-5306-4686>

E-mail: leticiaisabele.Is@gmail.com

Luiz Eraldo Almeida Silva is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0009-0000-1154-7464>

E-mail: luizeraldosilva@gmail.com

Maria Eduarda Alexandre de Souza is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0009-0009-5506-1138>

E-mail: malexandredesouza9@gmail.com

Thalita Moreira is an undergraduate student in Psychology at Faculdade Anhanguera, São José, SC, Brazil.

ORCID: <https://orcid.org/0009-0001-7902-8991>

E-mail: thalitagaraluz66@gmail.com

Contact:

Dr. Jeferson Gervasio Pires

Center for Philosophy and Human Sciences (CFH), Department of Psychology, Federal University of Santa Catarina (UFSC).

Campus Universitário Trindade

Florianópolis-SC, Brazil

ZIP Code: 88040-900