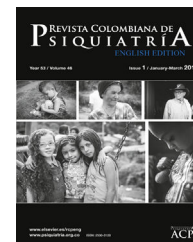




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Letter to the Editor

Personality and Alzheimer's

Personalidad y Alzheimer

Alzheimer's disease is the most common cause of dementia worldwide and is one of the main reasons for disability in the elderly.^{1,2} There are various clinical and social risk factors that can lead to this neurodegenerative condition, and personality traits are one of them. Systematic reviews have recently been published addressing this topic and, although the connection is evident, intervention approaches are in their early stages.^{3,4}

Personality has been considered to possibly impact the risk of dementia in several ways as it influences health habits, the quantity and quality of social relationships, cognitive activity and stress response over one's lifetime. The referenced studies have shown that personality can affect socioeconomic status, divorce and occupational success, among other things.^{5,6}

There are various models to explain personality. Most studies have been based on the five-factor model (also known as the big five). This model operationalises personality over five broad dimensions: neuroticism (the tendency to experience negative emotions such as fear and sadness), extraversion (the tendency to be social, gregarious, daring in social situations and avoid loneliness), openness (the tendency to prefer novelty and diversity of experiences, intellectual curiosity), agreeableness (the tendency to be cooperative, kind and trusting) and conscientiousness (the tendency to be organised, persistent and careful).^{3,7}

Personality traits have strong links to psychological, behavioural and clinical risk factors. Neuroticism has been described to be a strong risk factor for major depression, whereas low levels of conscientiousness are related to cigarette use, physical inactivity and obesity.⁸

The association of personality traits with some risk factors have led to various studies being conducted to shed light on this aspect. The meta-analysis by Terracciano summarises the results of five well-structured prospective studies conducted to date. A total of 5054 individuals who did not present with cognitive deterioration at the start of follow-up were included. These subjects completed the NEO Personality Inventory questionnaire which evaluates the five above-mentioned per-

sonality dimensions and were followed up to determine the influence of the assessed personality traits on developing dementia and mild cognitive deterioration. There was consistent evidence that individuals with higher neuroticism scores or lower conscientiousness scores were at greater risk of cognitive disturbance. The relationships found between neuroticism and conscientiousness were independent of one another and there was no interaction between the two traits.⁹

The studies concur with regard to the effect of neuroticism and conscientiousness, with said effect being of non-negligible magnitude. For example, in the study by Wilson, individuals with a conscientiousness score in the bottom 10% were almost twice as likely to develop Alzheimer's, as opposed to those who scored in the top 10%. Similarly, in the Baltimore Longitudinal Study of Aging, individuals scoring in the top quartile of neuroticism or in the bottom quartile of conscientiousness were three times as likely to develop Alzheimer's dementia.¹⁰ The data presented are not negligible given that they indicate that these personality traits represent one of the most significant risk factors, to a similar extent as the risk factors hypertension, diabetes and obesity in cardiovascular diseases.

Personality traits are also associated with memory complaints. People with a higher neuroticism score or lower conscientiousness score report more cognitive complaints and poorer self-rated memory. These subjective complaints have in turn been associated with a greater risk of Alzheimer's disease.^{11,12}

There are many ways in which personality traits can influence the development of dementia, particularly Alzheimer's. One of these is that typical personality traits can shape an individual's reactions to stress; behaviours to protect their health; and participation in physical, cognitive and social activities throughout their lifetime.⁵ Other studies have found an association between various personality traits and inflammatory markers, APOE genotype, activity patterns or vascular conditions.¹³

Personality traits may moderate the appearance of clinical signs of dementia in individuals with typical Alzheimer's disease.¹⁴ This hypothesis has been tested by comparing the personality traits of subjects who developed dementia with those who did not despite having typical neuropathology found on autopsy. In comparison to subjects diagnosed with dementia, asymptomatic individuals scored higher in conscientiousness and lower on neuroticism. These findings suggest that a specific personality profile plays an important role in the interface of neuropathological processes and the manifestation of clinical symptoms.⁹

Estimates of the risk attributable to the population suggest that high neuroticism and low conscientiousness may account for approximately 10% of Alzheimer's disease cases. Personality traits could therefore be a promising objective for interventions aimed at preventing or reducing the burden of this disease. Interventions aimed at changing maladjusted personality aspects are particularly of interest because these traits are believed to be distal causes of the disease and are linked to other risk factors. In addition to potential direct benefits, reducing neuroticism and increasing conscientiousness could have the added benefit of reducing other risk factors, such as physical inactivity, social isolation, cigarette smoking, obesity and other cardiovascular risk factors. Despite the potential direct and indirect benefits, fairly little is known about the effects of interventions on personality.^{4,15,16}

Pharmacological, cognitive/behavioural and educational approaches to shape personality traits have been tested, but their outcomes have been inconsistent. Medicinal products can treat clinical conditions, but caution should be exercised regarding potential side effects, including on cognitive capacity. Cognitive/behavioural interventions have proven useful to change a habit, but not to shape personality. Interventions aimed at improving physical activity have shown some benefit to modulating personality traits, but their long-term capacity has not yet been demonstrated.¹⁷

Educational training plans to improve neuroticism and conscientiousness levels have not yielded the expected results. The most important variable for the training to be adequate has been described as being the participant's conviction in wanting to improve. However, this is not always achieved in elderly patients with a solid personality structure.

Despite these findings, importance must be given to new specific methods to modulate personality traits. There is growing interest in customised training models that recognise and respect the preferences, values, interests and unique needs of each individual. The recognition of intrinsic differences in individual personality and other basic psychological dispositions is likely to shift the focus and lead to more effective interventions.

In conclusion, although the association of some personality traits (especially high levels of neuroticism and low levels of conscientiousness) with the onset of dementia has been recognised, there is still much work to be done to achieve tools for their modulation to have an effect on reducing disease burden. Urgent efforts are needed to design and implement intervention plans for these particular traits. A customised approach together with the intrinsic desire for change could be an alternative worth exploring.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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