



## Research paper

# Depressive vulnerability in women with Alzheimer's disease: Relationship with personality traits and abnormal personality dimensions



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## ABSTRACT

**Background:** This study sought to determine the evaluation of current and pre-morbid depressive vulnerability dimensions in Alzheimer's disease. Sidney Blatt's personality developmental perspective, the Five-Factor model and Axis II personality disorders were taken as references.

**Methods:** The study was conducted with two groups which were assessed using the Depressive Experiences Questionnaire, the NEO-FFI and the Personality Diagnostic Questionnaire-4+, in the form of individual interview sessions. Current personality measure: Alzheimer's disease Group, consisting of 44 female participants ( $M_{Age} = 81.36$  years); Pre-morbid personality measure: Alzheimer's disease Group Informants ( $n = 40$ ).

**Results:** Self-Criticism personality vulnerability is a general indicator of psychopathology. In pre-morbidity, Neuroticism ( $\beta = 0.41$ ), Agreeableness ( $\beta = -0.63$ ) and Conscientiousness ( $\beta = -0.08$ ) predicted Self-Criticism, explaining 64% of the variance; additionally, Self-Criticism ( $\beta = 0.72$ ) and Neediness ( $\beta = 2.05$ ) predicted the PDQ-4+ total, explaining 58% of the variance. In terms of current personality, the PDQ-4+ total was predicted by Self-Criticism ( $\beta = 0.55$ ), explaining 30% of the variance.

**Limitations:** The small size of the samples, especially since it is difficult to access individuals diagnosed with AD at the onset or in its early stages; measuring personality changes by means of retrospective assessment by proxies may have introduced some memory bias.

**Conclusions:** These findings are relevant to research relating depressive vulnerability to personality traits and psychopathology in Alzheimer's disease.

## 1. Introduction

Personality changes in AD have been documented in the literature and may constitute a useful early clinical marker of Dementia (e.g., Cipriani et al., 2015; Duberstein et al., 2010; Duchek et al., 2007; Henriques-Calado et al., 2016; Pocnet et al., 2011, 2013; Wahlin & Byrne, 2011). Within this field, the most robust and validated personality evaluation measure is based on the Five-Factor Model of Personality. The overall common objective is to understand personality changes in Dementia by comparing the pre-morbid and current measurement, in retrospective and current evaluation, normally by means of Informants. Evidence of an increase in the Neuroticism dimension and a decrease in the Conscientiousness dimension in Dementia appears to be unanimous across the literature (e.g., Terracciano et al., 2014, 2017; von Gunten, Pocnet, & Rossier, 2009; Wahlin & Byrne, 2011). In a

recent meta-analysis, D'Iorio et al. (2018) revealed that high Neuroticism and low Openness and Extraversion are significantly associated with a diagnosis of AD when evaluated by both self-rated and informant-rated measures, when compared with healthy individuals. This personality trait profile is similar to the pre-morbid profile, which indirectly supports the idea of specific pre-morbid personality traits as harbingers of AD (D'Iorio et al., 2018).

In the future, personality evaluation in Alzheimer's disease (AD) should be included in the diagnosis, since the results have implications for research on the prevention, treatment of symptoms and the etiological knowledge of Dementia (e.g., Balsis et al., 2005; Duberstein et al., 2010; Duchek et al., 2007; Terracciano et al., 2014, 2017).

Some researchers suggest that pre-morbid personality characteristics (personality traits and personality disorders) may represent a risk factor for AD and can modify the process of the disease or its

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phenotypic expression, such as the behavioral and psychological symptoms of dementia (e.g., Gilbert & Herbst, 2014; von Gunten et al., 2009). However, literature on the link between the pre-morbid personality (i.e., disorders or traits) and the development of AD, in addition to personality disorders as potential risk factors for AD, is still scarce (e.g., Holwerda et al., 2012; Kunik et al., 2003; Nicholas et al., 2010; Oltmanns & Balsis, 2011; Prior et al., 2016). In the longitudinal study and a meta-analysis of published studies by Terracciano et al. (2014), personality traits were found to be associated with increased risk of AD, with effect sizes similar to those of well-established clinical and lifestyle risk factors. Individuals with scores in the highest quartile of neuroticism or the lowest quartile of conscientiousness had a three-fold increased risk of AD incidence, along with weaker effects for openness and agreeableness. Among the components of these traits, self-discipline and depression had the strongest associations with AD incidence (Terracciano et al., 2014). Some of these data are followed by other prospective studies such as Terracciano et al. (2017a,b) and Yoneda et al. (2018), who concluded that stable personality tendencies are risk factors for Alzheimer's disease (e.g., Neuroticism).

The research data of Prior et al. (2016) identified abnormal pre-morbid personality traits as being associated with increased behavioral and psychological symptoms in dementia. Cluster A (solitary/paranoid) pre-morbid personality traits were associated with anxiety, depression and hallucinations, while Cluster C (anxious/dependent) traits were associated with a syndrome of depression. The presence of Clusters A and C appears to affect the expression of certain symptoms in dementia, particularly depression (Prior et al., 2016). This data is in line with that of Nicholas et al. (2010), pointing to pathological personality traits being over-represented in the AD group, and emerging mainly in association with the personality disorders of Cluster A, followed by Cluster B, and, to a lesser degree, of Cluster C, when compared with the control group in terms of pre-morbidity.

Depression may be a prodrome manifestation of dementia or an early risk factor, however the nature of this relationship has yet to be elucidated (e.g., Simões do Couto et al., 2016; Snowden et al., 2015). Using longitudinal data, Snowden et al. (2015) found that mild cognitive impairment and dementia were associated with significantly higher rates of depression in concurrent as well as prospective analyses. These findings suggest that efforts to effectively engage and treat dementia will also need to address co-occurring depression (Snowden et al., 2015). According to Simões do Couto et al. (2016), depression with melancholic features was observed to be an important risk factor for dementia, playing a key role in the relationship between these disorders. In a recent longitudinal study, Donovan et al. (2018) found that a higher amyloid beta burden was associated with increasing anxious-depressive symptoms over time in cognitively normal older individuals, suggesting that neuropsychiatric symptoms represent an early manifestation of preclinical AD. Moreover, according to Zufferey et al. (2017), depression and AD share biological substrates in the hippocampus that are stress related, and point to the key explanatory variables of anatomical changes being neuroticism, agreeableness personality traits and anxiety, stress, hostility, and depression factors.

As shown in a recent study by Hoeijmakers et al. (2018), stress experienced early in life, in the form of childhood maltreatment, maternal neglect or trauma, enhances the risk for cognitive decline in later life. Several epidemiological studies have now shown that environmental and adult life style factors influence AD incidence or age-of-onset, and early-life environmental conditions have attracted attention in this respect. Future clinical studies would elucidate whether stress exposure during the early-life period in humans modulates later vulnerability for AD (Hoeijmakers et al., 2018).

With few exceptions, little of the work conducted within the scope of psychodynamic counseling has been implemented to enhance understanding of the psychopathology of the elderly. The idea of

understanding organic pathology through psychoanalytic psychology is not recent, however it is still fairly uncommon (Evans, 2008; Gilbert & Herbst, 2014). In short, most of the psychodynamic authors, who are scholars in dementia, propose a pre-morbid borderline (anaclitic/dependency/neediness) personality (e.g., Abraham & Walter, 2008; Bergeret, 2000; Henriques-Calado et al., 2017; Myslinski, 1998; Sadavoy, 1991).

### 1.1. Aim of the study

This study sets out to empirically explore AD through the psychodynamic perspective of Sidney Blatt's depressive personality development (e.g., Blatt, 2008). It analyzes whether the vulnerability personality dimensions - relatedness/anaclitic (Dependency; Neediness/Connectedness) and self-definition/introjective (Self-Criticism) are related to - 1) personality traits, the Five-Factor Model and 2) abnormal personality traits -, by studying pre-morbidity and the present (clinical dementia).

The following considerations should be noted: Firstly, this study was developed within the scope of an empirical psychodynamic framework, in response to an argued limitation that studies on dementia in this area reflect, above all, theoretical considerations based on clinical observation and are rarely conducted through empirical methodology (Downs et al., 2008; Martin, 2002). Secondly, the etiology of Dementia to be studied is AD. Hence, this study seeks to overcome one of the limitations of a number of previous studies in which the etiologies of Dementia are mixed in the composition of the samples. The third consideration is related to the evaluation format of self-report (in interview form), on current personality in individuals with Dementia, thus in line with more recent studies on this subject, such as those of Duchek et al. (2007), Duberstein et al. (2010), Pocnet et al. (2011) and Terracciano et al. (2014). Lastly, the option was taken to study a sample of women ( $\geq 65$  years), since this pathology is more prevalent in females, and it is also easier to gain access to female participants owing to their longer life expectancy.

## 2. Method

It should be noted that the present research study was approved and authorized by the Administrative and Clinical Boards of the Institutions. Participants were clarified as to the aims of the study and provided their informed consent. No compensation was given. It complies with the ethical standards of the Portuguese Psychologists Board and the specific research on Dementia recommendations stipulated by Alzheimer Europe (2011).

### 2.1. Participants

The Alzheimer's disease Group (AD Group) is composed of 44 female, Caucasian participants of Portuguese nationality, resident in an urban environment with a clinical diagnosis of AD (onset), aged 65 years and above (see Table 1).

The Alzheimer's disease Group Informants (AD Group Informants) is composed of 40 participants who are the respective relatives of the AD Group participants, namely daughter/son 80.00%, niece/nephew 10.00%, husband 5.00%, sister 2.50% and daughter-in-law 2.50%. The Informants provide assessments of the pre-morbid personality characteristics of the respective AD Group participant.

### 2.2. Measures

#### 2.2.1. Socio-demographic questionnaire (e.g., Age, schooling)

#### 2.2.2. Mini mental state examination (MMSE)

A 30-point questionnaire with a total score used extensively in

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