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Research paper

The co-occurrence between depressive symptoms and paranoid ideation: A population-based longitudinal study

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ABSTRACT

Background: The aim of this study was to examine longitudinally in the general population (a) whether depressive symptoms co-occur with paranoid ideation from late adolescence to middle age (b) whether depressive subsymptoms are differently linked with paranoid ideation (c) whether depressive symptoms are associated with state-level or trait-level paranoid ideation.

Methods: Altogether 2109 subjects of the Young Finns study completed the Paranoid Ideation Scale of the Symptom Checklist-90 Revised and a modified version of the Beck Depression Inventory in 1992, 1997, 2001, 2007, and 2012, and the Beck Depression Inventory-II in 2007, 2011, and 2012.

Results: Higher self-rated depressive symptoms were associated with the course of more severe paranoid ideation over age, especially in late adolescence and early adulthood. Regarding depressive subsymptoms, the associations of negative attitude and performance difficulties with paranoid ideation were evident over age, whereas the influence of somatic symptoms (such as changes in sleep and appetite) was not significant until after early adulthood. Additionally, depressive symptoms were more evidently associated with the development of trait- than state-level paranoid ideation.

Limitations: Our study mostly captured mild depressive and paranoid symptoms. The results cannot be directly generalized to clinical populations.

Conclusions: Depressive symptoms were associated with the course of paranoid ideation from late adolescence to middle age. Patients with paranoid ideation might merit from evaluation of potential depressive symptoms, especially in late adolescence and early adulthood. Among patients with co-occurring depressive symptoms and paranoid ideation, there may be a substantial need for neurocognitive rehabilitation and community-based treatments.

1. Introduction

It has been widely recognized, that there is excessive comorbidity between psychiatric disorders (Valderas et al., 2009; Widiger and Samuel, 2005). The co-occurrence of psychiatric symptoms is estimated to be much more common than has been obtained at diagnostic level, so that patients with only a single disorder may in reality represent an atypical minority (Brown and Barlow, 2005; Hyman, 2010). Recently, it has been emphasized that comorbidity should be utilized as a tool for recognizing the full range of targets for treatment more widely than previously (Dell'Osso and Pini, 2012). Along with this, diagnostic classifications have strived for increasing comorbidity rates by reducing the number of mutually exclusive diagnoses (First, 2005). Hence, there is a growing demand to understand the interaction and course of co-occurring symptoms.

In the present study, we examine the comorbidity between depressive symptoms and paranoid ideation, which has provoked substantial interest over decades. Paranoia is defined as an unjustified distrust and suspiciousness towards others so that their motives are interpreted as malevolent (APA, 2013). Mild paranoia refers to feelings of

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vulnerability in interpersonal relationships, whereas most severe paranoid symptoms can be diagnosed as paranoid personality disorder or even as psychotic-level persecutory delusions (Freeman et al., 2011; Freeman and Garety, 2014). To date, there is a great body of evidence that depressive symptoms correlate with paranoid ideation both at clinical and subclinical levels (e.g. Freeman et al., 2008, 2010, 2012; Grant et al., 2005; Kool et al., 2000; Martin and Penn, 2001). Above 25% of depressed patients have clinical paranoid symptoms (Kool et al., 2000; Ramklint and Ekselius, 2003). However, long-term follow-up studies examining the co-occurrence and interaction of depressive symptoms and paranoid ideation in non-clinical adults are missing. Hence, there are still a range of open questions.

The first question is whether depressive symptoms are associated with paranoid ideation longitudinally over age. Several previous findings have suggested that depressive symptoms predict the onset and persistence of paranoid symptoms within adulthood (e.g. Fowler et al., 2011; Freeman et al., 2012; Vorontsova et al., 2013). Some studies, however, have indicated that the predictive pathways from depressive symptoms to paranoid ideation are relatively weak (Moritz et al., 2017) or even non-significant (Drake et al., 2004). By now, the follow-up periods have been at most 24 months. Hence, theoretic models of paranoia have suggested a predisposing and maintaining role for specific depressive symptoms, but highlighted the need for further evidence from longitudinal studies (Freeman and Garety, 2014).

A second question is whether different depressive subsymptoms, such as negative attitude, performance difficulties, and somatic symptoms, are differently associated with paranoid ideation. It has been recommended to examine symptoms separately (Fried and Nesse, 2015), because patients with depressive disorders may have varying symptom profiles (APA, 2013) and different symptoms may be linked with different comorbidity patterns (Lux and Kendler, 2010). Previously, negative attitude is found to be associated with paranoid ideation in clinical populations (Bentall et al., 2009; Corcoran, 2006; Vorontsova et al., 2013). The association between negative attitude and paranoid ideation, however, might be mediated via performance difficulties. This is because performance difficulties, such as weaker social and executive functioning, have been found to correlate with negative attitude (Snyder, 2013) and also with higher paranoia (Freeman et al., 2011; Bentall et al., 2009; Vorontsova et al., 2013). Regarding somatic complaints, previous studies have reported that insomnia, weight change, and sensory disturbances are associated with paranoid symptoms (Freeman et al., 2011, 2012). This association might be indirect via other risk factors such as current mood and performance difficulties (Freeman et al., 2002). However, there has been no study simultaneously investigating the associations of all depressive subsymptoms with paranoid ideation.

Recently, there has been a call for studies delineating between state- and trait-level paranoia (Corcoran et al., 2006). Hence, the third question is whether depressive symptoms are associated with state- or trait-level paranoia, i.e. whether paranoid ideas appear and disappear along depressive episodes or whether they persist also after the stabilization of acute depressive state. By now, there is evidence for an association of depressive symptoms with state paranoia: experimental studies have suggested that depressive mood increases the risk for paranoid ideas during the following days (Freeman et al., 2008; Thewissen et al., 2011) and improvement of depressive symptoms has been shown to predict decrease in symptoms of paranoid personality disorder over the following weeks (Fava et al., 2002). Regarding a trait paranoia, based on clinical observations only chronic depression has been suggested to be linked with trait-level increase in paranoia (Hirschfeld, 1999). However, studies with long follow-ups would be needed to capture potential trait-level changes in paranoid ideation related to depressive symptoms.

Currently, the comorbidity between depression and paranoia constitutes a considerable strain for health-care system. It has been demonstrated that among patients with clinical depression, comorbid paranoid symptoms are associated with poorer treatment outcome (Joyce et al., 2007; Mrazek et al., 2014; Skodol et al., 2011). Correspondingly, the current psychotherapeutic interventions for paranoid ideation appear to be ineffective (Dixon-Gordon et al., 2011; Karterud et al., 2003; Schneider and Klauer, 2001), which in many cases is supposed to result from co-occurring depression (Bockian, 2006). Thus, revealing the unknown aspects of this comorbidity, i.e. which depressive symptoms are associated with paranoid ideation and whether the associations persist over age, will have implications for tailoring more effective interventions especially for treatment-resistant patient populations.

The aim of our study was to investigate longitudinally in a non-clinical population (a) whether there is a co-occurrence between depressive symptoms and paranoid ideation from adolescence to middle age (b) whether depressive subsymptoms are differently linked with paranoid ideation (c) whether depressive symptoms are associated with state- or trait-level course of paranoid ideation, i.e. whether paranoid ideation appears and disappears along depressive episodes. Our data with a 20-year prospective follow-up and several measurement points provides a unique possibility for investigating how these associations are shaped over the lifespan.

2. Methods

2.1. Participants

We used data from the prospective Young Finns Study (YFS). Participants were selected from the population register of the Social Insurance Institution. The original sample included 3596 participants that were selected haphazardly from six age cohorts (born in 1962, 1965, 1968, 1971, 1974, and 1977). The baseline measurement was in 1980, and the participants have been followed since then so that the most recent measurement time was in 2012 (participants were aged 35–50). The study was carried out in accordance with the Declaration of Helsinki, and the study design was approved by Finnish Advisory Board on Research Integrity. Before participation, all the participants or their parents provided informed consent after the nature of the procedures had been fully explained. The design of the YFS is described more exactly elsewhere (Raitakari et al., 2008).

For this study, depressive symptoms were measured with a modified version of the Beck Depression Inventory-II (BDI-II) in 1992, 1997, 2001, 2007, and 2012 and with the BDI-II in 2007, 2011, and 2012. Paranoid ideation was measured in 1992, 1997, 2001, 2007, and 2012, socioeconomic factors in 2001 and 2007, and parental socioeconomic factors in 1980. We included in the analyses all participants with full data (i.e. no missing values) on paranoid ideation, depressive symptoms, and their own and parental socioeconomic status in at least one of the measurement times (full data about paranoid ideation in 1992, 1997, 2001, 2007, or 2012; full data about socioeconomic status in 2001 or 2007 etc.). The final data consisted of 2109 participants. The numbers of person-observations are shown in Supplemental Table 1.

2.2. Measures

Paranoid ideation was measured with the Paranoid Ideation Scale of the Symptom Checklist-90 Revised (SCL-90R; Derogatis, 1986). It consists of 6 self-rating items that are answered with a 5-point Likert-Scale (1 = totally disagree, 5 = totally agree). Earlier studies have found high reliability and predictive validity for the scale (e.g. Olsen et al., 2004; Schmitz et al., 2000). Based on previous recommendations (e.g. Freeman and Garety, 2014), we treated paranoia as continuous dimension and calculated a sum score of the items for each measurement time.

Depressive symptoms were measured with the Beck Depression Inventory-II (BDI-II; Beck, Steer and Brown, 1996) and with a modified version of BDI (mBDI). The BDI-II consists of 21 items with four answer