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Three year stability of Five-Factor Model personality traits in relation to changes in symptom levels in patients with schizophrenia or related disorders

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ABSTRACT

Five-Factor Model (FFM) personality traits are related to a wide range of clinical outcome in patients with psychotic disorders. However, it is not sufficiently clear whether psychotic illness, particularly fluctuation in negative symptoms and psychotic relapse, affects personality. The current study examined the 3-year temporal stability of FFM traits in 91 patients with non-affective psychotic disorders with a maximum duration of illness of 10 years and 32 control subjects without a (family member with) a diagnosis of psychotic illness. In patients, change in negative symptoms predicted changes in Neuroticism and (inversely) in Extraversion and Openness. However, when correcting for depressive symptoms, negative symptoms no longer predicted change in any FFM trait. Clinical characteristics, such as psychotic relapse, were also not found to be related to change in FFM traits. Patients showed a slight increase in Conscientiousness levels, the other FFM traits showed mean-level stability. Rank-order stability of the FFM traits was moderate to strong, although weaker for Neuroticism in patients. Our findings indicate that psychotic symptoms exert limited effect on the stability of FFM traits in patients with psychotic disorders. Consistent with general population findings, one should guard against state-trait confusion between Neuroticism/Extraversion and depression.

1. Introduction

Five-Factor Model (FFM) personality traits, Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness (Digman, 1990; McCrae, 1992), have been found to be associated with numerous clinical phenomena in patients with psychotic disorders (Dinzeo and Docherty, 2007). For instance, FFM personality traits have been found to be related to substance abuse (Reno, 2004), medication non-adherence (Lecomte et al., 2008), suicidal behavior (Pillmann et al., 2003), social functioning (Lysaker and Davis, 2004), subjective quality of life (Couture et al., 2007; Boyette et al., 2014), psychotic symptom exacerbation (Lysaker and Taylor, 2007) and psychotic relapse (Jonsson and Nyman, 1991; Gleeson et al., 2005). An underlying assumption of these studies is that FFM personality traits represent stable, independent constructs, unaffected by manifestation of illness. It is, however, also possible that the expression of psychotic illness alters the levels of FFM personality traits in patients with psychotic disorders; a hypothesis known as the 'scar effect' (Andersen and Bienvenu, 2011).

Up to date, two studies provide preliminary support that FFM personality traits remain stable in patients with psychotic disorders, despite fluctuations in psychotic symptom levels. In the first study, Kentros et al. (1997) examined the stability of FFM personality traits in 21 out-patients with schizophrenia and schizo-affective disorder over an avarage period of 6 months, using test–retest correlations. The authors found strong correlations for Neuroticism, Extraversion, Openness and Conscientiousness and a moderate strenght correlation for Agreeableness. Since the correlation for positive symptoms was not statistically significant (indicating change), the authors concluded that FFM personality traits remain stable over time,

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despite fluctuations in positive symptoms. No definite conclusion was reached for negative or depressive symptoms, as, in this sample, these levels remained stable high.

In the second study, Beauchamp et al. (2006) examined the mean-level stability of FFM personality traits in 79 patients with first-episode psychosis over an average period of 3 months. Paired *t*-tests showed no statistically significant differences for the FFM personality traits between baseline and follow-up. Since there was a statistically significant decrease in the mean level of positive symptoms, the authors concluded that FFM personality traits remain stable over time, despite fluctuation in positive symptoms. Negative symptoms were not assessed in this study.

Negative symptoms may, however, be of particular relevance. It is possible that the short-term stability of the FFM personality traits as reported in the aforementioned studies in fact reflects stability of negative symptoms, as negative symptoms are also more 'trait-like' in nature (Arndt et al., 1995). Also, negative symptoms may confound part of the relations between FFM personality traits and clinical outcome reported in earlier studies, as negative symptoms are generally associated with worse prognosis and more functional impairment (Fenton and McGlashan, 1991). If FFM personality traits are substantially affected by negative symptom levels after onset of psychotic illness, FFM traits may not provide independent information above and beyond that is provided by symptom levels, making personality assessment a potentially pointless exercise. Kentros et al. (1997) acknowledged that negative symptoms may have exerted a strong influence on the stability of the FFM traits in their study, but the small sample size restricted them in the possibilities for analysis. In order to specifically test whether change in negative symptoms predict change in FFM traits, a larger sample size and a longer follow-up period, allowing for more variation in negative symptoms, would be required.

When examing the temporal stability of FFM traits in relation to negative symptoms, depressive symptoms may present a complicating factor. Large general population studies demonstrated that during a depressive episode levels of Neuroticism temporarily increase and, to a lesser degree, levels of Extraversion temporarily decrease (Ormel et al., 2004; Fanous et al., 2007). Since depression is a very common comorbidity in patients with psychotic disorders (Buckley et al., 2009), and depressive and negative symptoms show considerable syndromal overlap (Siris et al., 1988; Siris, 2000), it is possible that depressive symptoms may distort any found relation between negative symptoms and FFM personality traits in patients with psychotic disorders.

Consequently, the first objective of the present study was to examine the temporal stability of the FFM personality traits in patients with psychotic disorders, in relation to changes in both positive and negative symptoms, over a 3 year time interval, while controlling for depressive symptoms. Although short-term stability of the FFM traits despite fluctuation in positive symptoms has been demonstrated in previous studies, we cannot rule out that the FFM traits Agreeableness and Openness may be affected by fluctuation in negative symptoms and/or the occurrence of multiple psychotic episodes. Patients with first-episode psychosis have been reported to score higher on Agreeableness compared to community controls (Gleeson et al., 2005; Beauchamp et al., 2006), while in studies with mixed or chronic samples, patients reported either comparable (Kentros et al., 1997; Gurrera et al., 2000) or lower levels of Agreeableness than controls (Lysaker et al., 2003; Reno, 2004; Camisa et al., 2005; Boyette et al., 2013), suggesting possible change over time. Similarly, two studies using the same sample (Beauchamp et al., 2006; Couture et al., 2007), although not another using a different sample (Gleeson et al., 2005), found higher levels of Openness in first-episode patients, while no differences have been reported in studies with mixed or chronic samples (Kentros et al., 1997; Gurrera et al., 2000; Reno, 2004; Camisa et al., 2005; Boyette et al., 2013). The remaining FFM traits show no such contrasts; in the aforementioned studies patients consistently report higher Neuroticism, lower Extraversion and (to a slightly less consistent degree) lower Conscientiousness than community controls or general population norms, although, as far as we are aware, the possibility that these traits may in-/decrease progressively has not yet been examined, apart from an at face-value comparison of multiple studies for Neuroticism (Horan et al., 2008). Subsequently, the examination of potential differences in changes in FFM levels between patients varying in clinical characteristics (f.e. number of psychotic episodes, duration of illness) was formulated as the second aim of the current study.

2. Methods

2.1. Participants and procedures

GROUP (Genetic Risk and Outcome of Psychosis) is a recently completed Dutch longitudinal multicenter cohort study that was designed to study vulnerability and resilience factors for variation in expression and course of non-affective psychotic disorders. Details of the GROUP study have been described elsewhere (Korver et al., 2012). GROUP patients and controls from the Amsterdam region, who participated in FFM personality assessment at baseline and 3 year follow-up, were included in the current study. Eligible patients fulfilled the following criteria: (1) age between 18 and 50 (extremes included), (2) meeting DSM-IV criteria (American Psychiatric Association, 2000) for a non-affective psychotic disorder: schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder or psychotic disorder NOS, (3) maximum duration of illness of 10 years, and (4) fluent in Dutch. Controls were between 18 and 50 years, had no lifetime diagnosis of psychotic illness, and no first-degree family member with a lifetime diagnosis of psychotic illness. Although a depressive disorder was not an exclusion criterion for study participation, none of the controls in the current sample fulfilled DSM criteria for a depressive episode, at baseline or follow-up.

2.2. Instruments

DSM diagnoses on psychotic and depressive disorders were based on the Comprehensive Assessment of Symptoms and History (CASH) (Andreasen et al., 1992). The CASH is a widely-used semi-structured interview, designed for research on schizophrenia spectrum conditions and mood disorders.

The Life Chart Schedule (LCS) (Susser et al., 2000) was used to elicit information on course of psychotic illness in patients. Psychotic relapse was defined as a recurrence of florid psychotic symptoms (hallucinations, delusions, formal thought disorder and/or inappropriate/bizarre behavior), with a duration of one week or longer. The LCS has shown to obtain sufficiently reliable ratings of the long-term course of schizophrenia and related disorders in multiple domains (Susser et al., 2000).

The Dutch version of the NEO-Five Factor Inventory (NEO-FFI) (Hoekstra et al., 1996) was used to rate the FFM traits at baseline and 3 year follow-up in patients and controls. Long-term stability of the FFM traits has been demonstrated in the general population (Costa and McCrae, 1988; Soldz and Vaillant, 1999; Caspi et al., 2005), although stability has been found to vary somewhat over life span, depending on age (Roberts and DelVecchio, 2000; Roberts et al., 2006). The NEO-FFI has demonstrated satisfactory to excellent construct validity and moderate to good internal consistency in several general population samples, with lower internal consistency for Agreeableness (Cronbach alpha 0.64–0.70) and Openness (0.57–0.76) (Hoekstra et al., 1996). Cronbach alpha of the participants of the current study are presented in Table 1. Normality assessment revealed that all FFM traits but Neuroticism (positive skew in controls, negative skew in patients) and Extraversion (negative skew in controls) at both baseline and follow-up, were normally distributed in the current sample.

Positive and negative symptoms in patients at baseline and 3 year follow-up were assessed with the Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987), a widely used interview to assess the severity of schizophrenia symptoms. Positive symptoms include hallucinations and delusions. Negative symptoms include, among others, blunted affect, withdrawal and motor retardation. The PANSS scales according to van der Gaag et al. (2006a) were used for analyses . This model shows good validity compared to earlier models (van der Gaag et al., 2006b).

Depressive symptoms were assessed in patients with the Calgary Depression Scale (CDS) (Addington et al., 1993). The CDS is a structured interview specially designed to assess depression in patients with psychotic disorders. The CDS has shown to be better in differentiating depressive symptoms from negative and

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