Personality and psychopathology: Higher order relations between the five factor model of personality and the MMPI-2 *Restructured Form*

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ABSTRACT

This study investigates the relationship between personality and psychopathology as measured by the NEO Personality Inventory (Costa & McCrae, 1992) and the Minnesota Multiphasic Personality Inventory-2-*Restructured Form* (MMPI-2-RF; Ben-Porath & Tellegen, 2008) in a combined dataset of patients with a broad range of psychiatric disorders ($N = 472$) and non-patients ($N = 323$). Results of a joint higher-order factor analysis suggest a positive affectivity and negative affectivity dimension at the top of the structure and a relatively weak integration of (normal) personality and psychopathology in combined factors at different levels of the structural analysis. Openness facets exemplify no relations with psychopathology at any level. Theoretical and clinical implications for the conceptualization and assessment of personality and psychopathology are considered.

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1. Introduction

Psychologists and psychiatrists have always been interested in the relation between personality and psychopathology. In the beginning, perspectives were mere theoretical (Maher & Maher, 1994) but the appearance of a uniform psychiatric nomenclature and a consensus personality taxonomy [the five Factor model of personality (FFM) or "Big Five" (Digman, 1990)] enabled empirical research (Kotov, Gamez, Schmidt, & Watson, 2010). It is clear now that normal FFM personality traits (i.e., neuroticism, extraversion, conscientiousness, agreeableness, and openness) can be linked theoretically and empirically to diverse forms of psychopathology (e.g., Kotov et al., 2010; Ruiz, Pincus, & Schinka, 2008; Samuel & Widiger, 2008). In the current research, we add to the existing literature by investigating the higher-order structure of combined measures of personality and psychopathology; the NEO-Personality Inventory-Revised (NEO-PI-R; Costa & McCrae, 1992) and the Minnesota Multiphasic Personality Inventory-2-*Restructured Form* (MMPI-2-RF; Ben-Porath & Tellegen, 2008).

Krueger and Tackett (2003) distinguish four models to explain relations between personality and psychopathology (see also Clark, Watson, & Mineka, 1994; Widiger & Smith, 2008): (1) the predisposition/vulnerability model, (2) the complication/scar model, (3) the pathoplasty/exacerbation model, and (4) the spectrum model. In the predisposition/vulnerability model, the presence of certain pre-existent (pathological) personality characteristics increases the probability of developing a clinical disorder. In contrast, certain mental disorders can also have strong and sometimes irreversible effects on personality (i.e., complication/scar model). The pathoplasty/exacerbation model refers to the influence of personality and mental disorders on each other's appearance, expression and course. Finally, the spectrum model, proposes that both (maladaptive) personality and psychopathology exist among a common spectrum of functioning. This model is gaining influence in the run-up for DSM-5 (Krueger & Eaton, 2010; Krueger et al., 2011) and will be the focus of the current study.

Higher-order models of psychopathology are not new. In 1966, Achenbach identified two general factors (i.e., internalizing and externalizing) underlying child behavior problems. Also, in personality science higher-order models have been identified (e.g., Digman, 1997). It is possible to integrate models of psychopathology and personality in combined higher order spectra (Widiger & Smith, 2008). That is, models of maladaptive personality can be integrated with Axis I mental disorders. For example, empirical

research by Krueger (1999) and Krueger, McGue, and Iacono (2001) reveals an internalizing dimension (e.g., depressive disorders, anxiety disorders) and an externalizing dimension (e.g., adult antisocial behavior, conduct disorder, substance-related disorders) as higher order factors underlying common clinical syndromes and personality disorders from DSM-IV (American Psychiatric Association, 1994). Also, models of general personality can be integrated with models of maladaptive personality (e.g., Markon, Krueger, & Watson, 2005; Watson, Clark, & Chmielewski, 2008). And finally, general models of personality can be integrated in a spectrum with Axis I mental disorders. For example, research by Hettema, Neale, Myers, Prescott, and Kendler (2006) demonstrates that genetic factors underlying the trait neuroticism account for one-third to one-half of the genetic risk across internalizing disorders (i.e., anxiety and depression). Similarly, the externalizing spectrum links to elevated levels of both neuroticism and disinhibition (Clark, 2005; Krueger, Markon, Patrick, Benning, & Kramer, 2007; Krueger et al., 2001; Watson & Clark, 1993; Watson, Gamez, & Simms, 2005).

However, so far no study investigated the combined (higher order) factor structure integrating a measure of normal personality with a broad band measure of psychopathology such as the MMPI-2-RF (measuring internalizing symptoms, externalizing behavioral problems and thought disorders). Already in 2003, Krueger and Tackett stated that the internalizing and externalizing spectra 'are promising foci for initial research on the joint structure of personality and psychopathology' (p. 109). More research at this higher order level of personality-psychopathology is still needed and of uttermost importance (cf. Krueger et al., 2011); especially in relation to models of normal personality (see also Krueger & Eaton, 2010). For example, it is possible that the comorbidity among prevalent forms of fears, distress, and externalizing psychopathology (Krueger & Markon, 2006) can be understood in terms of their associations with broad dimensions of personality (e.g., Lahey et al., 2012).

In the current investigation we use the NEO-PI-R because it is the most used and researched measure of the FFM (Costa & Widiger, 2002), a model that is widely recognized to measure personality. In addition, the FFM domains have been linked to internalizing pathology by means of a hierarchical analysis before by Tackett, Quilty, Sellbom, Rector, and Bagby (2008). Moreover, the newly released MMPI-2-RF provides an excellent and new opportunity to study relations between normal personality and higher order dimensions of psychopathology.

The MMPI-2-RF no longer contains the traditional Clinical and Content scales. Instead, the MMPI-2 RC scales (Tellegen et al., 2003) form the core of the MMPI-2-RF. Moreover, the MMPI-2-RF contains Higher Order (H-O) scales based on the Restructured Clinical (RC) scales (Tellegen et al., 2003) that resemble higher-order factors in current spectrum models of personality and psychopathology (Krueger et al., 2001; Markon, 2010; Van der Heijden, Egger, Rossi, & Derksen, 2012): (a) Emotional/Internalizing Dysfunction (EID; based mainly on the items from Demoralization (RCd), Low Positive Emotions (RC2) and Dysfunctional Negative Emotions (RC7) scales), (b) Behavioral/Externalizing Dysfunction (BXD; based on items from Antisocial Behavior (RC4) and Hypomanic Activation (RC9) scales), and (c) Thought Dysfunction (THD; consisting of items from the Ideas of Persecution (RC6) and Aberrant Experiences (RC8) scales).

A considerable number of validity studies have been reported on the MMPI-2-RF scales (e.g., Ben-Porath, 2012), and on the RC scales (that were developed in 2003) in particular (e.g., Arbisi, Sellbom, & Ben-Porath, 2008; Forbey & Ben-Porath, 2008; Handel & Archer, 2008; Sellbom & Ben-Porath, 2005; Simms, Casillas, Clark, Watson, & Doebbeling, 2005). Generally, the psychometric properties of the RC scales are considered to be good (Simms et al., 2005).

Particularly interesting is a study by Sellbom, Ben-Porath, and Bagby (2008a) who related the RC scales to the FFM (using the NEO-PI-R). They calculated zero-order correlations between both measures in a psychiatric sample ($N = 271$) and confirmed the higher order structure in the RC scales as proposed in the MMPI-2-RF manual (Ben-Porath & Tellegen, 2008).

The current study adds to this existing literature in several ways. First, we investigate the higher order structure of combined measures of normal personality and psychopathology at different levels, using Goldberg's (2006) "bass-ackwards" approach. Second, we consider the consistency of the revealed hierarchical model at different levels for two important subsamples, namely a subsample of patients ($N = 472$) with a broad range of psychiatric disorders and a subsample with non-patients ($N = 323$), representing a general population sample by calculating coefficients of congruence for the factors that appear at subsequent level in the higher order structure.

1.1. Hypotheses for the current investigation

At the first level we expect one broad psychopathology factor defined primarily by RCd (Demoralization) and neuroticism. Demoralization is conceptualized within the framework of Tellegens' hierarchical theory of mood and affect (1985) and captures the general psychopathology or emotional distress factor from the traditional MMPI-2 Clinical scales. In addition, neuroticism shows strong relations with emotional distress (i.e., the internalizing disorders; Griffith et al., 2010).

At the second level, we expect to find two broad dimensions resembling internalizing [primarily defined by RCd (Demoralization), RC2 (Low Positive Emotions), RC7 (Dysfunctional Negative Emotions), neuroticism and reversed extraversion] and externalizing disorders [primarily defined by RC4 (Antisocial Behavior), RC9 (Hypomanic Activation) and reversed agreeableness] (Krueger et al., 2001; Tackett et al., 2008; Widiger & Simonsen, 2005). However, higher order models of normal personality typically reveal one factor (Alpha; Digman, 1997), including reversed Neuroticism content as well as Agreeableness and Conscientiousness, and a second factor Beta, comprising Extraversion and Openness content (see also Markon et al., 2005). In these analyses, extraversion splits off from neuroticism at the second level.

At the third level, different higher order factors appear depending on the measures and samples used. For example, Krueger and Markon (2006) demonstrated that a three factor model including distress, fear and externalizing fits better than the internalizing-externalizing model they found by doing a meta-analytic review of the factor structure of 11 mental disorders in multiple representative samples ($N = 23,557$). However, when samples with severe psychopathology are taken into account, a third factor psychosis or thought disorder has been found besides the internalizing and externalizing factors (Markon, 2010; Wolf et al., 1988). In personality research (e.g., Digman, 1997; Markon et al., 2005) the three factor model comprises negative emotionality, positive emotionality, and a disinhibition dimension. Similarly, three factors identified in a higher-order analysis by Zuckerman, Kuhlman, and Camac (1988) consisted out of an extraversion- sociability factor, a neuroticism-emotionality factor, and a psychoticism-impulsive unsocialized sensation-seeking factor.

Although we (obviously) expect logical convergence as expressed in our hypotheses above, we do not formulate any further a priori predictions about the exact unfolding of the joint NEO-PI-R/MMPI-2-RF structure (i.e., at which level each higher-order component would appear or split). Based on prior research, we expect a maximum of 6 factors to emerge (Kendler et al., 2011; Kotov et al., 2011; Roysamb et al., 2011).