



Review

Towards a personality model encompassing a Disintegration factor separate from the Big Five traits: A meta-analysis of the empirical evidence

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ABSTRACT

Relying on a recent re-conceptualization of psychosis proneness as a personality trait, its relations with the Big Five traits were investigated in a meta-analytic study. This re-conceptualized trait – named Disintegration – is articulated as a broad, hierarchically organized, nine-faceted behavioral disposition. Disintegration is postulated to be a basic personality trait distinct from the Big Five traits. In accordance with this conceptualization, all the articles considered for this meta-analysis carry information on the relationship between Disintegration-like phenomena (referring to various aspects of symptomatology with prefix 'schizo-', both at the clinical and the sub-clinical level), and at least one Big Five trait. The benchmark for assuming distinctness of the trait Disintegration was .40, based on the meta-analytically derived correlations found among the Big Five traits. By computing inverse sampling variance weighted mean correlation coefficients under a random-effects assumption, the following associations were found between Disintegration and N, E, O, A, and C, respectively: .24, –.27, 0, –.19, and –.13. The differences in true correlations between the studies were substantial for each coefficient. Three variables were found to moderate Disintegration–personality correlations. The finding about the distinctness of Disintegration from other personality traits can have repercussions on the taxonomy of traits.

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1. Introduction

Substantial empirical evidence indicates that psychotic-like (schizo-) phenomena form a continuum from widely present sub-clinical forms to fully-developed schizophrenia (e.g., Hanssen, Krabbendam, Vollema, Delespaul, & van Os, 2006). Accordingly, ICD-10 (International Classification of Diseases) treats sub-clinical psychotic-like phenomena (schizotypal symptoms) as an indication of a general vulnerability to schizophrenia. There are several attempts to conceptualize dispositional roots of psychotic-like phenomena as a trait, with perceptual/cognitive distortions as its core content (e.g., Claridge, 1997; Eysenck & Eysenck, 1976; Watson, Clark, & Chmielewski, 2008). Recently, it has been argued that extensive previous evidence gave reasons to articulate psychosis proneness as a broad, hierarchically organized, multidimensional behavioral

disposition – a basic personality trait (Knežević, Savić, Kutlešić, & Opačić, submitted for publication). The trait was named Disintegration. The reason is that all of its facets, which will be discussed later, are postulated to stem from some level of *disintegration* of the information processing systems responsible for reality testing, resulting in peculiar, incoherent and distorted cognitions, emotions, and motivations. This disposition can be labeled as (a) Psychosis Proneness/Psychoticism/Schizotypy – if one wants to underlie predominant behavioral content, (b) Peculiarity – if a layman description of the behavior is to be emphasized, or (c) Disintegration/Apophenia if one tries to touch upon the process leading to behavior in question.

If different degrees of psychotic-like phenomena can be traced back to a trait-like (dispositional) structure, one of the first questions is whether this disposition can be mapped onto a personality space. Having in mind the central position of the Big Five taxonomy in modern personality research, and the claim of its comprehensiveness (John, Naumann, & Soto, 2008) the most important question is whether such a disposition could be (a) integrated into any of the five traits (N–Neuroticism, E–Extraversion, O–Openness, A–Agreeableness and C–Conscientiousness), or (b) treated as an additional and distinct personality trait.

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One early suggestion was to conceptualize Disintegration as an aspect of N (Widiger & Trull, 1992). Another suggestion, with a recently growing numbers of supporters, is that Disintegration represents the extreme point of O (DeYoung, Grazioplene, & Peterson, 2012; Haigler & Widiger, 2001). These attempts, entirely understandable from the point of view of parsimony and elegance, seem to be at odds with the available empirical evidence demonstrating low correlations between the basic personality traits and schizotypal personality disorders as an aspect of a general psychosis-proneness (Samuel & Widiger, 2008; Saulsman & Page, 2004). Accordingly, the overall aim of this meta-analytic study is to explore if Disintegration is distinct from the Big Five personality traits, that is, whether it shows discriminant validity.

2. Theoretical development

Firstly, we will describe the Disintegration trait, a recently developed conceptual framework for psychotic-like phenomena. This conceptualization will serve as a working definition of the domain, and will be used later to define the eligibility criteria and search terms for the studies to be included in the meta-analysis. Secondly, we will provide evidence from biological, construct, and predictive validity studies supporting the core assumption that Disintegration-type concepts are to be considered distinct from the established Big Five traits. Thirdly, we will discuss why Disintegration-type traits were not found using lexical approaches in defining the basic personality space. Finally, we will specify an empirically derived benchmark (i.e., maximum correlation) for assuming discriminant validity of Disintegration.

2.1. Conceptualization of Disintegration

Knežević et al. (submitted for publication) proposed a hierarchical taxonomy of Disintegration containing nine facets: General Executive Impairment, Perceptual Distortions, Enhanced Awareness, Depression, Paranoia, Mania, Flattened Affect, Somatic Dysregulations, and Magical Thinking. Extracted as latent structures in a series of factor analyses they were found to form a factor independent from the Five-Factor model (FFM, Costa & McCrae, 1992b). The finding was replicated across informants (self-, mother's and father's report), samples (undergraduate students and general population) and units of analyses (facets and items). In addition, Disintegration was found to be normally distributed in the general population.

The major advantage of this model is that it subsumes the most influential models of schizotypy/psychosis proposed to date – the two-factor model (positive and negative symptoms – Kay, Opler, & Fiszbein, 1987), three-factor models (disorganization, positive and negative symptoms – Buchanan & Carpenter, 1994, or depression, positive and negative symptoms – Stefanis et al., 2002), the four-factor model (positive symptoms, negative symptoms, depression and mania, van Os et al., 1999) and Five-Factor models (disorganization, positive symptoms, negative symptoms, depression and mania – Lindenmayer et al., 2004, or disorganization, paranoia, negative symptoms, depression and mania – Serretti & Olgiati, 2004). Although sharing the same conceptual root with Eysenck's Psychoticism, the content specified by Disintegration is quite different from Eysenck's, which has been shown to share substantial variance with A and C (Costa & McCrae, 1992a), and whose validity as a measure of psychotic-like behavior has been seriously questioned (Zuckerman, 1989). Relying on this conceptualization implies the inclusion of not only narrow models of schizotypy/schizophrenia/psychosis in this meta-analysis (e.g., those focusing exclusively on schizotypal personality disorder), but also of various trait-like conceptualizations, including phenomena not frequently a part of the most famous models of schizotypy, such as depression or mania. The model of Disintegration assumes that although the two aspects of what is usually recognized as negative schizotypy (social anhedonia and flattened/blunted affect) covary, they are influenced by different dispositions: the former is the primary indicator of low E, while only

the latter is a primary aspect of Disintegration (Knežević et al., submitted for publication). By choosing this broader definition of psychosis-proneness the chances to find substantive correlations with the Big Five should be maximized.

2.2. Evidence for assuming Disintegration as a distinct personality factor

2.2.1. Biological evidence

Firstly, neuroanatomical and neurochemical foundations of personality traits seems to be different for various personality traits (Panksepp, 1998; Zuckerman, 2005). It was postulated that each trait is related to the volume of different brain regions, and the evidence was found for all traits except for Openness (DeYoung et al., 2010). Several models developed to explain disorganized cognitions and perceptions in schizophrenia (Cohen & Servan-Schreiber, 1992; Philips & Silverstein, 2003) suggest that the biological mechanisms of individual differences in psychosis-proneness are different from those operating in the other five traits.

A second stream of biological evidence stems from genetic studies. Namely, it is accepted that the genetic structure of personality strongly resembles its phenotypic structure (Livesley, Jang, & Vernon, 1998). Therefore, if different genetic structures of Disintegration and the Big Five were to be found, phenotypic distinction of Disintegration should be expected as well. For example, the findings of, the distinctness of higher-order genetic factors describing psychosis-paranoia and those that could roughly be identified as E and N was demonstrated by Jang, Woodward, Lang, Honer, and Livesley (2005). However, there is also evidence of an overlapping genetic influence in case of schizotypy and N (Macare, Bates, Heath, Martin, & Ettinger, 2012), which leads to the expectation that phenotypic correlation of Disintegration and N might be higher than that between Disintegration and other personality traits.

Finally, an evolutionary perspective on individual differences regarding Disintegration empowers the expectation that the biological foundation of Disintegration is different from that of other traits. Namely, some authors argue that the most probable mechanism explaining heritable individual differences in Disintegration-like phenomena (and Intelligence) is the polygenetic mutation-selection balance (Keller & Miller, 2006). Unlike Disintegration, heritable variations of other personality traits are the consequence of an entirely different mechanism – balancing selection by environmental heterogeneity (e.g., Penke, Denissen, & Miller, 2007).

2.2.2. Factor-analytic evidence (construct validity)

A significant body of empirical evidence shows that Disintegration phenomena tend to separate from Big Five Factors on a phenotypic level. For example, Watson et al. (2008) suggested that their factor capturing psychotic-like phenomena (named Oddity) reflects a trait-like disposition outside the FFM. Another study, using a joint factor analysis of facets of the NEO-PI-3 and PID-5 obtained a six-factor solution with a broad factor comprising disintegrative phenomena separated from the five factors (De Fruyt et al., 2013). Another group of studies demonstrated that Disintegration-like phenomena form a separate factor even when personality is described by influential personality models assuming more than five factors, like HEXACO (Ashton & Lee, 2012; Ashton, Lee, de Vries, Hendrickse, & Born, 2012).

2.2.3. Potential relevance of Disintegration in predicting various behavioral criteria

Having in mind the importance of psychosis-proneness in explaining and predicting both psychotic disorders and non-psychotic psychopathology (e.g., Rössler et al., 2011), demonstrating its independence from the Big Five would have high relevance for understanding and predicting various aspects of maladaptive behaviors. However, since we argue that Disintegration has general relevance, it should also be demonstrated that it plays a noticeable role in behaviors not only restricted to psychopathology. For example, a considerable amount of

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