



# The hierarchical structure of personality and common psychopathology in childhood



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## ARTICLE INFO

### Article history:

Available online 27 August 2014

### Keywords:

Personality  
Psychopathology  
Problem behavior  
Hierarchical structure  
Children  
Adolescents

## ABSTRACT

The study examined the hierarchical structure of child personality and common psychopathology in a community sample of 2–18-year-olds ( $N = 1926$ ) using parent reported Inventory of Child Individual Differences-Short version and the Strengths and Difficulties Questionnaire. A joint higher-order factor analysis suggested a four-factor solution; the hierarchical framework showed that normal personality traits and problem behaviors are integrated within the same structural model from the early years onwards. The three-factor level, with a positive personality factor and two broad psychopathology factors, externalizing and internalizing, resembled the three developmental orientations of moving toward, against or away from the world. The findings suggest that personality and common psychopathology share the same temperamental origins in behavioral inhibition and negative affect.

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## 1. Introduction

Evidence is accumulating that personality is pervasively hierarchical (Markon, 2009). Markon, Krueger, and Watson (2005) in a comprehensive meta-analysis of normal and abnormal personality scales showed that personality hierarchy integrated Big Trait models of normal and abnormal patterns of behavior in adults and replicated across samples and measures. A recent study examining the hierarchical structure of childhood personality showed that Big Traits and their relationships map on to established patterns for adults and were largely consistent across five different cultures (Canada, China, Greece, Russia and the United States) and four age groups from early childhood to early adolescence (Tackett et al., 2012). The five factor model was easily recognizable as the Big Five even in the youngest age group (3–5 years old), whereas two-factor model clearly resembled Digman's (1997) higher-order factors derived from meta-analysis of different measures of the Big Five, based on teacher, peer and self-reports of children, adolescents and adults: Alpha comprising Agreeableness, Conscientiousness and Neuroticism (reversed), and Beta comprising Extraversion and Openness – which have subsequently been replicated (e.g., DeYoung, 2006).

The hierarchical structure of common childhood psychopathology has long been recognized; recently it has been confirmed with confirmatory factor analysis in representative samples (Goodman,

Lamping, & Ploubidis, 2010; Lahey et al., 2008). A similar structure has been found in adults (Krueger & Markon, 2006). As with models of normal personality, the rationale for examining the hierarchical structure of psychopathology is based on increasing recognition that most mental disorders are dimensional in nature and often co-exist (Rutter, 2011). There is extensive and sound evidence for two broad psychopathology factors, behavioral or externalizing and emotional or internalizing. In childhood, externalizing factor includes destructiveness, aggression, hyperactivity and anti-social behaviors, and internalizing factor includes anxiety, fears, depressive features and psychosomatic problems (Goodman et al., 2010; Lahey et al., 2008). A growing body of research indicates that both higher- and lower-order psychopathological characteristics are relatively stable and can be reliably identified beginning in early childhood (Egger & Angold, 2006).

Because both personality traits and mental health problems are dimensional and the two domains are closely related, examination of their joint factor structure may provide useful clues to the nature and patterning of problem behaviors (Krueger & Tackett, 2003). Hierarchical models of normal personality and common psychopathology may be particularly important in understanding the development of specific patterns of psychiatric problems, for example, they may help to explain such clinical phenomena as comorbidity (co-occurrence of specific disorders) (Krueger & Markon, 2006) or heterotypic continuity (when the type of disorder changes with age). Identifying specific constellations of personality traits and problem behaviors across levels of the hierarchy may help to better understand the role of individual risk and protective factors and to

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explain why some children develop healthily while others develop psychiatric disorders.

To our knowledge, no studies to date have looked at the joint factor structure of personality and common psychopathology in childhood. Most research integrating child personality and problem behavior examined correlational relationships or viewed personality as a predictor and psychopathology as a developmental outcome (De Pauw & Mervielde, 2010); most studies have focused on the Big Five, much less is known about the higher- and lower-order traits. The existing literature links Internalizing problems with high Neuroticism and low Extraversion and Externalizing problems with low Conscientiousness and low Agreeableness (Caspi & Shiner, 2008; De Bolle, Beyers, De Clercq, & De Fruyt, 2012; De Pauw & Mervielde, 2010; Tackett, Kushner, De Fruyt, & Mervielde, 2013). Links between Agreeableness and Conscientiousness on one hand, and Externalizing problems on the other may stem from their common origin in self-control that may be rooted in the executive attentional brain system. Limited research evidence suggests that fear and low positive affect might be particularly relevant for Internalizing problems, whereas antagonism and negative affect are associated with Externalizing problems (Caspi & Shiner, 2008; De Pauw & Mervielde, 2010; Tackett, 2006).

Several models of the personality–psychopathology relationship have been proposed (Caspi & Shiner, 2008; Tackett, 2006), most of them suggest causal effects. For example, according to the vulnerability model, specific personality traits may predispose individuals to the development of particular forms of psychopathology, whereas according to the complication model, suffering from a mental disorder may produce specific changes in personality. Although the longitudinal relations between normal and abnormal patterns of behavior are important in understanding developmental trajectories, the empirical evidence indicates that normal personality traits and problem behaviors do coexist from the early years onwards. The spectrum model suggests the dimensional relationship between personality and psychopathology and although this model has rarely been tested explicitly, many concurrent and predictive links that have been found between the two domains, can be explained in terms of spectrum associations (Caspi & Shiner, 2008; Tackett, 2006).

The present study aimed to examine the hierarchical structure of two child-specific measures of normal personality and common psychopathology, a short version of the Inventory of Child Individual Differences (ICID-S, Deal, Halverson, Martin, Victor, & Baker, 2007) and the Strengths and Difficulties Questionnaire (SDQ, Goodman, 2001), in a large community sample of children and adolescents from Russia. The joint factor analysis was employed to investigate how child personality traits and problem behaviors are integrated into a common hierarchical structure, whether there are gender and age differences, and whether this hierarchical framework resembles patterns previously found in adults, the models of personality hierarchy in childhood and hierarchical accounts of child psychopathology. Regarding personality–psychopathology relationship, it was hypothesized that problems within Internalizing spectra would load together with traits from Neuroticism and Extraversion domains, whereas problems within Externalizing spectra would load together with traits from Conscientiousness and Agreeableness domains. However, given the lack of previous research on the joint factor structure of personality and common psychopathology in childhood, these analyses were largely exploratory.

## 2. Method

### 2.1. Participants and procedure

A community sample of parents were recruited in Novosibirsk, Russia's third largest city, and nearby rural areas (25%). Parents

were approached via child care centers, schools, and in person, including home visits, and asked to complete the Inventory of Child Individual Differences – Short version (ICID-S) and the Strengths and Difficulties Questionnaire (SDQ) and to provide socio-demographic information. The present study included only ICID-S's and SDQs with no missing scale scores. The sample consisted of 1926 children (48% female) from 2 through 18 years ( $M = 10.3$ ,  $SD = 4.2$ ) equally distributed over four age groups: pre-school (2–6 years,  $N = 472$ ), middle childhood (7–10 years,  $N = 482$ ), early adolescence (11–14 years,  $N = 488$ ) and late adolescence (15–18 years,  $N = 482$ ); three children had missing age.

Most data came from mothers (84%), fathers rated 8% of the children, and other close adults rated the rest. Most of the children (72%) lived with both biological parents, 18% with a single mother, 8% with a mother and a stepfather, and the rest with other carers; 55% had one or more siblings. Eleven percent of the mothers and 16% of the fathers had ten years of schooling or less, 41% of the mothers and 40% of the fathers have completed vocational college, 48% of the mothers and 44% of the fathers had university degree. For occupation, the parents ranged from unskilled to professional workers, 15% of the mothers and 6% of the fathers were unemployed. The study was approved by the State Research Institute of Physiology and Basic Medicine SB RAMS Ethics Committee.

### 2.2. Measures

#### 2.2.1. Personality

The Inventory of Child Individual Differences – Short version (ICID-S, Slobodskaya & Zupančič, 2010) is an age and culture neutral instrument designed to assess child personality in terms of the five factor model. The ICID-S for parents was developed from the full instrument (Halverson et al., 2003) in English (Deal et al., 2007) and Slavic languages (Slobodskaya & Zupančič, 2010) and maintains comparable levels of reliability and validity as previously established for the full inventory. The Slavic version of the ICID-S includes 52 items measuring 15 robust lower-order traits: achievement orientation, activity level, antagonism, compliant, considerate, distractible, fearful, intelligent, negative affect, open to experience, organized, positive emotions, shy, sociable and strong willed. The Russian version has been validated, supporting good reliability of the scales and the invariance of the Five-Factor structure in two gender and four age groups (Knyazev, Zupančič, & Slobodskaya, 2008). In the present study alphas for ICID-S scales ranged from .68 to .86 with a mean of .75.

#### 2.2.2. Psychopathology

The Strengths and Difficulties Questionnaire (SDQ, Goodman, 2001) is a measure of child mental health that covers the prosocial behavior and common areas of emotional and behavioral difficulties. The SDQ 25 items are divided into five scales, emotional symptoms, conduct problems, hyperactivity–inattention, peer relationship problems and prosocial behavior. The selection and grouping of items were based on current classifications of child psychopathology, the International Classification of Diseases (ICD-10, World Health Organization, 1994) and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994), and also on previous factor analyses; the scales have satisfactory psychometric properties (Goodman, 2001). The SDQ is widely used throughout the world as a research tool and has been shown to correspond well with detailed diagnostic assessments and to predict the presence of a psychiatric disorder in community samples with good specificity and moderate sensitivity (<http://www.sdqinfo.com>). The Russian version has been validated in a stratified random sample, supporting its reliability and validity (Goodman, Slobodskaya, & Knyazev, 2005).

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