



Early temperament as a predictor of later personality

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ABSTRACT

This study examined developmental relationships between early temperamental dimensions and later personality traits using the Infant Behavior Questionnaire-Revised (IBQ-R), the Early Childhood Behavior Questionnaire (ECBQ) and the Inventory of Child Individual Differences-Short version (ICID-S) in a community sample of 98 children who had participated in a study of early temperament and who provided follow-up data on average seven years later. Analyses revealed a number of significant associations between higher- and lower-order dimensions of early temperament and later personality. Regulatory Capacity in infancy and Effortful Control in toddlerhood were related to personality domain of Conscientiousness, largely due to the contribution of early temperament trait of Low Intensity Pleasure. The findings showed considerable heterotypic continuity of individual differences, both within-domain and cross-domain, and highlighted the predictive effect of early regulatory traits.

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1. Introduction

There is a growing consensus that temperamental characteristics that appear in the first years of life form a basis for later personality (Caspi & Shiner, 2006; Rothbart, 2007; Shiner & DeYoung, 2013). The psychobiological model developed by Rothbart and colleagues (Rothbart, 2007; Rothbart & Derryberry, 1981) has become one of the most influential models of temperament. According to this model, temperament is conceptualized as constitutional differences in reactivity and self-regulation, influenced by heredity, maturation and experience. Reactivity refers to arousability of affect and motor activity, whereas self-regulation refers to processes such as behavioral inhibition and attentional control serving to modulate reactivity (Rothbart & Bates, 1998).

Factor-analytic studies of temperament as measured by questionnaires provided evidence that these individual differences are organized hierarchically, the three-factor structure of temperament, including Positive Affectivity/Surgency, Negative Affectivity, and Regulatory Capacity/Effortful Control, was recognizable in each specific age group from infancy through adolescence (Rothbart, 2007; Shiner et al., 2012). The content of the factors is largely similar across ages; the inclusion and exclusion of traits reflects, for the most part, change in the behavioral repertoire across the lifespan (Putnam, Ellis, & Rothbart, 2001). For example, a Positive Affectivity/Surgency factor includes traits of

Activity, High Intensity Pleasure and Approach/Positive Anticipation across infancy and childhood; Vocal Reactivity trait reflecting spontaneous babbling defines this factor only during infancy, whereas in toddlerhood, this factor additionally includes Impulsivity and Sociability. In both infants and older children, a Regulatory Capacity/Effortful Control factor includes traits of Low-intensity Pleasure and Duration of Orienting/Attention Focusing. Soothability, reflecting reduction of distress when soothing techniques are used, defines this factor only in infants; in older children, this factor also includes traits reflecting an ability to inhibit actions and to shift attention at will, Inhibitory Control and Attentional Shifting (Putnam, Rothbart, & Gartstein, 2008; Putnam et al., 2001).

In personality research, large-scale studies of systematic individual differences in thinking, feeling, and behaving have demonstrated the robustness of the five-factor model of personality across cultures and age groups from early childhood to adulthood (Caspi & Shiner, 2006; McCrae et al., 2005). Each of the Big Five subsumes a number of lower-order traits. Extraversion includes Activity Level, Positive Emotions and Sociability; Neuroticism encompasses a variety of negative emotions, including Fear and Anger/Irritability; Conscientiousness includes traits measuring orderliness, task persistence and achievement motivation; Agreeableness involves differences in prosocial tendencies, antagonism and willfulness; and Openness includes traits measuring perceptual, esthetic and intellectual interests (Caspi & Shiner, 2006; Halverson et al., 2003).

Although temperament and personality research traditions were largely independent for many years, in the current thinking temperament and personality traits are more alike than different (Caspi &

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Shiner, 2006; Shiner et al., 2012; Tackett, Kushner, De Fruyt, & Mervielde, 2013). Both are biologically based and develop over the life span under the influence of genes and environment. Thus, the main distinction between temperament and personality is that temperament usually refers to individual differences that appear in infancy and early childhood, while personality typically refers to individual differences that develop later in life (Shiner & DeYoung, 2013). This suggests that early temperament may play an important role in predicting later personality.

Research has highlighted the conceptual links between three higher-order childhood temperament traits of Positive Affectivity/Surgency, Negative Affectivity and Regulatory Capacity/Effortful Control and the Big Five personality traits of Extraversion, Neuroticism and Conscientiousness, respectively. All major traits comprising the Surgency domain in early childhood (Positive emotions, especially highly intensive, Sociability, Activity and Approach) have been found to predict later Extraversion (Caspi & Shiner, 2006). Two lower-order traits comprising the Negative Affectivity domain, Fear and Irritability/Anger, are related to Neuroticism. Early Fearfulness also predicted low Extraversion in adulthood (Caspi et al., 2003), whereas Irritability/Anger is also linked to Disagreeableness and low Conscientiousness (Lamb, Chuang, Wessels, Broberg, & Hwang, 2002; Shiner & DeYoung, 2013). Effortful Control and its lower-order components (Attention, Inhibitory Control, Low Intensity Pleasure) are consistently related to personality domain of Conscientiousness (De Pauw, Mervielde, & Van Leeuwen, 2009; Halverson et al., 2003; Shiner & DeYoung, 2013; Tackett et al., 2013). Self-regulatory processes encompassed by Effortful Control are also related to the personality domain of Agreeableness that reflects the regulation of emotions and behavior in interpersonal contexts (Caspi & Shiner, 2006).

However, empirical evidence on the links between child temperament and personality is scarce; most findings are derived from cross-sectional samples or focused on a predictive role of a few specific traits. Because measures assessing the psychobiological hierarchical model of temperament in infancy and toddlerhood have been developed in the last decade or so (Gartstein & Rothbart, 2003; Putnam, Gartstein, & Rothbart, 2006), little is known about early temperamental antecedents of personality traits. The present study was designed to address the developmental relationships between temperamental dimensions in infancy and toddlerhood and personality traits in later childhood, considering both higher- and lower-order levels of the hierarchical structure of individual differences. We hypothesized that higher-order dimensions and fine-grained components of early temperament would be associated with conceptually related personality traits in later childhood.

2. Method

2.1. Sample and procedures

This study is based on a subsample drawn from a study of early temperament that began in Novosibirsk, Russia, in 2001. Participants represent a community sample of children and their parents from urban and rural areas of Western Siberia and nearby regions, most living in Novosibirsk, Russia's third largest city. Parents were approached via childcare centers and in person, including home visits; all study members provided informed consent for participation in the study. Depending on the child's age, parents were asked to complete the Russian versions of the Infant Behavior Questionnaire-Revised (IBQ-R, Gartstein & Rothbart, 2003) or the Early Childhood Behavior Questionnaire (ECBQ, Putnam et al., 2006) along with a brief demographic questionnaire. The total sample of 563 children was recruited; 353 parents (92% mothers) completed the IBQ-R, 345 parents (90% mothers) completed the ECBQ, of these 135 parents completed both IBQ-R and ECBQ with an interval of approximately 15 months. The results of the cross-

sectional study of early temperament have been published elsewhere (Slobodskaya, Gartstein, Nakagawa, & Putnam, 2013).

At the time of the follow-up, contact details were available for 65% of the total sample and we were able to locate and approach 133 participants of the initial study. Of those, 74% completed the Inventory of Child Individual Differences-Short version (ICID-S; Slobodskaya & Zupančič, 2010) and provided sociodemographic information. The follow-up sample included 98 children (55% girls); 45 were initially assessed with the IBQ-R when they were, on average, 7.1 months of age ($SD = 2.9$); 27 of them were later assessed with ECBQ; and 53 participants were recruited in early childhood and were initially assessed with the ECBQ. As a result, the ECBQ sample is consisted of 80 children assessed when they were, on average, 23.8 months of age ($SD = 6.5$). At the time of ICID-S assessment children were, on average, 7.8 years of age ($SD = 2.1$); the average time interval between the IBQ-R and the ICID-S assessment was 8.4 years ($SD = 1.5$), the average interval between the ECBQ and the ICID-S assessment was 6.6 years ($SD = 2.0$). These follow-up participants were representative of the original sample of 563 children in terms of demographics; compared with the rest of the sample they did not differ on most temperament traits, but scored higher on the IBQ-R Soothability and ECBQ Impulsivity, Sociability and Perceptual Sensitivity. However, there were no significant differences between the participants and those 133 children whose parents were approached but did not participate, both on the IBQ-R and ECBQ.

The participating families were socio-economically diverse, 74% of the children lived with both biological parents, 20% with a single mother and the rest with other carers. For education, 5% of the mothers and 17% of the fathers had ten years of schooling or less, 26% of the mothers and 29% of the fathers had college education, 69% of the mothers and 54% of the fathers had university education. For occupation, the parents ranged from unskilled to professional workers, 22% of the mothers and 7% of the fathers were unemployed. Most data came from mothers (89%), 3% of children were rated by fathers, the rest were rated by other caregivers.

2.2. Measures

2.2.1. Temperament

2.2.1.1. Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003). This 191-item parent-report instrument yields 14 lower-order scales that form three higher-order factors: Positive Affectivity/Surgency, made up of Activity Level, Approach, High Intensity Pleasure, Perceptual Sensitivity, Smiling/Laughter and Vocal Reactivity; Negative Emotionality, including Distress to Limitations, Fear, Sadness and reversed Falling Reactivity; and Regulation, including Duration of Orienting, Cuddliness/Affiliation, Low Intensity Pleasure and Soothability. The Russian version has been validated, supporting good reliability of the scales (Gartstein, Slobodskaya, & Kinsht, 2003) and the invariance of the three-factor structure in Russian and US samples (Gartstein, Knyazev, & Slobodskaya, 2005). In the present study alphas for IBQ-R scales ranged from .75 to .92 with a mean of .86.

2.2.1.2. Early Childhood Behavior Questionnaire (ECBQ, Putnam et al., 2006). This 201-item parent-report instrument yields 18 lower-order scales that form three higher-order factors: Surgency, made up of Activity Level, High-intensity Pleasure, Impulsivity, Positive Anticipation, and Sociability; Negative Affectivity, including Discomfort, Fear, Sadness, Frustration, Motor Activation, Perceptual Sensitivity, Shyness, and reversed Soothability; and Effortful Control, containing Attention Focusing, Attention Shifting, Cuddliness, Inhibitory Control and Low Intensity Pleasure. The Russian version has been validated, supporting good reliability of the scales and similarity of three higher-order factors (Kolmagorova, Slobodskaya, & Gartstein, 2008). In the present study alphas for lower-order scales ranged from .71 to .91 with a mean of .81.

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