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TITLE: Longitudinal dynamic relationship between temperament and cognition in childhood: The Louisville Twin Study

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ABSTRACT:

Recognition that “non-cognitive” skills may impact cognitive outcomes has increased in recent decades. Research on the role of temperament in cognitive development typically focuses on the roles that reactivity, persistence, and approach play in school readiness and learning abilities. Few studies account for genetic associations or the possibility of reverse causation. Application of the bivariate dual change score model allows for investigation of genetic and environmental contributions to relationships between trajectories of change in temperament and cognition in childhood. Longitudinal assessments of mental development (MD) and temperament were collected from 1409 twins from ages 3 to 10 years as part of the Louisville Twin Study (70% with 3 or more waves). Factor analysis of 8 temperament scales from the Toddler Temperament Scale and the Middle Childhood Temperament Questionnaire resulted in 3 factors consistent across waves: reactivity (intensity, distress, and threshold), persistence (persistence and activity), and approach (approach, adaptability, and mood). Mental development was

assessed with the age-appropriate Wechsler scale (WPPSI or WISC). Model-fitting supported bidirectional relationships between MD and persistence, approach, and reactivity. Twin analysis indicated genetic variance in MD was associated with subsequent genetic variance in the persistence and approach factors. Thus, results indicate that while temperament supports cognitive development, growth in cognitive abilities may also contribute to development of the ability to stay on task and adapt to new situations.

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