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**Early Childhood Cognitive Development and Parental Cognitive Stimulation:
Evidence for Reciprocal Gene-Environment Transactions**

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Abstract

Parenting is traditionally conceptualized as an exogenous environment that affects child development. However, children can also influence the quality of parenting that they receive. Using longitudinal data from 650 identical and fraternal twin pairs, we found that, controlling for cognitive ability at age 2 years, cognitive stimulation by parents (coded from video recorded behaviors during a dyadic task) at 2 years predicted subsequent reading ability at age 4 years. Moreover, controlling for cognitive stimulation at 2 years, children's cognitive ability at 2 years predicted the quality of stimulation received from their parents at 4 years. Genetic and environmental factors differentially contributed to these effects. Parenting influenced subsequent cognitive development through a family-level environmental pathway, whereas children's cognitive ability influenced subsequent parenting through a genetic pathway. These results suggest that genetic influences on cognitive development occur through a transactional process, in which genetic predispositions lead children to evoke cognitively stimulating experiences from their environments.

Key Words: Cognitive development, Gene-environment correlation, Cognitive stimulation, Parenting, Behavior genetics