

# The Effects of Early Education, Shadow Education, Study Hours at Home and Educational Expenditures on Cognitive Skill at Age 12

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## Abstract

How does academic skill formation in the home environment affect students' academic performance? Is it possible that the increase in the number of working mothers will further widen existing educational disparities? We examine the effects of home environment on cognitive skills at age 12 using scores from the National Achievement Test held in 2010. Employing weighted least squares with instrumental variables, we found no statistically significant outcomes of home environment factors on educational performance. Taking into account the recent increase in the number of working mothers, the Japanese government is promoting the standardization of kindergarten and nursery school curricula. Our evidence shows that there is no difference between kindergarten and nursery school performance, and supports these early childhood policies.

Keywords: Early childhood Education, Shadow Education, Cognitive skill