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Active by nature, or active by nurture? A twin study of preschoolers' observed motor behavior.

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ABSTRACT:

Many children today do not meet recommended guidelines for daily physical activity, yet little research has examined movement in preschoolers. It is important to study the underlying etiology of activity to better understand how to positively impact children's behaviors. We hypothesized that: 1) genetic influences would significantly contribute to preschoolers' observed motor behavior, but 2) considering that sedentary lifestyles have rapidly increased only relatively recently, environment would account for greater variance. At age 5, families took part in the Southern Illinois Twins/Triplets and Siblings Study¹. During testing, parents and children completed a parent-child interaction task. Coders rated the physical activity that children exhibited during this interaction using a new coding scheme designed to measure young children's motor and sedentary behaviors². An ADE model was tested based on intraclass correlations, $r_{MZ} = 0.76$, $p < .001$, $r_{DZ} = 0.20$, $p = .023$. The AE model fit best, with 66% of variance attributed to additive genetic effects and 34% attributed to non-shared environment. Thus, a new reliable coding scheme provided unbiased, observer ratings to assess young children's physical activity. Findings revealed that both genetic and environmental influences contribute to the emergence of preschoolers' observed motor behavior; however, genetic factors appear most salient.

¹ DiLalla LF, Jamnik MR (2019) The Southern Illinois Twins/Triplets and Siblings Study (SITSS): A longitudinal study of early child development. *Twin Research and Human Genetics*, 22(6), 779-782.

² Jamnik MR (2021) A behavioral genetic investigation of activity levels and internalizing problems across childhood. PhD diss, Southern Illinois University Carbondale

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