

# Four factors predict neurodevelopmental outcomes for children with low birth weight

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Four factors - medical complications at birth, maternal education, early motor assessments, and early cognitive assessments - help predict later cognitive function and motor performance for children born early and at a very low birth weight, finds a new study by NYU's Steinhardt School of Culture, Education, and Human Development.

Research has shown that children born prematurely are at an increased risk for neurodevelopmental impairments. The prevalence of severe disabilities among preterm children is diminishing thanks to advances in medical care, but mild impairments remain and tend to persist into later childhood, posing challenges for children in their everyday home and school lives.

Studies suggest that 40 to 70 percent of preterm children have minor neurodevelopmental impairments, including cognitive delays, speech and language disorders, and mild motor problems such as issues with coordination and balance. They also may have lower [adaptive behavior](#), or the integrated ability of cognitive skills, motor skills, and social and emotional regulation people learn in order to function day-to-day.

"A better understanding of risk factors for impairments among preterm children can help health care providers develop a prevention plan when a child is still young, and identify those who might benefit from early intervention," said study author Tsu-Hsin Howe, associate professor of occupational therapy at NYU Steinhardt.

In their study, published in the January issue of *Research in Developmental Disabilities*, Howe and her colleagues examined predictors of neurodevelopmental outcomes in very [low birth weight](#) children at five years of age, and looked at the contribution of early cognitive and motor assessments to preterm children's later developmental outcomes.

The study participants included 126 children in Taiwan who were born prematurely (at or before 32 weeks) with very low birth weight (less than or equal to 1500 grams, or approximately 3.3 pounds), and were five years old at the time of the study. The children had no severe disabilities or major medical issues.

The five-year-olds were evaluated using neurodevelopmental assessments to determine their overall cognitive function and motor performance. Additional information was collected from their parents, including demographic data and a survey of the children's adaptive behaviors.

The researchers then examined whether certain indicators—prenatal factors, social factors, or results of early neurodevelopmental assessments—would assist in predicting the children's later developmental outcomes.

They found that more than 50 percent of intelligence and 30 percent of both [motor performance](#) and adaptive behavior can be explained by four factors: preterm children's [medical complications](#) at birth, [maternal education](#), early motor assessments, and early cognitive

assessments.

"Consistent with previous studies, we found significant associations between children's early developmental assessments and later outcomes, emphasizing the benefit of conducting detailed assessments of movement at one year of age," Howe said. "However, medical complications at birth were the most reliable predictor of [preterm children](#)'s overall developmental outcomes."

The researchers noted that 57 percent of participants had difficulty in overall adaptive behavior at five years of age, suggesting that very low [birth weight children](#) tend to have lower adaptive behavior.

**More information:** Tsu-Hsin Howe et al. Predicting neurodevelopmental outcomes at preschool age for children with very low birth weight, *Research in Developmental Disabilities* (2016). [DOI: 10.1016/j.ridd.2015.11.003](https://doi.org/10.1016/j.ridd.2015.11.003)

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