Predictors of Fraction Knowledge among Young Children

Rui Meng
University of Wisconsin Madison, Madison, Wisconsin, United States

Percival Matthews
University of Wisconsin - Madison, Madison, Wisconsin, United States

Edward Hubbard
University of Wisconsin-Madison, Madison, Wisconsin, United States

Abstract

Fraction knowledge is not only important for later STEM related education achievement but also crucial for employment and health. However, many children have great difficulties learning fractions. The present study examined predictors of fraction knowledge performance in second and fifth grade, including both math-specific skills and general cognitive abilities. Individual differences in non-symbolic ratio acuity, whole number line estimation, and auditory working memory were significant predictors of symbolic fraction knowledge performance. Non-symbolic ratio acuity made the largest contribution to symbolic fraction performance compared to other predictors. The implications of these findings for theories of numerical development and for improving mathematics learning are discussed.