

Non-Symbolic Ratio Sense Supports Symbolic Fraction Success

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

Non-symbolic ratio processing and symbolic fraction processing both involve thinking about relations between two parts and relational thinking. Despite the close connections between non-symbolic ratio and symbolic fractions, previous research on non-symbolic ratio processing and symbolic fraction learning have proceeded separately. The current research investigated whether children's non-symbolic ratio sense support their symbolic fraction success. Using sample of 151 children, we found that non-symbolic ratio sense significantly predicted fraction knowledge assessment scores and symbolic fraction comparison performance, but not for fraction number line estimation performance. The implications of these findings for theories of numerical development and for improving mathematics learning are discussed.