Developmental and Individual Differences in Predicting Algebra Performance and Learning from Student Fraction Knowledge

Julie Booth
Temple University, Philadelphia, Pennsylvania, United States

Abstract

Over the past decade, researchers have established a predictive relationship between students' fraction knowledge and algebra performance. In middle school, fraction magnitude knowledge is predictive of algebra skills, however, fraction computation knowledge predicts algebra performance for college students. When do different facets of fraction knowledge become more or less important for algebra? The present study examines developmental and individual differences in fraction magnitude knowledge, fraction computation knowledge, algebra feature knowledge, algebra equation-solving, and the relationships between these measures for students (N=700) in grades 4-10 who were tested in two subsequent years as part of an ongoing study. Results will examine developmental changes in student performance on these individual measures and on the relations between the measures both cross-sectionally and longitudinally. Preliminary findings indicate fraction magnitude knowledge develops early and is most important for development of early algebra skills, while fraction computation remains important even for later algebra learning.

In M. Goldwater, F. K. Anggoro, B. K. Hayes, & D. C. Ong (Eds.), *Proceedings of the 45th Annual Conference of the Cognitive Science Society.*