

1096-L1-1413 **Jennifer Yantz*** (jennifer.yantz@mtsu.edu). *Investigating the Links between Students' Knowledge of Rational Numbers and Algebraic Procedures and Students' Success in Undergraduate Mathematics.*

Undergraduate students must have well-developed algebraic procedural knowledge in order to succeed in calculus and other advanced mathematics courses (Baranchik & Cherkas, 2002 and Tall, 1993). Instructors report that many common algebra errors made by undergraduate students are related to simplifying and performing operations with rational expressions (Dawkins, n.d.; Schechter, 2009 and Scofield, 2003). Hiebert and Wearne (2003) submitted that operations with algebraic rational expressions should just be an extension of a students' understanding of operations with rational numbers. Using Hiebert and Carpenter's (1992) theory of connected representations as a framework, this study explored the connections students made, if any, between algebraic and numeric rational expressions. An assessment with three pairs of closely matched algebraic and numeric problems was given to 107 undergraduate students in five randomly selected sections of precalculus. The main focus of this presentation will be the qualitative analysis of the students' strategies used to solve the problems and the patterns of errors that emerged. I will discuss the evidence of students' lack of understanding of fundamental mathematical ideas and the implications for mathematics education. (Received September 15, 2013)