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Morgan Early Sellers* (mearly1@asu.edu), SoMSS, Arizona State University, P.O. Box 871804, Tempe, AZ 85287-1804, **Kyeong Hah Roh** (khroh@asu.edu), SoMSS, Arizona State University, P.O. Box 871804, Tempe, AZ 85287-1804, and **Erika Johara David** (ejdavid@asu.edu), SoMSS, Arizona State University, P.O. Box 871804, Tempe, AZ 85287-1804. *A Comparison of Calculus, Transition-to-Proof, and Advanced Calculus Student Quantifications for Complex Mathematical Statements.*

This study investigates Calculus, Transition-to-Proof, and Advanced Calculus students' quantifications for conditional statements involving multiple quantifiers. Three students from each course participated in clinical interviews. During the interviews, we presented the Intermediate Value Theorem (IVT) and three other statements. All four statements have the same hypothesis and predicate, but none of them are logically equivalent. During the first half of the interviews, students were asked to evaluate and interpret these statements. During the second half of the interviews, students used graphs to justify their reasoning for their evaluations. In the data analysis, we focused on student utterances, gestures, and markings on graphs to analyze students' evaluations of and quantifications for the statements. Several different types of student quantifications for the statements emerged from the data analysis. In this presentation, we will discuss how these student quantifications impact student evaluations of the statements. We also address differences in student quantifications across mathematical level and discuss some teaching implications associated with these findings. (Received August 18, 2017)