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*Representational Adaptivity in Multiplying Polynomials.*

While there is an extensive amount of research on representations for solving problems involving functions, there are few studies on student use of multiple representations for multiplying polynomials. This study contributes to current mathematics education literature by focusing on the appropriateness of student choices of representations for multiplying. Choice/no-choice assessments were administered to determine representational adaptivity with standard distribution, lattice and place value multiplication of polynomials. Semi-structured task-based interviews were also conducted to examine student choices of representation for multiplying polynomials. The results of generalized estimating equations for ordinal logistic regression reveal that students are more likely to accurately use lattice than standard distribution to obtain accurate solutions for polynomial multiplication tasks. Students also tended to transition from choosing standard distribution to the lattice as the number of terms in the polynomials to be multiplied increased. The value of teaching polynomial multiplication with multiple representations was found to be introducing students to adaptive choices for differing tasks and preferences as well as relating the representations to familiar integer multiplication. (Received September 25, 2018)