

When Teachers Make Errors: What do Single-case Designs Versus Mixed Modeling Approaches have to Say about Learning?

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Errors during instruction are a relatively common phenomena in teaching. While small errors for well-adapted students may not have much of an effect, it is well-documented that instructional errors can greatly impair learning for those with developmental disabilities, like Autism Spectrum Disorder (ASD). Interestingly, separate disciplines within psychology approach the study of learning quite differently. For example, cognitive research in typically developing individuals often focuses on large group designs and utilizes inferential statistics; whereas, a vast literature on ASD focuses on single-case design and utilizes visual analysis. The present study employs multiple approaches by embedding single-case design into a large group study to examine the impact of different instructional errors on learning for 166 students. Unique findings were yielded between methodological approaches. Multi-level modeling of group data informed differences in learning across types of instructional errors, such that multiple error types or components produced worse outcomes than a single error type or component. Visual analysis of individual data revealed unique learning patterns thought to reflect the process by which learning is impaired by errors. Specifically, those with the greatest detriment to learning showed a pattern of responding that was indicative of the development of inappropriate stimulus control. Implications for learning and recommendations for minimizing detrimental errors during instruction will be discussed. Additionally, findings will be used to highlight the benefit of collaboration across researchers and how integration of findings across fields of psychology may advance our understanding of learning processes.