**Replicability - A Case Study**

Lane, K. A., Urry, H. L., & Arnal, J. D. (2018, June 24). Replication in the Classroom - A Case Study. Retrieved from [osf.io/xhbjw](file:///C%3A%5CUsers%5CErin%5CDownloads%5Cosf.io%5Cxhbjw)

Liliana Mayes is a third-year doctoral student in developmental psychology.  She has a strong working relationship with her advisor, Dr. Arden Blackburn (who is a full tenured professor) and works on a secondary project with Dr. Garnet Hobson (an untenured faculty member in his fifth year on the faculty, who is also on her master's and dissertation committees).  Liliana completed her master’s thesis last year.

Her thesis consists of two studies.  The first study tested the hypothesis that five and six year old children show better understanding of scientific theories after engaging in a hands-on activity while learning the concept.  Seventy five- and six-year old children participated at a local science museum. Children were randomly assigned to learn about the food chain through a video and lecture from a college-aged docent and then draw a picture of sharks eating (control condition), or to learn about the food chain through the same video and lecture plus an activity where they reconstructed the food chain. The dependent variable was a series of 10 questions that children were asked individually by an undergraduate research assistant who was blind to condition.  Data from 16 children were not used in the study because in the experimenter's assessment, they didn't understand the task or were goofing off during the lecture, video, or activity. Data from 54 children, equally distributed across conditions, remained. Four other undergraduates who were blind to condition and the study’s purpose coded children’s answers on a scale from 0 (not at all correct) to 10 (perfectly correct); these scores were averaged to create a single score per subject. An independent samples t-test showed that children in the active learning group (*M* = 6.37, *SD* = 0.91) outperformed children in the control condition (*M* = 5.81, *SD* = 1.03), *t* (52) = 2.10, *p* = .04.

The second study was a laboratory-based replication of the first study that was preregistered on the Open Science Framework (OSF). One hundred five- and six-year old children came to Dr. Blackburn's Cognitive Development Lab and participated in the study, which recreated the museum experience.   The results were similar to the first study - children who had the hands-on activity showed greater conceptual understanding (*M =* 5.56, *SD =* 0.74)than those in the control condition (*M*  = 5.23, SD = 0.87), t (98) = 2.05, p = .04.  [[1]](#footnote-1)

Liliana presented the work at a conference and it received positive attention in the media and on social media.  She is close to finishing a manuscript for publication.  In the meantime, a separate research group conducted a replication of her study in their lab and did not find an effect of condition: t (498) = 1.29, p = .20.[[2]](#footnote-2) They have contacted Liliana and described their results, and she has shared their news with Drs. Blackburn and Hobson.  She is unsure about what to do now.  Her advisor, Dr. Blackburn is encouraging her to disseminate the research as a publication as quickly as possible.  Dr. Hobson is less sure what she should do, as he thinks that the external replication with a larger sample undermines the validity of her results.  Both faculty members are collaborating on the research and would be authors on any resulting publications.

1. Data for the museum study and lab study are available on the OSF, named mayes\_data\_study1.csv and mayes\_data\_study2.csv, respectively.  Each file is comma-delimited and contains three variables: Subject (a unique subject number), Condition (0=Control; 1= Active Learning Intervention), and Score (score on the assessment). [↑](#footnote-ref-1)
2. These data are also available on the OSF as mayes\_data\_replicaiton.csv, with the same variables as above. [↑](#footnote-ref-2)