|  |
| --- |
| **When Real Life Happens: A Practical Approach to Interpreting & Conducting Rigorous Research**  Session #: 1059  Day/Time: Thursday, November 17, 2016 at 1:30pm  Location: CC/201B  Authors: Lisa Fitton, Autumn McIlraith, Carla Wood, Emily Diehm, Jennifer Brown, & Suzanne Adlof |

**Additional Recommended Resources**

**TEXTBOOKS**

* Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). New York, NY: Oxford University Press.
* Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin
* Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.) New York, NY: Guilford Press.
* Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage Publications.
* Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. Washington, DC: American Psychological Association.

**ONLINE RESOURCES**

* Logan, J. (2016). I am statistics, and so can you [Web blog]. Retrieved from http://statsineducation.tumblr.com/
* What Works Clearinghouse (2014). *Procedures and standards handbook version 3.0*. Retrieved from ies.ed.gov/ncee/wwc/Docs/referenceresources/wwc\_procedures \_v3\_0\_standards\_handbook.pdf
* Magnusson, K. Interpreting correlations: An interactive visualization. [Web page]. Retrieved from http://rpsychologist.com/d3/correlation/
* Garbin, C. Cal’s resource archive. [Web page]. Retrieved from http://psych.unl.edu/psycrs/Resource.html

**PAPERS (more technical)**

* Wood, C., McIlraith, A., & Fitton, L. (2016). State of practice for language and literacy research: A review of methods in ten relevant journals. *Contemporary Issues in Communication Science and Disorders, 43*, 195-207. doi: 1092-5171/16/4302-0195
* Ioannidis, J. (2005). Why most published research findings are false. *PLoS Medicine, 2*(8), 0696-0701. doi: 10.1371/journal.pmed.0020124
* O’Dwyer, L. M., & Parker, C. E. (2014). A primer for analyzing nested data: Multilevel modeling in SPSS using an example from a REL study (REL 2015-046). Washington, DC: U.S. Dept of Education, Inst of Edu Sci, National Center for Edu Eval and Regional Assist, Regional Edu Lab Northeast & Islands. Retrieved from http://ies.ed.gov/ncee/edlabs
* Petscher, Y. (2016). Do our means of inquiry match our intentions? *Frontiers in Psychology*, 7:1048. doi:10.3389/fpsyg.2016.01048
* Sharpe, D. (2013). Why the resistance to statistical innovations? Bridging the communication gap. *Psychological Methods, 18*(4), 572-582. doi: 10.1037/a0034177

|  |  |  |  |
| --- | --- | --- | --- |
| **Cheat Sheet: Evaluating Research Designs and Statistical Analyses** | | | |
|  | ***When it’s helpful*** | ***When it’s not as helpful*** | ***Things to watch out for*** |
| **Randomized Controlled Trial** | * To test an intervention that’s shown promise in smaller studies * To generalize your results to a large, diverse population * As the “gold standard” for causal claims about an intervention’s effectiveness | * When resources are limited (time, money, personnel, participants) * When intervention cannot be ethically withheld from any participants * To isolate individual responses to intervention * To study the influence of factors you cannot change | * Was true random assignment used? * Are there issues with the control group not remaining a true control? * Were there enough participants for randomization to be effective? |
| **Single-Case Design** | * To test new intervention ideas * With low-incidence populations * When resources are limited | * To generalize your results to a large, diverse population * To evaluate more established interventions | * Is there a reasonable baseline period? (e.g., ~ 5 time points) * Did the baseline period convince you the participant(s) exhibited stable performance prior to intervention? * Is there replication of the observed effect? (3 or more instances) |
| **Quasi-Experimental Design** | * To study the influence of factors you cannot change (e.g., gender, SES, (dis)ability status * When it would be unethical to withhold treatment from a control group | * To make strong causal claims * To generalize your results to a large, diverse population | * How strong is the counterfactual (if there is one)? * Are there any signs of experimenter bias? * Was a pretest used to examine pre-existing differences between groups? * Over-reaching on the conclusions? |
|  | ***When it’s helpful*** | ***When it’s not as helpful*** | ***Things to watch out for*** |
| **Structural Equation Modeling** | * To study many interrelated factors at the same time * To determine the “most important” predictors * To get a better view of the big picture | * With smaller sample sizes * When few variables are available | * Be wary of claims about directionality of relationships: not a sure thing * How is the model fit? * Are there individual sampling issues? * Is there possible masking of real effects? |
| **Hierarchical Linear Modeling** | * When data have a nested structure (e.g., students nested within schools; or many time points nested within person) * With larger sample sizes | * With smaller sample sizes * With fewer than 10 higher-level units (e.g., schools) | * Does the unit of assignment match the unit of analysis? * Are the assumptions met? * Has missing data been handled properly, and reported? |