Teachable Examples on the Everyday Research Methods Blog

Students and instructors can find hundreds of examples of psychological science in the news on my blog, Everyday Research Methods (www.everydayresearchmethods.com; no password or registration required). I use these examples during class as well as for homework and exams. Students can use the entries as extra practice in reading about research studies in psychology in the popular media. Follow me on Twitter to get the latest blog updates (@bmorling); I usually post twice a month.

Changes in the Fourth Edition

Instructors who have used earlier editions will be happy to learn that the organization remains the same. I have replaced some chapter examples (see the table), meaning that instructors who assign the Fourth Edition might still use their favorite illustrations from past editions as extra examples while teaching.

The in-text citations, References list, and sample paper now conform to the guidelines in the latest edition of the *Publication Manual of the American Psychological Association* (7th edition, 2020).

The Fourth Edition continues to reflect the new methodological standards developed after psychology's replication crisis. For example, preregistration and replication are now introduced in Chapter 1. Transparent science practices are integrated in Chapters 1, 2, 11, and 14 and the supplemental chapters. I've revised discussions of sample size in light of our field's new emphasis on larger samples. I've also added error bars to the figures in the book, as is becoming standard.

A major change is the statistical validity coverage. Instead of foregrounding the *p*-values and statistical significance of null hypothesis significance testing (NHST), I now use the new statistics, which emphasizes effect size estimation, precision (confidence intervals), and meta-analysis. Psychological statisticians have argued for years in favor of this shift (e.g., Cumming, 2014) and many instructors know they *should* start to teach it—but there are few undergraduate models out there. With this edition, I strove to empower instructors by modeling how to teach the new statistics to students. Trust me: You can do it! In fact, students are more likely to grasp estimation and precision than they are to correctly define statistical significance. Instructors new to the approach should start by reading Chapter S2, including Table S2.3. And rest assured: The book still explains statistical significance. But instead of leading with it, I foreground effect size and 95% confidence intervals, and then simply explain that a statistically significant result is obtained when the confidence interval doesn't contain zero. I am grateful to Dr. Robert Calin-Jageman for helping me learn this approach and for carefully reviewing these sections for accuracy.

As college faculty, we play an essential role in helping our students become information literate. And the last four years have witnessed an alarming increase in the viral spread of disinformation ("fake news") online. Therefore, new content in Chapter 2 addresses disinformation and predatory journals. I'm grateful to my librarian colleagues at UD, Meg Grotti and Alison Wessel, for helping me develop this section.

Here is a detailed list of the changes made to each chapter.

Chapter	**Major Changes in the Fourth Edition**
1. Psychology Is a Way of Thinking	I have incorporated preregistration and replication here and added a short section on pseudoscience. There's a new section on Merton's norms of science (see "Scientists Work in a Community"), which provides an excellent model of why science is self-correcting. I also developed the section on why we don't use the term *prove* in science.

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2. Sources of Information: Why Research Is Best and How to Find It	In the section "Experience Has No Comparison Group," I replaced the bloodletting example with a new one on radical mastectomy. I've also replaced the contingency tables with bar graphs because the contingency tables confused my students and they are never revisited. I added new sections on predatory versus legitimate and open-access versus paywalled journals. There's also a new infographic with guidelines on avoiding disinformation (Figure 2.17: Be Information Literate, Not Gullible or Cynical). To make room for this new material, I omitted the sections on trade books and wikis.
3. Three Claims, Four Validities: Interrogation Tools for Consumers of Research	The three claims, four validities framework is the same, keeping the best teachable examples from the previous edition and adding new examples from recent media. Here's where you'll see the first introduction of the new statistics for statistical validity and a new infographic (Figure 3.5: Navigating Causal Claims: Do Family Meals Really Curb Eating Disorders?). I replaced the study on music lessons and IQ with a study on self-regulation in children. The Working It Through section at the end of this chapter was revised around a new example (on head tilt).

Chapter	Major Changes in the Fourth Edition
4. Ethical Guidelines for Psychology Research	This chapter is similar to the previous edition, but I have added a new discussion of self-plagiarism.
5. Identifying Good Measurement	This chapter retains the same teaching examples as the previous edition. In response to reviewer comments, I improved the section on internal reliability by adding a correlation matrix that depicts correlations among items and introduced the term *average inter-item correlation*. I have refined some of the validity coverage to reflect recent measurement papers by Flake et al. (2017) and Clark and Watson (2019). Although my coverage in this chapter is not as sophisticated as these authors might like, my goal has been to be student friendly as well as accurate.

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6. Surveys and Observations: Describing What People Do	In response to a reviewer suggestion, I have integrated research on the prevalence of ACEs, or adverse childhood experiences, a topic of interest to many students. The ACEs data also led me to temper the section on self-reports. I became concerned that the section on flashbulb memories might lead students to mistrust people's reports of *anything* they say happened to them. Therefore, I added content explaining that people generally can report accurately on their own histories of neglect, abuse, or poverty. Also look for a new example of observational research here.
7. Sampling: Estimating the Frequency of Behaviors and Beliefs	Polling strategies are always changing. I've replaced comparisons of cell-phone-only to landline-only samples with a new section on Internet panels, a technique that seems poised to replace telephone polling.

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8. Bivariate Correlational Research	There's a new example on brain thickness and time spent sitting (Siddharth et al., 2018), replacing the one on multitasking. The data are open, so your students could even re-create the statistics. However, it's a small sample (only 35 adults) and the estimate has not been replicated. (So don't go out and buy a standing desk just because of this finding!) The new statistics approach is in full force, including a revised section on effect size. I now downplay Cohen's effect size conventions (both here and in Chapter 10), for two reasons. First, Cohen himself warned people not to rely on them, and by including them in tables I was perpetuating them. Second, the conventions aren't consistent with each other. That is, *r*s of .1, .3, and .5 do not mathematically correspond to *d*s of .2, .5, and .8. Chapter 8 now provides a more nuanced discussion of effect size and importance inspired by Funder and Ozer (2019). At the end of Chapter 8, you'll find the first Replicate the Study section (Do people who have moved frequently prefer shopping at chain stores?).

Chapter	Major Changes in the Fourth Edition
9. Multivariate Correlational Research	The core examples have stayed the same. Here you'll notice new language explaining that when a beta is statistically significant, it means that its confidence interval doesn't include zero. In the mediation section, I removed the section on Kenny's five steps. These steps were too advanced for my own students; furthermore, most researchers today use other techniques to test mediation, such as bootstrapping and SEM.
10. Introduction to Simple Experiments	I replaced the pasta bowl study with a new study on baby persistence because Wansink's research has been widely discredited for its statistical inconsistencies and questionable practices. The new statistics are featured in this chapter again, including new content on replication, effect size, and whether to use d versus original units. Note that I recomputed the effect size of Mueller and Oppenheimer's (2014) study using their open data (it's $d = 0.37$, not 0.77). Be sure to look for some recent studies that failed to replicate Mueller and Oppenheimer in Chapter 14. At the end of Chapter 10, you'll find the second new Replicate the Study section (Do we remember words better if we process them deeply?).

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11. More on Experiments: Confounding and Obscuring Variables	The first half of this chapter is much the same as past editions. In the second half (on null effects), I have revised the content in light of the new statistics. There is new coverage of sample size, including a table explaining how sample size affects the precision of an estimate (the 95% CI). I have removed the figure on power (the flashlight and candle image) because power is mostly relevant to Type II errors and NHST.
12. Experiments with More Than One Independent Variable	The only major change here (as in all chapters) is the addition of accurate error bars to all figures. The discussion of main effects and interactions is framed more in the NHST format (students learn to ask, Is there a main effect or not?) and less in terms of the new statistics format (which would take the form of "How strong is the main effect?"). I believe this approach will be easier for students to comprehend.

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13. Quasi-Experiments and Small-*N* Designs	There are three excellent new examples of quasi-experiments here: on organ donation, on the opioid crisis in the U.S., and on the Netflix show *13 Reasons Why*. This last one replaces the Danziger study on food breaks and parole decision making, which has been criticized as flawed. The four quasi-experimental designs used to be grouped as two between-groups and two within-groups designs, but I removed this distinction. Now they're simply presented as four designs. I have also introduced a new key term, *quasi-independent variable*.
14. Replication, Transparency, and Real-World Importance	This chapter has a new title and has been updated to reflect the current state of the field. There's much more here on replication, including replication projects (such as Many Labs) and two new forest plots. The new Table 14.3 on questionable versus transparent research practices replaces Table 14.1 from the previous edition. To make room for new content, I reluctantly omitted Masuda and Nisbett's (2001) cross-cultural study on memory (the fish figures).

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Supplementary Chapters	Chapter S1, on descriptive statistics, has not changed much except to add dot plots and box plots. Chapter S2, on inferential statistics, is almost completely new. I hope this chapter is helpful to instructors teaching the new statistics for the first time as well as to students. In Chapter S3, you'll find a new student paper and poster. This paper models the seventh edition of the APA style manual and illustrates how students can integrate open science practices and write about the new statistics.