Course Enhancements, Activities, and Exercises

* From the most recent APA guide to graduate schools (*Graduate Study in Psychology*), select a representative sample of schools and demonstrate the necessity of undergraduate courses in statistics and research methods. Evidence for the importance of these courses to the psychology curriculum can be inferred from the Norcross survey described in Chapter 1 (Norcross, Hanych, & Terranova, 1996) and from a second survey by Lawson (1995). He examined 569 of the graduate schools listed in the 1993 guide, to determine which undergraduate courses they listed as necessary for successful applicants to have completed. The statistics course led the list (90.4%), and the research methods course was second (74.1%). No other course (intro was not included in the survey) came close (others: 44.1% for Abnormal, 37.9% for Personality, and 33.5% for Developmental, 32.2% for Learning, 27% for Social, 24.3% for Physiological, 23.4% for Testing, 17.2% for History, 8.8% for Cognitive, 7.9% for Perception, and 5.6% for Child). As a class exercise, have students in small groups (three or four) select a random sample of 10-15 schools from the latest guide and try to replicate the Lawson study. Doing this on the first class day drives home the message that psychologists like their conclusions to be based on data. By comparing the results from different groups, the exercise can lead to a preliminary discussion of the effects of small samples. Also, because schools use different labels for similar courses (e.g., research methods, experimental psychology, laboratory psychology), the exercise can provide an early opportunity to give students insight into the need for operational definitions.
* A study by VanderStoep and Shaughnessy (1997) showed that taking a course in research methods can have the beneficial effect of improving students’ abilities to think critically about real-life events. That is, they seem to generalize what they learn about such topics as correlation and causality and regression to the mean. The researchers gave students a test on critical thinking before and after they took either a research methods course or a course in developmental psychology. There was no improvement in the latter, but in the methods course, students improved their ability to critically evaluate both statistical and methodological reasoning questions that had been placed in everyday language. The study by VanderStoep and Shaughnessy lends credence to the argument in Chapter 1 that one of the reasons for taking the methods course is to become a more critical consumer of information.
* The methods course can be a tough sell to many students. One way to overcome resistance is to personalize psychological research and show how scientists become thoroughly absorbed in their work and passionate about it. Chapter 1 ends with an account of the work of Eleanor Gibson and B. F. Skinner. You might want to elaborate on the involvement theme by describing some of the research being done by your departmental colleagues. Further examples of how researchers become passionately involved in their work can be found in several books edited by Gary Brannigan and Matthew Merrens:

 Brannigan, G. G., & Merrens, M. R. (Eds.). (1993). *The undaunted psychologist: Adventures in research*. New York: McGraw-Hill.

 Brannigan, G. G., & Merrens, M. R. (Eds.). (1994). *The social psychologists: Research adventures*. New York: McGraw-Hill.

 Merrens, M. R., & Brannigan, G. G. (Eds.). (1995). *The developmental psychologists: Research adventures across the lifespan*. New York: McGraw-Hill.

 Merrens, M. R., & Brannigan, G. G. (Eds.). (2008). *Experiences in personality: Research, assessment, and change*. New York: Wiley.

The books include chapters by prominent researchers who describe in personal terms the research they do, how they became interested in it, and the origins of their ideas.

* Connor-Greene (1993) describes an exercise in critically evaluating press accounts of research. Students are given a copy of a *USA Today* article on homosexuality (“Gay Men Show Cell Distinction”) describing some preliminary research (reported in the prestigious journal *Science*) suggesting that differences exist between heterosexual and homosexual men in the structure of the hypothalamus. Small groups of students discuss the article, looking specifically for passages that imply causal conclusions that are not warranted by the actual study. In class, Connor-Greene then compares statements in the *USA Today* piece with statements from the original *Science* article, showing how the conclusions of the former should not have been made. Connor-Greene’s article includes a reprinting in full of the *USA Today* column.
* Add some examples of famous scientific thinking by using material from Daniel Boorstin’s (1983) *The* *Discoverers*. Boorstin describes several examples (e.g., Galileo, chapter 40, p. 312; Vesalious, chapter 46, p. 351; Harvey, chapter 47, p. 361) of pioneering scientists relying on empirical methods for making discoveries rather than accepting contemporary authority.
* Students sometimes will contrast the philosophical notion of determinism with free will or free choice. Concerning the matter of free choice, the positivist philosopher of science Rudolph Carnap argued that free choice is actually meaningless unless determinism is true, because choices should be made on some reasonable basis and there can be no such basis for a choice unless the world is lawful. According to Carnap, without “causal regularity, . . . it is not possible to make a free choice at all. A choice involves a deliberate preference for one course of action over another. How could a choice possibly be made if the consequences of alternative courses of action could not be foreseen?” (1966, p. 220). In short, Carnap argued that the idea of free choice has no meaning unless determinism is true.
* It is clear to researchers that in order for choice to have any meaning for humans, events in the world must be somewhat predictable. Thus, when the psychologist investigates behavior and discovers regularities, this does not eliminate or even limit human freedom. Indeed, if Carnap is correct, such research may actually enhance our ability to choose by increasing our knowledge of the alternatives.
* Students often believe that psychology is common sense buried in fancy language. A manifestation of this is the tendency to fall prey to a “hindsight bias” (Myers, 1990), seeing an outcome as fairly obvious once it has occurred. A good way to demonstrate the bias is to pick some current event that has not yet been resolved and ask students to predict the outcome in writing. Once the issue has been resolved and appears more “obvious” to students, refer back to the initial predictions, which will probably be mixed. Alternatively, ask students to predict an outcome, and then after the outcome has occurred, ask a different but comparable group to indicate what they would have predicted. Myers reports a study by Bolt and Brink showing that when the U.S. Senate was deciding whether to confirm Clarence Thomas to the Supreme Court, a little more than half of students surveyed (58%) predicted confirmation. After Thomas was indeed confirmed, 78% of a comparable group of students said the outcome was just what they expected.
* A good way to illustrate the goals of psychology is to take a specific phenomenon and show how the goals are met with reference to it. For example, descriptive research on anxiety is designed to classify the various forms of anxiety (e.g., state or trait) or anxiety disorder (e.g., generalized or obsessive-compulsive); the goal of prediction is achieved by identifying stimulus situations that reliably produce state anxiety and other personality traits that might correlate with trait anxiety; explanation examines the individual’s learning history or biochemical factors that might underlie anxiety; and control is accomplished, for example, by developing therapies or medications that allow anxiety to be effectively managed.
* In the tradition of Houdini, who was an ardent debunker of psychics and spiritualists at the turn of the century, James Randi is a professional magician devoted to exposing pseudoscience for what it is. He has demonstrated that the so-called psychic abilities of such people as Uri Geller reduce to simple magic tricks, and he has made a standing offer of a $10,000 reward to anyone who can demonstrate psychic abilities under controlled conditions. Since he first made the offer in 1964, more than 650 persons have tried, but Randi still has the money. A nice collection of articles by Randi can be found in the following:

 Randi, J. (1987). *Flim-flam: Psychics, ESP, unicorns, and other delusions*. Buffalo, NY: Prometheus Books.

* Bates (1991) demonstrates apparent psychic powers to students to teach them critical thinking skills. He performs several feats (for one trick, a partner in collusion is needed) that appear to involve psychic ability, then asks students to form small groups in order to provide more parsimonious explanations of how the trick was done. Even if students are unable to figure out the trick’s mechanics, the exercise provides a valuable lesson. At the very least, students should gain this insight: “Just because I cannot figure out how the trick was done, that doesn’t mean that special powers are involved.”
* Boyce and Geller (2002) describe a procedure to induce the kind of skepticism that pseudoscience should warrant by doing a Barnum effect demonstration using graphology. Students at the start of a research methods course were surveyed about their attitudes toward handwriting analysis. They were then asked to submit a handwriting sample that included all the letters of the alphabet (“the quick brown fox jumps over the lazy dog”). Next, they received a “personality profile” based on their handwriting (the same one for everyone of course). After the false feedback, their attitudes were reassessed. Attitudes were remeasured at the end of the course. They found that students started with a generally uncritical and positive attitude about graphology, that the acceptance strengthened after the Barnum manipulation, but dropped precipitously at the end of the course, showing the positive effect of the methods course on critical thinking with regard to pseudoscience. Nice study.
* LoShiavo and Roberts (2005) report a semester-long project that introduces students to a variety of methodological concepts by having them evaluate a pseudoscientific voice stress analyzer called “Truster” ([www.truster.com](http://www.truster.com)). During the semester, small groups of students develop a study to determine if Truster can reliably differentiate between participants instructed to lie and those instructed to tell the truth. As you might guess, Truster fails. The outcome also illustrates the beneficial effects of a null finding—if you want to make a claim about some product, you must show that it works (i.e., produce significant effects).
* A historical example of passionate research involvement comes from a remarkable letter by Lightner Witmer to Hugo Münsterberg in 1893. Witmer was an experimental psychologist who is best remembered for establishing the first psychological clinic at the University of Pennsylvania in 1896. Münsterberg ran the laboratory at Harvard during this same era and was an important pioneer in industrial and forensic psychology. Witmer’s letter displays the lengths to which some scientists will go to study human behavior. He was apparently interested in the psychological experience of pain. As he wrote to Münsterberg, he was using a novel approach:

…I let a horse throw me from his back, allowing me to drop on my shoulder and head. I showed a beautiful case of loss of consciousness.…I not only do not remember mounting the horse and running, but I forgot almost everything that happened.… [F]rom the time I got up in the morning till I regained consciousness about 11 o’clock, I can form no continuous series of events. My head was bad for a while but is all right now, but my arm has served the purpose of quite a number of experiments as it still continues quite painful at times.…The psychological side of my afflictions will form the basis of at least three lectures next fall. (Witmer, 1893, quoted in Goodwin, 2012, p. 212)

Another historical example of researchers going above and beyond the call of duty concerns E. G. Boring. Although Boring is best known as an eminent historian of psychology, his training was as an experimental psychologist and, while in graduate school at Cornell, he completed a study on nerve regeneration that lasted four year. To study the process he severed a nerve in his arm (Jaynes, 1969). His doctoral dissertation was on “visceral sensitivity,” which he studied by learning to insert a stomach tube, pouring various liquids into it (e.g., hot and cold), and introspecting about the experience.

* The Readings Quiz Assignment. Have students read examples of real research articles. Sometimes they will read the full article for some study that will be one of the text’s Research Examples. To insure that they have read the articles, students should take one page of hand-written notes on the articles. I precede the discussion of each with a brief quiz. Quizzes include 10 True/False statements, 6 of which are True, and students may use their notes (not the articles) during their quiz.
* One course goal is to make students better as critical consumers of information. An article by Hall and Seery (2006) describes an activity that helps students assess media reports of psychological research. It involved having groups of students make careful comparisons between a published research article and a description of the same research in an online newspaper.

Answers to Applications Exercises Not Answered in the Text (in Appendix B)

*Exercise 1.1. Asking Empirical Questions*

2. What is truth?

* Compared to those without training, will those with training in detecting deception (e.g., FBI officers) be more accurate at detecting lying?

4. Are women morally superior to men?

* Upon finding a wallet with $100 cash in it, will women be more likely than men to return the wallet with the cash still in it?

6. What is the meaning of life?

* Do those who score high on a “religiosity” scale also score high on a scale measuring how meaningful their lives are?

*Exercise 1.2 Thinking Critically About an Old Saying*

Critical analysis of the old saying “Bad things come in threes.”

* Children often learn about “old sayings,” including this one, from their elders (i.e., authority), some of whom may hold to the belief strongly (belief perseverance). The belief can then be strengthened by an uncritical acceptance of certain memorable anecdotal experiences (availability heuristic) – times when three bad things indeed occurred in close proximity to each other (confirmation bias). The problem is that no attention is paid to disconfirmations (e.g., four bad things in a row) and because the time frame within which these events are supposed to occur is never defined, disproof is impossible. So the definition of “bad thing” is never clear, nor is there a precise time frame within these things must occur, so virtually any set of events could be made to “confirm” the old saying; in general, the definitions are too vague for disconfirmation.

*Exercise 1.4. Subliminal Self-Help*

a. Consider each of the main aspects of pseudoscience. How might each apply in the case of subliminal self-help recordings to lose weight?

* Associates with true science: Subliminal self-help (SSH) materials confuse its concepts with genuine scientific ones. SSH describes the power of the unconscious to unlock the mind’s power of persuasion. In science, researchers describe “unconscious” elements of thought as sensory thresholds, “masking” stimuli, and priming. In short, individuals can be influenced by presentation of stimuli presented to them below their level of conscious awareness via priming, but such influence is very limited in scope.
* Relies on anecdotal evidence: Advertisements for SSH recordings are filled with testimonials from individuals who claim to have been helped by SSH.
* Sidesteps disproof: When responding to scientific research showing that SSH have no measurable effects, defenders of SSH might argue that that the recordings work through unconscious processes that are beyond the reach of conventional scientific methodology.
* Reduces complexity to simplicity: Can all of the factors that contribute to life changes (such as permanent weight loss) really be explained by listening to a relaxing audio recording???

*Exercise 1.5. Social Cognition and the Psychic Hotline*

There are a surprising number of otherwise normal people who consult psychics for advice about how to live their lives. Explain how believing in someone who appears to have psychic ability might result from or be strengthened by:

2. Believing someone has psychic abilities can be strengthened by confirmation bias in that individuals may seek out evidence or experiences that confirm their beliefs.

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