Conducting Psychology Research in the Real World

Instructor Manual

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This Research Methods unit helps students understand the way psychologists think about and answer questions. Instead of using intuition or instinct, we test research questions using a variety of empirical methods.

The second module, Conducting Psychology Research in the Real World, is designed to help students understand the importance of field research. All too often in Intro Psych, we focus so much on experiments and the importance of demonstrating causation, that students get a false impression that experiments are the only valid form of research. Therefore, this module highlights the importance of also conducting research outside the psychology laboratory, within participants' natural, everyday environments, and reviews existing methodologies for studying daily life.

Learning Objectives

- Relevant APA Learning Objectives (Version 2.0)
    - Describe key concepts, principles, and overarching themes in psychology (1.1)
    - Describe applications of psychology (1.3)
    - Use scientific reasoning to interpret psychological phenomena (2.1)
    - Demonstrate psychology information literacy (2.2)
    - Engage in innovative and integrative thinking and problem solving (2.3)

- Interpret, design, and conduct basic psychological research (2.4)
- Apply ethical standards to evaluate psychological science and practice (3.1)
- Apply psychological content and skills to career goals (5.1)

- Content Specific Learning Objectives: Conducting Psychology Research in the Real World

  - Identify limitations of the traditional laboratory experiment.
  - Explain ways in which daily life research can further psychological science.
  - Know what methods exist for conducting psychological research in the real world.

Abstract

Because of its ability to determine cause-and-effect relationships, the laboratory experiment is traditionally considered the method of choice for psychological science. One downside, however, is that as it carefully controls conditions and their effects, it can yield findings that are out of touch with reality and have limited use when trying to understand real-world behavior. This chapter highlights the importance of also conducting research outside the psychology laboratory, within participants' natural, everyday environments, and reviews existing methodologies for studying daily life.

Class Design Recommendations

The "Conducting Psychology Research in the Real World" module is well suited for a single class period. Please see the Noba PowerPoint slides that complement this outline.

1st class period (50 min – 75 min):

- Overview

  - Ethical and practical imitations of lab and experimental studies

- Rationale for Conducting Psychology Research in the Real World

  - Internal vs. External Validity

- Ecological validity

- Research Methods for Studying Daily Life
  - Studying Daily Experiences
  - Studying Daily Behavior
  - Studying Daily Physiology
  - Studying Online Behavior
  - Smartphone Psychology

Module Outline

Introduction

- This module seeks to help students understand that although experiments and lab studies are useful to researchers, there are other useful approaches that help researchers understand the human condition.
- It also introduces the concept of generalizability – that is, are the conclusions that researchers make from study results valid for the entire population of interest?

Rationale for Conducting Psychology Research in the Real World

- The authors articulate the trade-offs researchers think about when choosing a study design, such as internal and external validity (i.e., with experiments, we tend to have high internal validity and low external validity, but with field research, we have high external validity and low internal validity)
- Due to the importance of identifying true causal relationships, psychology has traditionally emphasized internal over external validity. However, in order to make claims about human behavior that apply across populations and environments, researchers complement traditional laboratory research with field research. One approach to field research is to study daily life, which is outlined below.

An Overview of Research Methods for Studying Daily Life

- Studying Daily Experiences
    - The purpose of studying daily experiences is to learn about what people do, think, and feel by conducting research that is more externally valid than the traditional laboratory experiment. The basic idea behind studying daily experiences is to collect in-the-moment (or, close-to-the-moment) self-report data directly from people as they go about their daily lives.
    - Potential methods that can be used to study daily experiences can include the Experience Sampling Method, Ecological Momentary Assessment, Diary Method, or the Day Reconstruction Method (DRM), all of which create "snapshots" of a participant's daily life (from what they do to how they feel).
- Studying Daily Behavior
    - The purpose of studying daily behavior is to understand daily social interactions and activities through naturalistic observation.
    - Potential methods that can be used to study daily behavior can include the Electronically Activated Recorder (EAR) or Time-lapse photography. For example, with the EAR, ambient sound recordings can be coded for many things, including participants' locations (e.g., at school, in a coffee shop), activities (e.g., watching TV, eating), interactions (e.g., in a group, on the phone), and emotional expressions (e.g., laughing, sighing).
- Studying Daily Physiology
    - The purpose of studying daily physiology is to understand how our bodies respond to the fluctuating demands of our lives though ambulatory physiological monitoring – that is, monitoring physiological reactions as people go about their daily lives.
    - Potential methods that can be used to study daily behavior can include Electrocardiogram (ECG), Blood pressure, Electrodermal activity (or "sweat response"), Body temperature, Electroencephalogram (EEG), or Biomarkers. Each method creates a snapshot of someone's physiological response to stimuli in their daily environment.
- Studying Online Behavior
    - The purpose of studying online behavior is to understand how people act and interact

with others on the Internet by using the direct (and permanent) verbal traces people leave when engaging in online behaviors (e.g., emailing, chatting, tweeting, blogging, posting)

- Potential methods that can be used to study to study online behavior include Linguistic Analyses, a quantitative text analysis methodology that automatically extracts grammatical and psychological information from a text by counting word frequencies (e.g., one group of researchers analyzed how people responded emotionally to the attacks of Sept. 11th, 2001).

- "Smartphone Psychology"?

  - The author closes this section of the chapter by providing a preview of what is next in studying daily behavior: Smartphones. The conjecture is that Smartphones are a source of rich information because the devices automatically store vast amounts of real-world user interaction data and are equipped with sensors to track the physical (e. g., location, position) and social (e.g., wireless connections around the phone) context of these interactions. However, this new source of information also creates new challenges for researchers (e.g., privacy protection, data analysis, and synthesis).

Conclusion

- Research outside the laboratory setting is a useful and necessary endeavor for psychologists; the need for both lab and field research helps create "full-circle psychology." Meaning one approach alone will not fully answer our questions about human behavior.

Difficult Terms

ecological validity
external validity
generalize
internal validity

Lecture Frameworks

Overview

Often times when we teach Intro to Psych, we get so busy explaining the importance of demonstrating causation (aka an emphasis on lab experiments), that we forget to create a balanced view of psychological research. This leads to students having the simplistic view that experimental research is the only "good" or acceptable form of research (that is, if research cannot prove causation, it is not good research). Therefore, the key concept in this module is the importance of field research, which cannot always be experimental.

First Class period

- Discussion/warm-up

The Disadvantages of Experiments & Lab Studies. If you have not yet discussed the disadvantages of experimental/lab research, this is an excellent time to do so! You can do so by having students engage with a fictional scenario:

Description of the fictional study: Rashi, a graduate student in psychology, was interested in exploring whether children like sweets more than adults. This idea is based on his hypothesis that children are always begging for candy. To investigate he brings 10 boys and 10 girls into the laboratory and gives them an opportunity to eat marshmallows. 85% of the children opt to do so. When Rashi brings 10 men and 10 women into the lab and repeats the study only 20% of the adults opt to eat marshmallows. Rashi concludes that children are far more likely to enjoy sweet foods. Rashi's advisor, however, is not convinced. He asks Rashi to outline some of the weaknesses of his study and asks him, more importantly, how he might study this phenomenon in "the real world" (ie outside the laboratory).

Engage your students in a discussion about these issues. Possible comments from your students:

1. Rashi only tested Marshmallows. Real world data collection would allow him to generalize across more types of sweets.
2. Rashi used a small sample. Real world data collection would allow him to generalize from larger samples to populations.
3. Rashi's lab study was artificial. In the real world other factors might determine whether people elect to eat sweets.

- Lecture
    - Disadvantages of Experiments/Lab Studies
        - Ethical Limitations. As psychologists, we can't manipulate everything! For example, if we are interested in whether or not smoking causes anxiety, we would have to rely on a survey or other non-experimental design. Because we know that smoking has serious negative consequences, it would be unethical for us to conduct a true experiment and randomly assign participants to become smokers.
        - Practical/Logical Limitations. Even if we could ethically manipulate some variables, not all variables are amenable to change! For example, if we want to know which psychological disorder has the biggest impact on social relationships, psychologists cannot possibly randomly assign participants to the experimental condition (in this case, having a psychological disorder). Just like we cannot randomly assign participants to race, gender, age, etc.
        - Realistic Limitations. So….even if we could manipulate all variables…..does it make sense to do so? Are there any instances where psychologists wouldn't necessarily want an experimental design? Of course. Even in a perfect world where we could manipulate variables for an experiment or lab design, there are times when we prefer other methodologies. For example, a researcher wants to know how often single people engage in certain behaviors (e.g., eating alone at a restaurant, going to a movie alone, sitting at a bar alone, etc.). In this scenario, an experiment or laboratory study doesn't make sense.
        - The bottom line. There are limitations to what psychologists can ethically and practically do. Beyond that, there are conceptual considerations that make field research more desirable than lab or experimental research. The trade-offs associated with each are discussed in more detail, below.
    - Internal vs. External Validity
        - To help students understand the circumstances under which we might want to use field research, we need them to understand the trade-offs between internal and external validity.
        - Threats to Internal Validity. Confounding Variables. To get your class involved, use the "Attractiveness" study suggested in the class activities, below.
        - Selection Bias
        - Operationalization of Variables

    - Threats to External Validity
        - Situational Specificity
        - Sampling Bias
        - WEIRD Participants (Western, Educated, Industrialized, Rich, Democratic)
    - The goal for this unit is to get students to understand that by conducting field research, what we give up in terms of control or experimental design (internal validity), we gain in realism and generalizability (external validity).
- Activity – Building a Research Study
- Examples of Research Methods
    - Now that students understand that there are scenarios when field research is preferred, the next step is to explain HOW field research is done.
    - Potential Research Methods
        - Experience-Sampling Method
        - Electronically Activated Recorder, or EAR
        - Ambulatory Assessment
        - Linguistic Analyses

Activities & Demonstrations

Confounding Variables (Internal Validity): A study on attractiveness

For this in-class activity, students participate in a small series of mock attractiveness studies.

Time5-10 minutes

MaterialsPowerPoint slides with images; iclickers or other remote system so students can

vote (preferred but not required)

DirectionsThere are two mini-studies on attractiveness (each "study" has 5-6 pictures that students will rate). For each study: show them the series of pictures and have them rate the attractiveness of each picture. At the end of the study, have students reflect on possible confounding variables. For example, in the first study, some pictures are professional while others are amateur/poor quality; some pictures are of famous people while others are not. In the second study, some pictures reflect personality/interests; there are also contrast and ordering effects.

See related activity slides in Noba PowerPoint for this module - Appendix B

In-class mini-writing: Internal and External Validity

For this in-class activity, students take a few minutes to evaluate a research scenario. The goal is for them to synthesize everything they have learned about research methods up until this point

Time5-10 minutes

MaterialsPrompt, students will need pen and paper

DirectionsShow students the prompt and give them enough time to read it through. You can then let them talk in small groups for a few minutes or have them start writing immediately.

An example of prompt

- Jed designs a study for his social psych class. He is interested in whether people will drink more soda when watching a Coke commercial as opposed to a Nike commercial. He gets ten of his friends to participate. He gives them each a can of coke, and then randomly assigns them to watch either the Coke commercial or the Nike commercial, and then measures how much soda they drank. To fit into everyone's schedule, one group watched the coke commercial in the morning, and the other group watched the Nike commercial in the afternoon.

Potential questions to ask your students

- Was this an experiment, a correlation, or a quasi-experiment? How do you know?

- What did Jed do well? What did he do poorly?
- What are some threats to the internal validity of this experiment? What about to the external validity?
- Are his findings generalizable? Why or why not?

Additional Activities

Leal, L. (2008). Experimental versus correlational research. In L. r. Benjamin (Ed.), *Favorite activities for the teaching of psychology* (pp. 20-21). Washington, DC, US: American Psychological Association.

- This activity is a vehicle for discussing the relations among experimental research, correlational research, and causal inferences at an introductory level. Students need a basic understanding of experimental and nonexperimental research methods, as well as positive and negative correlation coefficients. No advance preparation is needed, unless you wish to present the instructions for the research proposals as a handout or PowerPoint presentation. This is appropriate for any size of class and can be completed by students either in or outside of class.

Outside Resources

Website: Society for Ambulatory Assessment
http://www.ambulatory-assessment.org

Evidence-Based Teaching

Bensley, D., Crowe, D. S., Bernhardt, P., Buckner, C., & Allman, A. L. (2010). Teaching and assessing critical thinking skills for argument analysis in psychology. *Teaching Of Psychology*, 37(2), 91-96. doi:10.1080/00986281003626656

- Critical thinking is a valued educational outcome; however, little is known about whether psychology courses, especially ones such as research methods courses that might be expected to promote critical thinking skills, actually improve them. The resaerchers compared the acquisition of critical thinking skills for analyzing psychological arguments in 3 groups of research methods students, 1 getting critical thinking skills infused directly into their course and 2 other groups getting no explicit critical thinking skills instruction. They found that the group receiving explicit critical thinking skills instruction showed significantly greater gains in their argument analysis skills than the groups receiving no explicit critical thinking instruction. These results support the effectiveness of explicitly teaching critical thinking skills infused directly into regular course instruction.

Borshuk, C. (2006). Introducing Diverse Perspectives into Research Methods Classes. *Teaching Of Psychology*, 33(4), 256-258.

- Instructors of undergraduate research methods can introduce diverse perspectives into their courses through expanding learning units on research ethics to include extensive discussions on the responsibilities of the researcher. The author provides suggestions for teaching strategies that promote multiculturalism while avoiding a deficit research perspective.

Ciarocco, N. J., Lewandowski, G. R., & Van Volkom, M. (2013). The impact of a multifaceted approach to teaching research methods on students' attitudes. *Teaching Of Psychology*, 40(1), 20-25. doi:10.1177/0098628312465859

- A multifaceted approach to teaching five experimental designs in a research methodology course was tested. Participants included 70 students enrolled in an experimental research methods course in the semester both before and after the implementation of instructional change. When using a multifaceted approach to teaching research methods that included both active learning and a form of scaffolding, students reported a greater efficacy in APA style writing, a higher perceived utility of research and statistics, better attitudes toward statistics, and higher perceived skills/abilities in statistics. This approach benefitted students' perception of an often disliked subject area in psychology.

Manning, K., Zachar, P., Ray, G. E., & LoBello, S. (2006). Research methods courses and the scientist and practitioner interests of psychology majors. Teaching Of Psychology, 33(3), 194-196.

- This study examined the effects that exposure to research methodology coursework has on students' interests in scientist and practitioner activities. Consistent with previous

research, there was a positive correlation between scientific and practitioner interests. Exposure to instruction in research methods was associated with a loss of interest in scientific activities even for students who had strong interests in scientific occupations.

Sizemore, O. J., & Lewandowski, G. r. (2009). Learning might not equal liking: Research methods course changes knowledge but not attitudes. *Teaching Of Psychology,* 36(2), 90-95. doi:10.1080/00986280902739727

- Students completed surveys at the beginning and end of a sophomore-level course on research and statistics. Researchers hypothesized that the course would produce advances in knowledge of research and statistics and that those changes would be accompanied by more favorable attitudes toward the subject matter. Results showed that knowledge did increase significantly, but 4 of 6 attitude measures showed no change. Two attitude measures (perceived utility of research and statistics) showed significant declines. These results demonstrate the independence of knowledge and attitudes and show that attitudinal change is not monolithic. Thus, students' misconceptions about research might underlie the declines in perceived utility of research and statistics.

Links to ToPIX Materials

Activities, demonstrations, handouts, etc.:
http://topix.teachpsych.org/w/page/19981034/Research%20Methods%20in%20the%20Classroom

Current events/ news:
http://topix.teachpsych.org/w/page/23075273/Research%20Methods%20in%20the%20News

Video/audio:
http://topix.teachpsych.org/w/page/19981033/Research%20Methods%20Video

Teaching Topics

Teaching The Most Important Course
http://nobaproject.com/documents/1_Teaching_The_Most_Important_Course.pdf

Content Coverage
http://nobaproject.com/documents/2_Content_Coverage.pdf

Motivating Students
http://nobaproject.com/documents/3_Motivating_Students_Tips.pdf

Engaging Large Classes
http://nobaproject.com/documents/4_Engaging_Large_Classes.pdf

Assessment Learning
http://nobaproject.com/documents/5_Assessment_Learning.pdf

Teaching Biological Psychology
http://nobaproject.com/documents/6_Teaching_Bio_Psych.pdf

PowerPoint Presentation

This module has an associated PowerPoint presentation. Download it at http://nobaproject.com//images/shared/supplement_editions/000/000/146/Conducting%20-Psychology%20Research%20in%20the%20Real%20World.ppt?1416598490.

About Noba

The Diener Education Fund (DEF) is a non-profit organization founded with the mission of re-inventing higher education to serve the changing needs of students and professors. The initial focus of the DEF is on making information, especially of the type found in textbooks, widely available to people of all backgrounds. This mission is embodied in the Noba project.

Noba is an open and free online platform that provides high-quality, flexibly structured textbooks and educational materials. The goals of Noba are three-fold:

- To reduce financial burden on students by providing access to free educational content
- To provide instructors with a platform to customize educational content to better suit their curriculum
- To present material written by a collection of experts and authorities in the field

The Diener Education Fund is co-founded by Drs. Ed and Carol Diener. Ed is the Joseph Smiley Distinguished Professor of Psychology (Emeritus) at the University of Illinois. Carol Diener is the former director of the Mental Health Worker and the Juvenile Justice Programs at the University of Illinois. Both Ed and Carol are award- winning university teachers.

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