

**PRAC Assessment Grant 2009 Application Cover Sheet**

1. Name and rank/title of Project Director(s): **Leslie Ashburn-Nardo, Ph.D., Assistant Professor**
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7. Project Title: **Assessing the Effectiveness of the Psychology Research Methods Curriculum**
8. Project Dates: **January 2009 – January 2010**
9. **Project Checklist**

Statement of support from the department chair or school dean by e-mail to

[lhouser@iupui.edu](mailto:lhouser@iupui.edu) - as a separate file not included in the proposal.

Simple budget : A detailed budget is not necessary. Nevertheless, please include a paragraph indicating how you intend to spend the grant money.

IRB (Institutional Review Board) approval attachment by email or hard copy to

[lhouser@iupui.edu](mailto:lhouser@iupui.edu) or (Linda Houser ES 3155, IUPUI) or project director statement that IRB

representatives have been consulted and all requirements have been fulfilled and sent to the same.

**Disbursement of funds will be contingent on receipt of approval by the Institutional Review Board, if human subjects review is necessary.**

## **Assessing the Effectiveness of the Psychology Research Methods Curriculum**

**1. Abstract:** The present research will examine whether students' ability to read and interpret an empirical article changes as a function of taking an undergraduate course in psychology research methods. Students enrolled in a psychology research methods course and in a non-methods psychology (control) course will answer questions regarding an empirical article published in a mainstream psychology journal on two different occasions: at the beginning of the semester (baseline) and at the end of the semester (posttest). Students in methods are expected to answer more questions correctly at posttest than at baseline and are expected to outperform control students.

**2a. Purpose of Project:** In its 2007 *Guidelines for the Undergraduate Psychology Major*, the American Psychological Association (APA) outlined five learning goals regarding "knowledge, skills, and values consistent with the science and application of psychology" (p. 9). One of these goals is "Research Methods in Psychology: Students will understand and apply basic research methods in psychology, including research design, data analysis, and interpretation." This goal fits squarely within the Critical Thinking Principle of Undergraduate Learning here at IUPUI. That is, students should be able to analyze information carefully and logically using the tools of their discipline. Thus, one of the primary objectives of PSY B311 Introductory Lab in Psychology, a course required of all psychology majors, is to exhibit good critical thinking skills as a result of their training as scientists in psychology.

The purpose of the proposed project is to develop a standard assessment procedure that will ensure that IUPUI psychology majors are meeting the objectives of PSY B311. The primary aim of the project is to test whether students exhibit greater knowledge of research methods as a function of taking PSY B311. If the course is meeting the goals of both the APA and IUPUI, then students enrolled in PSY B311 should be better able to understand and interpret psychological research at the end of the semester than at the beginning, and they should show greater improvement in their research methods knowledge than students who have not taken the course.

**2b. Intended Outcomes.** Although research methods courses comprise a core part of any undergraduate psychology curriculum, surprisingly little empirical research exists to validate their effectiveness in enhancing critical thinking (cf. Penningroth, Despain, & Gray, 2007). The proposed study would be a step toward filling this gap in the literature. One intended outcome of the proposed research is to provide a scientifically rigorous test of the impact of PSY B311 on the research methods knowledge and critical thinking skills of IUPUI psychology majors, and, moreover, to share the results of this research with the broader psychology community (e.g., through conference presentations, publications). Consequently, IUPUI's reputation as a leader in the assessment literature would be strengthened.

Another intended outcome of the proposed research is to identify areas needing improvement within the psychology research methods curriculum and to do so scientifically. To date, curriculum needs have been discussed anecdotally, but to my knowledge there is little to no evidence-based assessment and formal documentation of the strengths and weaknesses of this critical aspect of our psychology curriculum. Such data would provide an empirical basis for curriculum planning, standardization of course content, coordination among the statistics-methods-capstone sequence instructors, development/standardization of tutoring programs, etc.

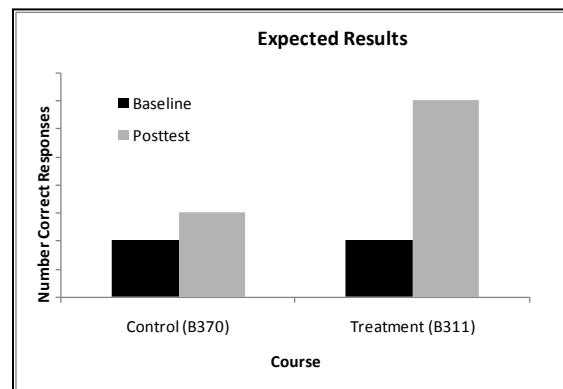
**2c. Assessment Methods.** Students enrolled in PSY B311 and in PSY B370 (Social Psychology) taught by the same instructor (to eliminate instructor as a potential confound) will answer a standard set of questions regarding a brief empirical article selected from *Psychological Science*, a well-respected mainstream psychology journal that publishes high-quality, high-impact psychological research spanning all the sub-disciplines within the field. Articles from *Psychological Science* are generally brief, which make them ideal for present purposes; in fact, the article selected for this study is a short report less than two and a half pages long. At two different points in the semester (beginning and end) students will be given 30 minutes to read the article and answer 10 open-ended questions related to its content. These questions were designed to address critical content of research methods: what is the goal of the

research; what is the basic design (e.g., correlational, experimental); what are the statistical and practical significance of the research findings; were the measures reliable; was the sample probability or non-probability; can one make causal inferences from the data; was the study conducted ethically. Because students must explain their answers and because of the open-ended nature of the questions, the likelihood of correct guesses will be minimized. In addition to answering these questions, students will provide information about previous statistics and methods courses they have taken (including which semesters such courses were completed; this will allow PI to eliminate students who are not naïve to research methods from the control group), and they will generate unique codes (what is the name of your 1<sup>st</sup> grade teacher, childhood pet) that will be used to link their data from the beginning of the semester (baseline) and at the end of the semester (posttest) while ensuring anonymity. Students who participate will earn extra credit toward their course, and those who choose not to participate will be provided alternatives to earn equivalent extra credit. These procedures were approved in IUPUI/Clarian Study Number EX0808-38B.

**2d. Data Analysis.** Data from students in B370 who report having completed B311 previously or taking B311 concurrently will be eliminated to ensure that the control group has no prior knowledge of research methods. Data from each open-ended response will be coded as 0 (incorrect) or 1 (correct);

items will then be summed such that each student has a score ranging from 0 to 10 at each point in time.

Higher numbers indicate a greater number of correct responses. Scores will be analyzed using a mixed model analysis of variance (ANOVA), with course (B311 or B370) as a between-subjects factor and time of



administration (baseline, posttest) as a within-subjects factor. The figure shown above illustrates the expected pattern of results. Students in the treatment course, B311, should provide more correct

responses than students in the control course, B370, but only at posttest, following a semester of learning about research methods. Students in the control course should show no significant improvement from baseline to posttest because they will not have received formal, specific training in research methods.

In addition to the composite analyses, individual items will be analyzed in order to determine shortcomings in B311 course content and instruction. That is, if most students provide incorrect responses to the same item at baseline and posttest, then one can conclude that the information needed to answer the item has not been made accessible to students.

**2e. Methods of Evaluation/Dissemination.** Results will be disseminated in at least three ways. First, they will be shared internally among faculty in the Department of Psychology, as a written report and/or presented at a department meeting, for example. Findings will also be shared with psychologists at neighboring institutions who may similarly wish to adopt the assessment technique to document the strengths and weaknesses of their own psychology research methods curricula. Ideally, PI could partner with faculty at peer institutions to collect data regarding the proposed assessment's validity and generalizability. Finally, results will be shared with the broader scientific community through presentations and publications (e.g., the E. C. Moore Symposium on Teaching Excellence, the Society for the Teaching of Psychology Best Practices Conference, the journal *Teaching of Psychology*), thereby increasing the visibility of the Department of Psychology and IUPUI.

**2f. Intended Use of Findings for Program Improvement.** Within the Department of Psychology, findings will be used to document the degree to which our current research methods curriculum is achieving its objectives and to develop strategies to improve the curriculum and student learning outcomes. Such data will be invaluable for future external reviews of the department, for justifying the need for internal and external funding related to assessment goals.

### References

American Psychological Association. (2007). APA guidelines for the undergraduate psychology major.

Washington, DC: Author.

Penningroth, S. L., Despain, L. H., & Gray, M. J. (2007). A course designed to improve psychological critical thinking. *Teaching of Psychology, 34*, 153-157.

### Budget

\$2500 is requested (a) to replace at least one of PI's existing lab PCs (which are 6 years old); (b) to update research software in order to facilitate data analysis for the proposed project; and (c) for travel to conferences to present findings from the proposed research.