

A Successful Model: Missouri Southern State University

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Missouri Southern State University

The benefits of undergraduate psychology students actively engaging in empirical research are well documented (for a review, see Halonen, Brewer, Bell, & Miller, this volume). The Psychology Department at Missouri Southern State University (MSSU) strives to ensure all psychology majors, not just those who are bound for graduate school, reap the rewards of conducting research. The curriculum for psychology majors is therefore designed to prepare students gradually in all aspects of conducting research. This preparation culminates in each student completing an original, independent research project before graduation. In this chapter, we describe the three-course research preparation sequence all students must complete, the required senior thesis research project, as well as additional opportunities MSSU psychology students have to engage in research, including opportunities to conduct cross-cultural research. Finally, we discuss evidence for the success of this model for encouraging undergraduate research.

Description of MSSU and the Psychology Department

MSSU is a state-supported, comprehensive university located in Joplin, Missouri, which has a population of about 50,000. The Carnegie Foundation for the Advancement of Teaching classifies MSSU as Bac/Diverse. The University has four schools: the School of Business, the School of Education, the School of Technology, and the School of Arts and Sciences. MSSU has its own Board of Governors and reports to the Missouri State Department of Higher Education. MSSU offers 65 baccalaureate degree programs, eight associate degree programs, and seven joint Master's programs that are offered in cooperation with other public four-year institutions in the state of Missouri. The University has 211 full-time faculty and 100 part-time or adjunct faculty. Of the approximately 5,600 students enrolled at MSSU, 35% are non-traditional students (24 years old and over) and 75% come from nine contiguous Missouri counties. Many

psychology students are place-bound to the Joplin area, and about half of majors transferred into MSSU from local community colleges. The average ACT score among enrolled students is 21.

The Psychology Department is part of MSSU's School of Education. There are eight faculty members, who each represent a different psychology subfield, and 220 majors pursuing one of two degrees: the Bachelor of Arts (BA) or the Bachelor of Science (BS). Both degrees have the same psychology requirements, including completion of the three-course research preparation sequence and the senior thesis research project, but the BA degree includes an emphasis on foreign language, whereas the BS degree includes an emphasis on math or science. Thirty percent of current psychology majors at MSSU are pursuing the BA and 70% are pursuing the BS.

Curriculum for Psychology Major

To graduate with a BA or a BS degree in psychology, students must earn 46 psychology credit hours. The curriculum serves to expose students to the breadth of psychology (by requiring students to take courses in child and adolescent development, conditioning and learning, memory and cognition, abnormal psychology, the biological basis of behavior, and social psychology or theories of personality), to encourage students to follow their specific interests within psychology (by allowing students to pick among a list of psychology electives), and to intensively train students to conduct research in psychology. We also require students to choose one of four 400-level electives: Psychological Measurement, Clinical Psychology, Advanced Research Projects, or a special topics seminar (e.g., Advanced Social Psychology, Positive Psychology, Animal Cognition) that encourages advanced study.

The University has a Writing Program that requires students to complete three Writing Intensive classes, in addition to the English composition courses. Psychology majors complete the requirement with three Psychology courses: Junior

Seminar (a course to prepare students for both employment and graduate school application processes), Experimental Psychology, which is part of the three-course research preparation sequence, and Senior Thesis, the capstone experience.

Three-Course Research Preparation Sequence

The research preparation sequence begins with Applied Statistics, a three-credit hour course that exposes students to descriptive and inferential statistical techniques. We encourage students to take this course as early in their college career as possible. The prerequisites for Applied Statistics are a 'C' grade or higher in both General Psychology and in College Algebra. By the end of this course, we expect students to select accurately the type of statistical analysis to use with a given research design, to know how to analyze data by hand, and to know how to interpret results of their analyses.

After students have passed Applied Statistics with a 'C' or better, they may take the second course in the research preparation sequence, Computers in the Behavioral Sciences. In this three-credit hour course, students further hone their statistical skills by learning to conduct analyses using SPSS software, develop word processing skills necessary to produce an APA style document, and become familiar with library research skills using online databases such as *PsychArticles* and *PsychInfo*. By the end of this course, we expect student competency to set up data files, enter data, compute a variety of statistical analyses, and interpret output of analyses.

The final course in the research preparation sequence, for which Computers in the Behavioral Sciences is a prerequisite or co-requisite, is Experimental Psychology, a five-credit hour laboratory course. In this course, students work in groups to gain basic skills in carrying out all phases of a correlational study and a multifactor experiment, including conceiving a research idea, choosing a design and methodology, completing the IRB application form, collecting data, analyzing results, and writing reports in a professionally acceptable manner. A large focus of Experimental Psychology is on mastering APA-style, and we require students to write two complete APA-style reports of their research. Students in this course require considerable input from the instructor, particularly in the form of feedback on multiple drafts of APA-style manuscripts. Therefore, there is a limit of 15 students for this course.

Required Senior Thesis Putting It All Together

Finally, after completing the three course research preparation sequence, psychology students take Senior Thesis, the three-credit hour capstone course. In this course, which we limit to eight students per section, students work independently to complete all phases of a research project on a topic of their choosing. Students in each section meet together with their instructor once a week for an hour. During this time, students brainstorm ideas and serve as research consultants for classmates' projects. Over the course of the semester, each student completes a literature review, designs a study, gathers materials for the study, completes the university's IRB application form, and collects and analyzes data. At the end of the semester, each student submits an APA style manuscript and gives a 12 min oral presentation of his or her study to a group of peers, psychology faculty members, and some administrators followed by a three minute session in which members of the audience can question the presenter. Each year, the collection of students' senior thesis manuscripts are bound and cataloged in the department's library to allow future students to see examples of completed research projects.

Further Research Opportunities

Psychological Measurement

Students learn the principles of questionnaire design and analysis, including item analysis in the Psychological Measurement course, a three credit hour elective. In this course, each student selects a topic on which to develop a questionnaire, develops the questions, administers the questionnaire to participants, and learns various techniques for assessing the items they generated. Some students have used the questionnaires they developed in this course as the basis for their senior thesis research. Students also develop more sophisticated skills in analyzing instruments that they might adapt to their own research projects.

Advanced Research Projects

In addition to completing the three-course research preparation sequence and Senior Thesis,

students who are particularly interested in conducting research may take Advanced Research Projects, an upper-level psychology elective. In this course, which students typically take during the summer before Senior Thesis, students work alone or in groups to conceive and design a naturalistic observation, a survey, or an experiment of their choosing, gather and analyze data, and write up their results in an APA-style report. Many students use the research project for this course as a pilot study for the senior thesis.

Cross-Cultural Research Opportunities

Few Missouri Southern students are from outside a 70 mile radius of the university, and because only 10% of MSSU students are members of ethnic minority groups, there are limited opportunities for students to interact with individuals from backgrounds and cultures other than their own. To enhance students' understanding of and tolerance for cultural differences and diversity, in 1995 Missouri Southern formally adopted an international mission and established the Institute of International Studies.

MSSU's international mission has increased the number of psychology students interested in conducting cross-cultural research. These students have taken advantage of the numerous opportunities that exist for conducting such research by examining cross-cultural differences for their senior theses. Recent examples of projects include a comparison of the use of self-serving biases between European American and Native American students, a comparison of national stereotypes between American and German students, and a comparison of rates of self-disclosure between Americans and British Virgin Islanders. For the latter two projects, rather than traveling abroad, students collected data by mailing questionnaires to instructors from Missouri Southern's international partner institutions.

To further facilitate students' cultural awareness and to enhance their understanding of cross-cultural research methods, the Psychology Department sponsored student trips to France in 2004 and 2006. The most recent trip was a 10 day trip in May 2006. To prepare for the trip, six students first took a seminar entitled, "Cross-Cultural Research," during the spring 2006 semester. For this course, students read about and discussed issues concerning cross-cultural research methodology, and they read about cultural differences between French and American individuals. Each student then designed and formally proposed (in an APA-style manuscript and in an oral presentation) an observational study and a survey designed to measure attitudinal differences between

American and French students. French students, who were studying at MSSU, translated students' materials for their surveys into French. While in France, students collected data for surveys in classrooms at a French university and conducted their observational studies in parks, on streets, and in restaurants. After returning, students collected data from American samples as part of their summer course, Advanced Research Projects. They then analyzed the data, wrote APA-style manuscripts, and gave oral presentations of their findings.

Psychology students have also participated in campus-wide travel opportunities. In the summer of 2005, three psychology students traveled on the Southern-in-India trip. This trip involved spending four weeks at the University of Hyderabad, where these students conducted independent research projects under the direction of UH faculty. One student's study of teachers' attitudes about sex education was incorporated into her senior thesis project with her collection of local teacher's attitudes on her return to Joplin.

Funding Student Research

Since 1990, a campus wide Student Research Grants Committee (SRGC) funds the costs of conducting research (photocopies, computer software, paying participants, purchasing questionnaire materials, etc.) and travel to conferences. Students receive up to \$700 for travel to conduct or present research, but funding for equipment or supplies is theoretically unlimited. In the last five years, SRGC has funded conference travel and research supply costs for an average of 13 psychology students per year.

Evidence of Success of Model

Of all the required psychology courses, Senior Thesis seems to incite the most anxiety among students. Before taking the course, many students remark informally about their fears about being able to finish an entire research project in one semester and about giving an oral presentation of their research. However, after completing Senior Thesis, students are very positive about their experiences. As part of an effort to assess graduates' opinions about their experiences as psychology majors at MSSU, we conducted a survey of alumni who graduated with a degree in psychology between 1994 and 1999. One open-ended question asked alumni to describe their thoughts about the requirement of Senior Thesis for all majors. Of the 42 respondents who answered this question, 36 were positive about the Senior Thesis

experience, five were ambivalent, and only one was negative. Although the oral presentation seems to be the most feared aspect of the Senior Thesis process, many respondents discussed the advantages of having gained experience in public speaking. Moreover, respondents reported having advantages in graduate school and in the workplace, including writing and analytical abilities that came directly from completing Senior Thesis. One student remarked:

"I think [Senior Thesis] was a crucial element in gaining a "competitive edge" among other grad school applicants. I was surprised to find that several students from more "prestigious" institutions had little to no experience designing, implementing and carrying out experiments."

Another student remarked: "I think Senior Thesis is absolutely necessary for anyone planning to go on to graduate school. [Upon beginning graduate school] I soon found out that my research experience was beneficial to me in every class! Even if you are not doing research, it is very important to understand it and be able to evaluate it correctly. It has been obvious to me that because of our research experience, Southern students are depended on by other students to help explain statistics and research design."

When the Senior Thesis project became, in 1986, a capstone requirement for all majors, we allowed students to choose to produce either a literature review or an empirical research paper. Within five years, based on the faculty's assessment of students' projects and presentations, we decided to require empirical research from every student, because weaker students often chose the literature review option, when in reality, writing an effective literature review requires stronger analytical skills than conducting an empirical research project. Since that time, every session of senior thesis presentations has been assessed by the entire faculty, from the point of view of the faculty mentor and from the point of view of the faculty in the audience. Over the years, there has been considerable refinement in how we teach the Senior Thesis classes and how we direct students through the process. Now, almost universally, competent students produce good to excellent presentations. The faculty's ability to assess our students' presentations is enhanced by the undergraduate research conferences we attend, where we have the opportunity to compare our students to other students from the region. We are quite satisfied with the comparison.

We intend to continue to require all students to complete a senior thesis project for graduation. The faculty thinks the capstone experience is valuable for students, because it requires that they integrate their interests in particular areas of psychology with their writing, statistical analysis, public speaking and presentation skills. In addition, supervising Senior Thesis is a rewarding experience for faculty mentors.

Some of the most compelling evidence for the success of the program is that students, even those who were resistant to the experience, consistently report that the research experiences they gained from our program helped them feel better prepared for graduate school and work that involves writing. Even those students, who never attend graduate school, report receiving positive feedback from their supervisors about their ability to write reports for state human service agencies.

Further evidence for the effectiveness of the program in honing students' writing skills comes from data from surveys about the campus-wide Writing Program. The goals of the Writing Program include writing within the discipline and writing with confidence. Both of these goals are satisfied by our program. Data from surveys designed to assess the success of the Writing Program include appreciative responses from psychology students about the faculty who helped them with their writing skills.

There is evidence for our students' strong writing skills. Several students have been successful at publishing their Senior Thesis research in the *Journal of Psychological Inquiry* (including six empirical research studies and two "Special Features" publications) and in *Modern Psychological Studies* (including two empirical research studies). In addition, each year, several students present Experimental Psychology class projects and Senior Thesis projects at regional undergraduate conventions (Psychological and Educational Research in Kansas, Great Plains Students' Psychology Convention and Missouri Undergraduate Psychology Conference). Many of these projects receive presentation awards.

Finally, we think our students' research experience is a key variable in their admission to graduate programs and to their success in their initial graduate research classes. Results of alumni surveys showed that roughly 25% of our alumni are admitted to graduate schools within the year of graduation, and about 50% are admitted within five years of graduation. Many of our alumni who have pursued graduate studies have told us that their undergraduate research experiences were invaluable to their success in graduate school.