Scientist-Practitioner Interest Changes and Course Outcomes in a Senior Research Psychology Course

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Abstract

Psychology students (N = 42) completed the Scientist-Practitioner Inventory before and after completion of a required senior research course. As predicted, students indicated a stronger preference for practice than science-related areas of psychology. Students reported a positive change in practitioner orientation and no significant change in scientist orientation at the end of the course. Course enjoyment was positively correlated with an increase in scientist orientation. Implications for program development and career choices are discussed.

Keywords: college student, science, practice, attitudes

Psychology is a diverse field that includes basic and applied research as well as practice- related divisions, such as clinical assessment and counseling. The research areas of psychology rely primarily on training in science and methodology, whereas the practice areas rely primarily on training in interpersonal skills, evaluation, and professionalism. Psychologists generally complete undergraduate programs in psychology that expose students to the breadth of the field, including scientific preparation areas, such as statistics and research methods, as well as certain practice-related areas of study, such as abnormal psychology and personality. A strong foundation in research methodology will teach the basics of the scientific method and prepare psychology majors to conduct research projects, analyze data, and communicate findings. Core courses in clinical or abnormal psychology, for example, teach students to identify psychological disorders and symptoms and consider appropriate treatment options, focusing more on the practice facet of psychology. Other courses in the undergraduate curriculum may emphasize communication skills, such as public speaking and writing, which are beneficial to the professional development of students interested in both the science and practice of psychology.

The undergraduate curriculum is important because this set of courses prepares students for further study in graduate school or for the workplace. In the area of clinical psychology, one of the most popular areas of psychology, the scientist-practitioner model (i.e., the Boulder model) combines science and practice areas in graduate training (APA, 2007). Psychologists become competent scientists, researchers, and practitioners who can apply their scientific knowledge and research skills to help their clients. While the Boulder model is very popular, other models focus on the different orientations, personalities, interests, and theoretical assertions of scientists and practitioners. For example, the Psy.D. practitioner–scholar model focuses on clinical practice, thereby differentiating training from the Ph.D. scientist-practitioner model (APA, 2007). A thorough understanding of these orientations may help with undergraduate and graduate academic program development and student career choices.

Portions of this research were presented at the 23rd Annual Association for Psychological Science Convention in Washington, D.C.

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Leong and Zachar (1991) developed a 42-item measure, the Scientist-Practitioner Inventory, to study scientist and practitioner interests in the field of psychology. The measure was composed of four sub areas of science and three sub areas of practice (see Method section for further sub area details), which can be combined to create overall science and practice scores. Graduate students in clinical and counseling programs scored higher in practice orientation while students in experimental programs scored higher in scientific orientation (Leong & Zachar, 1991). Zachar and Leong (1992) contended that these science and practice interests are related to personality. Feist (2006) further discussed the developmental and personality factors that explain individuals' propensity for scientific interests. Interest in areas of science often emerges at a young age (Feist, 2006). With respect to personality, those who are more conscientious, dominant, confident, and introverted are more interested in science (Feist, 2006). Additionally, Tazeau and Rozensky (1993) found that graduate students who were behaviorally oriented were interested in conducting research, more so than students with more humanistic interests. These studies demonstrate the connection between personality and interest in science and identify a survey measure which reliably measure science and practice interests, at least among graduate students.

However, few studies have investigated the scientist-practitioner interests of undergraduate psychology majors and the influence of these interests on performance in science- and practice-themed courses. Previous research (Hills & Pettijohn, 2010; Pettijohn & Ahmed, 2009) has examined lower level communications and research methods courses. Students reported a strong interest in practice-related areas over science-related areas of psychology overall in these two samples. Additionally, students who earned higher grades in the research methods course showed a slight increase in science orientation at the end of the course, demonstrating the possibility of attitude change through coursework and experience. Kardash (2000) also studied how undergraduate research experiences affected students. Undergraduate research experiences improved research skills, including experimental design, statistical analysis, interpretation of results, and oral and written communication of findings (Kardash, 2000). Although research skills can be enhanced with research experience, student attitudes and interest in research domains should also be considered.

The current research explores how the attitudes regarding the science and practice of psychology are impacted by course outcomes in an undergraduate senior level research class at a public university. Do undergraduates prefer practice over science areas of psychology? Does enjoying a research methods class, expecting a good grade in a research methods class, and obtaining significant outcomes on a research project increase student interest in science? Consistent with general information about psychology major interests (i.e., student graduate school area interests and applications) and past research (Pettijohn & Ahmed, 2009; Hills & Pettijohn, 2010), we predicted that students would indicate a preference for practitioner interests compared to scientist interests. We also predicted that students who reported more enjoyment of the senior research course, anticipated higher grades in the course, and obtained significant results in their research projects would report an increased interest in science-related areas due to their positive experiences with research.

Method

Participants

Forty-two students from a medium sized, public university in the Southeastern United States enrolled in three unique sections of a required senior research course participated in the current research. The racial distribution of the sample included 83.3% Caucasian and 14.3% African-American. The average age of the participants was 22.57 years (*SD* = 3.34), and all of the participants were psychology majors. Most of the participants enrolled in the course were women (83.3%). The majority of the participants were seniors (92.9%), with the remaining 7.1% being juniors. Approximately half of the participants planned to graduate the semester of the study (42.9%). Only 21.4% of the participants planned to follow up on their research project and the majority of students planned to attend graduate school (76.2%). Nearly 90% of the students indicated plans to attend clinical or counseling graduate programs.

Senior Research Course

The senior research course, Applied Research in Psychology (PSYC 497), is a required course for psychology majors which students generally complete during their senior year of college. The course is a "research experience in which students are required to develop a research project, conduct a literature review, gather and analyze data, prepare a research paper in accord with the standards of the American Psychological Association (APA) and present their research" as stated in the course syllabus. One instructor taught one section of the course and another instructor taught two sections of the course. The course objectives were standardized for the course and students in all sections utilized the same required text and were required to complete a research project using similar

assignments and deadlines. The instructor of each section supervised the student projects and lead group instruction on topics related to research.

Materials & Procedure

Students completed the Scientist-Practitioner Inventory (SPI; Leong & Zacher, 1991) at the beginning and the end of the semester. All students agreed to have their responses included in this investigation. The SPI includes 42 questions pertaining to interests in the science and practice of psychology. The inventory is divided into sub areas of science (research activities, teaching/guiding/editing, academic ideas, statistics and design) and practice (therapy activities, clinical expert/consultant, tests and interpretation) interests. Participants rated their interest in each scale item using a 5-point Likert scale (1 = very low interest, 2 = low interest, 3 = unsure, 4 = high interest, and 5 = very high interest).

Participants indicated whether they found significant results in their research project and whether they planned to follow up on their study. They also rated their enjoyment of the course, personal effort expended in the course, and whether the course increased their research knowledge on a 10-point Likert scale (1 = low and 10 = high). Participant age, sex, class rank, and major were collected on a demographic questionnaire. Students were also surveyed about their plans to attend graduate school and the type of graduate program and degree sought.

Results

As predicted, students preferred practice-related areas of psychology rather than science-related areas of psychology at both the beginning, $t(41) = 7.22$, $p < .001$, d = 1.51, and end, $t(41) = 8.40$, $p < .001$, d = 1.74, of the course.

We were also interested in possible changes in these interest areas during the semester. Difference scores (end of the course scores minus beginning of the course scores) for overall science and practice dimensions, as well as sub areas, were calculated to examine student interest changes from the beginning of the course to the end. Overall, students reported a positive change in practitioner orientation at the end of the course, $t(41) = 2.38$, $p = .02$, d = .24, and no significant change in scientist orientation, $t(41) = .73$, $p = .47$. Sub area results are provided in the Figure.

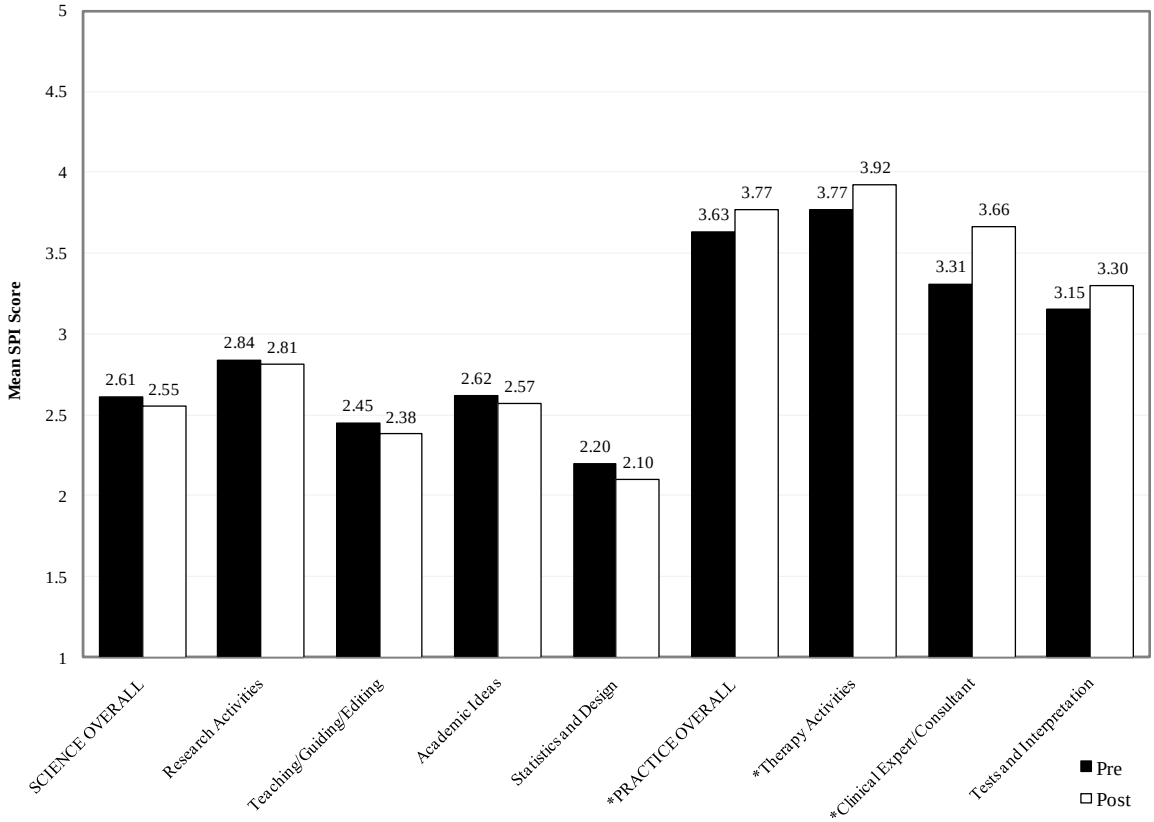

Figure. Mean pre and post SPI score by scale and subscale area. * = significant differences between pre and post scores, $p < .05$.

Student course enjoyment ratings were high (M = 7.20, SD = 1.81), suggesting overall course outcomes were relatively positive. Course enjoyment ratings and SPI science difference scores were correlated to examine whether students who enjoyed the course more showed a more positive change in scientist orientation. Reported course enjoyment was related to a positive increase in scientific interests, $r(40) = .37$, $p = .02$.

To examine whether positive changes in scientist orientation were higher for those anticipating good grades in the senior research course, anticipated letter grades and SPI science difference scores were analyzed. Thirty-eight percent of the students anticipated a course letter grade of A, 50% B, and 12% C. Students who anticipated earning As in the course reported more positive changes in scientific interests than those anticipating Bs or Cs, but these differences were also not statistically significant, $F(1, 40) = 1.79$, $p = .18$.

To test whether positive changes in scientist orientation were higher for students who found statistically significant outcomes in their research projects, research project outcomes and SPI science difference scores were analyzed. Approximately half of the participants' research projects did not yield statistically significant outcomes (52.4%). While students who obtained significant results in their research projects reported positive changes in scientific interests at the end of the course, these changes were not statistically significant, $t(41) = 1.02$, $p = .32$.

Although not predicted, it was interesting to find that students reported positive course outcomes regarding their personal effort in the course (M = 8.89, SD = 1.03) and research knowledge gained from completing the course (M = 9.42, SD = .83). However, effort was not related to change in science interest, $r(40) = -.05$, $p = .77$. While knowledge ratings were positively correlated with an increase in scientific interest, this relationship was not statistically significant, $r(40) = .18$, $p = .26$.

Discussion

As predicted, students reported a stronger preference for practitioner interests over scientist interests at both the beginning and end of the senior research methods course. These results are consistent with the fact that students enrolled in our department, as in many psychology departments, heavily prefer the practice-related areas of clinical and counseling psychology. As previously reported, among those planning to attend graduate school, approximately 90% were in clinical or counseling areas. The current findings were consistent with Pettijohn and Ahmed's (2009) investigation of an introductory research methods course and Hills and Pettijohn's (2010) investigation of a psychology communication course, finding greater student interest in practice than science-related areas overall.

While students who anticipated high marks in the course and who obtained significant results on their research project did report more positive changes in science interests, these results were not significant. However, students who enjoyed the course most showed significant increases in scientist orientation. These results together suggest a positive research experience, including obtaining significant findings and earning a high grade in the course, has the potential to increase student interest in science-related areas. Psychology departments should be sensitive to these findings and consider ways to increase student enjoyment in research methods courses. Given the vast number of students interested in clinical and counseling psychology, positive experiences in methods courses has the potential to strengthen research skills and open students to the opportunity to explore the science of psychology.

Limitations of this research include a small sample size of predominately women. Future investigations could compare male and female scientist-practitioner attitudes and shifts in interests related to course experiences. Long-term effects of interest changes into graduate school and careers could also be studied. Zachar and Leong (2000) conducted a 10 year study of scientist-practitioner interests and found these preferences remained relatively stable over time and predicted future behaviors, such as how much time participants believed they would spend performing scientist- and practitioner-related tasks, attending conference, and publishing papers. We also recognize the possibility that students may not fully comprehend some of the interest areas they rated (Holmes, 2011). For example, as an undergraduate, few students may understand what is required to apply for a research grant or conduct a clinical assessment of a new patient.

Conclusion

Research methods courses are a common psychology major requirement. Psychology programs may want to measure interests in science and practice areas of psychology at multiple stages across the curriculum to follow changes in students and to address assessment. Career choice options may also be explored using the SPI to help guide students into areas of psychology which match their scientist-practitioner orientations. Programs may also choose to emphasize science areas of psychology across their curriculum to provide opportunities for students to explore professional options beyond common clinical/counseling fields or to emphasize that clinical/counseling fields also benefit from having a scientific basis.

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