

# Student Perceptions of Psychology as a Science in Introductory and Research Methods Psychology Courses

## Abstract

College students ( $N = 297$ ) completed a perceptions of psychology as a science (PAS) survey before and after completion of psychology courses. PAS scores increased significantly from the beginning to the end of the research methods courses, but introductory psychology courses did not change and communications psychology courses decreased their PAS perceptions. Implications for program development are discussed.

## Introduction

While many psychologists consider themselves to be scientists, using the scientific method to conduct experiments on human behavior, convincing others of their scientific merit and fellowship among other 'hard' sciences such as biology, chemistry, and physics, has been quite a challenge. Recently, there has been a trend for university departments to change their names and course titles from Psychology to Psychological Science, or other variations highlighting the term science. In 2006, the American Psychological Society voted to change its name to the Association for Psychological Science, emphasizing its scientific mission. But what do students think about the scientific nature of the field of psychology? And what factors influence these perceptions?

Perceptions of psychology as a science (PAS) differ around the world. A study utilizing the PAS Scale (Friedrich, 1996) investigated a sample of undergraduates from four universities in Brazil. Fifty-four percent of students strongly agreed that psychology was a science, and 26% strongly agreed that psychological research is necessary and that training in methodology is important (Morales, Abramson, Nain, Nelson, & Bartoszeck, 2005). In an Australian sample, students viewed psychology to be a science within a few weeks of program commencement and their academic development influenced their view of psychology as a science (Provost et al., 2011). In the U.S., non-majors, including natural science and education majors, perceive psychology to be a soft-science or helping profession. However, psychology majors perceive the major to be more of a hard-science (Bartels, Hinds, Glass, & Ryan, 2009; Gervasio, Wendorf, & Yoder, 2010). Previous research supports the idea that advancement in psychological statistical courses and research method courses is associated with an increase in scientific thinking (Amsel, Baird, & Ashley, 2011; Holmes & Beins, 2009; Friedrich & Camac, 2003).

## Current Study Hypotheses

The current investigation was designed to examine how student perceptions of psychology as a science (PAS; Friedrich, 1996) would change upon completion of introductory and research methods psychology courses. We predicted that students would report an increase in PAS scores from the beginning to the end of all psychology courses, but a larger increase would be reported in research methods based courses which emphasize and/or require research experiences.

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## Method

### Participants

College students ( $N = 297$ ) enrolled in 12 psychology courses over three semesters from two universities participated in our study. The majority of students were from a medium sized public university in the Southeastern United States (84.2%), with the remaining from a branch campus of a large public university in the Midwestern United States. The average participant age was 21.13 years ( $SD = 3.41$ ). Students were enrolled in introductory psychology (INTRO;  $n = 47$ ), scientific communication in psychology (COMM;  $n = 116$ ), research methods (RM;  $n = 59$ ), and a senior thesis course (ST;  $n = 75$ ). Consistent with the makeup of the major, the majority of students were women (81.1%). While a variety of majors were represented, approximately 80% of the sample were psychology majors. There were 12.8% freshmen, 17.5% sophomores, 31.3% juniors, 36.3% seniors, and 2.1% "other." The racial distribution of the sample included 67.7% Caucasian, 22.5% African-American, 5.7% Hispanic/Latino, 1.3% Asian, .3% Native American, and 2.5% "other." Participants received a minimal amount of extra credit for study participation.

### Materials & Procedure

Students completed the PAS scale (Friedrich, 1996) at the beginning and end of the semester. The PAS measure was comprised of 20 questions, including five filler items, with a 7-point Likert agreement response scale. See PAS scale below.

In addition to anticipated course grade, participants also reported their course effort and enjoyment of the course on a 10-point Likert scale.

Participant age, sex, class rank, and major were collected on a demographic questionnaire.

## Psychology as a Science Scale (PAS; Friedrich, 1996)

Listed below are a number of statements. Each represents an opinion regarding some aspect of psychology. You will probably agree with some of these statements and disagree with others; there are no correct or incorrect answers. Read each statement carefully and indicate the extent to which you agree or disagree by circling the appropriate number below each statement.

- |  |   |
|--|---|
| 1. A psychology course is an important part of any person's college education.                                     | 11. Studying specific examples of how psychology is used is the most interesting part of a psychology course.   |
| 2. The different areas within psychology seem very unrelated to each other.  | 12. Government funding of experimentation is as necessary for expanding what we know about psychology as it is for gaining knowledge in areas like chemistry and physics. |
| 3. An undergraduate degree in psychology should be a Bachelor of Science rather than a Bachelor of Arts degree.    | 13. The study of psychology should be seen primarily as a science.  |
| 4. It's just as important for psychology student to do experiments as it is for students in chemistry and biology. | 14. Courses in psychology place too much emphasis on research and experimentation.  |
| 5. An introductory psychology course should cover as broad a range of topics as possible.                          | 15. Psychology courses should spend time covering various job possibilities for people with psychology degrees.   |
| 6. Research conducted in controlled laboratory settings is essential for understanding everyday behavior.          | 16. Psychological research can enable us to anticipate people's behavior with a high degree of accuracy.  |
| 7. Even though each person is unique, it is possible for science to find general laws explaining human behavior.   | 17. Psychologists working as counseling professionals don't need to be so concerned with research findings.   |
| 8. Carefully controlled research is not likely to be useful in solving psychological problems.                     | 18. Psychological theories presented in the media should not be trusted unless they are supported by experiments.   |
| 9. Our ability as humans to believe in any way we choose makes our attempts to predict behavior ineffective.       | 19. Psychology will never be a true science because its predictions of individual behavior are seldom exact and certain.  |
| 10. Psychological advice given in popular books and magazines is often as useful as more research-based claims.    | 20. Students get little benefit from learning about procedures for conducting psychology experiments.   |

## Results

The pre PAS scores among all courses were similar,  $F(3, 293) = 1.05, p = .37$ , while the post PAS scores among all courses were significantly different,  $F(3, 293) = 8.11, p < .001$ . The post PAS scores for ST were significantly higher than the INTRO course ( $p = .002$ ) and the COMM course ( $p < .001$ ). The post PAS scores for RM were higher than the INTRO course ( $p = .09$ ) and significantly higher than the COMM course ( $p = .04$ ). See Figure.

Difference scores were calculated to examine student PAS changes from the beginning to the end of the course. There were significant changes between pre and post PAS scores by course,  $F(3, 293) = 7.21, p < .001$ . The PAS change scores increased more for the ST course ( $M = .259$ ) compared to the INTRO course ( $M = -.042$ ) ( $p = .03$ ) and the COMM course ( $M = -.115$ ) ( $p < .001$ ), but not the RM course ( $M = .086$ ) ( $p = .46$ ). PAS change scores were not significantly different for students expecting As ( $M = .055$ ), Bs ( $M = .003$ ), or Cs ( $M = .081$ ) in the courses,  $F(2, 291) = .46, p = .63$ .

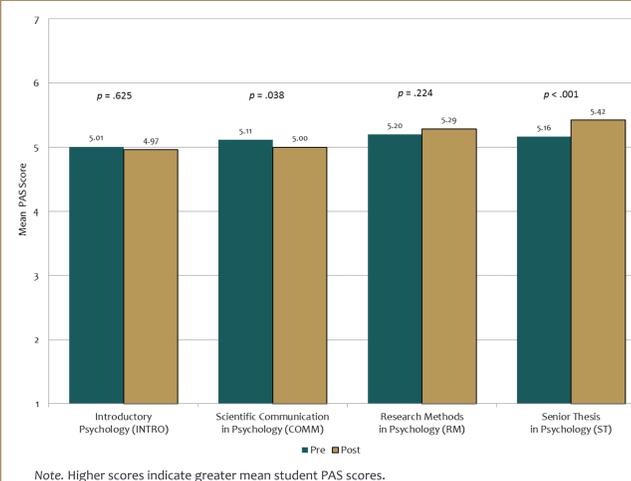
Overall, there were no significant gender differences in PAS score changes,  $F(1, 294) = 2.53, p = .11$ , although men ( $M = .142$ ) reported more positive changes than women ( $M = .005$ ). Within INTRO only, men ( $M = -.042$ ) and women ( $M = -.043$ ) reported similar PAS score changes,  $F(1, 45) = 0.0, p = .99$ .

Although confounded by course, psychology majors ( $M = .067$ ) reported a greater increase in PAS change scores than non-majors ( $M = -.115$ ),  $F(1, 295) = 4.77, p = .03$ .

Overall, there were positive relationships between PAS change scores and participant age [ $r(295) = .12, p = .03$ ], course effort [ $r(295) = .16, p = .005$ ], and enjoyment of course [ $r(295) = .21, p < .001$ ].

No significant differences in PAS scores were found between different professors teaching the same course.

Figure. Mean Pre and Post PAS Scores by Course.



## Discussion

Despite students initially having very strong opinions that psychology is a science (over 5.0 on a 7-point scale), we found increases in PAS scores at the end of ST and RM courses, minimal changes in INTRO, and decreases in COMM courses. The RM and ST outcomes were expected, but the COMM findings were not. The COMM course focused on writing and communicating, which may have made the course seem less research and science oriented.

Previous research has found psychology student perceptions of PAS increase as students complete more psychology courses (i.e., Bartels et al., 2009). However, our study did not show significant differences between pre PAS scores among the different level courses, suggesting number of courses completed is not the only factor influencing PAS beliefs. One-on-one interaction between faculty and students (Bjornsen, 2000), especially working on research as in ST, may be especially important in strengthening psychology's scientific status. Students can further strengthen their perception of psychology as a science through courses which emphasize research methodology and/or require students to complete a research project.

Past research has also found perceptions of psychology as a science differ due to personality differences across genders (Harton & Lyons, 2003). Future research could consider these variables and other influences.

Psychology departments may find the PAS to be a useful tool to assess student attitudes about psychology and consider the emphasis on psychology as a science in their respective program.

## Selected References

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