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# Use of Pre- and Postcourse Surveys to Predict Student Outcomes

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*We obtained data from pre- and postcourse questionnaires given in an Introduction to the Psychology Major course taught for 10 semesters and compared these data with institutional outcomes concerning the students' last known major and their graduation status. We found the questionnaire reliably measured (a) vocational identity, (b) knowledge of course content, and (c) students' knowledge of information-finding strategies. Generally, students who entered the course with high commitment to psychology or who demonstrated the greatest growth in commitment tended to remain psychology majors and earned the bachelor's degree in psychology. We discuss factors that affect these predictive outcomes.*

As the undergraduate psychology major continues to grow in popularity, the challenge to provide accurate advising information to large numbers of students also continues to grow. Faculty members use several methods to communicate academic and career information to students including informal seminars (Lammers, 2001), psychology clubs (Satterfield & Abramson, 1998), and publications such as *Eye on Psi Chi* (see [www.psichi.org](http://www.psichi.org)). Another increasingly popular alternative is the Introduction to the Psychology Major (IPM) course (Dillinger & Landrum, 2002). Just over a third of undergraduate psychology programs offer such a course (Landrum, Shoemaker, & Davis, 2003). Thomas and McDaniel (2004) also provided evidence for increasing interest in career planning courses.

We originally designed our IPM course to provide "truth in advertising" to beginning psychology majors and prospective majors. We were interested determining if the IPM course has a long-term impact on the successful completion of the psychology major. We previously analyzed pre- and postcourse data from students over a period of three semesters (Dillinger & Landrum, 2002). We now have 10 semesters (5 years) of pre- and postcourse data. This study differs from previous work because we also obtained each student's last reported major; graduation status; and, if graduated, whether the degree was in psychology. We

used a factor-analytic approach to determine whether the questions used in the original measure could be represented by a smaller number of constructs. We were also interested in the predictive value of IPM pre- and postcourse questionnaires, such as predicting who remained a psychology major and who graduated with a bachelor's degree in psychology.

## Method

### *Participants*

Participants were students (407 women, 154 men, 68 not reporting sex;  $N = 629$ ) enrolled in the IPM course from Fall 1998 to Spring 2003 at Boise State University. Ages ranged from 18 to 53 ( $M = 23.8$ ,  $SD = 6.7$ ). The majority (93.5%) identified themselves as White or Caucasian; the other 6.5% indicated Hispanic, African American, American Indian/Alaska Native, or Asian American/Pacific Islander. Because not all students completed the pre- and postcourse surveys, the  $N$ s change for each analysis. The most common reason for not completing both measures was absence from class on the day we administered the survey.

### *Materials*

Our precourse–postcourse questionnaire contained 21 items (see Dillinger & Landrum, 2002). Students confidentially provided their names and student identification numbers. In addition to the 10 semesters of precourse and postcourse data, we also obtained data from the Registrar's office concerning each student including IPM course grade (pass–fail); their current declared major; whether they had graduated; and, if they had graduated, whether it was with a bachelor's degree in psychology.

## Procedure

Students completed the survey items at the first and last class meeting each semester of the IPM course. Typically, students completed the survey in about 10 min. After the Spring 2003 semester, we contacted the Registrar's office and obtained the student data.

## Results and Discussion

### Factor Analysis Outcomes

Using postcourse data only, we conducted an exploratory factor analysis using a varimax rotation, eigenvalues  $> 1.0$ , and factor loadings  $> .50$ . This analysis resulted in a four-factor solution explaining 61.9% of the variance (see Table 1). We also analyzed the reliability of each factor using interitem analysis and Cronbach's  $\alpha$ : Factor 1  $\alpha = .93$ , Factor 2  $\alpha = .82$ , Factor 3  $\alpha = .75$ , and Factor 4  $\alpha = .60$ .

Based on the factors created, three yielded adequate reliability. Factor 1 represented the feelings of certainty and commitment to the psychology major. Factor 2 represented an understanding of the various content areas of the course (e.g., types of careers, course requirements, ethical implications, opportunities outside the classroom). Factor 3 best represented students' knowledge about how to find psychological information. One item loaded on two factors; thus, this particular item

did not discriminate well between these two constructs. Additionally, the items that loaded on Factor 4 made sense, but we disregarded this factor because (a) it consisted of only two items and (b) the reliability coefficient (.60) was too low.

### Who Remained a Psychology Major?

We ascertained from the Registrar's office whether enrolled students from Fall 1998 to Spring 2003 were still psychology majors. Additionally, we created a postcourse minus precourse change score for each survey item, because we believed that the change in attitudes over time might help predict who remained a psychology major. Using a multiple regression equation with declared major as the criterion variable ( $R^2 = .20$ ), four predictors emerged from the linear equation,  $F(42, 289) = 3.07, p < .001$ : the precourse answer to "I am committed to the psychology major" ( $B = .290, SE B = .063, \beta = .522, p < .01$ ), the change in "I am committed to the psychology major" ( $B = .153, SE B = .048, \beta = .391, p < .01$ ), the precourse answer to "I am familiar with the type of careers graduates from this program have attained" ( $B = -.080, SE B = .032, \beta = -.178, p < .01$ ), and the postcourse answer to "I have a good understanding of the study skills needed for success in college" ( $B = -.103, SE B = .051, \beta = -.137, p < .05$ ).

Thus, the initial levels of commitment to the psychology major and its positive growth over time were the strongest predictors of remaining a psychology

**Table 1. Factor Analysis Outcomes (Loadings) for Postcourse Items Only**

Items	Factor 1	Factor 2	Factor 3	Factor 4
After this course, I think I'll still be interested in majoring in psychology.	.92			
I am committed to the psychology major.	.90			
Which term best reflects your current feeling toward being a psychology major?	.87			
I want a career that is psychology related.	.86			
I am certain I will be able to work in a psychology-related job.	.74			
I am familiar with the type of careers graduates from this program have attained.		.75		
I am familiar with the jobs a BA/BS-level psychologist can attain.		.73		
I understand some of the disciplines related to psychology.		.68		
I understand the course requirements for the psychology minor at this university.		.65		
I understand the ethical implications of studying psychology and doing psychological research.		.59		
I know about the opportunities in psychology that I can experience outside of the classroom.		.50		
I know how to find information about psychology on the Internet.			.81	
I know how to find information about psychology using PsycINFO.			.78	
I understand the course requirements for the psychology major at this university.		.54	.55	
I feel prepared for any type of post-BA/BS career.				.77
I feel prepared to apply for graduate school.				.72

Note. For clarity, decimal points from factor loadings have been omitted.

major. These findings are similar to those of Chartrand, Camp, and McFadden (1992), who found that a behavioral commitment to the student role (e.g., adequate study habits) related positively to academic performance and satisfaction with the major. In our factor analysis outcomes, commitment to the major is expressed in terms of answering, in a similar fashion, items concerning continued interest in the major, current feelings toward the major, a desire for a career that is related to psychology, and confidence about obtaining employment in a psychology-related job. To some extent, faculty can monitor students' commitment to the major (by asking these and related questions), but also can foster a potential for commitment in the form of providing information about psychology careers and helping students to obtain the skills and abilities necessary for successful employment.

Students who reported being less familiar with the career paths of graduates from our program were more likely to remain psychology majors, which may simply represent a lack of knowledge of the range of jobs available (the course is a 100-level course designed for students to take early in their academic careers, in part explaining the lack of knowledge about psychology and psychology-related careers). Another unexpected predictor of psychology major status was its inverse relation with the postcourse item "I have a good understanding of the study skills needed for success in college." Students who agreed less with this statement tended to remain psychology majors. Perhaps after the course some naïveté still existed about the rigors of our undergraduate psychology program (the only prerequisite to this course is general psychology). Students who did not fully understand the challenges ahead continued in the program without fully understanding the need for good study skills. This notion, however, is speculative, and continued work in this area should focus on clarifying these outcomes.

### *Who Graduated With a Bachelor's Degree in Psychology?*

For this analysis we included data only from those students who had graduated by the conclusion of the Spring 2003 semester ( $N = 166$ ). Of these students, 137 (82.5%) graduated with a bachelor's degree in psychology. Using a stepwise multiple regression approach with type of degree as the criterion variable ( $R^2 = .293$ ), four predictors emerged from the linear equation,  $F(42, 54) = 1.94$ ,  $p < .05$ : the change in scores for the item "I am committed to the psychology major" ( $B = .203$ ,  $SE B = .086$ ,  $\beta = .583$ ,  $p < .05$ ),

precourse answers to the item "I am committed to the psychology major" ( $B = .253$ ,  $SE B = .112$ ,  $\beta = .512$ ,  $p < .05$ ), postcourse answers to the item "I understand the ethical implications of studying psychology and doing psychological research" ( $B = -.236$ ,  $SE B = .097$ ,  $\beta = -.444$ ,  $p < .05$ ), and the change in scores for the item "I understand the ethical implications of studying psychology and doing psychological research" ( $B = .124$ ,  $SE B = .062$ ,  $\beta = .336$ ,  $p < .05$ ).

The lower the postcourse answer to the item regarding understanding the ethical principles of psychology and research, the greater the likelihood of graduating with a major in psychology. This result could merely mean that students, even after the end of the course, did not understand well the ethics of psychology, yet were still motivated and eventually graduated with a bachelor's degree in psychology. Why might students not understand ethics, yet still be motivated? Students (especially those not having a future as researchers) do not need to understand fully the research methods and rules for behavioral research to persist in the major and graduate. For those students who increased their understanding of ethics over the semester, this increase was also predictive of graduation with a psychology degree. Students may have (a) had little understanding of ethics at the beginning of the semester, (b) experienced some growth (although ending at relatively low levels), or (c) sustained a continued interest in psychology. Obviously, this explanation is speculative; it does, however, indicate that continued research in this area may be fruitful.

## Conclusions

Student responses to survey items in an introductory-level IPM course can be significant predictors of commitment to psychology, whether that be remaining a psychology major or graduating with a bachelor's degree in psychology. We found that some items in the precourse and postcourse measures were particularly useful in measuring content delivery and showed promise as a measure of vocational identity for psychology majors (see Table 1 for these factor-analysis results).

What can other psychology instructors gain from this study? First, we provide evidence of survey items that measure (a) students' commitment to the major, (b) an understanding of IPM course content, and (c) students' self-perception of their ability to find psychological information. Future research should continue to examine the factors that influence student

commitment to the major and what role faculty members play in moderating that commitment. Second, studying student answers to particular survey items can help predict who remains a psychology major. Instructors can use this information to help students explore their commitment to the major. Third, we can use these results to predict who graduates with a bachelor's degree in psychology. Understanding the predictors of graduation rates could have some usefulness in curricular design and what instructors should emphasize in the IPM course (e.g., examining topical areas in which nongraduates struggle or graduates excel). We encourage other researchers to use these measures to better understand their students and their pathways to success.

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## Notes

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