

Yoder, J. D., West, R., & Rose, S. (1986). Using Microcomputers to Enhance Students' Interest in Statistics and Other Psychology Courses. *Social Science Computer Review*, 4(3), 371-374.

**Using Microcomputers to Enhance Students' Interest in Statistics and Other Psychology Courses/Janice D. Yoder and Renée West, Webster University and Suzanna Rose, University of Missouri—St. Louis**

Most psychology instructors assume that students generally fear the statistics course, or at least view it less favorably than other course offerings (e.g., Dillbeck, 1983; Mausner et al., 1983). How often have we heard our students and colleagues speak of "sadistics" or "statisticophobia" (Dillon, 1982)? Yet, 72% of 152 four-year colleges and universities surveyed listed a course in statistics as a requirement for a psychology major (Bartz, 1981).

Usage of microcomputers promises to continue to grow in psychology. Computers can enhance psychology's curriculum in their capacities both as objects-that-think (powerful computational tools) and as objects-to-think-with, that is, as tools for teaching logical thinking through programming and interactive demonstrations and simulations. Although the technology is burgeoning, little is known about students' reactions to it. Will a "computer phobia" develop

among psychology majors similar to statisticophobia? Will the addition of computers to statistics and other psychology courses challenge or alienate students? These questions are addressed in this article.

The purposes of the present study are twofold: (a) Although most teachers would agree that many psychology majors feel uncomfortable with statistics, no one has attempted to understand specifically what students fear about the statistics course. (b) As more statistics courses rely on microcomputers and as computers become an important tool in other psychology classes, it is useful to examine students' feelings about computers. For example, the addition of microcomputer usage in the statistics course, if regarded favorably by students, may serve to reduce fear of statistics.

### Method

*Respondents*—Respondents are 98 psychology majors from two Midwestern universities: a small, private (45) and a large, public (53) institution. The 26 men and 72 women range in age from 19 to 48 with a median age of 25. Most are juniors (33%) or seniors (51%) concentrating in general psychology (34%), clinical/community (26%), developmental/educational (12%), or social/industrial (12%) areas of psychology. Most plan future graduate work in psychology (58%), social work (9%), or other postgraduate academic fields (12%). Few are devoted computer users; the plurality (46%) use computers "very seldom," with fully 31% reporting no exposure to computers. Only 9% report frequent computer usage. Furthermore, these psychology majors report little college-level exposure to math and computer courses. Although the majority (55%) took a statistics course, most did not take any computer courses (74%), remedial math (66%), or algebra (54%). Subjects are significantly older at the smaller school; this is the only significant difference found for these descriptors by gender or school.

*Procedure*—Psychology majors taking upper-level psychology courses volunteered to complete anonymously a four-page questionnaire on statistics and computers. Descriptive items concerned their gender, age, academic class, area of concentration in psychology, postgraduate plans, frequency of computer usage, and exposure to math and computer courses. Respondents then finished two incomplete sentences indicating how they feel when they think of taking a statistics or computer course (taken from Dillon, 1982). Majors then were asked if they would take statistics if it were not required for the major, if they would prefer a statistics course with or without computers, if the use of computers in other psychology classes would influence their decision to take those classes, and if they would take a course in computer science. Students also listed their reasons for their answers to these last four items; the open-ended questions were content analyzed.

## Results

As anticipated, the overwhelming majority of students (74%) report negative feelings when they contemplate taking a statistics course. If statistics were not required for the major, fully 48% say that they probably or definitely would not take the course and an additional 19% are unsure. The most frequently occurring reasons given by those who would prefer not to take statistics are: not good with numbers (27%), dislike working with numbers (20%), and think statistics is useless (14%), boring (10%), or too difficult (8%). The minority who would take statistics even if it were not required would do so because they feel it benefits their career (38%), are curious (24%), like working with numbers (10%), and are challenged by statistics (7%).

When psychology majors consider taking a computer course, the majority (53%) report negative feelings. Still, this is a significantly lower number than the 74% who fear statistics. Fully 33% list positive feelings about a computer course compared to only 14% about a statistics course. When asked to choose between required statistics courses that either utilize or omit computers, 60% of all respondents select the computer option. Of those who would avoid statistics as an elective, 53% would prefer a required statistics course that includes computers.

Preference for statistics with computers varies with age. Collapsing age into three categories (below 22 years, i.e., traditional age students; 23–30; and over 30), interest in statistics with computers declines with age. Fully 69% of traditional age students would choose statistics with computers; 60% of 23–30 year-olds; and 51% of the oldest group.

Students feel positively about integrating microcomputers into nonstatistical aspects of their undergraduate training. Seventy per cent report that they would be interested in taking other psychology courses (e.g., Introductory and Social) if they included some computer work; a few would probably (7%) or definitely (3%) avoid these courses. Notably, of the students who would prefer to take a required statistics course without computer applications, 49% would be interested in other courses using this technology; only a handful (18%) would consistently avoid computers. Interest in computers extends even to computer science courses, with 48% of the respondents indicating that they would consider taking a computer science course.

There are no significant differences on the statistics and computer items by gender or school.

## Conclusions and Implications

As expected, fear of statistics is prevalent among psychology majors. The dominant reasons given by students underlying their fears involve discomfort and felt incompetence when working with num-

bers, anticipated boredom, and perceptions that statistics are useless. Problems with working with numbers may reflect students' lack of exposure to college-level math courses. Since many educators agree that a well-rounded liberal arts background is essential for all college-educated persons, advisers of psychology majors may serve their students well by encouraging greater exposure to basic math and computer science classes. Furthermore, the perception that statistics are useless to psychology graduates needs to be dispelled, especially among the high proportion of students planning postgraduate academic work. Students need to realize that whether they do research or simply refer to the work of others, as professionals they will need to be critical of conclusions in journal articles, most of which are based on statistical evidence.

Statisticophobia need not generalize to computer phobia for psychology majors. When computer applications are added to basic statistics courses, many students, even those who would avoid statistics totally if possible, prefer them. This is especially true for students of traditional age. Psychology departments may consider offering two sections of statistics, one with and one without computer applications in order to enhance student's interest in this course. Another alternative is to consider instituting an elective computer lab to complement the basic statistics course.

Beyond statistics, the integration of computers into other aspects of the psychology curriculum is welcomed by the overwhelming majority of students. There are a multiplicity of creative uses of computers in other psychology courses involving simulations, demonstrations, and research data collection (see for example, Bare, 1982; Brothen, 1984). Even the psychological study of students' interactions with computers promises to be an interesting content area for the study of cognitive development (Turkle, 1984).

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