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ABSTRACT

Assumptions that many academic psychologists have concerning the undergraduate research experience are reviewed, and comparisons are made to the educational process in the physical and natural sciences. In addition, the development of undergraduate research conferences is discussed in terms of some general assumptions about science education in psychology. The assumption that a few good methods courses in the undergraduate psychology curricula are sufficient is challenged. It is suggested that the usual course offerings in psychology provide little direct experience with the majority of the techniques and methods, and that the nature of the techniques taught in the research methods courses are biased by the research interests of the instructor. A second assumption is that the goal of the undergraduate curriculum is to prepare students for the demands of graduate education. It is noted that the majority of baccalaureate graduates never go on for advanced degrees in psychology. The University of Texas, Austin, encourages students considering graduate school to undertake additional research courses. A third assumption challenged is that teaching undergraduates to do research will not be helpful in attaining tenure. Although it is the faculty member's own research efforts that are typically rewarded, an undergraduate researcher might be integrated into the established research programs of the faculty. Finally, the assumption that it is better to have undergraduates do a mediocre study than no study at all is acknowledged, since it is important to increase the awareness of research techniques for all undergraduate majors, while at the same time encouraging good and potentially original research. (SW)

Undergraduate research:
Assumptions and expectations

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Abstract

This paper reviews assumptions that many academic psychologists have concerning the undergraduate research experience. Comparisons are made to the educational process in the physical and natural sciences. The development of undergraduate research conferences is discussed in terms of some general assumptions made about science education in psychology.

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Assumptions and Expectations

It is my role in this symposium to review some of the assumptions and expectations that many academic psychologists hold concerning the undergraduate's experience with research training in psychology. That is, I am going to explore what I perceive as some of the prevailing suppositions we have concerning the scientific or research training of the undergraduate in the field of psychology. I hope this will provide my colleagues with a conceptual framework in which their individual contributions concerning undergraduate research conferences can have broader implications for science education in psychology. It will be your decision as to the appropriateness of the assumptions discussed. I will attempt to make my personal biases obvious in most cases.

ASSUMPTION 1 - We do a creditable job of teaching the science of psychology at the undergraduate level. A few good "methods" courses are sufficient.

Given the crisis in science education in general can we really assume this is valid ? A recent article in the APA Monitor by Cordes (July, 1982) quoted an elementary school student as saying that "if a student wants to become a scientist, he practically has to educate himself." With only minor reservations, the typical major in most undergraduate psychology programs could make a similar statement concerning his or her education in the science of psychology. For a discipline that often has to defend itself as being a science as rigorous as any, it

may be useful to examine undergraduate curricula in other sciences. A comparison of the catalog descriptions of psychological offerings with those in any of the natural sciences produces some very noticable differences. For example, in the undergraduate catalogues of the University of Texas at Austin, the undergraduate curriculum in Microbiology has listed fourteen content courses and eleven laboratory courses related to those content offerings. The undergraduate catalog in Psychology has listed fifty-nine content courses and only seven laboratory courses or sections. Three of these laboratory sections are related to statistics courses, and the remaining four are in physiological psychology or learning courses.

For almost every content course in the natural or physical sciences there is typically a mandatory laboratory course or section. Although I am not advocating we be like the natural sciences, I am suggesting that we may learn something about potentially useful approaches to education by comparing ourselves to others sciences. If my experience as a faculty member in six different universities is any indication, the usual course offerings in psychology provide little direct experience with the majority of the various techniques and methods used. Hands-on-training typically occurs only in statistics, research methods, independent studies, and (sometimes) physiological psychology. The nature of the techniques taught in the research methods courses are understandably biased by the specific research interests of the instructor. Thus, the course may ignore, or only marginally cover, entire methodologies such as surveys or quasi-

experimental field experiments. The tendency in psychology to rely heavy on a single technique/methodology course, whether one or two semesters, is very different from the pedagogical approach used in the physical and natural sciences after whom we supposedly are modelled. I am suggesting that we concentrate in doing a better job of training our students in research techniques than the other sciences.

There are certainly communalities in design and analysis regardless of the content area; for example, the use of control groups or the appropriateness of certain statistical tests. However, the unique techniques employed and problems encountered in applied social psychological research are very different from those in visual perception, behavior modification, or psychopharmacology. To a scientist-teacher in vertebrate physiology or inorganic chemistry it would be difficult to teach the content of that area without the students having direct experience with the research techniques that generated those facts. The opposite seems to be the case for many psychologists who teach content courses with little direct-contact with the methodologies involved.

To the best of my knowledge, it is interesting that psychology seems to be unique among the sciences in having large regional conferences specifically geared to undergraduate research endeavors. Are these meetings a response to the need for additional educational opportunities for those interested in the science of psychology ? What is the educational role of the undergraduate conference ? Once that role is established, how do you organize these meetings to do the job effectively ?

ASSUMPTION 2 - The goal of the undergraduate curriculum is to prepare our students for the demands of graduate education.

Is this assumption reasonable, given declining enrollments in most departments and the shrinking job opportunities for most Ph.D. graduates in traditional settings ? The majority of our baccalaurate graduates never go on for advanced degrees in psychology. Yet our undergraduate programs are often geared with this assumption in mind. Simply, not everyone is going to be a Ph.D. psychologist, nor should they be.

Even if the goal were to prepare potential graduate students, we should provide more than only one or two contacts with the research tools of the field. The University of Texas at Austin encourages those considering graduate school to undertake additional research courses. Of the seven previously mentioned "nands-on" research courses available, three are geared primarily for the advanced honors graduate student. Although these courses are certainly important, what about those students who are not going on to graduate school and hence do not take any additional research course work ? Where do these students obtain their appreciation for research ? I personally doubt it comes from the lectures in content courses. The terminal baccalaurate students ought to be enlightened consumers of psychological research.

However, my experience as a consultant in business and industry where a large number of baccalaurate graduates are employed, indicates that they have little appreciation for even the simpliest of research concepts or tools such as statistical

prediction or behavioral assessments. It is difficult for them to see the value of psychological research in business decisions. Janet Spence (APA President-elect) has recently been quoted in the APA Monitor (August, 1982) as restating the admonition that we must learn to "... give psychology away..." if we are going to create a demand for psychology and psychologists. In general American society has traditionally had a very poor understanding of science in general and psychology in particular. Although we certainly need to encourage our best people, is that the sole function of undergraduate conferences ? How can they be planned to do more ?

ASSUMPTION 3 - Teaching undergraduates to do research will not get you tenure.

Despite how I would like to disagree with this assumption I am very much aware that it is true at least in the large, research-oriented institutions. The traditional academic system does not substantially reinforce teaching or directing original research by undergraduates. It is the faculty member's own research endeavors that are typically rewarded and that is perhaps how it should be.

If faculty members are going to effectively encourage undergraduates to do research and at the same time be rewarded with tenure and/or promotions, they must intergrate the new undergraduate researcher into their already established research programs. This certainly deminishes the degree of orginality of the student's work, but it probably enhances the quality of the product and improves its likelihood of publication. If this

joint venture in research is to be rewarding to faculty, the results will be presented at national or regional professional association meetings.

If this is the case, then what purpose is served by the undergraduate paper session ? Are the papers in actuality as good as those at the regional professional meetings ? If not, why not ? Despite my attempts to learn of comparable large scale regional undergraduate meetings in the natural sciences, I have been unable to find such an educational approach in either biology, chemistry, physics, mathematics or computer science. Not even sociology has this phenomena. What demand in psychology has created the undergraduate research conference as its answer ?

ASSUMPTION 4 - Undergraduates may not conduct great research, but it is better to have them do a mediocre study than no study at all.

I would like to suggest we adopt this assumption even if it means that students only replicate classic studies in the field. This in itself could have potential benefits for the science. I am of the opinion that we should increase the awareness of research techniques for all undergraduate majors, while at the same time encouraging our best students to do good, solid, and potentially original research. In the physical and natural sciences, original research usually occurs only after prolonged mastery of the techniques of research, a situation which is not the case in psychology. Certainly Ph.D.'s do not have a "corner on the research market," but they do produce the majority of the meaningful research. Unless the undergraduate is exceptionally bright

and motivated, the research product will be heavily influenced by the faculty mentor. Quality research conducted solely by the undergraduate will be the exception, not the rule. If the research product is good, it should be treated no differently from a Ph.D.'s research endeavors. If you accept these views then what does an undergraduate paper session accomplish ? Does it become a very special kind of research outlet ? Who uses it and why ? In closing I hope that I have challenged my colleagues to examine the broader implications of undergraduate research conferences in psychology. I have raised questions which I hope will be addressed by the other papers presented in this symposium.