Experiment Spot-Checks: A Method for Assessing the Educational Value of Undergraduate Participation in Research
by R. Eric Landrum and Garvin Chastain

For years, psychology departments around the nation have justified the use of subject pools as having educational value for students. That is, they claim that students can learn firsthand about the research process through their participation, and that this out-of-class activity fosters an understanding and appreciation for psychological research. Ideally, there is a dual benefit (to the researcher and the student participant) with minimal risk (typically the time necessary to participate). In the last fifteen years, however, some have begun to question whether participation in a subject pool is a valuable educational experience. A related issue is that of coercion or perceived coercion for students to participate in research. While an interesting issue, it is not the focus of this paper. We attempt to answer the following: (1) Do students feel that participating in research is a learning experience? and (2) Can we have some confidence that the instrument used to measure student perceptions has some validity?

These questions have been addressed in the past with mixed results. Britton developed a questionnaire to assess the ethical and educational aspects of subject pool participation, and found that an experimenter's politeness, student comfort, and the explanation given for performing the experiment rated highly, while the educational value of the experience rated somewhat lower. Britton urged supervisors of subject pools to gather information about the subjects' experiences, and suggested improving the debriefing process as a method of enhancing that experience. Debrieings tend to be seen as a critical component. Coulter suspected that insufficient debrieings were responsible for students rating research experiences as boring, irrelevant, and a waste of time.

Of course, student opinion of research participation is mixed. Although Coulter found students held negative attitudes toward research, Leak found that students viewed research participation positively. In exploring student attitudes toward research, Nimme and Handelsman performed a quasi-experiment with groups of students working in different research situations. They found that students felt that research participation does have some educational value. Further, they recommend adequate debriefings and giving a one-page questionnaire to students for their feedback.

In their survey of graduate departments in psychology, Sieber and Sales noted that some departments have developed an evaluation form to assess educational value. The present study is an extension of that approach, involving the development of an assessment instrument directed to student-participants, and its use by a group of researchers for one academic year.
State University is required to complete some sort of outside-of-class activity exposing him or her to psychological research. Most students choose to be research participants. During the 1993-1994 academic year, all researchers in the psychology department cooperated by having 10 percent of their experimental subjects fill out an experiment spot-check form. Questions on the form are presented in Table 1. Two hundred subjects completed these forms during the 1993-1994 academic year.

**Materials.** Based on a review of the literature and the general concerns about the value of research participation, we formulated six items to which students replied using 5-point Likert-scale (strongly disagree to strongly agree) responses. We also tracked the particular experiment for which the form was completed, the date, the number of other projects in which the students had participated (our students need two research experiences), the semester of participation, and whether or not the student signed the spot-check form (the student's signature was optional).

**Design and Procedure.** Spot-check forms were distributed to all researchers at the beginning of each semester. They were asked to administer this form to 10 percent of their research subjects. Researchers varied in how they selected their sample; for example, those running single-subject sessions administered the form to every tenth subject, while those running group sessions occasionally asked an entire group of students to complete the form.

### Results

Table 1 presents means and standard deviations for the six questionnaire items, as well as information on the number of days into the semester that had elapsed when the experiment was conducted, the semester of participation, the number of times the student had already participated in research, and whether or not the student signed the form.

A factor analysis was performed on the student response data. Factor analysis is a multivariate statistical tool that allows for the examination of multiple relationships between variables simultaneously. The results of a factor analysis identify patterns of response among multiple variables. These interrelationships are often maximized using a variety of mathematical rotations of the resulting matrix of values. In the current study, using a varimax rotation and a minimum eigenvalue of 1.0, the solution converged in 7 iterations. (An eigenvalue is similar to a cutoff value indicating a degree of communality among the clustered variables; iterations refers to the number of rotations necessary to find the optimal statistical solution.) Table 2 shows the factor loadings, scores indicating the degree of expression on any one particular factor (all above 0.5). Factors 1 (educational value) and 3 (professionalism) are the most important. Factor 2, time, seems to be an index of how far into the semester the experiment was completed, and Factor 4, with only one question loading on it, seems to identify disclosure (signature).

### Discussion

Do subject pools have educational value? Our students' answer is yes. Students agreed with statements indicating that participating helped them to learn about psychology and to understand research better. Researchers varied in how they selected their sample; for example, those running single-subject sessions administered the form to every tenth subject, while those running group sessions occasionally asked an entire group of students to complete the form.
Clinical Trials Committees: How Long Is the Protocol Review and Approval Process in Spain? A Prospective Study
by Rafael Ortega and Rafael Dal-Re

Since 1982 regulation of all clinical trial protocols (phases I to IV) in Spain, irrespective of sponsorship, involves mandatory review and approval by (1) the clinical trials committee (CTC) at each participating center, and (2) the Ministry of Health. The regulation also includes guidelines for the composition of the CTCs (which must be approved by the Ministry of Health), and states that they must evaluate ethical and scientific aspects of the protocol, as do ethics review committees in other western countries. The content of the dossier submitted is quite standardized: protocol (according to a 23-item format), patient consent form (also official format), case report form, and updated investigator’s brochure. In recent years, a patient information sheet has also been requested. In addition, health insurance coverage for potential damages for subjects who participate in trials is also required by law. All documents should be in Spanish, but in practice this is limited to the protocol and forms related to patient’s consent.

Studying the protocol review and approval process at the CTC level is relevant because of the impact it may have on the timing of clinical research projects, hence in their proper planning. Delays in initiating research due to this review process have been a source of concern, and they are likely to become increasingly so in the future, when shorter times for the international clinical development of drugs are to be sought actively. In addition, analysis of factors that could potentially influence—either positively or negatively—the time consumed by the review and approval process is also of interest, since the results may bring possible sources of improvement.

Material and Methods

The first 10 drug protocols submitted by our company to the CTCs since 1 July 1992 were evaluated. A database of study and CTC-related features was designed in advance for this prospective study. The following were recorded: type (local or multinational) and phase of protocol, essential features of design (comparative, use of placebo, double-blind, multicenter, etc.), time (days) from submission (by the investigator) to approval and from approval to reception of Coulter, our students disagreed that the experience was a waste of time. These findings, on the whole, provide us with some confidence that students value the educational experience provided by their participation in research, and that our researchers and student research assistants do a good job of treating students fairly and with respect, and provide an adequate debriefing.

Additionally, the spot-check form revealed that most of our students completed research in the second half of the course (70.1 days into the semester), that more students participated in research in the fall semester (69.5% of the total), that the average number of experiments previously completed when filling out the form was 1.45, and that 78.5 percent of the students signed the form.

The results of the factor analyses merely indicate that trends or patterns exist in the students’ responses, and that there are sets of items that tend to evoke similar responses. Interpreting the factors is subjective, but we believe that the most meaningful factors to emerge are educational value and professionalism, factors that make good sense considering the original items and the purpose of the spot-check. Finding such underlying patterns and factors is part of the process of establishing validity of the spot-check questions.

Having current information about the performance and outcomes of the department subject pool is valuable. It provides a snapshot of current performance, a method of confirming the educational value of research participation (accountability), and a vehicle for identifying and solving subject-related problems should they arise. Use of such a spot-check form has other benefits as well. Distributing the form to researchers at the beginning of the semester sensitizes them to these issues, since they know that their research project and personnel will be evaluated. Britton suggests that an experimenter’s behavior may be influenced by the use of a questionnaire. This procedure also emphasizes the importance of debriefing in experimental studies, and the spot-check form clearly captures student opinion in that area.

Other researchers concerned with the educational value of research participation are encouraged to pursue those issues empirically. Based on the psychometric qualities of the questions developed here, others can have confidence in measuring the educational value and professionalism of research participation.

References


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