The Undergraduate Research Assistantship: An Analysis of the Benefits

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This study documents and quantifies the benefits of serving as an undergraduate research assistant based on the results of a national survey of undergraduate psychology educators (N = 211). The survey consisted of a list of 40 potential benefits, skills, and abilities. Respondents rated each of the items on (a) whether their research assistants attain the benefit, skill, or ability and (b) the importance of each item to an undergraduate education in psychology. Factor analysis revealed 2 major themes: The first factor contained items relating to technical skills, such as math, statistics, writing, and effective communication, whereas items in the second factor pertained to interpersonal benefits. This study provides important information for evaluating the value of the assistantship experience.

Psychology has become an increasingly popular field of study among undergraduates, as the number of students majoring in psychology has risen dramatically in recent years. For 1996/1997, the number of baccalaureates awarded in psychology was 74,191 (National Center for Education Statistics, 1999). Students can therefore expect their career paths, such as graduate school or employment, to be highly competitive and should strive to develop skills and abilities that distinguish them from other psychology majors.

There are several opportunities for students to enhance an undergraduate education in psychology, and for students to make the most of their education, they should become involved in activities outside of traditional coursework (Landrum, Davis, & Landrum, 2000). One such opportunity is for students and faculty to collaborate on research or book projects. Jones and Draheim (1994) found their 8-month writing collaboration to be a highly beneficial experience for both student and teacher. Some of the student responsibilities included conducting library literature searches and critiquing drafts of a college textbook written by the professor. Their experience led to benefits for the student, such as improved writing and library skills, and the instructor got much-needed help with a time-consuming project.

The collaborative effort just described is much like the more commonly used undergraduate research assistantship. Educators seem to agree that research assistantships are beneficial to students. Evidence of the popularity of assistantships is revealed by examining the increasing number of papers presented at conferences by students (Kierniesky, 1984; Palladino, Carsrud, Hulicka, & Benjamin, 1982) and the increasing number of colleges utilizing the research assistantship as part of their undergraduate programs (Starke, 1985). Perlman and McCann (1999) found that, in 1996/1997 college catalogs, 28% of the institutions listed Research Participation as an available course. However, as Worthen (1969) noted, psychology educators tend to make assumptions regarding the innate value of the research assistant experience. In other words, educators may assume that one assistantship experience is just like another and that the experience is "inherently valuable" (p. 3). Faculty use a variety of models when working with undergraduate assistants, which leads to a wide array of skills, abilities, and benefits students can gain. Because the research assistantship is becoming increasingly popular, it is important to know what, specifically, about the experience is beneficial and how educators can maximize the benefits.

Limited research exists along these lines. However, studies to date have examined this question in two ways. Some examined the benefits as perceived by faculty members, and others examined the benefits as perceived by students. Faculty respondents reported that the experience is an important preparation for graduate school and that the experience generates excitement and curiosity about the research process (Kierniesky, 1984; Palladino et al., 1982). Additional benefits, such as improved critical- and independent-thinking

skills, which can be useful in occupational pursuits as well, can occur from a research assistantship.

Starke (1985) found that student participants in a research practicum reported benefits such as improved organizational skills as well as increased statistical skills. In addition, many participants stated that they would not have acquired these benefits in traditional coursework and that they were using these skills in further educational and occupational pursuits. Gibson, Kahn, and Mathie (1996) identified specific skills and abilities acquired as a result of the research assistant experience. Student respondents reported that their library, computer, and critical-thinking skills improved. They also found that serving as research assistants exposed them to other valuable experiences, such as working as part of a team and public speaking. Simmons's (1994) study reported similar benefits, including that the experience led to the development of important relationships with college faculty, increased self-confidence, and created a feeling that the student was making an important research contribution.

Seemingly, the benefits of the research assistantship (as reported by students and faculty) overlap in some areas, and yet other benefits are unique to individual studies. The goal of this study was to further pinpoint the benefits, skills, and abilities gained by students through a research assistantship. In addition to asking faculty what they thought was important, we also asked about their ability to actually achieve these research assistantship goals with students. Understanding faculty perceptions is an important first step in quantifying the benefits of research assistantships. If faculty do not believe that the experience is an important one, they are less likely to make the experience available. Additionally, to our knowledge, this is the only study that has asked faculty about what they actually accomplish in addition to what they think it is important. Identifying potential gaps between importance and delivery could provide valuable feedback about the goals and accomplishments of the research assistantship.

Method

Participants

The participants consisted of undergraduate psychology educators selected from the Council of Undergraduate Psychology Programs (CUPP; 1999) directory. All 341 CUPP members received three surveys to distribute among their colleagues who work with undergraduate research assistants.

Materials

The questionnaire used in this study was an original instrument consisting of a list of benefits, skills, and abilities we believed to be applicable to the research assistant experience. After reviewing the literature and some collaborative brainstorming, we chose 40 items for the questionnaire. Respondents rated each of the items on the following two dimensions: (a) how important each goal, skill, or ability is to an undergraduate education in psychology and (b) the extent to which their research assistants attain the goal, skill, or ability. The reverse side of the survey contained two open-ended questions that asked participants to explain the model they use, if any, when working with research assistants.

Procedure

The survey packets included a self-addressed envelope for each survey along with a cover letter that explained the purpose of the study and the assurance that responses would be strictly confidential. The packets were mailed in October 1999. Of the 1,023 surveys mailed, 211 were completed and returned (20.6%). Because survey responses were anonymous, the distribution of respondents by institution is unknown.

Results

Descriptive Statistics

Participants answered 40 items on two dimensions. Mean responses for the "achieve" and "importance" dimensions appear in Table 1. Note that 6 of the top 10 items overlap between the two dimensions, indicating that the participants believed the goal, skill, or ability is important to an undergraduate education in psychology and that research assistants are attaining the goal, skill, or ability.

Factor Analysis Results

A principal component, varimax rotation factor analysis (eigenvalues > 2.0, factor loadings > .50) of the 40 importance items (not the achieve items) yielded two factors. We interpreted the factors as being related to (a) specific skills and abilities and (b) interpersonal goals. Items in Factor 1 included mathematical, statistical, writing, and communication skills. Items in Factor 2 were associated with forming relationships; developing leadership and teamwork skills; and general interpersonal skills such as time management, coping with deadlines, and increased self-confidence (see Table 2 for a listing of items, factors, and factor loadings).

Correlational Results

There were significant correlations between both dimensions for each of the 40 items. In other words, participants who rated a particular item as important to an undergraduate education also rated the item as being one that their research assistants attain or achieve. These statistically significant correlations ranged from a low of .20 to a high of .61, all $ps < .05$. The highest correlations between both dimensions were "develop leadership skills," $r(195) = .61$; "ability to analyze data," $r(199) = .58$; "applies ethical principles to actual re-

Table 1. Mean Responses to Items on Importance and Achieve Dimensions

Question	Importance[a]	Achieve[b]
1. An opportunity to enhance critical-thinking skills	2.69	1.62
2. Preparation for graduate school	2.63	1.84
3. Gains enthusiasm for the research process	2.60	1.80
4. Participates in the data-collection process	2.57	1.88
5. Improved writing ability	2.57	1.21
6. The ability to conduct literature searches	2.53	1.46
7. Develops a one-to-one relationship with a professor	2.51	1.89
8. Influences decisions about attending graduate school	2.51	1.74
9. To be capable of asking effective research questions	2.50	1.34
10. Sees the research process from beginning to end	2.46	1.45
11. Ability to analyze data	2.43	1.30
12. Forms relationships for the basis of letters of recommendation	2.41	1.88
13. Fosters an ability to work independently	2.40	1.61
14. Improved comprehension of journal articles	2.40	1.53
15. Ability to develop clear research ideas	2.39	1.29
16. Applies ethical principles to actual research situations	2.36	1.48
17. Ability to cope effectively with deadlines	2.30	1.51
18. Gets to know faculty members in a department	2.29	1.63
19. An increased comfort level in using statistical procedures	2.25	1.30
20. Improvements in general library skills	2.21	1.39
21. Practice in making oral presentations	2.19	1.08
22. Increased familiarity with a variety of research methodologies	2.18	1.28
23. Improves interpersonal communication skills	2.15	1.38
24. Ability to code data accurately	2.13	1.68
25. Meets other students involved in research	2.11	1.69
26. Gains an increase in self-confidence	2.10	1.58
27. Improves teamwork skills	2.08	1.35
28. Use of statistical programs (e.g., SPSS)	2.08	1.34
29. Use of time-management skills	2.07	1.32
30. Enhanced knowledge of APA format	2.05	1.42
31. Ability to choose appropriate measures	2.02	0.98
32. Generation of writing samples	1.89	1.16
33. Gets practice in manuscript preparation	1.85	1.02
34. Prepares graphs and tables	1.83	1.17
35. Prepares conference presentations for a poster format	1.81	1.33
36. Develops leadership skills	1.77	1.04
37. Improvement of math skills	1.73	0.79
38. Practice in developing surveys and questionnaires	1.63	0.86
39. Opportunity to manage and troubleshoot an entire research project	1.61	0.72
40. Prepares conference presentations in an oral format	1.59	0.70

Note. For the sake of clarity, standard deviations for each item on both dimensions are omitted from the table. This information is available from the authors.

[a]Respondents rated the importance of each item to undergraduate education in psychology, using a 4-point scale: 0 (*not at all important*), 1 (*slightly important*), 2 (*moderately important*), 3 (*extremely important*). [b]Respondents indicated whether they achieve these goals with their students, using a 3-point scale: 0 (*no*), 1 (*somewhat*), 2 (*yes*).

search situations," $r(196) = .56$; and "opportunity to manage and troubleshoot an entire research project," $r(196) = .55$.

Open-Ended Survey Responses

A cursory review of the open-ended survey responses yielded a variety of responses concerning undergraduate research assistant experiences. Many participants highlighted the method by which they select students. For instance, student recruiting may take place by advertising the availability of faculty-initiated research projects, creating a research topic for interested students, or by mentoring student-initiated projects. Some faculty prefer individualized, one-to-one relationships, whereas others promote a team approach with lab meetings. Many faculty prefer a commitment of more than one semester; some ask for a commitment as long as 2 years.

We asked respondents if they followed any particular model in working with undergraduate research assistants, and a number of interesting concepts emerged. A mentor–colleague model was often mentioned, with students working closely with faculty on research. Some described a hierarchical model, in which undergraduate students work with graduate students, and faculty members supervise the graduate students. In the apprentice model, students achieve different levels of responsibility as their performance warrants. A few faculty use a contractual model in which they specify tasks in advance with deadlines clearly delineated. Students clearly have multiple opportunities to gain beneficial research experiences, regardless of the method of delivery.

Discussion

Results of the factor analysis reveal two major themes: Technical skills and abilities comprised the first factor, and the second factor was related to the interpersonal benefits of the research assistantship. The first included skills important for graduate school preparedness and some occupations for a bachelor-degree level psychology graduate. The ability to analyze data, use statistical programs and procedures, prepare a manuscript, and develop surveys and questionnaires are some examples of these skills. Items in the second factor—such as teamwork, leadership and time-management skills, self-confidence, and interpersonal communication skills—benefit students going on to graduate school as well as those planning to find employment immediately after graduation.

The correlational results are not surprising, but they are important nonetheless. One would hope that educators provide experiences for students that are congruent with what they believe is important, and these results suggest that is the case. For each item, there was a statistically significant positive relation between the achieve and importance dimensions. It seems that research assistants are getting practice in those skills and abilities that educators believe are important.

Previous literature has referred to some of the benefits of serving as a research assistant. Many of the reported skills and abilities overlap between this study and prior research. For example, this and other studies report that the experience is an important preparation for graduate school and generates excitement about the research process (Kierniesky, 1984; Palladino et al., 1982). However, additional benefits (as perceived by faculty) surfaced as a result of this study, such as developing a one-to-one relationship with a professor (e.g., the mentor–colleague model) and influencing the decision to attend graduate school.

More important though, this study provides a comprehensive listing of those skills and abilities educators believe to be important in an undergraduate psychology education. This study specifically addresses the question raised by Worthen (1969) regarding the inherent value of an assistantship. Educators can now evaluate various models of assistantship to determine those that are most valuable and effective, based on this comprehensive list of benefits, skills, and abilities. Educators can use this list as a tool to help them examine whether the method they use, when working with assistants, provides experiences that maximize the benefits. In the open-ended portion of the survey, one respondent wrote:

Table 2. Factors and Factor Loading Results for Importance Items

	Factor Loadings	
Items	Factor 1[a]	Factor 2[b]
Ability to analyze data	78	
An increased comfort level in using statistical procedures	74	
Use of statistical programs (e.g., SPSS)	73	
Prepares conference presentations in an oral format	70	
Gets practice in manuscript preparation	69	
Ability to develop clear research ideas	66	
Ability to choose appropriate measures	66	
Prepares graphs and tables	65	
Improved writing ability	63	
Prepares conference presentations for a poster format	62	
Practice in developing surveys and questionnaires	58	
Practice in making oral presentations	57	
Enhanced knowledge of APA format	56	
Improvement in math skills	54	
Opportunity to manage and troubleshoot an entire research project	54	
The ability to conduct literature searches	54	
To be capable of asking effective research questions	53	
Increased familiarity with a variety of research methodologies	52	
Influences decisions about attending graduate school		75
Meets other students involved in research		67
Gets to know faculty members in a department		67
Improves teamwork skills		65
Applies ethical principles to actual research situations		63
Forms relationships for the basis of letters of recommendation		63
Use of time management skills		63
Develops a one-to-one relationship with a professor		63
Develops leadership skills		61
Improves interpersonal communication skills		59
Ability to cope effectively with deadlines		59
Gains enthusiasm for the research process		57
Preparation for graduate school		56
Gains an increase in self-confidence		55

Note. Decimal points have been omitted from factor loading scores.
[a]Specific skills and abilities. [b]Interpersonal goals.

> I don't like to admit this, but these days I'm so busy that I often don't spend as much time as I should helping them to build skills. For example, instead of having them write something and then suggesting changes on multiple drafts, I write because it's quicker. Filling this [survey] out motivates me to spend more time helping them to grow.

In addition, educators can now provide students with examples of the skills and abilities they are likely to gain as the result of serving as a research assistant.

A limitation to this study is that we asked instructors only what they believe students gain from the research process; there is no assurance that students actually do gain the benefits that faculty members expected. One way to elucidate the actual relationship would be to compare the benefits research assistants report with those that educators report. Another way to examine whether the perceived skills and abilities translate to functional skills and abilities would be to assess student perceptions after the students have been employed or have been in graduate school for a few years to determine in what way they have applied the skills and abilities. In addition, it may be useful to examine the difference, in regard to skills acquired, between universities with and without graduate programs in psychology, because it is possible that those with graduate programs use a different model for undergraduate assistantships than those without (e.g., the hierarchical model, in which undergraduates work more with graduate students vs. professors).

The research assistantship is an important part of an undergraduate education in psychology, and continued research along these lines is imperative. There is the potential to make this useful and unique learning experience an even better one.

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Notes

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