WHO DOES A BETTER JOB? WORK QUALITY AND QUANTITY COMPARISON BETWEEN STUDENT VOLUNTEERS AND STUDENTS WHO GET EXTRA CREDIT

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Although undergraduate students are often involved in academic research as volunteers, paid assistants or to receive extra-credit, very little attention has been paid to how well these students perform when they assist researchers. The current study compares the number of surveys gathered at a large local event and the number of missing entries for each survey among students who participated voluntarily, who received extra-credit, and who are required to spend a certain amount of hours of service per semester. Our results show that no significant difference exists among these three groups in terms of the number of surveys completed and the number of missing entries. These results suggest that students who receive extra-credit are as motivated as those who voluntarily participate in a large scale survey. Thus, researchers do not jeopardize survey quantity or quality by giving extra-curricular credits to students when a large scale survey needs to be conducted.

Undergraduate college students play a great part in academic research by participating in experiments, surveys, or by assisting faculty. For example, in Millard and Grant's study (2006), undergraduate students served as judges to evaluate magazine photographs. Similarly, Goodin et al (2011) tested the validity of their content analysis with undergraduate students by asking them to rate multiple pictures. In Rau and Durand's study (2000), undergraduate students were trained and conducted interviews for a study to examine academic ethics of college students. Although the practice of undergraduate's involvement has been widely accepted, very few studies examined the quality of data yielded by undergraduate students who assist with data collection. Moreover, it is unknown if there is a difference in data quality between students who voluntarily participate in a project without any reward (such as payment or extra credit for a course) and students who receive a reward.

It is reasonable to assume a difference between purely voluntary students and students receiving a reward in terms of motivation and completion of a task. Pearce (1983) compared volunteer workers and employees in comparable organizations. He did not find a significant difference in intrinsic motivation (interest in job, enjoyment of doing the work, etc.) between the two; however, he found a significant difference in service motivation (a chance to make a real contribution, identification with the mission of the organization, etc.) with volunteers showing a higher service

motivation than employees. He further found that volunteers showed greater job satisfaction and less intent to leave than employees (Pearce, 1983). A more recent study yields similar results. Beeher, et al. (2010) examined required volunteers and non-required volunteers among undergraduate students, and found less motivation among required volunteers than non-required volunteers. The study also found a higher level of university commitment as well as university satisfaction among non-required volunteers than required volunteers.

Above studies indicate that 'no strings attached' volunteers are more motivated and satisfied. These findings imply that among students who participate in research, those who receive extra credit are less motivated than students who voluntarily participate in research. In our study, we intend to compare data quality and quantity between three different groups of students who participated in a survey research. The study will compare the number of questionnaires completed by each student per shift and the amount of missed entries per survey with special focus on students' volunteer status. Study results will contribute to future research which involves students' participation as interviewers/investigators.

Numerous studies have examined students who participate in research and their results are inconclusive with respect to relationships between participation in extra credit activities and their characteristics including demographic characteristics (Harrison, et al., 2011; Elicker, et al., 2010; Padilla-Walker, et al., 2005; Henley & Savage, 1994). Padilla-Walker et al (2005) found that students who do not participate in research for extra credit are significantly more likely to earn less than an average grade than those who participate. Similarly, Harrison et al (2011) found that students who participate in extra credit showed significantly higher pre-extra-credit grades than those who did not. Padilla-Walker et al (2005) further found that those who do not participate scored lower in motivation than those who did participate. Henley and Savage (1994) found no relationship between frequencies of participation in extra credit activities and students' grades, race, and academic year. Likewise, Elicker et al. (2010) found no difference in expected grade, gender, and race, although in their study, participants were a little older than non-participates.

Methodology

Students at a midsize university in a rural area in the Northeast were recruited to participate in a survey conducted at a local fair. The fair is a nine-day event which draws over 400,000 attendees each year, and during the fair week, local schools up to high school are out of session. Since the event is massive relative to sizes of surrounding areas/towns, the local visitors' bureau requested the university research center to examine the magnitude of the economic impact of the fair to local areas. The survey instrument was approved by the institutional review board at the university. To gather as many surveys as possible, the research center needed a large amount of student volunteers who could work as the survey crew.

Several instructors in the college of liberal arts offered extra credit for their courses if their students joined the survey team. Some students participated to meet their community service requirements while other students participated voluntarily. All the students who planned to join the survey team were required to attend an hour-long training session to learn rules and manners on how to conduct the survey at the fair. At the session, students were instructed to read each question on the questionnaire to a respondent and circle/fill in an answer by themselves. It was emphasized that questionnaires were not to be given away to respondents. The survey was conducted on four days (Tuesday, Wednesday, Friday, and Saturday) during the fair week in September,

and there were two shifts (morning and afternoon) on each of these days. Each student was asked to sign up for at least one four-hour shift. When they signed up for their shift(s), they received a survey team t-shirt and an admission ticket to the fair. On the day of the survey, each student was required to check in with the research assistants on the fair grounds and were assigned a location to survey. There was no minimum or maximum number of questionnaires that students were required to complete during their four-hour shift, although students were encouraged to complete each questionnaire with as much detail as possible and to collect as many surveys as they could.

The total number of usable questionnaires gathered was 1,211. The data gathered from the survey included the name of the student who conducted the survey. For this study, the students were grouped into three: those who were receiving extra-credit (Extra Credit Group: n = 29), those who were to meet their service requirements (Service Group: n = 25), and those who do not belong to either group (Volunteer Group: n = 37). For each student, the total number of questionnaires conducted per shift and the number of missing answers per questionnaire were obtained. The total number of questions examined for each questionnaire is 38, and each question missed was counted as one. After summing the total number of missed questions per questionnaire, the mean missed number per student was calculated.

Results

Number of Questionnaires

Out of 1,211 questionnaires, forty-one questionnaires did not have a student name; thus these were excluded from the analysis. The mean number of questionnaires completed by the Extra Credit Group is 12.0 with the standard deviation of 7.36. For the Service and Volunteer Groups, these are 12.08 (St. Dev. 8.50) and 10.32 (St. Dev. 6.86), respectively. Thus, the Volunteer Group shows the lowest mean number of questionnaires while Extra Credit and Service Groups are very similar in terms of the mean number of questionnaires conducted during a four-hour shift. To test if these differences are statistically significant, ANOVA was conducted. The ANOVA result is presented in the last column of the table. It shows that these means are not significantly different from each other ($F = 0.57$, $p = .566$).

Further, the median number of questionnaires collected for all three groups do not differ greatly: 9 for the Extra Credit and Volunteer Groups, and 10 for the Service Group. Interestingly, however, the modes seem somewhat different by group. The mode for the Service Group is 6, while that for the Extra Credit is 9 and for the Volunteer is 15. It is also worth mentioning that the minimum number of surveys collected was 1 for Service (n = 1) and Volunteer (n = 3) groups while that was 3 for Extra Credit (n = 1), and the maximum number was 30 (n = 1), 32 (n = 1), and 37 (n = 1), respectively (results not shown); thus each group had a wide range in the number of collected questionnaires.

Table 1. Descriptive Statistics and ANOVA Results

Variable	Extra Credit		Service		Volunteer			
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	F	p
Number of Questionnaires	12.00	7.36	12.08	8.5	10.32	6.86	0.57	0.566
Number of Missing Answers	4.77	2.55	4.27	0.89	4.73	1.26	0.50	0.610
N	29		25		37			

Figure 1. Number of Questionnaires Completed

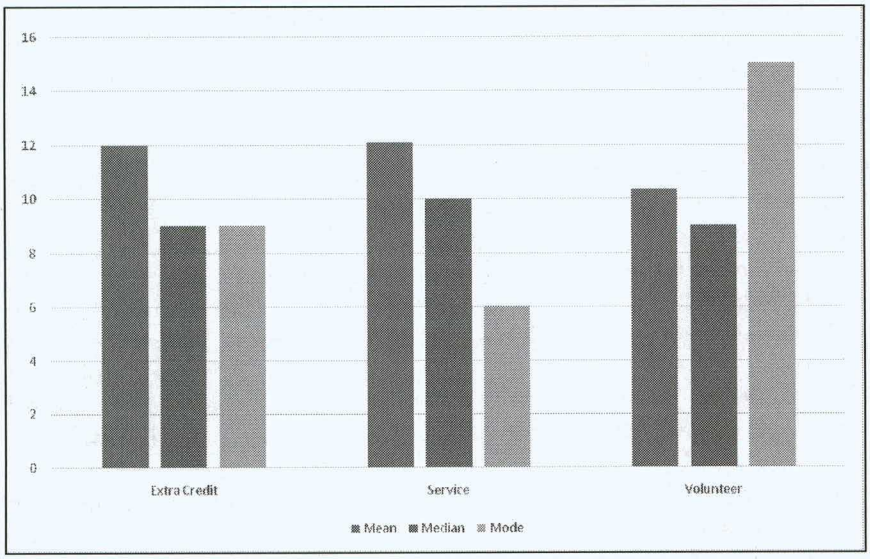
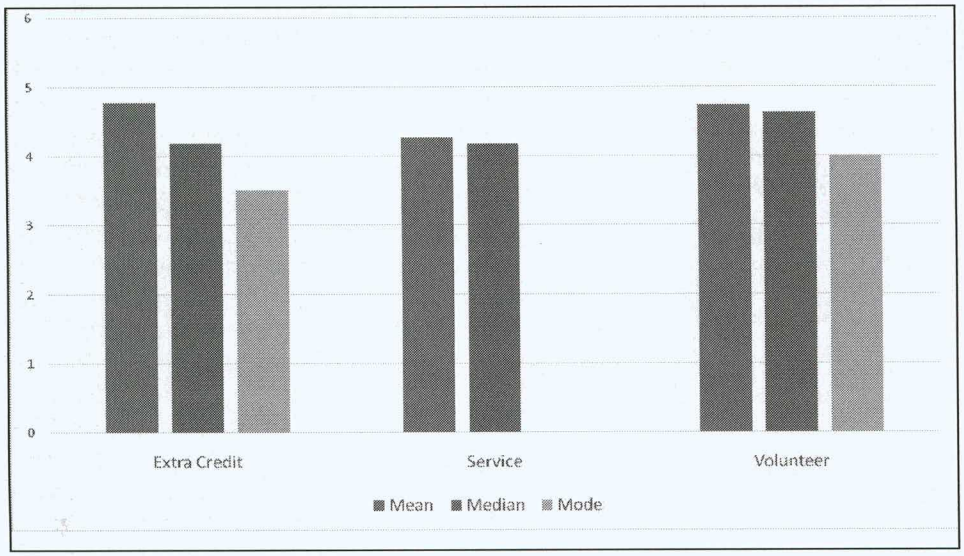


Figure 2. Number of Questions Left Blank



Number of Missed Questions

Second, the number of missing answers was compared by group. As shown in figure 1, the mean number of missed questions was also similar across the groups. For the Extra Credit Group, the mean number missed was 4.77 with the standard deviation of 2.55, and that for the Service Groups was 4.27 and 0.89, respectively. For the Volunteer Group, the mean missed was 4.73 with the standard deviation of 1.26. The ANOVA result shows the differences are not statistically significant ($F = 0.50$, $p = .610$).

The median also falls very closely across the groups: 4.18 for the Extra Credit Group, 4.17 for the Service Group, and 4.61 for the Volunteer Group. The mode is 3.5 for the Extra Credit Group and 4.0 for the Volunteer Group, while there is no mode for the Service Group. The minimum number of questions left blank was found to be approximately 2 for all the groups. However, the maximum number of questions left blank varied by group: 6.5 for the Service Group, 8.9 for the Volunteer Group, and 16 for the Extra Credit Group.

Quality vs. Quantity

Lastly, a relationship between quantity and quality was tested to see if students who were able to collect many questionnaires were not careful to complete each survey with many questions left blank. Or, conversely, they may be motivated enough to gather as much information as they could by being persistent. A correlation coefficient between the two variables, the number of questionnaires collected and the average number of questions left blank was found to be not significant ($r = -.166$, $p = .115$, result not shown). This indicates that a larger number of questionnaires collected do not end up having many questions left blank or vice versa.

Discussion

Our study compared the quality and quantity of questionnaires gathered by undergraduate students by their participation status: extra-credit, service requirements, or volunteers. The quality was measured with the number of questions left blank per questionnaire, and the quantity was measured with the number of questionnaires collected during a four-hour shift. Contrary to an earlier study which found greater motivation and commitment among volunteers than among 'required' volunteers (Beeher et al, 2010), our results revealed that there was no difference in both quality and quantity across these three groups. The results suggest that students who participate in survey research for extra-credit or to meet their service requirements are as motivated and committed as their counterparts who participate purely voluntarily. This further suggests that offering extra-credit will not jeopardize survey results, data quality, and efficiency of data collection.

It is important to note that there was a great variability *within* each group. Although the average number of questionnaires collected during a 4-hour shift was between 10 and 12 across the groups, the range was 29 for the Service Group, 31 for the Volunteer Group, and 34 for the Extra Credit Group. Thus, some students do very little while others work hard, regardless of their volunteer status. Similarly, the number of questions left blank varies greatly. The average number of missed answers for a particular student in the Extra Credit Group is 16, out of 38 questions. This means the student only completed 42 percent of each questionnaire. Although this is an extreme case, there is one student in each group who missed an average of eight questions, indicating nearly one fifth of the questions were left blank.

Implications from our results are that recruiting undergraduate students by offering extra credit and by seeking groups of students

who are required to do community service are both viable options that yield similar data quality and quantity for large survey research projects. Unless each student is required to do a set amount of work during a given time, it seems unavoidable to have some students who do very little.

The current study is unique in terms of work quality and quantity comparison among students, and our results may help researchers' decision to utilize undergraduate students. Since the study was exploratory, there is some room for improvement for future research. First, we did not gather information regarding what kind of extra credit students were given from the six instructors whose students participated in the survey research. If an instructor gives students a pre-set amount of extra credit, students may not have any reason to gather many questionnaires. Second, this is a preliminary study, we were not able to obtain students' characteristics such as major, GPA, class standing, age and gender. Several studies have found students who participate in extra credit activities have better grades and are a little older than those who do not participate (Elicker et al., 2010; Harrison et al., 2011; Padilla-Walker et al., 2005), and it would be beneficial to control these factors in future research.

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