College Students, Majors, Job Prospects, and Financial Behavior

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Abstract

Research suggests that students who major in engineering, business, or health-related fields are more likely to have higher wages than students majoring in social sciences, humanities, or education (Thomas 2000). Accordingly, we investigated the relationship between students' major and their financial behavior. We also examined the relationship between students' willingness to take on additional debt and their expected earnings after graduation. We found that having a major associated with higher expected earnings leads to positive financial behaviors and that the anticipation of higher salary jobs indicates more willingness to take out loans for additional classes.

The cost of a college degree continues to rise and as a result its potential economic return seems more uncertain. Consequently, students facing this trend must recognize the importance of their college major decision. While students have a variety of ways for choosing their major, certain factors such as expected financial return to education are becoming increasingly important. Research into this topic helps students make informed decisions about their college major and encourages further investigation into the value of students' educational experiences.

There is a breadth of literature on the topic of college students and financial behaviors, which includes students' buying behavior, willingness to take on debt, and students' financial literacy (Wang and Xiao 2009; Norvilitis and MacLean 2010). In the past, college students have been spending more on their education, putting them at risk of accumulating large amounts of debt (Lyons 2004). For this reason, it is important to examine college students' knowledge about debt, as well as how they invest in their education. The relationship between college students and their financial behavior is complex. Thorough research of the topic will help illustrate how choice of major and job prospects act as variables in determining students' financial behavior.

Therefore, this research explores how and why college students choose their majors of study, what college students do to ensure job prospects and compete in the job market, how much debt college students take on and why, and finally, the importance of investment in education.

Literature Review

Academic Major Choice

Due to the increasing cost of college and university tuition, more and more students are graduating with large amounts of debt (Rothstein and Rouse 2010). For this reason, there is a variety of research exploring the relationship between the amount of debt students acquire and their choice of major. For example Montmarquette, Cannings, and Mahseredjian (2002) analyzed data from the National Longitudinal Survey of Youth (NYSL) to examine college students' major choice based on expected earnings. They found that economic return heavily influenced students' decision of major (Montmarquette et. al., 2002). However, another study by Rothstein and Rouse (2010) contradicted this finding. Rothstein and Rouse looked at the administrative records of one university to determine how debt affects students' employment after graduation. After analyzing their data, Rothstein and Rouse report two different findings: (1) students with debt are more likely to choose a major in the humanities and social sciences and (2) debt is associated with choosing a major in economics or business, both of which were defined as leading to high-salary jobs. As a result, there is disagreement between the two articles: Montmarquette et al. (2002) concludes that economic return influences students' major choice whereas Rothstein and Rouse (2002) disagrees and suggests that debt has little influence on students' major choice.

Similarly, Thomas (2003) explores how major choice at both private and public institutions affects students' earnings and accumulated debt after graduation. Research found that majors in education and history earn relatively less in comparison to all other fields, and majors in

business, engineering, and science yield more earnings (Thomas 2003; Montmarquette et al., 2002). Evidence suggests that when students incur less debt, they are more likely to find positions in lower-paying jobs in public service industries (Rothstein and Rouse 2011). Furthermore, students who majored in engineering and history are more likely to pay off their debt sooner after graduation in comparison to students from the humanities or psychology because of debt-to-earnings ratio (Thomas 2003). Ultimately, students from private institutions find themselves in greater debt after graduation compared to students from public universities (Thomas 2003). However, students at private institutions felt their investment in education was worthwhile (Thomas 2004). Thomas' (2003) findings suggest that the investment in a private college education has a positive impact on earnings.

College Student Financial Behaviors

Different studies have distinct ways of measuring and defining financial behavior. Some studies conceptualize financial practices in terms of more general day-to-day behaviors. For example, they examine students' budgeting tendencies, spending habits, and financial accountability (Hayhoe, Leach, Turner, Bruin, and Lawrence 2000). Meanwhile, other studies look at more long-term behaviors in relation to college expenditures and explain how the rise of debt burdens, augmented financial aid, and increased student loans have contributed to students refraining from some typical post-graduation expenditures like getting married or purchasing homes (Rothstein and Rouse 2010). Overall both approaches contribute relevant information to the discourse on college student financial behavior.

Studies focusing on students' long-term behaviors illustrate how spending and consumption tendencies are closely related to the earnings students expect to get after graduation. Those who anticipate lower financial returns to their college degree are more willing to curtail their large-scale expenditures shortly after graduating (Kidwell and Turrisi 2004). For

that reason, students' awareness of their potential post-graduation economic situation corresponds with a greater awareness of their long-term financial behaviors.

Research that looks at short-term financial practices demonstrates how students' potential financial returns to education after college impact their behaviors while they are still in school. College students who are more interested in minimizing their debt-to-earnings ratio after college tend to engage more in budgeting and spending control while in college (Kidwell, Brinberg, and Turrisi 2004). Furthermore, other studies suggest that contentment with educational experience and academic performance contribute to better financial management practices and vice versa (Hayhoe et. al. 2000; Xiao, Tang, and Shim 2008). Therefore, students tend to adjust their daily spending habits to increase their capacity to finance a wide range of college experiences like extracurricular activities, study abroad, and internships (Roulin and Bangerter 2013). Students typically pursue these in an effort to reinforce their job prospects and enhance their potential for financial success (Rothstein and Rouse 2010).

There is a lack of research on the explicit relationship between financial behaviors and college major choice. Therefore, since so many factors affect each of these topics, the connection between the two is not always entirely clear. Nevertheless, the literature indicates that students tend to use expected earnings as a strong factor in their major choice and this relates closely with their financial behaviors. As a result our first hypothesis proposes that*:*

Students who chose their major at least partly because of its expected earnings tend to engage in more positive financial behaviors compared to those who didn't choose their major for its expected earnings.

Debt and Financial Behaviors

Between the years 2000 and 2011, college costs at private institutions increased by 31%, and are continuing to rise (Khan 2013). At the same time, median household income decreased each year between 2007 and 2011 (Noss 2013). These patterns have resulted in students

borrowing more money to pay for college and graduating with increasingly large amounts of debt (Khan 2013). A body of literature exists that explores relationships pertaining to students' majors, how much money they borrow to pay for college, and their financial returns to education. Human capital theory holds that students will choose the optimal amount and type of education in order to maximize their financial returns to education (Betts 1996). Past research complicates this theory by supporting some studies and contradicting others, yet it remains an important basis for researchers' understandings of certain behaviors and motivations. For example, a study conducted by Thomas (2000) explored the debt-to-return ratio of students in various fields of study and at various institutions, and found that students' earnings and debt ratios varied by area of study. This indicates that students with a higher debt-to-earnings ratio do not necessarily choose their area of study based solely on the financial returns to education. Rather, the quality and prestige of an institution plays an important role as well, requiring students to balance their desire to attend a more prestigious institution with their ability to access it financially (Thomas 2000). Thomas (2000) found that students do choose to take out more loans in order to attend higher-quality institutions, taking into account that a degree from a more prestigious institution may lead to higher earnings. Thomas' (2000) findings showed that students who attended private colleges borrowed significantly higher amounts to pay for their education, and while they experienced earnings about four percent higher than graduates from public colleges, they had debt ratios that were 57 percent higher. In this way, students' efforts to maximize earnings by attending a more prestigious institution supports the idea that students' use human capital theory, but sometimes in inappropriate ways.

Previous research addresses this gap between students' future salary expectations and their actual knowledge of wages. Betts (1996) conducted a study that explored students' knowledge of wages and their expectations for financial returns to education within their field. He found that there is a disconnect between what students know about post-secondary financial aid and actual college costs which then prevents them from making fully rational educational

decisions when it comes to accruing debt. The findings of a study by Chan, Chau, and Chan (2012) verified that most college students do lack knowledge about investment and loans, and indicated that increased knowledge would lead to better financial behaviors pertaining to budgeting, planning, and accruing debt while in college.

Enhancing Job Prospects

There are many ways for college students to establish a competitive advantage to ensure job prospects after graduation. Students sometimes declare a major in a specific field that matches their career interests, others gain experience in extracurricular activities to create a competitive résumé (Robst 2007; Roulin and Bangerter 2013). Students are consistently trying to add specific skills and experiences that they believe will give them an advantage when entering the job market.

Research has found that students who find jobs that are in line with their college major are likely to have higher wages than students whose majors do not match their career (Robst 2007). The results also describe how graduates whose majors provide them with more general skills, like those at a liberal arts institution, have a much higher chance of being mismatched with their career, but also have a low cost of being mismatched (Robst 2007). This suggests that liberal arts graduates have many different transferable skills that they can apply to different careers (Robst 2007). Another factor in job prospects is the income that is associated with certain majors. A study by Thomas (2000) found that engineering, health related fields, and business majors are more likely to have higher wages than education, humanities, and social science majors. This study can help explain the reasoning behind students' major choice and the ways in which they believe their major will aid them in finding a job after graduation.

Another way students enhance their résumé is by participating in extracurricular activities in order to become more well-rounded individuals. Roulin and Bangerter (2013) investigated whether or not extracurricular activities really give college students a competitive

advantage in the job market. The study found that many students were participating in extracurricular activities to gain more experience and to distinguish themselves from other potential candidates in the job market. Today simply having a college degree is not enough and students feel it is important to gain experiences from additional educational experiences as well (Roulin and Bangerter 2013). Therefore, it is evident that students are more willing to take out additional loans in order to engage in extra activities that will make them more well-rounded and employable individuals in the future. Accordingly, our second hypothesis suggests that:

Students who intend to work in jobs associated with higher salaries are more willing to take on (additional) debt to enhance their educational experience compared to those who do not intend to work in jobs associated with higher salaries.

Overall, the literature on college major, job prospects, and financial behaviors highlights a wide variety of engaging information about college undergraduates. Students' major selection, willingness to take on debt, job prospects, and financial habits are all areas that require further research and consideration. This research explores these topical areas more thoroughly and attempts to expand on the foundational work that previous research has established.

Methods

After conceptualizing some ideas pertaining to our topic, we conducted a focus group to better understand our subject and find specific elements for further exploration. As a result, we had better perspective on our research questions and we started forming hypotheses and questions. We then created an online survey and sent it out to St. Olaf students. The questions on our survey were part of a larger survey that our quantitative research methods class created. The participants in our survey remained anonymous. The survey was sent out fall 2013 and was open for eight days. The people who were asked to participate in this survey received several email reminders.

Sampling and Sampling Procedures

Our target population was the St. Olaf student body. We obtained a group of students who fit our targeted population by removing some individuals from our sample. We excluded any student who is under the age of 18 years-old, anyone who is over the age of 25 years-old, anyone who is studying abroad this semester, part-time students, anyone who participated in our focus group, students from the two quantitative research classes, and the teacher's assistant. This helped us acquire unbiased responses for our results. As a method we used simple random sampling in which every member of the target population had an equal chance of being selected (Neuman 2012). Our sample consisted of 530 undergraduate students at a private liberal arts college, and 196 students responded. Therefore, our response rate was 39.6 percent. From our survey data we found the frequencies of gender and class year in our sample. Our sample contained 50 respondents who identified as male and 138 who identified as female. The sample also contained 55 first-years, 51 sophomores, 39 juniors, and 41 seniors.

Variables

We determined our independent variable, *major choice*, by asking respondents to list their major(s) and concentration(s) in an open-ended question. Additionally, we asked respondents to indicate the level of influence of given topics (area of interest, expected earnings, proficiency in subject area, and parental/guardian expectation) on their choice of major. We utilized a five-item Likert-type scale to measure each topic and provided categories that included: *no influence, some influence, moderate influence, average influence,* and *high influence*. We then coded the responses as high-salary job or low-salary jobs according to the literature (Montmarquette, Cannings, and Mahseredjian 2002; Rothstein and Rouse 2011; Thomas 2000).

We conceptualized our dependent variable, *financial behaviors*, as the tendency of students to responsibly monitor their finances. Those that exhibit "good" characteristics track

expenses often, save money monthly, do not spend impulsively, never fail to pay credit card debt on time, and set spending limits. We asked respondents, *"While in college, how often do you engage in the following activities every month?"* The activities used to measure positive financial behavior included *track expenses, spend impulsively, save money, set spending limits, and overdraw money from bank account.* Respondents indicated how often they perform each item by using a five-item Likert-Scale, which included *almost never, rarely, sometimes, and almost always.* This measure indicates how well students keep track of their spending on a monthly basis and how responsible they are when it comes to finances.

We conceptualized *expected earnings* as the annual income students anticipate to earn in their first two years after college. Respondents chose from the following ratio response options: $0, $1-$9,999, $10,000-$19,999, $20,000-$29,000, $30,000-$39,000, $40,000-$49,999, $50,000-$59,999, $60,000 or more.

We operationalized our second independent variable, *job prospects*, as students' intent to work or students' expectations for careers and annual salaries during the first two years after college. We asked participants, *"Which of these opportunities are you most likely to pursue first in your first two years after graduation?"* Respondents chose from business/corporate job, post-graduate service program (Lutheran Volunteer Corps, Peace Corps, etc.), Non-profit sector, Government job, Health-care job, Lower-level service-industry job (such as restaurant server or retail sales), Graduate school (such as Masters, Ph.D., medical school, law school, etc.), or other. If respondents chose other, they were asked to explain. We recorded the responses as high-salary job or low-salary jobs according to our literature review.

We operationalized our third dependent variable, *willingness to take on (additional) debt*, as students' willingness to take on more loans than are necessary for completing the minimum requirements for a degree, in order to engage in extra coursework and experiential learning. Respondents chose from a list of possible reasons to borrow money, including study abroad, internships, summer classes, course overload, and extracurricular activities (i.e. club sports,

honor societies, private lessons, etc.). We utilized a five-item Likert scale to measure participants' willingness to use additional finance for each activity: *very unwilling, unwilling, somewhat willing, willing, very willing*.

Validity and Reliability

Our study had relatively high content and face validity. On the surface the variables were logical ways of measuring the hypotheses we proposed and made sense in relation to previous research. According to Neuman (2012), content validity refers to whether or not the full content of a definition is represented in a measure. For each of our hypotheses, we carefully specified and defined each of the variables, and constructed our questions in order to measure each of these variables and cover all of the content within our definitions. We also conducted a 90 minute focus group to help us conceptualize our variables and refine our hypothesis. There were six participants in total. We asked them questions pertaining to how they decided on a major, financial behavior, and potential job prospects. In addition to the literature we reviewed, we used the responses we received from this focus group as a foundation of our topic and survey questions. Furthermore, to achieve face validity--the indicator really measures the variable as judged by the scientific community (Neuman 2012)--our professor Ryan Sheppard assessed our measures for validity.

Reliability in quantitative research refers to dependability or consistency, in which measurements result in repeated, stable outcomes. Neuman (2012) specifies four ways in which researchers can improve the reliability of their study. We addressed two of these methods in our measurement. The first method we implemented was to clearly conceptualize our constructs. We did this by specifying and defining each dimension of our hypotheses, and formulating questions that measured each dimension separately. We addressed the second method, which is to increase the level of measurements, by providing precise measurement categories for the questions (Neuman 2012). Where it was appropriate, we used 5-item Likert

scales that provided more refined, precise categories for the measurement of our constructs in order to decrease the likelihood of receiving vague or irrelevant information from the participants.

Ethical Concerns and Resolutions

The first ethical issue that we had to address in our research was deception. We intentionally created a very transparent cover letter that explained our purpose, sponsor, and the principle of voluntary consent. This letter also included the participant selection process, risks or potential discomforts, the anonymous nature of the study, and how to access the results after completion. All of these components relate to the statement of "informed consent" which is a process through which researchers guarantee particular ethical protections through an explicit agreement with participants (Neuman 2012).

Next we had to consider how we could ensure the privacy of participants. Neuman (2012) explains that researchers must mask the identity of the respondent and keep the individual unknown to achieve anonymity. We accomplished the task of hiding respondents' identity by representing them as a number. Finally, we protected our respondent's confidentiality. Confidentiality, unlike anonymity, may include the participants name but researchers keep their information private and do not release it to the public (Neuman 2012). Since we are keeping respondents anonymous, we ensure confidentiality by using responses from participants for academic purposes only. This assuages any concern about legal implications or the media reporting on individual's private information.

Another ethical concern that we addressed was minimizing the harm and discomfort of our respondents. Our cover letter made it clear that if respondents were uncomfortable answering any of the questions then they had every right to not give a response. We also tried to word our questions in unobtrusive ways to avoid respondents feeling uncomfortable or incriminated by responding.

Results

H1: Students who chose their major at least partly because of its expected earnings tend to engage in more positive financial behaviors compared to those who didn't choose their major for its expected earnings.

In our first hypothesis, we examined the relationship between the influence of expected earnings on one's major and an index of positive financial behaviors. Since both variables are normally distributed and our hypothesis was directional, we did a one-tailed test using Spearman's rho. The correlation coefficient was .010, which indicates a very weak relationship. The statistical significance is .446, which means there is no statistically significant relationship at the $p < .05$ level. Rho (187) = .010, $p > .05$

Correlations

			Major: Expected Earnings	Index of Positive Financial Behavior (5 Items)
Spearman's rho	Major: Expected Earnings	Correlation Coefficient	1.000	.010
		Sig. (1-tailed)	.	.446
		N	193	187

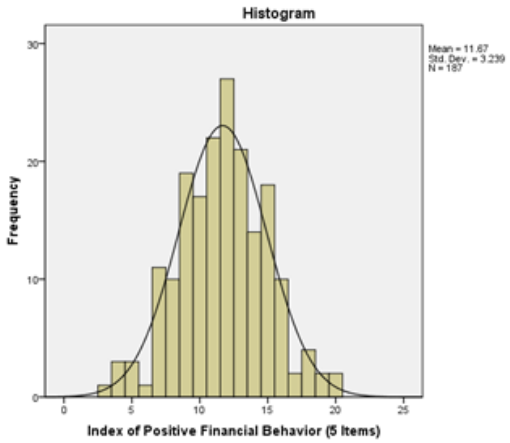
In addition, we performed an independent samples T-test between majors that are or are not associated with high expected earnings to see if there is a significant difference in financial behaviors between the two groups. The significance level for Levene's Test for Equality of Variances was greater than .05, therefore we could not assume equal variances. The results, however, still did not show a statistically significant difference between the two groups.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Index of Positive Financial Behavior (5 Items)	Equal variances assumed	.280	.597	-1.009	160	.314	-.518	.514	-1.533	.496
	Equal variances not assumed			-1.013	159.892	.313	-.518	.512	-1.529	.492

When we tested each of the individual five items of the index against majors associated with higher expected earnings we continued to find no statistically significant results. Finally, after controlling for class year as well, none of the partials in the controlled crosstab yielded statistically significant results.

We then recoded our index of positive financial behaviors into three categories (low, medium, high). Each category was determined by the frequency distribution of the index. Approximately 30% of the cases fell within each category.



The Chi-square test showed significance at the p<.05 level, and the Cramer's V test showed a correlation coefficient of .189, which indicates a slight correlation between the variables.

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.267	.038
	Cramer's V	.189	.038
N of Valid Cases		187	

Hypothesis 2: Students who intend to work in jobs associated with higher salaries are more willing to take on (additional) debt to enhance their educational experience compared to those who do not intend to work in jobs associated with higher salaries.

To compare expected income and the willingness to take out loans to enhance the educational experience, we first tested to see if there was a correlation between students' expected income, and the index of students' willingness to take out additional loans. We used a one-tailed test of significance because our hypothesis is directional. Additionally, since both were normally distributed, we ran Spearman's Rho test and found no significance with p=.233 and correlation coefficient of .054. Rho(181)=.054

Correlations

			Importance High Salary Job	Index of Loan Willingness
Spearman's rho	Importance High Salary Job	Correlation Coefficient	1.000	.104
		Sig. (1-tailed)	.	.079
		N	191	184

Since we found no significance in prior tests, we ran expected income against each of the individual components of the index of willingness (study abroad, unpaid internship, summer classes, course overload, and extracurricular activities). We found one statistically significant result between expected income and willingness to take out loan for course overload, rho(183)=.132, p<.05.

			Course Overload
Spearman's rho	Expected Income	Correlation Coefficient	.132*
		Sig. (1-tailed)	.038
		N	183

Finally, we conducted another spearman's rho between the importance of a high salary job and each of the individual components of the index of willingness. We found one statistically significant between summer classes and importance of high salary jobs, rho(185)=.218, p<.01.

			Summer Classes
Spearman's rho	Importance High Salary Job	Correlation Coefficient	.218**
		Sig. (1-tailed)	.001
		N	185

Ultimately we were able to find support for our first hypothesis even though it was weak. We ran numerous tests and tried to control to find stronger evidence but the results suggested otherwise. We could only find partial support for the second hypothesis despite collapsing categories and controlling for variables.

Discussion

Our findings for the first hypothesis suggest a slight relationship between students who have majors that are associated with higher expected earnings and their positive financial behaviors. We anticipated a higher correlation between the variables since it makes sense that students who are more conscious of their post-graduation financial prospects are also more aware of their current financial behavior. This relates back to the literature in which students tend to engage in more positive financial behaviors if they are more interested in minimizing their debt-to-earnings ratio (Kidwell, Brinberg, and Turrisi 2004). The logic holds that students who are actively pursuing a particular major to achieve higher income after college tend to be more engaged in things like budgeting and spending control while in college (Kidwell, Brinberg, and Turrisi 2004). These findings do propose some important implications for college students. The relationship we found might help students see the connection between their financial

decisions while in college and their prospects for post-graduation. Also, even though the association isn't particularly strong or direct it does show students a worthwhile consideration when they are deciding their major. However, our research question did not gauge the extent to which students with majors not associated with higher earnings engage in positive financial behaviors. If we could use an instrument that captures financial worry we might be able to figure out more specific reasons why students pick their major and perform more positive financial behaviors.

The results also indicate that students who intend to work in jobs associated with higher salaries are partially willing to take on more debt for additional classes. We thought that students would be more willing to take out loans for *study abroad*, *unpaid internships,* and extracurricular trips and activities, but our findings suggest otherwise. It is possible that these alternate options are more important to students who intend to work in jobs associated with lower earnings whereas additional classes are more important to those who intend to work in jobs associated with higher earnings. These findings relate to prior research, which states that students are willing to take on additional loans in order to gain valuable knowledge and experience that will distinguish them from their peers (Roulin and Bangerter 2013). However, since the results only support a relationship between students expected earnings and additional classes our interpretation must be relatively narrow. Meanwhile, our findings contradict other literature which argues that many college students are willing to pay for supplemental college experiences beyond just classes to gain more experience and to distinguish themselves from other potential candidates in the job market (Roulin and Bangerter 2013). These results have some notable suggestions for institutions of higher education and college students. Since students do see extra classes and alternative learning options as important components of their education colleges should strive to provide funding to make students' debt burden smaller. Also, the relationship we found can serve as a reference for students making a decision about the importance of additional classes and taking out more loans.

Conclusion

In our research, we asked the question, “Is there a relationship between college students, college majors, job prospective, and financial behavior?” The survey we created to represent this question examined how and why college students choose their major(s) of study and how this affects their financial behaviors and willingness to take out debt.

Our first hypothesis,”students who chose their major at least partly because of its expected earnings tend to engage in more positive financial behaviors,” was slightly supported by our results from the survey and statistical testing. The lack of a strong statistical significance could mean that students who took the survey do not consider the expected earnings to be as important when choosing a major. Therefore, researchers seeking to explore this topic further might try to figure out if there is a relationship between majors not associated with higher earnings and financial behaviors.

Our second hypothesis, “students who intend to work in jobs associated with higher salaries are more willing to take on (additional) debt to enhance their educational experience,” was partially supported by our results. Our results were only partially supported because of some limitations. Since our data was gathered from self-reported responses variables, such as expected earnings, this was difficult to gauge accurately. Furthermore, students who anticipate lower salary jobs may be more willing to take out loans for other types of educational experiences, but our instrument does not measure this. Therefore, researchers looking into this topic in the future could look at the extent to which students who intend to work in jobs associated with lower salary are willing to take on additional debt.

Other ways researchers may expand on this topic might include having more time to conduct a study with a greater number of questions and instruments of measurement. More time will permit researchers with the opportunity find a wider range of literature to compare research results. Additionally, our operational definitions may have been too narrow and failed

to capture the complexity of topics like college major decision or financial behaviors. Furthermore, a larger sample size would result in more accurate results and a lower chance of committing a type I error. We recommend that future researchers consider conducting the study with multiple institutions to get a wider variety of responses. If researchers consult more institutions, they would be able to illustrate larger implications about the relationship between college student major, job prospects, and financial behaviors.

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