Financial Literacy and Education in the First Semester of College:

What Do Students Know and Learn?

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Abstract: This study analyzes pretest and posttest financial literacy data to identify four types of learning—retained, positive, negative, and zero. The purpose of the analysis is to offer more insights into what students already know at the start of college and the change in learning that occurs by the end of a course. Freshmen students who show high levels of retained learning came into the university with more existing financial knowledge while those who with high positive learning did not know the content initially, but show learning gains during the semester. The data for this study comes from more than 1,000 first semester freshman at the University of South Carolina who were enrolled in an introduction to the University course (UNIV 101). A financial literacy test was constructed and administered to students at the beginning of the semester and again at the end of the semester with 332 students having both the pre- and post-test. Approximately twenty percent of the students received one class period of formal training in a financial education program in their university 101 course. The other students did not receive such training. A regression model is specified and estimated with different learning outcomes (e.g., posttest, pretest, difference scores, positive learning, and retained learning) to estimate the treatment effects while controlling for demographic and background variables (e.g., gender, race/ethnicity, past financial education, and other financial variables). The results show what type of learning that occurs during the first semester for incoming students who received financial literacy training and those who did not. The results identify those financial literacy topics students already know and retain during a semester and those financial literacy topics that appear to be new and for which there is positive learning.

Key words: Financial education, retained learning, positive learning, financial literacy

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Introduction

In the fall semester of 2015, over a thousand first- semester freshmen at the University of South Carolina were enrolled in the Introduction to the University course (UNIV 101). These students were asked to take a financial literacy pretest and posttest. From this group, 332 students supplied matched pretest and posttest data. During the semester, about 20 percent this matched sample participated in a one-class financial intervention (the treatment group) taught by one of the authors while the remaining 80 percent did not (the control group). This study assesses the effect of this limited financial education intervention by comparing the test results from the intervention (treatment) and nonintervention (control) groups.

Research using test scores can be static, in which case it focuses on student achievement at a point in time, such as at the time of the pretest or at the time of the posttest. It also can be dynamic, in which case it focuses on the change in student understanding, such as that shown by the difference between the pretest and posttest scores. This study adopts a dynamic approach to the analysis of the intervention, but instead of just investigating the difference in the overall pretest and posttest scores, it disaggregates the test data and uses the test items to construct four different types of learning: retained learning (RL); positive learning (PL); negative learning (NL); and zero learning (ZL) (Walstad and Wagner 2016). RL occurs when a student correctly answers both the pre-test and post-test question. PL is shown when a students who got the question wrong on the pre-test but answers the question correctly on the post-test. NL is indicated by a correct response on to an item on the pretest and an incorrect response on the posttest. With the final type, ZL, a student gets the item wrong on both the pretest and posttest.

The major advantage of this disaggregated approach is that the pretest and posttest scores can be expressed in terms of the four different learning types. The pretest is the sum RL and NL

score because with either type the student answered those items correctly on the pretest. The posttest is the sum of RL and PL score because with either type students answered the item correctly on the posttest. The difference between the pre and posttest is (RL+PL) - (RL+NL) = PL - NL. The problem with using difference scores to assess the outcomes from the intervention is that is composed of two opposite types of learning. By contrast, both PL and RL are better measures of outcomes from an educational intervention. PL might be considered an ideal type of learning because it shows that the intervention is an effective way to increase student understanding while RL shows that students are maintaining their understanding.

The test data are analyzed both in aggregate and disaggregate form to assess the effects of the financial education intervention. The results suggest that students who report taking a financial education course (in high school, college, or at work) had positive effects on financial knowledge at the beginning of the course and in retaining that knowledge throughout the semester. Non-white students were more likely to show positive learning—therefore they came in not knowing the material as well as other student but gained financial literacy throughout the semester. Also while the intervention had no statistical affect the magnitudes of the coefficient was in the correct direction—those who participated had larger post-test score, more PL, and fewer NL and ZL.

Literature Review

Financial literacy and financial education has become a more pressing issue as more people often feel unprepared to assume financial responsibilities (Lusardi and Mitchell 2014). The emphasis on financial literacy and financial education has mostly focused on the pre-college level with some states including requirements in their education standards, ensuring a personal finance course is offered, or requiring a course for graduation (Walstad, Tharayil, and Wagner 2016; Council on Economic Education 2016). By contrast, there have been limited programs and little

research conducted on financial literacy and financial education at the college level. This development is surprising because college students are at the age where they are taking on large amounts of debt through student loans, applying for and using their own credit cards, and assuming responsibility of managing their finances independent of their parents. Financial mistakes made in college can also snowball into larger mistakes that can be costly, both monetarily and in future opportunities. It is for these reasons and others that it is important to teach undergraduate students good financial practices before they engage in financial contracts or make financial decisions (Lusardi, Mitchell, and Curto 2010).

There are several studies that have estimate financial literacy of college students or young adults around college age, and found it to be low. One such study used "What is your Investing IQ?" test from *Money* magazine to study college student investment knowledge and found that college students do not have adequate investing knowledge and answer less than half of the questions correctly (Volpe, Chen, and Pavlicko 1996). Another study examined the financial literacy of young adults between the ages of 23 and 28 (adults that are likely to be college aged) using the National Longitudinal Survey of Youth and three financial literacy questions (Lusardi, Mitchell, and Curto 2012). Only 29 percent of those surveyed answered all three questions correctly, with a large portion of young adults answering "do not know."

Another subset of research at the undergraduate level investigates how financial education affects financial behaviors. While the goal of this research does not focus on behavior outcomes, many of these studies also include some sort of financial education course or intervention component. One study finds that a college personal finance course increases the participant's investment knowledge, which in turn increases the likelihood of saving (Peng, et al. 2007). Another study using a sample from ten Midwest campuses suggests that taking a personal finance

course significantly reduces the likelihood that a college student engages in the four risky financial credit card behaviors including: 1) credit card balances of $1000 or more; 2) delinquent on their credit card payments; 3) reaching their credit card limit; and 4) only paying off their credit card balances some of the time or never (Lyons, 2008).

Description of the Data

The data for this study comes from more than 1,000 first semester freshman enrolled at the University of South Carolina who participated in a project entitled The Financial Literacy Project which took place in the fall semester of 2015. The project was implemented in sections of UNIV 101, a course introducing students to the university, and is enrolled by approximately 75 percent of incoming freshman. This course is designed to introduce students to the college experience and was chosen due to the large percentage of incoming students enrolled in the course, the opportunity to provide a financial literacy intervention, and the access to student information provided through the program. The purpose of UNIV 101 is to "build trust, understanding, and open lines of communication between students, faculty, staff and administrators." Instructors vary across sections of the course, but a set of common course requirements have been established to ensure consistency. Sections are capped at 20 students to encourage students to form a bond and allow instructors the ability to develop personal relationships with all students.

The Financial Literacy Project involved three components: a pre-survey with a financial literacy pretest, a financial literacy intervention, and a post-survey with the same financial literacy questions from the pretest serving as the posttest. The pre-survey was used to understand the level of financial literacy the student's enter college with and some information on their demographic characteristics and the financial education opportunities they have participated in. The intervention was used to provide a subset of students with a financial education opportunity that was specific

to their current interests. The intervention included a budget worksheet specific to college students attending USC—it specifically looked at prices and items a college student might be purchasing or shopping for. Another topic for the intervention was information about credit cards including an activity where students compared actual credit cards. The post-survey was used to determine the financial literacy of students after they had completed their first semester of college. The same set of financial literacy questions found on the pre-survey was included, along with a variety of questions inquiring whether the student had participated in any financial education opportunities.

The financial literacy questions on the pre- and post-survey can be examined to determine which types of learning occurs throughout a student's first semester in college. Table 1 includes the financial literacy questions tested in both surveys. It is expected that students who participated in the intervention will experience relatively more PL, specifically on questions covering material discussed during the education. The researchers acknowledge that the intervention is not the only financial literacy education program, formal or informal, that students may have participated in throughout the semester. To control for this effect the post-survey ask students about other educational opportunities students in which they participated. While information on the duration and quality of these programs are unknown, we can examine whether education has an impact on learning or if the effect is a result of an increase in financial independence that occurs during the student's first semester of college.

[Insert Table 1 here]

Students were asked if they had taken financial education and if so where—high school, college[4], through an employer or other community organization. Students were able to respond

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[4] Since this course is for incoming freshman, very few participated in a financial education program at the college level. However, those that report taking the course may be currently enrolled in one of two introductory courses

that they took more than one—therefore there are 8 course combinations: 1) High school only; 2) College only; 3) Work/Community only; 4) High school and college; 5) High school and work/community; 6) College and work/community; 7) High school, college, and work/community; and 8) No financial education course. All course combinations are distinct.

The Pre-Survey

The Director of the University 101 programs sent an email invitation to all instructors, asking to encourage their students participate in the pre-survey to be sent to students through the learning management system and general information about the project.. To encourage instructors to participate two $50 VISA gift cards were raffled off to instructors with student participation rates 75% or above. The survey was open during the first two weeks of classes, from August 17 to August 31, 2015. Table 2 provides a comparison between sections with no participation relative to those with at least one participant.

[Insert Table 2 here]

The data show some instructors did not appear to send the invitation message to their students. While this is not the ideal result, it is not expected to influence the results of the study. Whereas instructors choose whether or not to encourage students to participate, students sign up for a section blind to the instructor. There are often multiple sections of the course offered at same time and instructors' names are not posted until after students have registered for the classes, creating a near random sample of students participating in the pre-survey. Even though there are some sections that saw response rates of zero and others with 100 percent responses, the randomness in which students enroll in sections is expected to reduce any bias.

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offered by the business school or had the opportunity to take a course through another institution during high school.

The Intervention

There are some common course requirements within the UNIV 101 course, instructors do have flexibility on other campus presentations that can be included in the schedule. Some examples include presentations by Campus Police, Career Center, Campus Wellness, and the Study Abroad Office. The financial literacy presentation had traditionally been offered through a branch of the Student Success Center, another organization on campus, but was unavailable during the fall of 2015 semester. One of the authors provided an alternative presentation that semester which focused on basic financial literacy information: setting financial goals, creating a budget, methods of payments, and comparing credit cards. Instructors had the ability to sign up for a one-class presentation that would be held between September 9 and October 5, 2015. Instructors signed up for 38 presentations, 36 were completed.

The Post-Survey

To follow up with participants, a post-survey was given during the final two weeks of the semester, November 19 to December 14. Participation in this survey was targeted at those who had already participated in the pre-survey. Emails were sent to students who provided an email address in the pre-survey. Instructors were also contacted, specifically those with high response rates on the pre-survey, to encourage their students to participate. The response rate on the post survey was much lower than the pre survey, likely due to end of the semester fatigue and the significant number of evaluations students are expected to complete at the end of the semester.

Data collection for this study was carefully planned and thought through, despite that there are some issues with the data collection that is beyond the authors control. An article by Allgood (2014) outlines good practices for economic education researchers to follow. Among the suggestions is to make sure the study is carefully thought through before implementation because

after the fact there is little that can be done to fix data problems. Because true experiments are nearly impossible many studies use quasi-experiments. This study utilizes a quasi-experiment with the treatment group being those who were exposed to the intervention while those who did not get the intervention are the control group. Due to the near randomization when students sign up for the course both groups are similar.[5]

One challenge of any project with non-mandatory participation is how to maximize usable observations. Participation rates on the survey dropped off drastically between the pre and post survey even with the many reminders and attempts to encourage participation by both the authors and the cooperating instructor. Also, all students participating in the intervention did not all complete the pre- and post-survey. This greatly reduces the sample size available for this study. One reason for this might be due to a lack of incentives and the students being motivated at the beginning of the semester to complete extra tasks but less so as the semester continues. Another reason may be due to survey fatigue and end of the year stresses. Students are asked to fill out several surveys including surveys about each class they are taking which may reduce their willingness to complete another survey that has no effect on their grade. Similarly there was an attrition issue for those in the intervention.

Preliminary Results

Descriptive Statistics

Descriptive statistics for the full matched sample used in this research is in Table 3. On average students answered just over half of the questions on both the pre-survey (6.1) and post-survey (5.6). Students who took both surveys answered nearly a half additional questions correctly

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[5] Comparison of descriptive statistics between the groups show that there are only minor differences—there are more students who reported participating in a financial education program provided by a workplace and more males in the non-intervention group, while more students in the intervention group rely on their family for finances.

on the pre-survey relative to the post-survey. This may be because a result of decreasing student motivation to fill out the survey. The survey was not part of a grade which may explain their lack of motivation to accurately complete the post-survey.

[Insert Table 3]

The majority of correct responses from the post-survey were from students who knew the material coming into the class and retaining it throughout the semester; average RL is 4 questions. The average PL was 1 question suggesting that students were more likely to know the material in the beginning than learn it as the semester progresses. Since there was only ten weeks between the pre- and post-survey, this is not unexpected. While incoming freshman are gaining financial independence relatively quickly, they may not have experienced significant additions in financial literacy over the same period.

Nearly 21 percent of the students completing both the pre survey and post survey were also involved in the intervention—the one class period presentation taught by one of the authors using interactive techniques to teach some basic financial literacy concepts. While many students were not involved in the intervention there are a large percent of the students that received financial education in another place. Almost 42 percent took a financial education course in high school, but did not receive financial education at another time. As of 2014 South Carolina includes personal finance in their standards which are required to be implemented at the district level— therefore students who went to high school in South Carolina were likely to be exposed to personal finance either as an elective or through another course (Council for Economic Education 2014). One percent of students are taking a financial literacy course in the same semester as the University 101 course, with another 4 percent receiving financial education through work or the community. As expected there is a relatively small proportion of the students that took combinations of

financial education (i.e. both high school and college financial education). Approximately 41 percent of students had no exposure to financial education, before or during their first semester of college. It should be noted as a limitation of the study that there is no information about the content, length, or other information about what was actually taught in any of the financial education reported by students.

The pre survey inquired into the demographics of the students. About 36 percent of the students are male and 87 percent are white. The survey also inquired into the family situation of the students in their primary household during high school. The average number of parents present in their primary household, including step parents, is two. Half of the students' mothers have a college degree and nearly 45 percent of students' fathers have a college degree. The majority of the students (63 percent) rely on their family financially and 42 percent are paying for college with student loans. Since a large number of students rely on their family financially it raises the question of whether they will have an adequate level of financial literacy to make informed budgeting decisions. For this reason one goal of the educational interventions is to encourage students to think about their financial goals and budgets. The significant percentage of students relying on student loans to fund their education is another reason to encourage financial education among this group. With an increasing number of young adults reporting they are concerned about their ability to pay off their student loans, early information is key.

While most pre- and post-survey research estimates learning through a composite score, the difference between the post-survey and pre-survey, this study breaks down the analysis by question. It is important to know and understand how students score on the questions as a group, but the individual questions can help tell a more informative story and breakdown topics the students came in understanding (RL) versus topics the students learned through the semester (PL)

compared to topics that show negative types of learning (NL and ZL). Table 4 presents the descriptive statistics for the four types of learning by question. The presented results provide further evidence that students are experiencing positive learning outcomes—RL and PL. There are few questions with ZL higher than 30 percent and all NL proportions are less than 25 percent (with the exception of question 10 with NL equal to 39 percent).

[Insert Table 4 here]

Questions 1, 5, 8, and 10 seemed to be difficult for the students and also were the primary questions targeted by the intervention. The financial literacy quiz included questions that were to be covered during the intervention and those that were not. This was a further control employed by the authors to ensure that the intervention was the primary determinant of any learning that occurred during the semester, not just the experience of becoming more independent. The authors did not want a test that covered exactly the material taught in the intervention, items were included that purposely were not covered in order to complete the item analysis. It is expected that some questions, not covered during the intervention, will have zero learning. This is to ensure that the PL that may occur from the intervention is the result of the education and not just general learning that occurs during the first semester of college.

Approximately 55 percent of students answered question 1 correctly on both the pre and posttest, however there were a fairly large amount to students (13 percent) that did not get it correct on the pretest but got it correct on the posttest (PL). The results for question 5 are similar—the question had about 43 percent RL and 15 percent PL. Unlike questions 1 and 5, questions 8 and 10 relatively low levels of RL (14 percent and 8 percent), but higher levels of PL (16 percent and 14 percent) compared to most of the questions. Since the intervention focused on material covered in these questions this is the expected result. While the aggregate score did not show a significant

difference between the pre and posttest, implying the intervention had no effect, the disaggregation offers more information. Further examination of these questions show that examining individual items, rather than the pre and post survey difference, may serve as a better measure to estimate learning.

Table 5 breaks down the questions and learning types even further by showing the percent correct on the posttest, pretest, RL, PL, NL, and ZL for each question. Also presented in the table is a comparison of the learning types for those who participated in the intervention and those who did not. There are several interesting points looking at the four questions covered in the intervention—questions 1, 5, 8, and 10. Question 1 is mostly RL for both the intervention and non-intervention groups with 64 and 53 percent answering the question correctly on both the pre and posttest. Similarly, question 5 is mostly RL for both groups however, the PL for the intervention group is higher, 19 percent compared to 14 percent for the non-intervention group, although these are not statistically different. Question 8 has almost equal RL and PL for both groups with the intervention group having 17 percent RL and 14 percent PL for that question and the non-intervention group having 13 percent RL and 17 percent PL for the same question. Question 10 has more PL than RL for both groups and the level of PL for the intervention group is statistically different, 23 percent versus 12 percent for the non-intervention group.

These results confirm the importance of disaggregating the financial literacy scores by question. Examining only the aggregate scores indicates no effect of the intervention, but this is not the case. When comparing learning on questions targeted by the intervention, the educational effects can be seen—students who received the intervention experienced more PL relative to students who did not receive the intervention. Even though the financial education intervention

was short in length and did not have a follow-up debriefing, the intervention did result in positive learning.

[Insert Table 5 about here]

Regression Analysis

Table 6 shows results from the general regression analysis. The dependent variables are the different learning outcomes—both traditionally aggregated scores and the disaggregated learning outcomes previously described. The traditional learning outcomes include the number correct on the posttest and the difference score between the post and pretest. The new learning outcomes: RL, PL, NL, and ZL, include the number of questions falling into each category for that student. Independent variables for the regression include various characteristics that may affect a student's financial literacy. Variables include a dummy variable for participating in the intervention, financial education, gender, ethnicity, number of parents present in their primary household (including step parents), and parent's education.

For simplicity the results from the traditional learning measurements will not be discussed in detail, but will be included as a comparison to the disaggregated learning variables. The intervention did not have any effect on the disaggregated learning variables—while this is not ideal it is not necessarily surprising. The intervention lasted for only one class period and material covered was only tested on four of the ten questions. Some notable results for the intervention variable is that while there is a negative difference between the pre- and post-survey that negative impact does not show up in the regressions. The intervention has a positive effect on the posttest score, the differenced score, RL, and PL, while having a negative effect on NL and ZL. Although these results are not significant they are in the expected direction. With a limited intervention, in terms of duration and follow-up, the effect is positive.

14

Financial education has the expected effects on the different learning variables. Students who took a high school financial education course answered .54 more questions correctly on both the pretest and posttest (RL) relative to those who did not participate in any financial education. Similarly those who took a high school financial education course had .58 more questions categorized as ZL. The higher RL was expected as these students had completed the financial education course before college and therefore came into the UNIV 101 course with the knowledge to correctly answer the questions. Students who completed a college financial education course answered 2.6 additional questions categorized as RL and 1.7 fewer questions categorized as ZL. Those who take financial literacy courses as a business elective are expected to be more interested in the topic and therefore have higher levels of knowledge entering into the course. Enrolling and completing the course would likely reinforce that knowledge leading to retained financial knowledge. Students who completed a high school and college course answered 1.4 fewer questions categorized as ZL. There are two course combinations that do not seem to have positive learning outcomes; those who took both a high school and completed education in the workplace experienced .9 more NL questions and students who completed a college and workplace education have almost 3 more questions categorized as ZL. These results suggest that some course combinations are not as effective.

Previous financial education is not likely to affect PL; students who completed a course before entering college are more likely to have RL since they come in with some financial education. The exception is the college financial education course, students who choose to enroll in that course their first semester are likely to be more interested in the topic and place higher value on the material, therefore may have more knowledgeable.

Examining the differenced score alone does little to explain what incoming students know and retain throughout the semester. Similarly, the posttest score is a composite of both the RL and PL and only shows a static measure of financial knowledge at the end of the semester. Using the disaggregated learning outcomes show a more informative measure of learning, a flow measure rather than static. For example, the differenced score suggests that financial education has no effect on college students' financial literacy test in UNIV101. However, examining individual questions shows that is incorrect—financial education has a significant positive effect on students retaining knowledge between the posttest and pretest and a negative effect on students answering the financial literacy questions incorrectly on both the pretest and posttest. Also, concerning the questions targeted specifically by the intervention, higher rates of positive learning occur, relative to those questions which were not covered in the intervention.

Implications and Future Research

This research supports recent literature which finds that simply looking at aggregate difference scores for an educational intervention does not tell the whole story of what learning occurred. Examining the disaggregated test data from an educational program may better determine its effectiveness (Walstad and Wagner 2016). Although the intervention was limited, the results did indicate that there was positive learning. The finding reinforces the idea that simply looking at traditional outcome measures, such as using a posttest or a difference score, may overlook different types of learning. Students who participated in the intervention had higher levels of PL for questions specifically covered in the interventions. Question 10 was a difficult question with low levels of RL, but much higher levels of PL. There also a significant difference between PL for the intervention and non-intervention groups that are not shown in the aggregate results. The intervention appeared to have positive effects in the expected direction in the

regression analysis the RL and PL scores while having expected negative effects on NL and ZL scores. The effects, while not statistically significant, are suggestive of what might be found if there had been more class time devoted to the intervention and more test questions for assessing financial literacy.

Current results are preliminary and there is more work to be done to estimate the variables that affect the four learning types. Future research will include further examining how the intervention and financial education affects the learning types specifically looking at individual questions. This would include looking at the learning for each of the individual questions and comparing the four financial literacy questions covered in the intervention relative to the other six questions. The authors are still collecting data for this study—additional variables being obtained from university records include the state the student went to high school to estimate how potential mandates affect learning in college. Other high school variables that will be included in later versions are the student's high school GPA and math placement scores.

Despite some of these limitations with the intervention and the attrition with the pretest and posttest data, this research will add to the limited existing literature on college financial knowledge and learning. Results can also aid other college financial education programs by assessing which questions or topics that seem to stump college students and focus on questions with low RL and higher PL and ZL; those questions that are likely to be most difficult questions for college students and areas where the greatest gains can be made.

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Table 1: Financial Literacy Questions in the surveys (Answers bolded)

Variable Expense	1. The Jackson's budget includes fixed and variable expenses. Their monthly expenses include rent, car insurance payments, dues for a fitness club, and groceries. Which of these is a variable expense? A. Dues for a fitness club **B. Groceries** C. Car insurance payments D. Rent E. Don't Know
Taxes	2. Bob earns $45,000 a year and Elizabeth earns $75,000 per year. Which is true about how much each pays in federal income taxes? **A. Bob pays a lower average tax rate and lower rate on the last dollar earned.** B. Elizabeth pays a higher rate on the last dollar earned, but the same average tax rate. C. Bob pays a higher average tax rate, but a lower rate on the last dollar earned. D. Elizabeth pays a lower average tax rate and lower rate on the last dollar earned. E. Don't Know
Car Loan	3. Jennifer is deciding between a 2-year and a 5-year car loan. If she decides to take the 5-year loan, compared to the terms of the 2-year loan, the interest rate will likely be: A. lower and the monthly payment will be lower. B. lower and the monthly payment will be higher. **C. higher and the monthly payment will be lower.** D. higher and the monthly payment will be higher. E. Don't Know
Credit Card	4. Which of the following methods lets someone buy a good now, but pay for it later? **A. a credit card** B. a debit card C. a money order D. a personal check E. Don't Know
Budget	5. Maria has a monthly income of $2,000. For the past six months, after paying taxes and expenses, she has contributed $50 a month to a savings account. Maria needs to pay for $400 in unplanned car repairs. To what extent will she have to adjust her budget to cover these expenses? A. She will not need to adjust her budget because she has enough in her savings account to cover the cost.

	B. She will not need to adjust her budget because she earns enough income each month to cover the cost. **C. She will need to adjust her budget by reducing her expenses.** D. She will need to adjust her budget by reducing her taxes. E. Don't Know.
Compound Interest	6. People who start saving for retirement earlier in life usually save more money, relative to those who wait, because early savers A. are paid higher interest rates. **B. start earning compounding interest sooner.** C. likely earn higher salaries. D. are less likely to lose any of their savings. E. Don't Know
Impulse Buys	7. Tamara likes to shop. She often purchases expensive products without thinking about the consequences. Tamara's tendency to buy on impulse A. reduces her earned income. B. increases the amount she saves. C. increases the interest rate on her credit card. **D. reduces her opportunities to buy things in the future.** E. Don't Know
Credit Report	8. Which of the following is found on a credit report? A. Checking account balance B. Value of primary residence **C. Unpaid medical bills** D. Brokerage account balance E. Don't Know
Interest	9. Suppose you had $100 in a savings account and the interest rate was two percent. After five years, how much do you think you would have in the account if you left the money to grow? **A. More than $102** B. Exactly $102 C. Less than $102 D. Unknown, it will depend on the inflation rate. E. Don't Know
Loan Interest	10. A new car loan will likely have a higher interest rate if the borrower A. earns a higher income. B. has a higher credit score. C. wants a shorter term loan. **D. makes a lower down payment.** E. Don't Know

Table 2: Instructor Participation Rates (pre-test)

	Sections with 0 response	Sections with at least 1 response
Average Number of Students	17.8	17.6
Sections meeting 3 days a week	32	26
Sections meeting 2 days a week	78	83
Sections start time in morning	61	47
Sections start time after noon	37	38
Sections start time after 4:00pm	12	24
Average Response Rate	0	54.20%
Number of Sections	110	109
Total Number of Sections	219	

Table 3: Descriptive Statistics

	(1) Full Sample		
	count	mean	sd
Posttest Score	332	5.6235	2.0030
Pretest Score	332	6.0783	1.8113
Post-Pre	332	-0.4548	1.9606
Total RL	332	4.3645	2.0022
Total PL	332	1.2590	1.0906
Total NL	332	1.7139	1.4373
Total ZL	332	2.6627	1.6418
Intervention	332	0.2078	0.4064
HS Course Only	332	0.4187	0.4941
College Course Only	332	0.0090	0.0948
Work/Other Course Only	332	0.0422	0.2013
HS & College Course	332	0.0361	0.1869
HS & Work/Other Course	332	0.0512	0.2207
College & Work/Other Course	332	0.0030	0.0549
HS, College, & Work/Other Course	332	0.0331	0.1793
No Course	332	0.4066	0.4919
HS Fin. Ed. important	332	0.6054	0.4895
Coll. Fin. Ed. important	332	0.9669	0.1793
Male	332	0.3584	0.4803
White	332	0.8705	0.3363
Number of Parents	332	1.9548	0.4864
Rely on family	332	0.6325	0.4828
Mom has College Degree	332	0.5000	0.5008
Father has College Degree	332	0.4458	0.4978
Observations	332		

Table 4: Learning Variables by Question

	count	(1) Pretest Prop.	(2) Posttest Prop.	(3) RL Prop.	(4) PL Prop.	(5) NL Prop.	(6) ZL Prop.
Q1	332	0.6536	0.6867	0.5542	0.1325	0.0994	0.2139
Q2	332	0.2590	0.2741	0.1024	0.1717	0.1566	0.5693
Q3	332	0.6536	0.5633	0.4307	0.1325	0.2229	0.2139
Q4	332	0.9428	0.9066	0.8645	0.0422	0.0783	0.0151
Q5	332	0.6777	0.5964	0.4458	0.1506	0.2319	0.1717
Q6	332	0.8614	0.7922	0.7169	0.0753	0.1446	0.0633
Q7	332	0.6175	0.6265	0.4880	0.1386	0.1295	0.2440
Q8	332	0.2289	0.3012	0.1386	0.1627	0.0904	0.6084
Q9	332	0.7229	0.6506	0.5422	0.1084	0.1807	0.1687
Q10	332	0.4608	0.2259	0.0813	0.1446	0.3795	0.3946
Obs	332						

Table 5: Learning Types Comparing the Intervention Group to the Non-Intervention Group

	Intervention		Non-Intervention	
	Count	Mean	Count	Mean
Panel A: Pretest				
Q1	69	0.7246	263	0.6350
Q2	69	0.1884	263	0.2776
Q3	69	0.7101	263	0.6388
Q4	69	0.9275	263	0.9468
Q5	69	0.6522	263	0.6844
Q6	69	0.8841	263	0.8555
Q7	69	0.6232	263	0.6160
Q8	69	0.2464	263	0.2243
Q9	69	0.6812	263	0.7338
Q10	69	0.4348	263	0.4677
Panel B: Posttest				
Q1*	69	0.7681	263	0.6654
Q2	69	0.2754	263	0.2738
Q3	69	0.5797	263	0.5589
Q4	69	0.9275	263	0.9011
Q5	69	0.6667	263	0.5779
Q6	69	0.7826	263	0.7947
Q7	69	0.6377	263	0.6236
Q8	69	0.3188	263	0.2966
Q9	69	0.6232	263	0.6578
Q10	69	0.2754	263	0.2129
Panel C: RL				
Q1	69	0.6377	263	0.5323
Q2	69	0.0580	263	0.1141
Q3	69	0.4928	263	0.4144
Q4	69	0.8696	263	0.8631
Q5	69	0.4783	263	0.4373
Q6	69	0.7246	263	0.7148
Q7	69	0.5072	263	0.4829
Q8	69	0.1739	263	0.1293
Q9	69	0.4928	263	0.5551
Q10	69	0.0435	263	0.0913
Panel D: PL				
Q1	69	0.1304	263	0.1331
Q2	69	0.2174	263	0.1597
Q3	69	0.0870	263	0.1445
Q4	69	0.0580	263	0.0380
Q5	69	0.1884	263	0.1407
Q6	69	0.0580	263	0.0798
Q7	69	0.1304	263	0.1407
Q8	69	0.1449	263	0.1673
Q9	69	0.1304	263	0.1027
Q10*	69	0.2319	263	0.1217

Panel E: NL				
Q1	69	0.0870	263	0.1027
Q2	69	0.1304	263	0.1635
Q3	69	0.2174	263	0.2243
Q4	69	0.0580	263	0.0837
Q5	69	0.1739	263	0.2471
Q6	69	0.1594	263	0.1407
Q7	69	0.1159	263	0.1331
Q8	69	0.0725	263	0.0951
Q9	69	0.1884	263	0.1787
Q10	69	0.3913	263	0.3764
Panel F: ZL				
Q1*	69	0.1449	263	0.2319
Q2	69	0.5942	263	0.5627
Q3	69	0.2029	263	0.2167
Q4	69	0.0145	263	0.0152
Q5	69	0.1594	263	0.1749
Q6	69	0.0580	263	0.0646
Q7	69	0.2464	263	0.2433
Q8	69	0.6087	263	0.6084
Q9	69	0.1884	263	0.1635
Q10	69	0.3333	263	0.4106

Table 6: Learning Variable Regression analysis

	(1) Posttest	(2) Pretest	(3) Post-Pre	(4) RL	(5) PL	(6) NL	(7) ZL
Intervention	0.2248	-0.0422	0.2670	0.0446	0.1802	-0.0868	-0.1379
	(0.275)	(0.248)	(0.272)	(0.276)	(0.152)	(0.199)	(0.225)
HS Course Only	0.4642*	0.6502***	-0.1860	0.5380**	-0.0738	0.1122	-0.5764***
	(0.240)	(0.216)	(0.237)	(0.240)	(0.133)	(0.173)	(0.196)
College Course Only	1.9752*	2.3085**	-0.3333	2.6177**	-0.6425	-0.3091	-1.6660*
	(1.163)	(1.049)	(1.148)	(1.163)	(0.643)	(0.839)	(0.948)
Work/Other Course Only	0.5824	0.4377	0.1447	0.7796	-0.1972	-0.3419	-0.2405
	(0.562)	(0.507)	(0.555)	(0.562)	(0.310)	(0.406)	(0.458)
HS & College Course	0.8798	1.2402**	-0.3604	0.7652	0.1146	0.4750	-1.3548***
	(0.610)	(0.550)	(0.602)	(0.610)	(0.337)	(0.440)	(0.497)
HS & Work/Other Course	-0.3961	0.5732	-0.9693*	-0.3687	-0.0274	0.9419**	-0.5458
	(0.511)	(0.461)	(0.505)	(0.512)	(0.282)	(0.369)	(0.417)
College & Work/Other Course	-3.1778	-1.9214	-1.2565	-2.1319	-1.0459	0.2106	2.9672*
	(2.052)	(1.851)	(2.026)	(2.053)	(1.134)	(1.481)	(1.673)
HS, College, & Work/Other Course	0.4425	0.2117	0.2307	0.2625	0.1799	-0.0508	-0.3917
	(0.626)	(0.565)	(0.618)	(0.626)	(0.346)	(0.452)	(0.511)
Male	-0.0004	0.1846	-0.1849	-0.0425	0.0422	0.2271	-0.2267
	(0.231)	(0.208)	(0.228)	(0.231)	(0.128)	(0.167)	(0.188)
White	0.1349	0.6311**	-0.4962	0.5236	-0.3887**	0.1075	-0.2425
	(0.336)	(0.303)	(0.332)	(0.336)	(0.186)	(0.243)	(0.274)
Number of Parents	-0.2798	-0.0100	-0.2698	-0.1842	-0.0956	0.1742	0.1056
	(0.235)	(0.212)	(0.232)	(0.235)	(0.130)	(0.170)	(0.192)
Mom has College Degree	-0.5666**	-0.1732	-0.3934*	-0.4589**	-0.1078	0.2856*	0.2810
	(0.229)	(0.206)	(0.226)	(0.229)	(0.126)	(0.165)	(0.186)
Father has College Degree	0.2268	0.2516	-0.0249	0.2415	-0.0147	0.0102	-0.2369
	(0.232)	(0.209)	(0.229)	(0.232)	(0.128)	(0.168)	(0.189)
Constant	5.9352***	5.0786***	0.8566	4.1037***	1.8315***	0.9749**	3.0899***
	(0.548)	(0.495)	(0.541)	(0.549)	(0.303)	(0.396)	(0.447)
R^2	.0635	.0684	.0477	.0619	.0357	.0523	.0735
Observations	332	332	332	332	332	332	332

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$