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## Financial Capability of Student Loan Holders Who are College Students, Graduates, or Dropouts

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## **Financial Capability of Student Loan Holders Who are College Students, Graduates, or Dropouts**

### **Abstract**

Effective consumer financial education provides relevant information to meet special needs of targeted audiences. The purpose of this study is to examine differences in financial capability among student loan holders who are college students, graduates, and dropouts. Using data from the 2015 U.S. National Financial Capability Study, the results show that student loan holders who have completed their education program have higher scores in all financial capability indicators than college students and dropouts. Further analyses show differences in specific financial knowledge items among college students, graduates, and dropouts. In addition, college graduates are more likely to perform several specific desirable financial behaviors than college students and dropouts. The findings suggest that financial educators should emphasize action taking when they provide financial education for student loan holders who are college students and dropouts.

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## **Introduction**

Student loan holding is a current important policy issue in the U.S.. Research shows that between 2000 and 2014, student loan debt nearly quadrupled to surpass \$1.1 trillion, the number of student loan borrowers more than doubled to reach 42 million, and default rates among recent student loan borrowers rose to the highest levels in 20 years (Looney and Yannelis 2015). According to the 2015 National Financial Capability Study (Lin et al. 2016), 26% of the U.S. population hold student loans. Many student loan holders lack knowledge about their loans. Only 35% of the loan holders knew if their loan repayment plan is income-based and 19% did not know; 53% did not estimate the monthly repayment cost of their student loans when they were offered loans. Among those who borrowed student loans to attend colleges/universities, 28% did not complete the degree/program (Lin et al. 2016). As suggested by previous research, effective financial education programs should focus on specific needs of students (Alsemgeest 2015; Bartholomae and Fox 2016). To encourage repayment of student loans after graduating or dropping out of colleges/universities, consumer educators should better inform these student loan holders through effective targeted financial education programs including online exit counseling at the time of graduation. To achieve this goal, knowledge creators and knowledge distributors should work together creatively (Hill 2019). As the first step, we have researched differences in financial capability among student loan holders with various education attainments.

The purpose of this study is to examine differences of financial capability among three types of student loan holders: college students, graduates, and dropouts. The research question is: What are differences in financial capability factors in the three groups of student loan holders? Financial capability can be broadly considered “a multi-dimensional concept that encompasses a combination of knowledge, resources, access, and habits” (Lin et al. 2016, 2). In

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this study, a narrower definition is used in which financial capability is defined as the ability to apply financial knowledge and engage in desirable financial behavior for achieving financial wellbeing (Xiao and O’Neill 2016; Xiao and Porto 2017).

Following previous research (Xiao and Porto 2017), four indicators and one index are used to measure financial capability: objective financial knowledge, subjective financial knowledge, desirable financial behavior, and perceived financial capability. The index of financial capability is a sum of Z-values of the four indicators of financial capability. The findings of this study have direct implications for consumer educators and policy makers for developing effective educational programs tailored to meet diverse needs of these student loan holders. Specifically, any differences found among the three types of student loan holders will be informative for policy makers when they make relevant policies for promoting consumer financial capability and wellbeing. Detailed analyses of group differences in terms of specific knowledge items and behaviors will inform consumer educators to tailor their education materials and approaches to address the diverse needs of three types of student loan holders with various education completion statuses.

## **Literature Review**

Research on student loan issues has been conducted from a variety of perspectives, such as cost and benefits of student loan borrowing (Avery and Turner 2012), predictions of loan default (Flint 1997), legal debates of student loan options (Miller 2004), and disparities of student loan burdens (Houle 2014). Researchers have also studied topics such as college financing (Cigno and Luporini 2009), education policy (Lochner and Monge-Naranjo 2015), and general trends of student loans (Burr 2016; Chapman 2006; Looney and Yannelis 2015).

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One line of research studying consumer behavior of student loan holding shows that student loan holding is an important factor contributing to the stress of college students. Among college students, student loan debt is positively associated with financial anxiety (Archuleta, Dale, and Spann 2013). College students are more likely to experience financial stress when they have student loan debt as compared to those without student loan debt (Britt et al. 2015). College students with higher student loan debts are more likely to seek help from financial professionals (Lim et al. 2014).

College students' knowledge level regarding student loans is low and providing relevant information for them may affect their financial and academic behaviors. Research shows that students rely heavily on advice from parents, guidance counselors, and friends; and they know very little about the loans they will be responsible for repaying (Johnson et al. 2016). First-generation students are more likely to use student loans than continuing-generation students (Lee and Mueller 2014). Student loan information provision may impact college students' borrowing decisions, especially some key subgroups such as those with low GPAs (Darolia 2016). Provision of student loan information through a simple "Know Your Debt" letter may also affect students' academic choices (Schmeiser, Stoddard, and Urban 2016).

Many researchers have also identified other factors associated with student loan debts and debt behavior. Research shows that family income and college experiences are strongly associated with the probability of zero debt burden as well as the level of debt burden; graduates from private institutions have a higher level of debt burden than graduates from public institutions; and state funding of merit-based aid programs plays a role in reducing students' debt burden (Chen and Wiederspan 2014). Another study indicates that among student loan holders, individuals who received financial education in an academic or professional setting are less

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likely to be late on student loan payments or worry about their student loan debt (Fan and Chatterjee 2019). Financial independence is positively associated with both credit card borrowing and student loan debt of college students (Kim, Chatterjee, and Kim 2012). Individuals who have borrowed from both federal and private sources or private lenders only are less likely to indicate that they would make the same borrowing decisions (Robb et al. 2019).

Student loan borrowing has significant consequences on borrowers' personal lives. A literature review concludes that student loan debt may negatively affect young adults' health and transition to adulthood outcomes (Cho, Xu, and Kiss 2015). For example, holding student loans is associated with poorer psychological functioning among young adults aged 25-31 (Walsemann, Gee, and Genti 2015). Increases of \$1,000 in student loan and credit card debt result in 6% and 4% higher odds of distress, respectively among young adults aged 18-28 (Zhang and Kim 2019). Earlier student loan debts are negatively associated with health status among Hispanic students (Kim and Chatterjee 2019). Researchers have called for higher education institutions to better understand the needs of college students and effectively plan and implement financial wellness initiatives on campus (Montalto et al. 2019).

### **Conceptual Framework and Hypotheses**

Based on the seminal work of Erikson (1982), the psychosocial theory of human development offers an organizational framework for considering individual development within the larger perspective of psychosocial evolution. One of the key concepts of psychosocial theory are the "stages of development" that include specific developmental milestones by age ranges (Newman and Newman 1999). Each developmental stage faces unique psychosocial tasks, crises, solving processes, radiating networks, and coping skills (Newman and Newman 1999). Relevant

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to this study are the developmental age ranges of adolescence (18 to 24), early adulthood (24 to 34), middle adulthood (34 to 60), later adulthood (60 to 75) and very old age (75 until death). Later adolescence is also called emerging adulthood in the human development literature (Arnett 2000). For the purpose of the conceptual discussion, we considered two age groups, people aged 18-24 as emerging adults and people 25 and over as older adults.

In the context of financial capability and in terms of financial independence, two major age groups exist, emerging adults who are attending college and investing human capital to gain earning potential and older adults who are financially independent and fulfilling obligations (including repayment of student loans). These two age groups have demonstrated different levels of financial knowledge, financial behavior, and financial capability (Agnew and Cameron-Agnew 2015; Braun Santos et al. 2016; Letkiewicz and Fox 2014; Montford and Goldsmith 2016; Murendo and Mutsonziwa 2017; Riitsalu and Pöder 2016; Xiao et al. 2011; Xiao, Chen, and Sun 2015). In this study, older adults have two subgroups, one group includes college graduates and the other includes college dropouts. Previous research shows that even among young adults, levels of financial capability are different among college enrollees, graduates, and dropouts (Xiao, Chatterjee, and Kim 2014). We expect these differences to persist as people grow older.

In this context, we assume that financial capability can be determined by two factors: cognitive ability and life experience. Based on the relevant theories and empirical research, we have created Figure 1 that summarizes the conceptual discussion on financial capability among student loan holders who have various education attainment statuses through borrowing student loans. Based on this conceptual framework, we discuss and propose three hypotheses below.

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As mentioned in the introduction, financial capability is defined as an integration of financial knowledge and financial behavior. Levels of financial knowledge and performances of financial behaviors are dependent on both cognitive ability and life experience. For simplicity, we assume that financial knowledge is mainly related to cognitive ability and financial behavior is mainly related to life experience. If these assumptions hold, we expect that both college graduates and enrollees have more financial knowledge because they have higher cognitive abilities than college dropouts (there are of course exceptions, such as famous college dropouts like Bill Gates and Mark Zuckerberg). Researchers find significant differences in the likelihood of entrepreneurship among dropouts and graduates. Except at the upper end of the income distribution, entrepreneurship does not allow college dropouts to compensate for their disadvantages in the labor market (Buenstorf, Nielsen, and Timmermans 2017). Lack of academic ability may be the major reason for dropping out of college (Hendricks, Lutz, and Oksana Leukhina, 2017). Research on community college students shows that math and science credits earned in the first and second year are most predictive of completion among the matched group of students who have earned a high number of credits but dropped out in the middle of an academic program (Park 2019). We acknowledge that this is only an assumption since some people may be dropping out of college for other reasons such as getting married (a famous example is the former first lady, Barbara Bush). Previous research shows that education levels are positively associated with financial knowledge levels (Lusardi and Mitchell 2014; Xiao and Porto 2017). Thus, the following hypothesis is proposed:

H1: Among student loan holders, college graduates and enrollees have higher levels of financial knowledge than college dropouts.



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Financial behaviors refer to any behaviors relevant to money management. As people age, their finances become more complicated and they engage in more financial behaviors than younger individuals (Xiao, Chen, and Sun 2015). Compared to young adults aged 18-24, older adults are more likely to perform desirable financial behaviors (Henager and Cude 2016). Based on the assumption that financial behaviors are most related to life experience and given the fact that, on average, college graduates and dropouts are older than college enrollees, we predict that both college graduates and college dropouts should perform more desirable financial behaviors.

H2: Among student loan holders, college graduates and dropouts perform more desirable financial behaviors than college enrollees.

Financial capability can be defined in various ways (Lin et al. 2016). It can be defined as financial knowledge (Lusardi and Mitchell 2014) and its application of financial knowledge (Huston 2010). In this study, we define it as the ability to apply financial knowledge and engage in desirable financial behavior (Xiao and Porto 2017). We further predict that college graduates will have a higher level of financial capability than the other two groups because they possess more cognitive ability than college dropouts and more life experience than college enrollees. Differences in financial capability between college dropouts and enrollees are ambiguous depending on several factors such as weights of financial knowledge and financial behavior effects on the overall financial capability. Thus, the following hypothesis is proposed:

H3: Among student loan holders, college graduates have a higher level of financial capability than college enrollees and dropouts.

## **Methods**

### **Data**

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Data used in this study was from the 2015 U.S. National Financial Capability Study (NFCS), commissioned by the FINRA Investor Education Foundation and conducted by Applied Research and Consulting LLC. Background information about this data set can be found in Lin et al. (2016). Started in 2009, the NFCS is composed of triennial surveys that have been widely used and validated as a representative sample of the American population by researchers in economics, business, consumer finance, and other social science fields. The 2015 survey included several new questions about student loans. In this study, only respondents who had student loans for their own education programs were selected. To accurately identify education attainments of these student loan holders, we used multiple variables. For college graduates, we used G34=1 (completed the education program from which borrowed money) and A5=6 or 7 (bachelor's degree or postgraduate degree) to capture college graduates and a limited number of postgraduates). For college dropouts, we used G34=2 (did not complete the education program from which borrowed money) and A5=4 (some college, no degree). For current college students, we used a combination of G34=3 (still enrolled in the education program from which borrowed money) and A22=1 (attending 4-year college or university), which resulted in a sample size of 3,312, among which 2,065 completed, 762 dropped out, and 485 were enrolled in a higher education program. These subgroups of student loan holders were examined in this study because they may have differences in financial knowledge, behavior, and capability so that their needs for financial education may be different.

### **Variables**

Table 1 presents specifications of variables used in this study including the original wordings of several variables. Following previous research (Xiao et al. 2015), financial capability variables include four indicators and one index. The four indicators are objective

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financial knowledge, subjective financial knowledge, desirable financial behavior, and perceived financial capability. Financial knowledge was measured by the objective and subjective financial knowledge variables. Previous research suggested that these two types of knowledge have different effects on consumer behavior (Xiao et al. 2011). Objective financial knowledge was the quiz score of six financial knowledge questions ranging from 0 to 6. Subjective financial knowledge was a self-assessment of financial knowledge with a range of 1-7 (1=very low, 7=very high). Desirable financial behavior was the number of desirable financial behaviors performed and reported by the respondents with a range of 0-5 (0=no behavior is performed, 5=all five behaviors are performed). Financial capability was measured by two measures following previous research (Xiao and Porto 2017). Perceived financial capability was a self-assessment of money management ability with a range of 1-7 (1=very low, 7=very high). The financial capability index was constructed by summing up Z scores of the four indicators of financial capability.

Student loan holders were divided into three types, college students, graduates, and dropouts (see the data section for detailed specifications). Several socioeconomic variables, gender, race, marital status, having dependent children, employment status, age, and income were included to provide profiles of student loan holders and to be used for control variables in later regression analyses (Table 1).

## **Data Analyses**

To test the hypotheses, both bivariate and multivariate analyses were conducted. As preliminary analyses, MANOVA were conducted among three student loan holder types on financial capability variables. In addition, multivariate OLS regressions were conducted by

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adding student loan holder types and control variables. To provide specific information for financial education, additional Chi-square tests on specific financial knowledge and behavior variables among student loan holder types were conducted.

### **Results**

#### **Descriptive Statistics of the Sample**

Table 2 presents descriptive statistics of the sample. When profiles of three types of student loan holders are compared, two patterns emerge. First, college graduates and dropouts are similar as a group compared to college enrollees. College graduates and dropouts are more likely than enrollees to be male, white, married, older, and have dependent children. The second pattern is related to employment status and income. College graduates have the highest level, college enrollees have the lowest level, and college dropouts are in between in terms of employment status and income. These facts confirmed several assumptions we made in the conceptual framework section suggesting that most college enrollees are younger, single and less likely to be employed while still in college.

#### **Financial Capability by Student Loan Holder Type**

MANOVA results in Table 3 show group differences in all four indicators and the index of financial capability that demonstrate the same pattern, where financial capability variables are dependent variables and education attainment type is the independent variable. College graduates had higher scores on all four indicators and the index of financial capability than college dropouts and enrollees. For example, for objective financial knowledge, the mean score of college graduates was 3.43 out of a possible perfect score of 6, while those of college dropouts and enrollees were 2.69 and 2.75, respectively. The scores of college graduates were

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significantly higher than those of the other two groups, while the scores of college dropouts and enrollees were not statistically different from each other. The same patterns are shown in subjective financial knowledge, desirable financial behavior, perceived financial capability, and the index of financial capability.

OLS regression analyses on financial capability variables were conducted where control variables were added in addition to the education attainment variable and the results are presented in Table 4. Three main patterns emerged from these analyses. First, controlling for socioeconomic variables, when comparing the three student types, college graduates had the highest and dropouts had the lowest scores in objective financial knowledge, desirable financial behaviors and the index of financial capability. Second, college graduates had statistically higher scores than enrollees in perceived financial capability. Third, college dropouts had a lower score than enrollees in subjective financial knowledge.

### **Additional Analyses**

**Specific Financial Knowledge by Student Loan Holder Type.** To gain more insights and provide more specific information for consumer educators, we conducted additional analyses on specific financial knowledge and financial behaviors by student loan holder types. Table 5 presents the results of Chi-square tests on specific financial knowledge, where financial knowledge variables are dependent variables and education attainment type is the independent variable. For the whole sample, the percentages, by topic, of respondents who correctly answered six financial knowledge questions were 76% (interest), 48% (inflation), 23% (bond), 34% (time value of money), 73% (mortgage), and 38% (stock), respectively.

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Chi-square tests results are statistically significant for all financial knowledge questions. For the interest question, proportions of those having answered correctly among college graduates, dropouts, and enrollees were 79%, 72%, and 77%, respectively;  $\chi^2(2, N = 3,312) = 18.28, p < 0.001$ . For the inflation question, proportions of those having answered correctly among college graduates, dropouts, and enrollees were 52%, 44%, and 48%, respectively;  $\chi^2(2, N = 3,312) = 27.21, p < 0.001$ . For the bond question, proportions of those having answered correctly among college graduates, dropouts, and enrollees were 26%, 24%, and 19%, respectively;  $\chi^2(2, N = 3,312) = 17.19, p < 0.001$ . For the time value of money question, proportions of those having answered correctly among college graduates, dropouts, and enrollees were 39%, 31%, and 31%, respectively;  $\chi^2(2, N = 3,312) = 36.26, p < 0.001$ . For the mortgage question, proportions of those having answered correctly among college graduates, dropouts, and enrollees were 81%, 68%, and 71%, respectively;  $\chi^2(2, N = 3,312) = 93.79, p < 0.001$ .

A comparison of the three types of student loan holders, revealed four patterns. The first pattern demonstrated that college graduates and enrollees had significantly higher correct answer rates than that of college dropouts for the question about interest. as 79% of college graduates and 77% of college enrollees provided correct answers, higher than 72% of college dropouts who answered correctly. The question on inflation revealed pattern 2, for which rates of the correct answer were 52% for graduates, 48% for enrollees, and 44% for dropouts, and that they were statistically different from each other. Pattern 3 emerged in the bond question where college graduates and dropouts as a group had significantly higher rates of correct responses than college enrollees, 26% for graduates and 24% for dropouts vs. 19% for enrollees. The last three questions showed pattern 4, in which the rate of correct responses of college graduates was significantly higher than college dropouts and enrollees. For example, for the question of the

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time value of money, the correct answer rate of graduates was 39%, higher than the 31% rate for both dropouts and enrollees. For the mortgage question, the correct answer rate of graduates was 81%, a rate higher than 68% for dropouts and 71% for enrollees. For the stock question, the correct answer rate of graduates was 44%, while it was 34% for dropouts and 36% for enrollees. Pattern 1 and 2 may reflect the effect of cognitive ability, pattern 3 may reflect the effect of life experience, and pattern 4 may reflect effects of both cognitive ability and life experience.

**Specific Financial Behaviors by Student Loan Holder Type.** Table 6 presents the results of Chi-square tests on specific desirable financial behaviors, where financial behavior variables are dependent variables and education attainment type is the independent variable. Among the whole sample, percentages of respondents performing these behaviors are 34% (underspending), 30% (emergency saving), 57% (budgeting), 57% (goal setting), and 33% (retirement need calculating), respectively.

Chi-square tests results are statistically significant for all financial behavior variables. For underspending behavior, proportions of those having answered yes among college graduates, dropouts, and enrollees were 40%, 29%, and 32%, respectively;  $\chi^2(2, N = 3,312) = 36.19, p < 0.001$ . For emergency saving behavior, proportions of those having answered yes among college graduates, dropouts, and enrollees were 42%, 19%, and 25%, respectively;  $\chi^2(2, N = 3,312) = 151.66, p < 0.001$ . For budgeting behavior, proportions of those having answered yes among college graduates, dropouts, and enrollees were 63%, 55%, and 51%, respectively;  $\chi^2(2, N = 3,312) = 33.43, p < 0.001$ . For goal setting behavior, proportions of those having answered yes among college graduates, dropouts, and enrollees are 67%, 47%, and 55%, respectively;  $\chi^2(2, N = 3,312) = 107.75, p < 0.001$ . For retirement needs calculating behavior, proportions of those

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having answered yes among college graduates, dropouts, and enrollees were 50%, 25%, and 22%, respectively;  $\chi^2(2, N = 3,312) = 216.27, p < 0.001$ .

Compared to the three types of student loan holders, two patterns are evident. The first pattern is that the proportions of self-reported specific behaviors of college graduates are higher than the other two groups. For the behavior of underspending, the performance rate is 40% for college graduates, higher than 29% for dropouts and 32% for enrollees. The same pattern is shown in other behaviors such as emergency saving (42%, higher than 19% and 25%) and budgeting (63%, higher than 55% and 51%). The second pattern refers to the situation in which three groups differ from each other in two self-reported financial behaviors. For goal setting, 67% of college graduates, 47% of dropouts, and 55% of enrollees reported this behavior. For retirement need calculating, 50% of college graduates, 35% of dropouts, and 22% of enrollees reported this behavior. These findings suggest that college graduates are more likely to perform desirable money management behaviors than college dropouts and enrollees.

## **Discussions**

This study used a large scale, national data set to examine differences in financial capability variables among three types of student loan holders in terms of their college completion status. Compared to previous research, this study contributed to the literature by examining differences in five financial capability variables and differences in specific financial knowledge items and financial behaviors among three types of student loan holders.

The results of this study provided partial support for the three hypotheses. H1 (both college graduates and enrollees have higher levels of financial knowledge than college dropouts) is mostly supported by multivariate analysis results after several socioeconomic variables are



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controlled. In Table 4, college dropouts tend to score lower than the other two groups in both objective knowledge and subjective knowledge, consistent with H1. In addition, college graduates tend to score higher than college enrollees in objective knowledge, while there is no difference in subjective knowledge between the two groups, suggesting subtle differences between objective and subjective knowledge. The finding implies that two types of knowledge may have different effects on consumer behavior and wellbeing as indicated by previous research (Xiao et al. 2011).

H2 (both college graduates and dropouts perform more desirable financial behaviors) is also only partially supported. College graduates tend to report more desirable financial behaviors than the other two groups, which is consistent with H2, while the number of desirable financial behaviors reported by college dropouts is lower than that of college enrollees (Tables 4). Findings of specific financial behaviors show that college graduates are more likely to perform each of five financial behaviors than the other two groups, while for three specific behaviors, there are no differences between college enrollees and dropouts. This suggests that desirable financial behaviors may be impacted by not only cognitive ability and life experience, but also by other personality traits such as conscientiousness (Letkiewicz and Fox 2014).

H3 (college graduates have a higher level of financial capability than college dropouts and enrollees) is, again, partially supported. As measured by both the perceived financial capability and the financial capability index, college graduates displayed a higher level of financial capability than the other two groups, consistent with H3. In addition, there is no difference in perceived financial capability between college dropouts and enrollees but college enrollees tended to score higher than college dropouts in the financial capability index (Table 4). These findings suggest that in terms of financial capability, college graduates have the highest

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level, while college dropouts have the lowest level. Previous research suggests that college dropouts have different characteristics in terms of financial independence (Xiao et al. 2014). This study provides additional information to meet special education needs of various student loan holders including those who have borrowed student loans but do not complete their education program.

### **Conclusion, Limitations, and Implications**

#### **Conclusion**

Using a large national data set from the U.S., this study has examined differences in financial capability among three types of student loan holders who are college students, graduates, and dropouts. Multivariate results show that college graduates tend to score the highest on all financial capability indicators, while college dropouts tend to score the lowest in these indicators. For specific financial knowledge, several group differences are shown. For specific financial behaviors, college graduates are more likely to perform all of them than college students and dropouts.

College students are, by definition, in a transitional state leading to either graduation or becoming dropouts. Recent data shows that 60% of first-time, full-time students graduate in 6 years or less (US Department of Education 2019). Roughly 1 in 3 students drop out during their first year of college. Those leaving college without a degree while still paying for student loans will start their professional life being disadvantaged on not just their educational attainment but also their financial capability.

#### **Limitations**

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This study is limited to cross-sectional survey data that can only provide a snapshot of student loan holders and group differences in financial capability variables. To better understand long term consequences of student loan holding and financial capability, relevant longitudinal data are needed. Future research could also address how financial capability is developed among different student loan holders and how to help them enhance their financial capability and wellbeing. In addition, this study did not examine education differences in financial capability but education status differences among student loan holders. In future research, if educational differences in financial capability is studied, a different variable, education attainment, should be used for that purpose. Finally, while this study focused primarily on differences in financial capability among three types of student loan holders, other student loan variables such as loan type (federal and private) or if estimating monthly payment in advance may be of interest for future research focusing on different aspects of student loan holders.

## **Implications**

Keeping limitations of the study in mind, the findings of this study have direct implications for consumer education. Research evidence continues to support the benefits of financial education for consumer wellbeing (Brown et al. 2014; Brown et al. 2016; Wagner and Walstad 2019; Kaiser et al. 2020). Financial educators should be aware of different needs of the three types of student loan holders. According to our results, college graduates have a higher level of financial capability than college students and dropouts, in which they are more likely to perform desirable financial behaviors and more knowledgeable in all specific knowledge items. Moreover, these results also suggest that improving the financial capability of college students while they are still in college might improve their chances to graduate. The data used in this study is cross-sectional so no claims of causality or directionality are feasible; however, the low

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level of financial capability of dropouts compared to the other two groups suggests that this may contribute to their inability to graduate. Financial education while in college would provide the opportunity to improve students' financial capability in terms of both knowledge and behavior and, presumably, also improve their chances to graduate.

Findings of this study suggest that when teaching financial education for the three types of student loan holders, different contents need to be stressed for different groups. Both college students and dropouts are less likely to perform desirable financial behaviors that could have been encouraged by education. Action-oriented education programs that are based on the theory of transtheoretical models of behavioral change (TTM) can be developed and delivered (Prochaska, DiClemente, and Norcross 1992; Xiao et al. 2004). For educational content design, specific findings of this study could be referenced to address deficiencies of financial knowledge of certain loan holder types such as college students and dropouts.

The results show that college dropouts have the lowest level of financial capability in terms of knowledge, behavior, and overall capability. As such, consumer educators, counselors and advisors offering financial education should pay special attention to clients that have dropped out from college. When college dropouts are identified, these consumer professionals can provide specific information to enhance their knowledge and strengthen their overall financial capability while encouraging them to engage in desirable financial behaviors. Many educational resources and tools developed by researchers and educators, available from Consumer Financial Protection Bureau (CFPB), National Endowment for Financial Education (NEFE), and other public education website can be used for these purposes.

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## Financial Capability of Student Loan Holders

Table 1

### Variable Specifications

Variable name	Variable label	Attribute
	<i>Financial capability</i>	
Sum(m6, m7, m8, m31, m9, m10)	Objective financial literacy	0-6, the sum of correct numbers for financial literacy questions. The original financial literacy variables (m6-m10) were recoded to binary variables in which 1=correct answer, 0=otherwise and then the new variables were summed to form the score. These questions asked financial knowledge about interest (m6), inflation (m7), bond (m8), loan (m31), mortgage (m9), and stock (m10). More details about these questions can be found at Lin et al. (2016).
M4	Subjective financial literacy	The question is “On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?”
Sum(J3, J5, J31, J33, J8J9)	Desirable financial behavior	The sum of five desirable financial behaviors: spending within income (J3), saving for emergency (J5), budgeting (J31), setting financial goals (J33), and calculating retirement needs (J8 and J9). All of these variables are appropriately recoded to binary variables.
M1_1	Perceived financial capability	The question is “I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses,” 1-strongly disagree, 7-strongly agree.
	Financial capability index	A sum of Z scores of objective knowledge, subjective knowledge, financial behavior, and perceived financial capability variables.
	<i>Student loan variables</i>	
G34, A5, A22_2015	Education attainment type	The question is “Did you complete the most recent educational program for which you borrowed money?” 1=yes, 2=no, 3=still enrolled in the program. Graduates (G34=1 and A5=6, 7), Dropouts (G34=2, and A5=4), Enrolled (G34=3 and A22_2015=1)
	<i>Socioeconomic variables</i>	
a3	Being female (vs. male)	Recoded, 1=female, 0=male
A4a_new_w	Being Non-White	Recoded, 1=non-white, 0=white
a6	Being married	Recoded, 1=married, 0=not married
a11	Having dependent children	Recoded, 1=yes, 0=no
a9	Working	Recoded, 1=yes, 0=no
A3Ar_w	Age group	Recoded to 3 age groups: 1-18-34 2-35-54 3-55 or older
a8	Income level	Recoded to 4 income levels: 1-Less than\$25,000 2-At least \$25,000 but less than \$50,000 3-At least \$50,000 but less than \$75,000 4-At least \$75,000 or more

## Financial Capability of Student Loan Holders

Table 2

*Descriptive Statistics of the Sample (%)*

	Graduates	Dropouts	Enrollees
Gender (Female=1)	60%	63%	66%
Age 18-34	55%	57%	86%
Age 35-54	38%	36%	12%
Age 55 or older	7%	6%	2%
Income under \$25,000	13%	37%	57%
Income \$25,000-\$49,999	25%	35%	21%
Income \$50,000-\$74,999	41%	24%	16%
Income \$75,000 or higher	21%	4%	6%
Ethnicity (White=1)	64%	60%	54%
Married=1	51%	38%	14%
Dependent Child(ren)=1	48%	48%	22%
Working=1	84%	58%	30%
Observations (3,312)	2,065	762	485

FINRA 2015 National Financial Capability Study

## Financial Capability of Student Loan Holders

Table 3

*Result of MANOVA of Financial Capability Indicators*

Financial Capability Type	Holder	Mean	ST	Diff
Objective financial knowledge (0-6)	Graduates	3.43	1.48	a
	Dropouts	2.69	1.26	b
	Enrollees	2.75	1.16	b
	Total	2.96	1.30	
Subjective financial knowledge (1-7)	Graduates	5.32	1.60	a
	Dropouts	4.89	1.37	b
	Enrollees	4.85	1.27	b
	Total	5.02	1.41	
Perceived financial capability (1-7)	Graduates	5.84	1.52	a
	Dropouts	5.31	1.30	b
	Enrollees	5.30	1.21	b
	Total	5.48	1.34	
Desirable financial behavior (0-5)	Graduates	2.62	1.50	a
	Dropouts	1.75	1.29	b
	Enrollees	1.84	1.19	b
	Total	2.07	1.33	
Financial capability index	Graduates	0.22	1.26	a
	Dropouts	-1.52	1.04	b
	Enrollees	-1.47	1.01	b
	Total	-0.62	1.10	

Note. In the column “Diff,” group a is statistically different from group b at significance level of 1% based on post hoc tests. For example, for objective financial knowledge, the mean score of college graduates is significantly higher than the other two groups, while there is no difference between scores of college dropouts and enrollees.

## Financial Capability of Student Loan Holders

Table 4: OLS Regression Results on Financial Capability Variables

	(1) Objective Financial Knowledge b/se	(2) Subjective Financial Knowledge b/se	(3) Perceived Financial Capability b/se	(4) Desirable Financial Behaviors b/se	(5) Financial Capability Index b/se
<b>Loan Type (ref: Enrolled)</b>					
Graduates	0.3599*** (0.085)	0.1152 (0.073)	0.3231** (0.096)	0.3706*** (0.073)	0.7872*** (0.141)
Dropouts	-0.1947* (0.095)	-0.1484* (0.072)	-0.0778 (0.098)	-0.1946** (0.071)	-0.4246** (0.131)
Female=1	-0.4519*** (0.065)	-0.4285*** (0.035)	-0.0760 (0.049)	-0.2204*** (0.042)	-0.8290*** (0.073)
<i>Age (ref: 18-34)</i>					
35-54	0.3083*** (0.063)	0.0484 (0.044)	-0.0183 (0.067)	-0.3481*** (0.047)	-0.0163 (0.105)
55 and older	0.5791*** (0.122)	0.0925 (0.090)	0.2829** (0.098)	-0.1096 (0.095)	0.5554*** (0.157)
<i>Income (ref: under \$25,000)</i>					
\$25,000-\$49,999	0.2213** (0.072)	0.2636*** (0.065)	0.0739 (0.076)	0.1598* (0.076)	0.5114*** (0.137)
\$50,000-\$74,999	0.2772*** (0.072)	0.3657*** (0.068)	0.2369** (0.086)	0.5973*** (0.072)	1.0344*** (0.128)
\$75,000 or higher	0.6292*** (0.106)	0.4661*** (0.071)	0.3462*** (0.080)	0.9044*** (0.080)	1.6095*** (0.140)
Race (White = 1)	0.4623*** (0.055)	-0.1539*** (0.034)	0.0503 (0.049)	-0.1384** (0.050)	0.0936 (0.075)
Married=1	0.0702 (0.071)	0.0877 (0.061)	0.1523* (0.067)	0.2254*** (0.061)	0.3727** (0.120)
Dependent Child(ren)	-0.2834*** (0.074)	0.2790*** (0.044)	-0.0105 (0.055)	0.1390* (0.067)	0.1474 (0.096)
Employment (working=1)	0.0283 (0.072)	0.0950 (0.055)	0.0409 (0.065)	0.1625* (0.062)	0.2325 (0.116)
Constant	2.6715*** (0.095)	4.9621*** (0.082)	5.2243*** (0.091)	1.8166*** (0.087)	-1.5123*** (0.150)
Observations	3.312	3.312	3.312	3.312	3,312

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\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



## Financial Capability of Student Loan Holders

Table 5

*Chi-square Test Results on Specific Financial Knowledge*

Financial Knowledge	Holder Type	%	Diff
Interest $X^2=18.28$ , $p<.001$ , Cramér's $V=.074$	Graduates	79	a
	Dropouts	72	b
	Enrollees	77	a
	Total sample	76	
Inflation $X^2=27.21$ , $p<.001$ , Cramér's $V=.071$	Graduates	52	a
	Dropouts	44	b
	Enrollees	48	c
	Total sample	48	
Bond $X^2=17.19$ , $p<.001$ , Cramér's $V=.056$	Graduates	26	a
	Dropouts	24	a
	Enrollees	19	b
	Total sample	23	
TVM $X^2=36.26$ , $p<.001$ , Cramér's $V=.082$	Graduates	39	a
	Dropouts	31	b
	Enrollees	31	b
	Total sample	34	
Mortgage $X^2=93.79$ , $p<.001$ , Cramér's $V=.132$	Graduates	81	a
	Dropouts	68	b
	Enrollees	71	b
	Total sample	73	
Stock $X^2=46.84$ , $p<.001$ , Cramér's $V=.093$	Graduates	44	a
	Dropouts	34	b
	Enrollees	36	b
	Total sample	38	

Note. For all tests,  $DF=2$ ,  $N=3.312$ . In the column "Diff," group a is statistically different from group b at significance level of 5% or better based on post hoc tests. For example, for the "interest" question, the correct answer rate of college dropouts is significantly lower than the other two groups, while there is no difference in correct answer rates between college graduates and enrollees.

## Financial Capability of Student Loan Holders

Table 6

*Chi-square Test Results on Specific Financial Behaviors*

Desirable Financial Behavior Type	Holder	%	Diff
Underspending $X^2=36.19$ , $p<.001$ , Cramér's $V=.105$	Graduates	40	a
	Dropouts	29	b
	Enrollees	32	b
	Total sample	34	
Saving for emergency $X^2=151.66$ , $p<.001$ , Cramér's $V=.214$	Graduates	42	a
	Dropouts	19	b
	Enrollees	25	c
	Total sample	30	
Budgeting $X^2=33.43$ , $p<.001$ , Cramér's $V=.101$	Graduates	63	a
	Dropouts	55	b
	Enrollees	51	b
	Total sample	57	
Setting goals $X^2=107.75$ , $p<.001$ , Cramér's $V=.180$	Graduates	67	a
	Dropouts	47	b
	Enrollees	55	c
	Total sample	57	
Calculating retirement needs $X^2=216.27$ , $p<.001$ , Cramér's $V=.255$	Graduates	50	a
	Dropouts	25	b
	Enrollees	22	b
	Total sample	33	

Note. In the column "Diff," group a is statistically different from group b at significance level of 5% or better based on post hoc tests. For example, for the "underspending" behavior, the performing rate of college graduates is significantly higher than the other two groups, while there is no difference in performing rates between college dropouts and enrollees.

## Financial Capability of Student Loan Holders

Figure 1.

Conceptual Considerations of Financial Capability by Student Loan Holder Type.

