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Understanding Student Loan Repayment: The Role of Sustainable Financial Behaviors, Financial Knowledge, and Bounded Rationality

Gloria Preece [1*], Steve Cox [2]

[1]Assistant Professor, School of Business, Indiana University Kokomo, 2300 S. Washington St. Kokomo, IN. United States
Email ID : gpreece@iu.edu

[2]School of Business, Indiana University Kokomo, 2300 S. Washington St. Kokomo, IN. United States

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KEYWORDS

Neuromarketing, Behavior Patterns, Neural Communication, Systematic Review

ABSTRACT

Using data from the 2018 National Financial Capability Study, we use a series of logistic regressions to isolate the relationship between on-time student loan repayment and demographic and economic variables, as well as the impact of financial behavior, financial knowledge, and financial education. We find that older borrowers, male borrowers, non-white borrowers, and borrowers with children are less likely to make timely student loan payments. When it comes to behavior, earning a degree and subsequently earning more income are essential to successful loan payback. Financial knowledge and sustainable financial behaviors are also important predictors of on-time student loan repayment. However, financial education seems to have no impact. We argue that bounded rationality describes the process of many student loan decisions. While formal financial education can communicate the behaviors that are likely to result in successful student loan repayment, many young borrowers can't engage in successful cost benefit analysis because they don't know enough about their future academic and professional prospects. As a result, they choose student loan strategies that suffice based on limited analysis with the primary goal to simply make it to college. We conclude that nudges are likely to be more effective in guiding students to successful student loan strategies than traditional education models that assume the average student is self-aware and has the cognitive power to consider the many variables that will influence what their lives will look like in the years after they matriculate...

1. STATEMENT OF THE PROBLEM AND LITERATURE REVIEW

Over the past decade, outstanding student loan debt in the United States has more than doubled, reaching $1.75 trillion in 2023, with $1.57 trillion in federal loans. Student loans are now the fastest-growing household debt category, second only to mortgages, which total $12.01 trillion (Federal Reserve Bank of New York, 2023). With 43.4 million borrowers and an average balance of $28,950, student loans present growing concerns for both borrowers' financial well-being and the broader economy (Federal Student Aid Office, 2023).

Although student loans are intended to improve access to higher education and enhance long-term financial outcomes, many borrowers encounter significant repayment challenges, contributing to elevated delinquency and default rates. Many students make borrowing decisions with incomplete information about their repayment responsibilities, a phenomenon referred to as "borrowing blindly" (Akers & Chingos, 2014). Repayment difficulties are not evenly distributed across the population, with non-white borrowers, male borrowers, and borrowers with dependents facing heightened risks of repayment struggles (Farrell et al., 2020; Furquim et al., 2022).

These disparities do not arise solely from individual financial behaviors. Structural barriers—including institutional racism, gender pay inequities, and the racial wealth gap—contribute to these unequal repayment outcomes (Addo, 2021; Houle & Addo, 2019). Black and Hispanic borrowers are more likely to come from families with less generational wealth, leaving them with fewer financial resources to draw upon for educational expenses and loan repayment. After graduation, they are also more likely to experience labor market discrimination, resulting in lower earnings and fewer opportunities for career advancement, further complicating

repayment (Addo, 2021). For female borrowers, the gender pay gap and disproportionate caregiving responsibilities create additional financial pressures that affect both repayment capacity and long-term wealth accumulation (Houle & Addo, 2019). These structural inequities compound the financial challenges faced by marginalized borrowers, underscoring the need for policies that address both individual financial behaviors and the broader economic and social context shaping repayment outcomes.

In addition to demographic disparities, prior research highlights the importance of financial behavior and financial knowledge in successful repayment. Li (2021) emphasizes that financial behaviors, such as budgeting, saving, and monitoring credit, are closely linked to repayment success. However, formal financial education programs alone have produced mixed results in improving borrower outcomes (Willis, 2008). Young borrowers, in particular, make complex financial decisions under conditions of bounded rationality, where limited information, cognitive biases, and future uncertainty constrain their ability to fully anticipate repayment obligations and long-term financial consequences (Simon, 1955). These behavioral and cognitive limitations suggest that traditional financial literacy programs may need to evolve into targeted behavioral interventions that leverage choice architecture and nudges to promote more responsible borrowing and repayment decisions (Thaler & Sunstein, 2008).

The increase in student borrowing has been driven by a combination of political, economic, and social factors, including rising tuition, reduced state investment in higher education, and increasing enrollment among low-income and minority students, who are more reliant on student loans (Gordon & Hedlund, 2020; Kim & Kim, 2022). As student loan debt has grown, it has become a highly visible political issue, with policymakers and candidates proposing loan forgiveness, debt-free college, and tuition-free education initiatives to address concerns over borrower distress.

Brook and Levin (2020) describe the federal student loan system as functioning more like a progressive, income-based tax program than a conventional credit product. Borrowers are not strictly required to repay their full balances but are instead entitled to fulfill their repayment obligations by paying a portion of their income for a set number of years, after which remaining balances are forgiven. Despite these flexible repayment options, default rates remain high. The PEW Charitable Trusts (2021) found that approximately one-third of federal student loan borrowers experienced default at some point in the past 20 years. Further, 25% of borrowers default within the first five years of repayment (Education Data Initiative, 2023).

These repayment struggles have prompted extensive research into the factors influencing repayment success. Farrell et al. (2020) characterize the issue not simply as a student loan debt crisis, but as a student loan repayment crisis. Mezza et al. (2016) show that student loan debt delays homeownership among young borrowers, while Elliott et al. (2013) find that households with student loan debt accumulate significantly less retirement savings than similar households without student loans. Hayhoe (2002) finds that among borrowers early in repayment, one-third report greater financial risk due to longer-than-expected repayment timelines. Archuleta et al. (2013) identify higher anxiety levels among younger borrowers as they begin to comprehend the full scope of their debt obligations.

Socioeconomic disparities further compound these challenges. Houle (2014) finds that young adults from lower socioeconomic backgrounds are more likely to accumulate higher-than-average student debt burdens. Johnson et al. (2016) find that low levels of student loan knowledge are linked to poor financial and academic decision-making, further increasing the risk of repayment problems. However, degree completion is a protective factor. Borrowers with bachelor's or graduate degrees are less likely to default, even though they typically hold larger loan balances and have higher payment-to-income ratios (Lee et al., 2018).

Despite these challenges, it is important to recognize that student loans can serve as investments in human capital, leading to higher lifetime earnings and greater financial satisfaction for many borrowers (Robb et al., 2019). Nevertheless, the studies reviewed here illustrate that the financial benefits of student borrowing are not guaranteed and that repayment struggles, economic disparities, and financial stress remain significant concerns. To promote borrower financial well-being and protect broader economic stability, Lusardi et al. (2016) recommend ongoing research and monitoring to better understand the determinants of student loan repayment outcomes.

This study contributes to this growing literature by investigating the interplay between demographic characteristics, financial behaviors, and financial knowledge to better understand what drives on-time student loan repayment and what contributes to repayment struggles. By identifying these factors, this research provides empirical evidence to inform policy development, educational programming, and financial services, with the goal of improving repayment success and promoting greater financial stability for all borrowers, particularly those from historically disadvantaged populations.

Data and Sample

The study uses data from the 2018 National Financial Capability Study (NFCS) dataset to estimate the determinants of on-time student loan payments. The NFCS employs a stratified random sampling strategy to ensure a representative cross-section of the U.S. adult population. Data collection is conducted through online and telephone surveys, gathering self-reported information on financial behaviors, knowledge, and attitudes. The study utilizes a range of statistical analyses, including descriptive statistics to summarize data and inferential statistics to identify relationships and differences among subgroups. These methods aim to provide a comprehensive overview of financial capability across the nation, though they

are subject to limitations inherent in survey-based research. During June and October 2018, respondent interviews were conducted. Approximately 500 respondents from each state and the District of Columbia were gathered, resulting in a total sample size of 27,091 observations. Sample weights, derived from the American Community Survey, were applied to standardize the data to be nationally representative. The analytical sample in this study is from a subsample of NFCS respondents who: (a) had outstanding student loan(s), (b) were in the repayment stage, and (c) were 18 to 64 years old. This produced a sample of 2,921 student loan borrowers.

2. METHODOLOGY

The determinants of on-time student loan repayment can be analyzed through the lens of Social Cognitive Theory (Bandura, 1986), which emphasizes the interaction between environmental influences, personal factors, and behavioral attributes. Applying this framework, the study examines cognitive factors related to the financial aspects of student loans, focusing on the influence of financial education (environment), financial knowledge (personal factors), and financial behavior (behavior). Traditional demographic and economic variables are also included as controls to account for their established influence on repayment outcomes. Additional factors, such as first-generation status, field of study, and geographic location, were considered but excluded due to data limitations or weaker observed associations with repayment. Grounded in this theoretical framework, the following three hypotheses are proposed:

H1: On-time student loan repayment will be positively associated with formal financial

education (SCT – environment factor).

H2: On-time student loan repayment will be positively associated with higher levels of financial knowledge (SCT - personal factor).

H3: On-time student loan repayment will be positively associated with positive financial behaviors (SCT – behavior factor).

We test these hypotheses using multinomial logistic regression models, allowing us to examine the relationships between on-time student loan repayment behavior and a set of demographic, economic, and Social Cognitive Theory (SCT) variables. Table 1 provides the mean values for both the dependent and independent variables, which are described in detail in the following sections.

Table 1 Descriptive Statistics (n = 2,921)

Dependent Variables	
Always On-Time Student Repayment History	52.0%
Late Once Student Repayment History	15.1%
Late More Than Once Repayment History	32.9%
Independent Variables (Demographic)	
Age	
18-24 (reference group)	13.4%
25-34	41.6%
35-44	28.8%
45-54	12.1%
55-64	3.7%
Gender	
Male	40.5%
Female (reference group)	59.5%
Race	
White	63.2%
Non-White (reference group)	36.8%
Marital Status	
Married	44.5%
Unmarried (reference group)	55.5%
Dependent Children	
Yes	51.9%

No (reference group)	48.1%
University Education	
Some college – no degree (reference group)	33.5%
Associate Degree	13.8%
Bachelor's degree	32.4%
Graduate degree	20.3%
Independent Variables (Economic)	
Employment	
Employed	83.7%
Not employed (reference group)	16.3%
Income	
Less than 35K (reference group)	24.6%
35K to 50K	15.3%
50K to 75K	21.7%
75K to 150K	33.2%
Above 150K	5.1%
Independent Variables (Environmental Factors)	
Financial Education in High School	18.0%
Financial Education in College	21.7%
Financial Education at Work	12.5%
Financial Education in the Military	5.8%
No Financial Education	68.9%
Independent Variables (Personal Factors)	
Financial Knowledge (Composite Result)	2.61
Compound interest question	0.75
Inflation question	0.47
Bonds question	0.22
Mortgages question	0.79
Diversification question	0.39
Financial Confidence	5.01
Independent Variables (Behavioral Factors)	
Composite Result	5.74
Spend less than income	0.35
Maintains health insurance	0.89
Presence of an emergency fund	0.40
Calculate for retirement	0.47
Has a self-retirement account	0.29
Has an employer sponsored retirement account	0.66
Has a checking account	0.94
Has a savings account	0.77
Rated credit record good or very good	0.98

Dependent Variables

The dependent variables are based on student loan borrowers' responses to the following question from the NFCS: *"How many times have you been late with your student loan payment in the last 12 months? (If you have more than one student loan, please consider them all.)"*

In Model 1, borrowers who reported always paying on time are assigned a value of 1, while those who reported one or more late payments are assigned a value of 0. The sample size for Model 1 is 2,921.

However, a single missed payment may not accurately indicate a borrower who is experiencing serious repayment challenges, as it could reflect a minor oversight rather than ongoing financial distress. To better differentiate consistent on-time payers from those struggling with repayment, Model 2 assigns a value of 1 to borrowers who always paid on time and a value of 0 to those who reported more than one late payment. The sample size for Model 2 is 2,479.

Demographic/Economic Independent Variables

This study uses demographic variables from the NFCS dataset, including age, gender, race, marital status, dependent children, education, employment, and income, to examine their impact on student loan repayment outcomes. These variables were prioritized based on strong evidence from prior research demonstrating their influence on default risk and repayment behavior, particularly through their connection to financial stability and structural inequalities.

Age is included as research consistently shows that older borrowers are more likely to default, reflecting differences in career stability, financial obligations, and education pathways (Gross et al., 2009). Borrowers aged 18-24 serve as the reference group.

Gender was prioritized given the increasing share of female college enrollment (now nearly 60%) and research showing women borrow more, repay at slower rates, and face lower post-graduation earnings (National Student Clearinghouse, 2022; Hanson, 2023). While some studies find no gender differences in default rates, others show men are more likely to default, though more recent evidence shows women may face unique repayment challenges (Wilms et al., 1987; Volkwein & Szelest, 1995; Flint, 1997; Podgursky, 2002; McKinney et al., 2021; Farrell et al., 2020; Furquim et al., 2022). Women are the reference group.

Race was included due to persistent racial disparities in borrowing, repayment, and default rates, driven by structural barriers in wealth, employment, and educational opportunities (Gross et al., 2009; Farrell et al., 2020; Furquim et al., 2022; Pew, 2021). Non-white borrowers serve as the reference group.

Parental and marital status capture additional financial pressures affecting repayment. Borrowers with dependents face competing financial demands, while married borrowers may benefit from dual incomes. Research links higher numbers of dependents and divorce/separation to increased default risk (Dynarski, 1994; Volkwein & Szelest, 1995; Woo, 2002; Pew, 2021). Non-married borrowers and those without dependents are the reference groups.

Educational attainment was included due to its strong link with repayment success, with degree completion consistently identified as a key predictor of avoiding default (Gross et al., 2009). Borrowers with some college but no degree serve as the reference group.

Employment and income are essential predictors, as unemployment and low income increase default risk (Dynarski, 1994; Flint, 1994; Volkwein et al., 1998; Monteverde, 2000; Woo, 2002; Lochner & Monge-Naranjo, 2004). Unemployed borrowers and those earning under $35,000 are the reference groups.

Explanatory Variables

This study measures financial education, financial knowledge, and financial behavior using a combination of self-reported data and standardized assessments from the National Financial Capability Study (NFCS). Financial education is based on a self-reported binary variable, indicating whether respondents participated in financial education offered by their high school, college, workplace, or military service. Financial knowledge is assessed using five standardized financial literacy questions covering compound interest, inflation, bond pricing, mortgages, and diversification (Lusardi & Mitchell, 2011), with a composite score reflecting the number of correct answers. A self-reported financial confidence score, measured on a seven-point scale, is also included to capture perceived confidence in financial decision-making. Sustainable financial behavior is measured using the Responsible Financial Behaviors Index (Preece et al., 2022), constructed from nine self-reported NFCS items covering five behavioral domains: financial time horizon, money management, financial risk management, debt awareness, and ownership of baseline financial products. Combining objective and self-reported measures strengthens the study's reliability and offers a more comprehensive view of financial capability, though self-report bias remains a consideration.

Financial Education refers to the process of teaching individuals about financial concepts, principles, and practices to improve their understanding and management of finances. In addressing student loan debt among college students, a common suggestion has been to provide financial education. However, there has been substantial debate among researchers about the effectiveness and role of financial education, with some arguing that it has been largely ineffective (Willis, 2008). In the current study, financial education is measured as a binary variable using the following NFCS question: "Was financial education offered by your high school, college, workplace, or military service?" The following response "Yes, and I

participated in the financial education" was assigned the value 1 and responses "No" or "Yes, but I did not participate" was assigned the value 0.

Financial Knowledge refers to an individual's understanding of key financial terms and concepts necessary to function effectively in today's economy (Bowen, 2002). This study measures financial knowledge using the five-question financial literacy assessment developed by Lusardi and Mitchell (2011), which has been widely used to assess basic financial literacy. In the NFCS, respondents answered five questions covering compound interest, mortgages, bond pricing, inflation, and diversification. Each correct response is assigned a value of 1, and the composite financial knowledge score for each respondent is calculated by summing the number of correct answers.

Compound Interest: Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? Correct answers were coded as 1, all others are assigned a value of 0.

Inflation: "Imagine that the interest rate on your savings account was 1% per year, and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?" Correct answers were coded as 1, all others are assigned a value of 0.

Bond Pricing: "If interest rates rise, what will typically happen to bond prices?" Correct answers were coded as 1, all others are assigned a value of 0.

Mortgages: "A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less." Correct answers were coded as 1, all others are assigned a value of 0.

Diversification: "Buying a single company's stock usually provides a safer return than a stock mutual fund." Correct answers were coded as 1, all others are assigned a value of 0.

Table 1 shows the mean values of each question and the composite value. In addition to the objective measure of knowledge described above, we also include a self-reported score of financial confidence (seven-point scale) used in the NFCS study.

Sustainable Financial Behavior is measured by the Responsible Financial Behaviors Index (Preece et al., 2022). The index is comprised of the following five financial sub-constructs: (1) Financial time horizon; (2) Money management; (3) Financial risk management; (4) Debt awareness; (5) Ownership of baseline financial products.

Financial time horizon refers to an individual's inclination to plan for future financial needs and serves as an indicator of financial capability (Xiao & O'Neill, 2018). Money management, as a financial behavior, is gauged by a single comprehensive item regarding overall spending, aligning with research by Jorgensen et al. (2017). Financial risk management measures financial behaviors taken to guard against unforeseen events. Studies indicate that individuals with adequate health insurance coverage and an emergency fund are better equipped to withstand economic shocks compared to those without (Lusardi, 2011). Debt awareness assesses an individual's understanding of how their financial behaviors influence financial outcomes. Debt awareness is measured by the financial behaviors related to knowledge of financial information on one's credit report and FICO score. Given the importance of credit reports and scores, consumers should be aware of their contents. Credit experts recommend that consumers periodically check the accuracy and completeness of their credit report information (Lyons et al., 2007).

The index unifies the five financial subconstructs and is operationalized by nine questions from the NFCS. To measure the reliability and internal consistency of the index, Cronbach's alpha was calculated. The alpha score for the nine items is 0.73. The constructs and questions are shown in Appendix 1. Table 1 shows the mean values of each question and the composite value.

3. RESULTS

Model 1 (n=2,921 borrowers in repayment) is a logistic regression that estimates the odds of all on-time payments vs. at least one late payment. Model 2 (n=2,479) is a logistic regression estimates the odds of on-time payments vs. late payment more than once. Model 2 was designed to provide greater contrast between borrowers who always pay on time and borrowers who are struggling in repayment. The cost is a reduced sample size. That said, the regression results are essentially the same. These results are significant with explanatory power in the 24–37% range. The impact of demographic and economic variables are generally consistent with those of previous studies as discussed in the Methodology Section. Model 1 and Model 2 results are presented in Tables 2 and 3 respectively.

Regarding traditional demographic variables, the older the borrower, the greater the likelihood of late payment. For example, borrowers aged 35-54 are about 60% less likely to pay on time compared to the 18-24 reference group. These results are consistent with previous literature indicating that traditional age college students are more likely to subsequently make student loan payments on time compared to students who borrow to attend college later in life.

Male borrowers are approximately 50% less likely to pay on time. Earlier studies generally found no gender differences in payment history. Most more recent studies find results consistent with this study that men are more likely to pay late.

Consistent with all previous studies, our study finds that non-white borrowers are less likely to pay on time (50% less likely in our results). In their review of the literature, Gross et al., (2009) conclude that "race/ethnicity emerges as one of the strongest predictors of default. Our sample does not further distinguish between non-white borrowers based on race or ethnicity.

Student loan borrowers with a dependent child are approximately twice as likely to pay late compared borrowers without dependents. This result is consistent with the findings of Volkwein et al. (1998) who find that having dependent children has a greater negative impact on the likelihood of payment than a borrower's income, parent's income, and quality of academic institution. We do not find a significant impact based on the marriage status of borrowers in repayment. While this may seem inconsistent with previous results, it is likely due to measuring marriage as a binary yes/no variable. Previous studies found significant negative associations between on-time payments and being divorced, separated, or windowed. Not being married does not necessary imply those negatively associated outcomes. This indicates that marriage itself does not necessarily improve repayment outcomes. Instead, intending to be married, and then not being married, is the driver of increased likelihood of late payments.

Borrowers who completed degrees are more likely to pay on time and the odds of paying on time increase as the level of the degree increases. Compared to borrowers that failed to earn a degree, associate degree holders are twice as likely to pay on time, bachelor's degree holders are three times as likely, and graduate degree holders are four times as likely. Economic variables show that income is positively related to the likelihood of on-time payment after household income exceeds $50,000. Borrowers with income between $50,000 and $150,000 are 50% more likely to pay on time compared to the reference group with income below $35,000. Borrowers with income above $150,000 are more than three times likely to pay on time. Interestingly, being employed was not related to loan repayment outcomes. This result might be due to employment status being indirectly captured in the salary data, or because student loan borrowers with high enough household income have the luxury to not work and still make loan repayments.

In these models we apply Bandura's Social Cognitive Theory (1986) by focusing on cognitive factors relating to the financial aspects of student loans. We measure the impact of "environment" with the completion of a formal financial education course. We find completing a course in high school, college, or at work did not change the likelihood of on-time student loan payment. Student loan borrowers who completed a financial education course in the military are more likely to pay late. This unexpected result triggered additional tests (results not shown) that revealed that student loan borrowers in the military are more likely to pay late (independent of financial education). Thus, the "financial education course in the military" variable is likely a proxy for being in the military. In summary, we reject Hypothesis 1 that on-time student loan repayment will be positively associated with formal financial education.

We measure the impact of Bandura's "personal factors" using two measures of each student loan borrower's financial knowledge. The first is the objective measure using the composite results from five NFCS quiz questions regarding compound interest, mortgages, bonds, inflation, and diversification. The second is a self-reported score of financial confidence (on a seven-point scale) gathered in the NFCS study. The composite quiz results are positively related on-time payments. Student loan borrowers with more objective financial knowledge are more likely pay on time. Financial self-confidence regarding financial knowledge is unrelated to payment behavior. The mean response (shown in Table 1) is 5.01, well above the mid-point average of 4. Apparently, student loan borrowers are not different from the general population that tend to, on average, believe that they are better than average. Heck et al. (2018) find that 65% of Americans believe they are smarter than average. Thus, we accept a (modified) Hypothesis 2 that on-time student loan repayment will be positively associated with higher actual levels of financial knowledge while perceived knowledge is not predictive. We measure the impact of Bandura's "behavior" using Preece's (2022) Responsible Financial Behaviors Index. This index is positively related to on-time student loan payments. We can accept Hypothesis 3 that borrowers with more positive financial behaviors will also be more likely to repay student loans on time.

Table 2 Logistic Regression of On-Time Student Loan Payment Versus One Or More Late Payments
(N=2,921)
(Likelihood Ratio Significance <.0001)
Pseudo R-Square range (.243 - .372)

Parameter	b	SE b	Chi-Square (DF=21)	Odds Ratio	95% Wald Confid. Lower	Upper
Intercept	-1.89	0.24	63.2***			
Independent Variables (Demographic)						
Age 25-34 (18-24 is reference)	-0.75	0.14	28.4***	0.47	0.36	0.62
Age 35-44 (18-24 is reference)	-0.93	0.15	37.7***	0.39	0.29	0.53
Age 45-54 (18-24 is reference)	-0.95	0.17	29.6***	0.39	0.28	0.55

Age 55+ (18-24 is reference)	-1.36	0.25	29.4***	0.26	0.16	0.42
Male (female is reference)	-0.61	0.09	41.9***	0.54	0.45	0.65
White (non-white is reference)	0.62	0.09	46.0**	1.86	1.55	2.22
Married (unmarried is reference)	0.16	0.10	2.6	1.18	0.97	1.44
Dependent Child (none is reference)	-0.68	0.10	48.1***	0.51	0.42	0.61
Associate Degree (some college is reference)	0.68	0.13	25.78***	1.98	1.52	2.58
Bachelor's Degree (some college is reference)	1.08	0.11	96.9***	2.94	2.37	3.65
Graduate Degree (some college is reference)	1.47	0.14	118.6***	4.36	3.35	5.69
Independent Variables (Economic)						
Employed (not employed is reference)	0.15	0.12	1.4	1.16	0.91	1.48
Income 35k to 50k (below 35k is reference)	0.18	0.14	1.6	1.20	0.91	1.58
Income 50k to 75k (below 35k is reference)	0.39	0.14	8.1***	1.47	1.13	1.92
Income 75k to 150k (below 35k is reference)	0.40	0.14	7.9***	1.49	1.13	1.96
Income above 150k (below 35k is reference)	1.25	0.27	21.8***	3.50	2.07	5.93
Independent Variables (Environmental)						
Financial Education in High School	-0.13	0.14	0.8	0.88	0.67	1.15
Financial Education in College	-0.01	0.13	0.0	0.99	0.77	1.26
Financial Education at Work	-0.15	0.17	0.8	0.86	0.62	1.20
Financial Education in the Military	-1.11	0.26	17.8***	0.33	0.20	0.55
Independent Variables (Personal)						
Financial Knowledge (composite quiz result)	0.25	0.03	50.9***	1.28	1.20	1.37
Financial Self Confidence (7-point scale)	-0.02	0.04	0.2	0.99	0.92	1.06
Independent Variables (Behavioral)						
Responsible Financial Actions (composite result)	0.21	0.03	53.7***	1.24	1.17	1.31

*** Significant at 99% confidence

** Significant at 95% confidence

Table 3 Logistic Regression of On-Time Student Loan Payment Versus More Than One Late Payment
(N=2,479)
(Likelihood Ratio Significance <.0001)
Pseudo R-Square range (.270 - .367)

Parameter	b	SE b	Chi-Square (DF=21)	Odds Ratio	95% Wald Confid. Lower	Upper
Intercept	-1.95	0.27	51.7***			
Independent Variables (Demographic)						
Age 25-34 (18-24 is reference)	-0.99	0.17	34.3***	0.37	0.27	0.52
Age 35-44 (18-24 is reference)	-1.27	0.18	49.5***	0.28	0.20	0.40
Age 45-54 (18-24 is reference)	-1.43	0.20	50.8***	0.24	0.16	0.36
Age 55+ (18-24 is reference)	-1.90	0.28	46.2***	0.15	0.09	0.26
Male (female is reference)	-0.47	0.11	18.9***	0.62	0.50	0.77
White (non-white is reference)	0.69	0.10	44.0**	1.99	1.63	2.44

Married (unmarried is reference)	0.03	0.12	0.08	1.03	0.82	1.30
Dependent Child (none is reference)	-0.60	0.11	29.6***	0.55	0.44	0.68
Associate Degree (some college is reference)	0.77	0.15	26.5***	2.16	1.61	2.90
Bachelor's Degree (some college is reference)	1.18	0.12	90.1***	3.26	2.55	4.16
Graduate Degree (some college is reference)	1.48	0.16	90.8***	4.41	3.25	5.99
Independent Variables (Economic)						
Employed (not employed is reference)	0.14	0.14	1.0	1.15	0.88	1.50
Income 35k to 50k (below 35k is reference)	0.23	0.16	2.2	1.26	0.93	1.71
Income 50k to 75k (below 35k is reference)	0.49	0.15	10.6***	1.63	1.21	2.19
Income 75k to 150k (below 35k is reference)	0.58	0.16	13.6***	1.79	1.32	2.45
Income above 150k (below 35k is reference)	1.32	0.31	17.8***	3.74	2.03	6.90
Independent Variables (Environmental)						
Financial Education in High School	0.02	0.16	0.0	1.03	0.75	1.40
Financial Education in College	-0.08	0.15	0.3	0.92	0.69	1.23
Financial Education at Work	-0.28	0.19	2.0	0.76	0.52	1.11
Financial Education in the Military	-1.44	0.30	23.7***	0.24	0.13	0.42
Independent Variables (Personal)						
Financial Knowledge (composite result)	0.15	0.04	14.6***	1.16	1.08	1.26
Financial Self Confidence (7-point scale)	0.02	0.04	0.2	1.02	0.94	1.10
Independent Variables (Behavioral)						
Responsible Financial Actions (composite result)	0.34	0.03	92.3***	1.40	1.31	1.50

*** Significant at 99% confidence

** Significant at 95% confidence

4. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations that should be acknowledged. First, the analysis relies on data from the 2018 National Financial Capability Study (NFCS), which, while comprehensive, may not fully capture the evolving landscape of student loan repayment behaviors, particularly in light of policy changes, economic shifts, and the impacts of the COVID-19 pandemic. Additionally, the data are self-reported, raising the possibility of response biases, including social desirability bias or inaccuracies in participants' recall of their financial behaviors and loan experiences. There are also generalizability concerns, as the NFCS sample may not fully represent all student borrowers, particularly those who left school without borrowing or who obtained loans from non-federal sources. Future research could address these limitations through longitudinal studies that track borrowers over time to better capture changes in financial behavior and repayment outcomes, particularly as they transition from school to repayment. Experimental research could also be valuable, testing the effectiveness of targeted interventions such as personalized financial counseling, behavioral nudges, and repayment support programs, allowing researchers to directly assess which strategies improve repayment success and financial well-being across diverse borrower populations.

Several additional limitations in the study should also be acknowledged. Although the study gathers data on participation in financial education programs, it does not evaluate the content, instructional methods, or overall effectiveness of these programs. This lack of detailed information limits the ability to draw definitive conclusions about the benefits and quality of financial education.

The regression models used in this study identify associations between variables but do not establish causal relationships. Results should be interpreted cautiously, as unmeasured confounding variables could influence the observed relationships. As a result, any cause-and-effect conclusions drawn from these analyses are inherently tentative.

The reliance on self-reported data also introduces the potential for response biases, including social desirability bias, where participants may report behaviors they perceive as more socially acceptable rather than their actual behaviors. This tendency

could result in overreporting of positive financial behaviors and underreporting of financial difficulties, potentially skewing the findings.

The cross-sectional design of this study further limits its ability to observe changes over time, preventing the analysis of how financial knowledge, behaviors, and repayment outcomes evolve after borrowers leave school and enter repayment. In addition, the study measures financial knowledge at the time of survey administration, which occurs after loan decisions were made. As a result, the financial knowledge score and Responsible Financial Behaviors Index may not accurately reflect the level of financial knowledge borrowers had at the time they took on student loans, limiting the ability to draw conclusions about how pre-loan financial literacy influences borrowing and repayment decisions.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The findings of this study provide strong evidence that certain borrower characteristics—including being older, male, non-white, divorced or widowed, or having dependent children—are associated with greater difficulty repaying student loans. However, most borrowers with these characteristics do successfully make their loan payments on time, reinforcing the importance of focusing on financial behaviors and decision-making processes rather than restricting loan access based on demographic characteristics. Since student loans are designed to expand access to higher education, policies should target borrower behaviors and support systems to improve repayment outcomes, rather than excluding populations that most need educational financing. As Thaler and Sunstein (2008) highlight through their work on choice architecture, small changes in how borrowing options and repayment information are presented can effectively nudge students toward more informed borrowing decisions and sustainable financial behaviors without restricting their choices.

Earning a degree emerged as a key factor in repayment success. Borrowers who earn an associate degree are approximately twice as likely to make on-time payments compared to those without a degree, while earning a bachelor's degree triples the likelihood of timely repayment, and a master's degree quadruples it. This confirms the importance of policies that promote degree completion, including stronger academic advising, proactive financial counseling, and targeted retention programs that help students persist to graduation.

Although higher income is linked to better repayment outcomes, this relationship only becomes significant for borrowers earning over $50,000 annually. Yet, not all college graduates achieve these incomes. Recent research by Burning Glass Institute (2024) shows that 52% of bachelor's degree holders are underemployed one year after graduation, and 45% remain underemployed even a decade later, limiting the financial benefits of earning a degree. This underscores the importance of aligning borrowing decisions with realistic post-graduation earnings expectations, particularly for students in lower-wage fields.

Beyond degree attainment and income, factors like field of study, job market conditions, and loan size also shape repayment outcomes. Graduates in higher-paying fields have stronger repayment prospects, while those in lower-paying fields or entering weak job markets face greater risks. Larger loan balances further increase delinquency risk, especially when earnings fall short. While this study focuses on demographics and financial variables, these factors highlight the need for realistic borrowing guidance and targeted financial counseling to improve repayment success.

This study also highlights the importance of sustainable financial behaviors and financial knowledge in successful repayment. Borrowers who engage in sustainable financial practices, such as budgeting and monitoring credit, are more likely to make timely payments. Higher financial knowledge, measured through objective assessment, is also associated with better repayment outcomes. In contrast, participation in formal financial education programs showed no significant relationship with repayment, reinforcing the need for more applied, behavior-focused financial advisement strategies rather than traditional classroom-based financial literacy programs.

To enhance financial preparedness, policies could require mandatory financial education at both the high school and college levels, with content specifically tailored to student loans, debt management, and long-term financial planning. Generic financial literacy programs are often too broad and may fail to address the complexities of borrowing for higher education and the specific financial risks associated with student loans. Embedding targeted, practical financial education modules into required college orientation or first-year seminars would ensure that all students—regardless of background—receive foundational knowledge before taking on debt.

Alongside universal education, targeted support programs should be developed for vulnerable borrower groups, including first-generation students, students of color, and low-income borrowers. These populations face unique structural barriers, including limited access to family financial support, labor market discrimination, and wealth gaps that can amplify repayment challenges. Culturally competent financial counseling tailored to these groups could address both immediate financial decision-making and the broader systemic factors that shape their financial realities.

In addition, pre-loan financial counseling should be required for all borrowers before loans are disbursed. Existing entrance counseling often functions as a procedural requirement rather than a meaningful learning opportunity. Instead, pre-loan counseling should include personalized borrowing projections, expected debt-to-income ratios based on field of study, and

interactive tools that allow students to model future repayment scenarios. This tailored approach would provide clearer, more realistic expectations, allowing students to make more informed borrowing decisions.

To translate these findings into practice, institutions and policymakers should also develop comprehensive financial advisement programs that offer individualized, behaviorally informed financial counseling. These programs should be embedded at key student touchpoints, such as orientation, academic advising, and financial aid counseling, with students receiving tailored financial plans based on their educational goals, anticipated debt, and expected earnings. Advisement should also include hands-on tools, such as interactive budgeting exercises and personalized debt projections, to help students better understand the long-term implications of their borrowing decisions.

Funding for such programs could be supported through federal and state grants focused on student success and retention, as well as institutional resources and partnerships with financial institutions and nonprofit organizations. Advisor training would need to go beyond basic financial literacy, incorporating behavioral economics principles, culturally responsive counseling techniques, and strategies for working with first-generation and low-income students. Certification programs blending financial planning, behavioral counseling, and student development would help ensure advisors are equipped to provide effective, personalized guidance.

Several challenges would need to be addressed. Providing individualized financial counseling at scale is resource-intensive, so institutions may need to adopt a triage approach, offering intensive support to higher-risk borrowers while providing lower-risk students with self-guided tools and workshops. Student engagement is another challenge, as many students may underestimate the importance of financial counseling until repayment difficulties arise. Framing advisement as part of career readiness and long-term financial planning, rather than a remedial service, could help improve participation. Effective advisement would also require seamless access to real-time loan data, enabling advisors to offer personalized, data-driven guidance.

In addition to direct advisement, broader public communication campaigns could help shift borrower attitudes toward student debt. Social media campaigns featuring testimonials from students who successfully minimized debt through practical choices—such as working during college, living with roommates, or attending lower-cost institutions—could promote responsible borrowing as a positive and achievable goal. The Department of Education, in collaboration with institutions, should also explore direct outreach strategies using the National Student Loan Data System (NSLDS) to provide borrowers with clear, personalized updates on their current loan balances, projected payments, and available repayment options. Simplified, borrower-friendly communication, delivered at regular intervals, could help borrowers stay informed and engaged with their repayment responsibilities.

Underlying all these recommendations is the recognition that student loan decisions are often made under conditions of bounded rationality (Simon, 1955), where young borrowers face cognitive and informational limitations that hinder fully rational decision-making. Simplifying the student loan system, improving loan disclosures, and developing user-friendly tools that show clear links between borrowing decisions, future earnings, and repayment obligations could help students make more informed choices. Policies that nudge borrowers toward lower debt levels, encourage timely completion, and reward responsible repayment with benefits such as interest rate reductions or partial loan forgiveness could further support responsible borrowing and reduce default risk.

Effective financial counseling programs must also address the structural factors contributing to demographic disparities in loan repayment outcomes. This includes incorporating culturally competent counseling approaches that recognize how systemic racism, gender pay inequities, and wealth gaps shape financial decision-making and repayment capacity for marginalized borrowers. Additionally, policy reforms that promote pay equity, wealth-building opportunities, and accessible career pathways for borrowers from underrepresented backgrounds are critical complements to borrower-focused financial interventions.

REFERENCES

[1] Addo, F. R. (2021). Student debt in the United States: Racial disparities and wealth. In Oppressed by Debt (pp. 92-104). Routledge.

[2] Akers, E. J., & Chingos, M. M. (2014). Are college students borrowing blindly? Brookings Institution. https://www.brookings.edu/research/are-college-students-borrowing-blindly/

[3] Archuleta, K. L., Dale, A., & Spann, S. M. (2013). College students and financial distress: Exploring debt, financial satisfaction, and financial anxiety. Journal of Financial Counseling and Planning, 24(2), 50-62.

[4] Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall.

[5] Burning Glass Institute. (2024, February). Talent disrupted: College graduates, underemployment, and the way forward. https://static1.squarespace.com/static/6197797102be715f55c0e0a1/t/65d7705653660e652db98306/1708617815952/Talent+Disrupted+02222024.pdf

[6] Dynarski, M. (1994). Who defaults on student loans? Findings from the National Postsecondary Student Aid

Study. Economics of Education Review, 13(1), 55-68.

[7] Education Data Initiative. (2023). Student loan default rates. https://educationdata.org/student-loan-default-rate

[8] Elliott, W., Grinstein-Weiss, M., & Nam, I. (2013). Student debt and declining retirement savings. Center for Social Development.

[9] Farrell, D., Greig, F., & Sullivan, D. M. (2020). Student loan debt: Who is paying it down? JPMorgan Chase Institute.

[10] Federal Reserve Bank of New York. (2023, November 7). Student loans: An update on repayments, forbearance, and delinquencies. https://www.newyorkfed.org/newsevents/news/research/2023/20231107

[11] Federal Student Aid Office. (2023). Federal student aid portfolio summary. https://studentaid.gov/data-center/student/portfolio

[12] FINRA Investor Education Foundation. (2017, March 17). Financial capability study. http://www.usfinancialcapability.org/about.php

[13] Flint, T. (1994). The federal student loan default cohort: A case study. Journal of Student Financial Aid, 24(1), 13-30.

[14] Flint, T. (1997). Predicting student loan defaults. The Journal of Higher Education, 68(3), 322-354.

[15] Furquim, F., Deane, K. C., McCall, B. P., & DesJardins, S. L. (2022). Like any other trap: The circuitous path of student loan repayment. AERA Open, 8, 23328584221093325.

[16] Gordon, G., & Hedlund, A. (2020). Accounting for tuition increases across US colleges. SSRN. https://doi.org/10.2139/ssrn.3720860

[17] Gross, J., Cekic, O., Hossler, D., & Hillman, N. (2009). What matters in student loan default: A review of the research literature. Journal of Student Financial Aid, 39(1), 19-29.

[18] Hanson, M. (2023). Student loan debt by gender. EducationData.org. https://educationdata.org/student-loan-debt-by-gender

[19] Hayhoe, C. (2002). Comparison of affective credit attitude scores and credit use of college students at two points in time. Journal of Family and Consumer Sciences, 94(1), 71-77.

[20] Heck, P., Simons, D., & Chabris, C. (2018). 65% of Americans believe they are above average in intelligence: Results of two nationally representative surveys. PLOS ONE, 13(7), e0200103. https://doi.org/10.1371/journal.pone.0200103

[21] Houle, J. N. (2014). Disparities in debt: Parents' socioeconomic resources and young adult student loan debt. Sociology of Education, 87(1), 53-69.

[22] Houle, J. N., & Addo, F. R. (2019). Racial disparities in student debt and the reproduction of the fragile Black middle class. Sociology of Race and Ethnicity, 5(4), 562-577.

[23] Johnson, C. L., O'Neill, B., Worthy, S. L., Lown, J. M., & Bowen, C. F. (2016). What are student loan borrowers thinking? Insights from focus groups on college selection and student loan decision making. Journal of Financial Counseling and Planning, 27(2), 184–198. https://doi.org/10.1891/1052-3073.27.2.184

[24] Jorgensen, B. L., Foster, D., Jensen, J. F., & Vieira, E. (2016). Financial attitudes and responsible spending behavior of emerging adults: Does geographic location matter? Journal of Family and Economic Issues, 38(1), 70-83. https://doi.org/10.1007/s10834-016-9512-5

[25] Kim, H., & Kim, J. H. (2022). Student debt, college tuition, and wage inequality. Concordia University, Department of Economics. Lee, J. M., Kim, K. T., & Hong, E. J. (2018). Exploring financial burdens of student loan holders in the United States. Family and Consumer Sciences Research Journal, 46(4), 347-362. https://doi.org/10.1111/fcsr.12261

[26] Li, Q. (2021). Student loan burden, financial literacy, and financial behavior: Evidence from the 2018 FINRA survey. Journal of Accounting and Finance, 21(1), 54-67.

[27] Lyons, A., Rachlis, M., & Scherpf, E. (2007). What's in a score? Differences in consumers' credit knowledge using OLS and quantile regressions. Journal of Consumer Affairs, 41(2), 223-249.

[28] Lochner, L., & Monge-Naranjo, A. (2002). Education and default incentives with government student loan programs (NBER Working Paper No. 8815). National Bureau of Economic Research.

[29] Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: An overview. Journal of Pension Economics & Finance, 10(4), 497–508. https://doi.org/10.1017/S1474747211000448

[30] Lusardi, A., de Bassa Scheresberg, C., & Oggero, N. (2016). Student loan debt in the US: An analysis of the 2015 NFCS data. Global Financial Literacy Excellence Center.

[31] McKinney, L., Gross, J., & Williams, A. (2021). Understanding loan default among community college students. Community College Review, 49(3), 210-232.

[32] Mezza, A., Ringo, D., Sherlund, S., & Sommer, K. (2020). Student loans and homeownership. Journal of Labor Economics, 38(1), 215-260.

[33] http://dx.doi.org/10.17016/FEDS.2016.010r1

[34] Monteverde, K. (2000). Managing student loan default risk: Evidence from a privately guaranteed portfolio. Research in Higher Education, 41(3), 331-352.

[35] National Student Clearinghouse. (2022). Total fall enrollment in degree-granting postsecondary institutions, by attendance status, sex of student, and control of institution: Selected years, 1947 through 2021. National Center for Education Statistics. https://nces.ed.gov/programs/digest/d22/tables/dt22_303.10.asp

[36] PEW Charitable Trusts. (2021a). Student loan borrowers with certain demographic characteristics more likely to experience default. The Pew Charitable Trusts. https://www.pewtrusts.org/en/research-and-analysis/articles/2023/01/24/student-loan-borrowers-with-certain-demographic-characteristics-more-likely-to-experience-default

[37] PEW Charitable Trusts. (2021b). Government hits reset on student loan defaults, but many could experience default again. The Pew Charitable Trusts. https://www.pewtrusts.org/en/research-and-analysis/articles/2022/06/14/government-hits-reset-on-student-loan-defaults-but-many-could-experience-default-again

[38] Podgursky, M., Ehlert, M., Monroe, R., Watson, D., & Wittstruck, J. (2002). Student loan defaults and enrollment persistence. Journal of Student Financial Aid, 32(3), 27-42.

[39] Preece, G. L., Kiss, D. E., & MacDonald, M. (2023). Development of a responsible financial behaviors index. Journal of Financial Counseling and Planning, 34(2), 266-280.

[40] Robb, C., Chatterjee, S., Porto, N., & Cude, B. (2019). The influence of student loan debt on financial satisfaction. Journal of Family and Economic Issues, 40(1), 51-73.

[41] Simon, H. A. (1955). A behavioral model of rational choice. Quarterly Journal of Economics, 69(1), 99-118. https://doi.org/10.2307/1884852

[42] Thaler, R. H., & Sunstein, C. R. (2008). Nudge: Improving decisions about health, wealth, and happiness. Yale University Press.

[43] Volkwein, J. F., & Szelest, B. P. (1995). Individual and campus characteristics associated with student loan default. Research in Higher Education, 36(1), 41-72.

[44] Volkwein, J. F., Szelest, B. P., Cabrera, A. F., & Napierski-Prancl, M. (1998). Factors associated with student loan default among different racial and ethnic groups. The Journal of Higher Education, 69(2), 206-237.

[45] Willis, L. E. (2008). Against financial-literacy education. Iowa Law Review, 94, 197-285.

[46] Wilms, W., Moore, R., & Bolus, R. (1987). Whose fault is default? A study of the impact of student characteristics and institutional practices on guaranteed student loan default rates in California. Educational Evaluation and Policy Analysis, 9(1), 41-54. https://doi.org/10.3102/01623737009001041

[47] Woo, J. (2002). Factors affecting the probability of default. Journal of Student Financial Aid, 32(2), 5-23.

[48] Xiao, J. J., & O'Neill, B. (2018). Propensity to plan, financial capability, and financial satisfaction. International Journal of Consumer Studies, 42(5), 501-512. https://doi.org/10.1111/ijcs.12461;

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