



# Financial Socialization, Financial Education, and Student Loan Debt

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## Abstract

This study examines the role of financial socialization, financial knowledge, and receiving financial education on student loan repayment behaviors and related financial stress, as reported by the participants. From an analysis of the 2015 National Financial Capability Study dataset, we find that individuals who received financial education in an academic or professional setting were less likely to be late on student loan payments or worry about their student loan debt. Additionally, those who received both financial education and learned about finances from their parents were even less likely to worry about their student loan debt. The broader implications of the main findings for financial counselors, therapists, and planners are also discussed.

**Keywords** Financial socialization · Financial education · Student loan debt · Financial behavior · Financial stress

## Introduction

Student loans are used by many people to obtain a higher education. However, the increase in student loan debt is an important consumer debt category. Consequently, this debt increase has caught many researchers' attention. As the increase in higher education tuition has exceeded the increase in inflation and the median income, student loans have become an important source of financial support for US households. More specifically, the average published tuition and fees for the 2017–2018 academic year was \$34,740 for private nonprofit 4-year schools, up from \$15,160 from 1987 to 1988, which is a 129% increase. The number for public 4-year schools in 2017–2018 was \$9970, an increase of 213% from the average tuition and fees of \$3190 from 1987 to 1988 (College Board 2017). Meanwhile, according to the US Bureau of Labor Statistics Consumer Price Index, the inflation during the 20-year period from 1987 to

2017 is around 118%, which is lower than both public and private 4-year schools' tuition and fees increases. Furthermore, historical income data provided by the US Census Bureau revealed that the household median income has risen from \$26,061 in 1987 to \$59,039 in 2016<sup>1</sup>. The skyrocketing tuition and fees has caused affordability issues for most individuals trying to borrow from different sources to meet their college dreams.

However, a recent report by the US Federal Reserve showed that, among those who borrowed student loans for college/university and graduate degrees, the debt repayment issue was found to be critical for people of all age groups, not just young adults (Federal Reserve 2016). This student loan burden has not only affected people across age groups, but has also created a huge accumulated wealth gap between student loan debtors and non-debtors. In turn, student loan debtors were also more likely to carry other types of debts, such as car loans and credit card debts (Fry 2012). According to a 2017 Consumer Financial Protection Bureau (CFPB) (2017) report, more than 40% of student loan borrowers leave school owing \$20,000 or more and more than half of the borrowers are older than 34 when they start their student loan repayment, which may delay their mid- to later-life enjoyment and decrease their overall financial well-being.

Lack of financial literacy, especially a lower level of debt literacy (e.g., credit card debt, compound interest

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<sup>1</sup> All dollar values indicate US dollars.

knowledge), can lead to negative and irresponsible debt behavior (Lusardi and Tufano 2009). Financial knowledge that is actively learned, either from parents, educational institutions, or the workplace, can powerfully guide and influence individual and household financial behavior and financial satisfaction (Fan 2017; Hilgert et al. 2003; Robb and Woodyard 2011). Financial education was found to increase financial literacy and improve debt repayment behavior (Brown et al. 2016; Lusardi 2003); however, the sources of financial education, whether learned from parents, obtained from schools and/or employers, were not clarified in the literature. This paper aims to identify these financial education sources and their associations with student loan debt stress and behavior.

Parental influence on children's financial attitude development and behavior is imperative. Using consumer socialization concepts, Danes (1994) and Bowen (2002) stated that parents, serving as non-formal socialization agents, significantly influence children's financial knowledge level. Similarly, Kim and Chatterjee (2013) found that financial socialization experiences (e.g., a childhood with parental warmth, monitored spending, knowledge of donations), can shape one's money management behavior. Another study emphasized the significance that parents and the process of family financial socialization can have on influencing one's money beliefs, financial attitudes, and savings behaviors (Solheim et al. 2011). Solheim et al. (2011) also provided insights that can be used by educational institutions and workplaces to enhance financial education programs and help people to develop a comprehensive understanding of financial knowledge.

The purpose of this study is to examine the relationships among student loan debt-related behavior, stress, financial socialization, education, and other demographic variables for those who have taken out student loans for themselves. The findings from this study will benefit financial counselors and educators in terms of generating new information about potentially influential factors leading to student loan debt-related stress and debt repayment behaviors and attitudes. The findings will also inform policy on financial education and student loans and help parents better understand the importance of a child's financial education on their well-being and debt management behavior later in life.

## Literature Review and Conceptual Framework

Financial socialization theories and parental financial influence have been examined in previous literature. Moschis and Churchill (1978) defined parents and schools as socialization agents who act as significant sources of norms, beliefs, attitudes, and behaviors for young learners in households. The learning and development of consumer-related skills, knowledge, attitudes, and behaviors, under the influence of

socialization agents, is known as the consumer socialization process. Using a life cycle model, Moschis and Churchill (1978) defined age and life cycle position as two antecedent variables and examined the influence of the socialization process on the financial behaviors as learning outcomes. Their results revealed that family communication and parents' teachings significantly affected young people's desired financial behaviors. Danes (1994) further defined financial socialization as a process in which individuals develop financial attitudes and norms, financial management behaviors, and achieving financial well-being.

Several financial education resources were studied in the literature in terms of their roles in the financial socialization process. Both parental teaching and financial learning in schools showed significant impacts. For example, Shim, et al. (2010) developed a hierarchical model in which the formal socialization process, gained from school, and the informal socialization process, gained from a parental influence and work experience, both play prominent roles in a young adult's financial knowledge. The effects of socialization agents (e.g., parents, schools) were further confirmed to be significant as predictors of individuals' financial attitude, self-efficacy, and financial capabilities to use the financial knowledge and of their financial behaviors (Shim et al. 2013). Parental financial teachings had positive impacts on individuals' financial attitudes towards borrowing and money management behaviors (Jorgensen and Savla 2010; Kim and Chatterjee 2013).

Among these socialization agents and financial educational sources, parental influence is predominant and has long-term effects on what children believe and how they behave in the future. Various factors, such as family characteristics and family relationships, were found to influence the financial socialization process. This further shaped financial attitudes, built a financial knowledge base, and guided financial behaviors (Gundmunson and Danes 2011). Parenting techniques and parental involvement in youth financial education programs were also significant in forging financial beliefs and attitudes among young adults (Campenhout 2015). Tang et al. (2015) asserted that, without considering the social and psychological impacts, the financial knowledge acquired could hardly improve the financial behavior. They found that parental influence was significantly associated with responsible financial behavior among young adults. In particular, they stated that women can benefit more from a parental influence in terms of behaving in a more positive manner towards the financial decision making process.

Parents and schools are not the only sources providing financial knowledge and influence, however. Working adults need to take more responsibility towards their own retirement with the shift from the defined benefit to the defined contribution system. Employers provide customized financial trainings and counseling covering topics such as

retirement planning, tax planning, debt management, etc. to help employees make better financial decisions. Workplace financial education programs, also acting as a socialization agent that provides peer pressure, were found to be effective in terms of building realistic retirement goals, improving financial knowledge, retirement planning behavior, and financial wellness (Prawitz and Cohart 2014). Previous studies found that employees' self-assessed financial knowledge, confidence, behaviors, and well-being were improved after attending a one-time workplace financial education, including financial goal setting, cash management, risk management, investment, and retirement planning, etc. (Kim 2007; Kim et al. 2005). As a result, firms offering financial education programs reported a larger number of employees participating in retirement plans and contributing higher savings rates (Bernheim and Garrett 2003). The frequency of the educational seminars also contributed to this influence (Bayer et al. 2009).

Student loan debt burden is defined as the level of student loan repayment difficulty (King and Bannon 2002). The degree of the burden is determined by the percentage of the before-tax monthly income used for student loan repayment. Previous studies have also suggested that 8–10% is a manageable student loan debt repayment percentage; whereas, if the ratio increases to 12% or higher, it indicates an individual is under high student loan repayment burden (Baum and O'Malley 2003; Baum and Schwartz 2006; Greiner 1996). The average student loan debt-to-income ratio for those who graduated in 2007–2008 with college-level or higher degrees, was 9% in 2012. In particular, for those who were employed but did not have additional postsecondary enrollment, they used more than 10% of their monthly income as student loan debt repayment. For borrowers who had additional postsecondary enrollment after they graduated in the 2007–2008 academic year with a bachelor's degree, the ratio was 14.1%, a higher-than-manageable level of student loan repayment burden (Velez and Woo 2017).

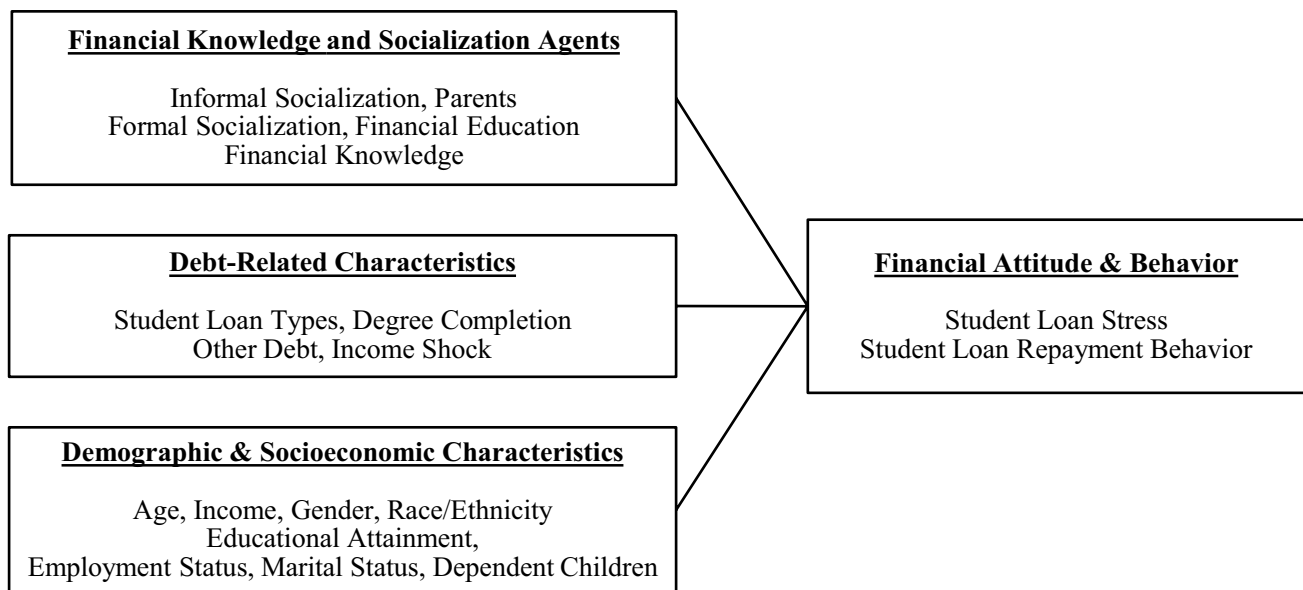
Borrowers' perceptions and attitudes are formed and influenced in the financial socialization process. Perceptions and attitudes toward student loans are important because these perceptions and attitudes illustrate whether the consumer is willing to use the loan products and whether they would recommend the products to others (Greiner 1996). Using data from a 2012 National Financial Capability Study (NFCS), Ratcliffe and McKernan (2013) argued that 57% of people who had student loan debt were worried that they would be unable to repay their debt. Those who were women, divorced, with a lower income, did not have full-time jobs, and had financially dependent children at home were more likely to have student loan stress. They also found that the unmanageable student loan debt has led to a negative attitude towards student debt over time. In retrospect, although people believed that the benefits of the loans

outweighed the disadvantages, if they had the chance to do it again, they would borrow less due to the unanticipated financial hardship of borrowing student loans.

Financial literacy, especially knowledge and practice of student loan debt, has a significant influence on financial behaviors. Student loan literacy is defined as the knowledge and ability to "identify, understand, interpret, and navigate student loan options, principles, and practices associated with responsible borrowing and debt management" (Lee and Mueller 2014, p. 714). Research results have suggested that first-generation college students lacked fundamental student loan literacy (Lee and Mueller 2014). Moreover, men tended to be more confident with their general money management knowledge and skills (Kim and Chatterjee 2013). Financial stressors (e.g., recent income shocks, other debts), which cause financial difficulties, were positively associated with negative financial behaviors. Debt not only caused financial strain, but also triggered mental stress, affected well-being, and was associated with more undesired financial behaviors for households, such as being late for debt payment and lacking an emergency fund and retirement savings (Fan 2017; Kahn and Pearlin 2006).

Demographic and socioeconomic factors, such as income, ethnicity/race, gender, education, and the presence of dependent children, showed significant influence on student loan borrowing behavior. Household income was found to be associated with student loan debt borrowing behavior (King and Bannon 2002; Baum and O'Malley 2003; Fry 2012; Ratcliffe and McKernan 2013, 2015). Students from low-income households were more likely to borrow for education and were more likely to face difficulties in paying off their debts. More than half of African-American and Hispanic students graduated with student loan debt burdens. The repayment of these loans was valued at more than 8% of their monthly income (King and Bannon 2002). Women were more likely than men to worry about paying off student loans. This might be a result of the lower financial confidence and increased awareness of debt among women (Ratcliffe and McKernan 2013). Whites were also more likely to worry about finances; this worry may come from their financial futures expectations (Kim and Chatterjee 2013). In addition, whether or not people completed the college degree for which the loan was taken was found to be negatively associated with the variable representing being worried about repaying the student loan debt. That being said, parents with dependent children were more likely to experience the student loan burden (Ratcliffe and McKernan 2013, 2015).

Figure 1 presents the conceptual framework rooted in the theoretical and empirical research of financial socialization and student loan debt attitudes and behaviors (Moschis and Churchill 1978; Danes 1994; Gundmunson and Danes 2011; Shim et al. 2010, 2013; Kim and Chatterjee 2013). In particular, parental influence and



**Fig. 1** Conceptual framework of financial socialization and student loan attitudes and behaviors

financial education are the two types of financial socialization agents suggested by Moschis and Churchill (1978) and Danes (1994). Debt-related characteristics (e.g., student loan types, degree completion, financial stressors) and demographic and socioeconomic characteristics (e.g., age, gender, and income) are also included in the framework as predictors of student loan stress and repayment behavior.

Three *hypotheses* were developed to examine the relationships between the variables illustrated in the conceptual framework:

**H1** Financial socialization, through financial knowledge learned from parents, is negatively associated with late student loan payments and worry about the student loan debt situation after controlling for various debt-related characteristics and other demographic and socioeconomic factors.

**H2** Financial knowledge learned through a school- or college-based curriculum or the financial training offered by an employer is negatively associated with late student loan payments and worry about the student loan debt situation after controlling for various debt-related characteristics and other demographic and socioeconomic factors.

**H3** Financial knowledge is negatively associated with late student loan payments and worry about the student loan debt situation after controlling for various debt-related characteristics and other demographic and socioeconomic factors.

## Methods

### Data

This study aims to capture the indicators of financial capabilities and behaviors as well as the demographic, behavioral, and attitudinal characteristics of US households using data from the 2015 NFCS, funded and administered by the Financial Industry Regulatory Authority (FINRA) Investor Education Foundation. The NFCS was developed by FINRA in consultation with the US Department of Treasury and President Bush's Advisory Council on Financial Literacy (Mottola 2013). There were 27,564 respondents in the 2015 wave of this dataset. This study limited the sample to respondents who indicated that they had taken out a student loan for themselves, were between the ages of 24 and 65, were no longer a student, were employed, and were the primary decision makers in their families. This reduced the sample size to 2662.

### Empirical Model

In this study, the financial attitudes and behaviors of the respondents were examined using the following two characteristics: (1) student loan repayment behavior, and (2) student loan stress. To examine student loan repayment behavior, the following binary measure was constructed

based on a corresponding variable available in the NFCS dataset: being late for student loan debt payment (1 = Yes; 0 = No); to examine student loan stress, the following binary measure was constructed using another corresponding variable in the NFCS dataset: being worried about paying off their student loan debt (1 = Yes; 0 = No). Each measure encapsulates a slightly different aspect of financial attitude and behavior towards student loan debt. Being late on student loan debt payment identifies respondents who are having difficulty managing student loan debt and repayment of its balances, while being worried about paying off student loan debt identifies the level of stress or worry that some respondents have regarding their ability to pay off student loan debt.

The ordinary least squares (OLS) is a commonly used tool for regression analysis. However, previous studies have found disadvantages to the use of OLS for binary dependent variables (Jin et al. 2005; Kinsey and Lane 1983; Pindyck and Rubinfeld 1988). This is because using OLS, or linear probability models (LPM), for binary dependent variables can result in erroneous estimation of predicted probabilities that are either greater than 1 or less than 0 (Kinsey and Lane 1983). Burgess (1982) has suggested using probit models for empirical analyses using dependent variables. Similarly, Pindyck and Rubinfeld (1976) have also suggested the use of either probit or logit models for empirical analyses of binary variables. On the other hand, Hanna and Lindamood (1985) found no practical difference when they compared the estimates generated using OLS and logit models for a binary dependent variable in their study on the probability of household home ownership. A number of previous studies have used the probit model for examining the probability of carrying either credit card or student loan debt, and borrowing behavior among households (Fan and Chatterjee 2017; Lyons 2004; Robb and Sharpe 2009; Schwartz and Finnie 2002). Similarly, this study also uses probit models to investigate the factors that affect the probability of being late for student loan payments and being worried about being able to pay off student loan debt. Probit models were estimated for the two binary variables following Wooldridge (2010). The relationship is specified as follows for the first model:

$$\gamma_i^* = X_i'\beta_1 + Z_i'\beta_2 + \Phi_i'\beta_3 + u_i, \text{ where} \quad (1)$$

$$\gamma_i = 1 \text{ if } \gamma_i^* = 1 \text{ and } 0 \text{ otherwise for } i = \{1, \dots, I\}.$$

where  $\gamma_i$  is the binary dependent variable that is equal to 1 if the  $i_{th}$  respondent has been late for student loan debt payment and 0 otherwise. This is determined by the latent variable  $\gamma_i^*$ , which was constructed based on the following question included in the 2015 wave of the NFCS survey:

How many times have you been late with a student loan payment in the past 12 months?

The variable is coded as 1 if the respondent selected “once” or “more than once” and as 0 otherwise. The “Don’t know” and “Prefer not to say” responses were excluded from the analyses of this study. The factors that determine  $\gamma_i^*$  and therefore  $\gamma_i$  are modeled by vectors  $X_i$ ,  $Z_i$ , and  $\Phi_i$ .  $X_i$  includes financial knowledge and socialization related factors;  $Z_i$  includes debt-related characteristics; and  $\Phi_i$  is the other socioeconomic and demographic related control variables. The error term  $u_i$  is distributed normally with mean zero and variance equal to 1. The probit model is used to determine consistent estimates of Eq. 1. The probit model is also similarly used to determine the probability of being worried about paying off student loan debt.

$$Y_i^* = X_i'\beta_1 + Z_i'\beta_2 + \Phi_i'\beta_3 + u_i, \text{ where } Y_i = 1 \text{ if} \quad (2)$$

$$Y_i^* = 1 \text{ and } 0 \text{ otherwise for } i = \{1, \dots, I\}.$$

where  $Y_i$  is the binary dependent variable that is equal to 1 if the  $i_{th}$  respondent reported being worried about paying off student loan debt and 0 otherwise. This is determined by the latent variable  $Y_i^*$ , which was constructed based on the following question included in the 2015 wave of the NFCS survey:

Are you concerned that you might not be able to pay off your student loans?

This variable was coded as 1 if the response was “Yes” and 0 if “No.” The “Don’t know” and “Prefer not to say” responses were removed from the analyses. The control variables used in both models are described in detail below:

## Measures

### Financial Knowledge and Socialization

Objective financial knowledge was measured by an index summing up the participants’ correct answers to six fundamental financial literacy questions (“Appendix”). Responses to each of the six questions were coded as binary variables with 1 = correct answer and 0 = incorrect answer or don’t know. The “Prefer not to say” responses were removed from the sample. The total number of correct answers were summed up to represent 6 = all correct responses through 0 = all incorrect responses.

The first financial socialization predictor was financial education. Participants were asked if they participated in any financial education courses offered by their high school, college, or employer (1 = if they participated in at least one education; 0 = otherwise). The second financial socialization agent variable was parental influence. Participants were asked whether their parents or guardians taught them how to manage their own finances (1 = Yes; 0 = No).

## Debt-Related Characteristics

The other independent variables of interest were whether the participants had student loans through federal (1 = Yes; 0 = No), private (1 = Yes; 0 = No), or a combination of federal and private sources (1 = Yes; 0 = No); whether they had completed the program for which they had most recently borrowed the money (1 = Yes; 0 = No); whether they had any other debt (credit card, auto loans, medical bills) (1 = Yes; 0 = No); and whether they had experienced a recent income shock (1 = Yes; 0 = No).

## Demographic and Socioeconomic Characteristics

For the educational attainment variable, completion of college was used as the reference variable, and the binary variables for graduate school and attending some college were used as the control variables. Other demographic and socioeconomic characteristics related control variables included in this study were age, income, gender, race/ethnicity, educational attainment, marital status, number of dependent children, and employment status.

## Results

The descriptive statistics are presented in Table 1. It was determined that 22% of respondents with student loans reported that they were late on their student loan payments. Over half (55%) of the respondents reported being worried about their student loans. Almost one-third (30%) of the respondents reported receiving a financial education, either through their high schools, colleges, and/or employers' financial education programs. Another 40% reported learning about finances from their parents or guardians through the financial socialization process. Overall, 64% of the respondents took out federal student loans (64%), 26% took out both federal and private student loans, and 10% only took out private student loans. Among those student loan borrowers, more than 61% completed the education program for which they borrowed the money. In terms of financial stressors, more than 80% reported having other types of debt (e.g., credit card balance, auto loan debt, unpaid medical bills). One-third (33%) of the respondents reported experiencing a large drop in income in the previous 12 months.

The respondents represented many age groups: 48.6% were aged 25–34, 29.9% were aged 35–44, 14.4% were aged 45–54, and 7% were aged 55–64. Over half (59%) of the respondents were women (59.3%), White (63.3%), and employed (77.9%). Over 33% of respondents reported having a college degree and having an income level between \$50,000 and \$75,000 (21.4%). The average number of financially dependent children was 1.2 children per household.

**Table 1** Descriptive statistics

Variable	Mean	Std. dev.	Min	Max
Late on student loan payment	0.220		0	1
Worry about student loans	0.551		0	1
Student loan types				
Only federal loans	0.640		0	1
Only private loans	0.101		0	1
Federal and private loans	0.260		0	1
Financial education (HS, col, empl)	0.294		0	1
Financial socialization	0.470		0	1
Objective financial knowledge	3.294	1.667	0	6
Other debt (CC, auto, medical)	0.801		0	1
Income shock	0.330		0	1
Age				
Age 25–34	0.486		0	1
Age 35–44	0.299		0	1
Age 45–54	0.144		0	1
Age 55–64	0.070		0	1
Income				
Less than \$15,000	0.112		0	1
\$15,000–\$25,000	0.102		0	1
\$25,000–\$35,000	0.116		0	1
\$35,000–\$50,000	0.161		0	1
\$50,000–\$75,000	0.214		0	1
\$75,000–\$100,000	0.148		0	1
\$100,000–\$150,000	0.110		0	1
More than \$150,000	0.037		0	1
Female	0.593		0	1
Married	0.494		0	1
Number of financially dep children	1.068	1.208	0	4
White	0.633		0	1
Education				
Some college	0.247		0	1
College	0.331		0	1
Grad school	0.215		0	1
Employed	0.779		0	1
Observations: 2662				

## Late Student Loan Payments

As stated previously, being late on student loan payments was the dependent variable. The results of the probit analysis are illustrated in Table 2. These results indicate that respondents who had both federal and private student loans (ME = 8.9%;  $p < 0.001$ ) were more likely to be late on student loan payments as compared to the control group of respondents with only federal loans in Model 1. This relationship was significant (ME = 7.4%;  $p < 0.001$ ), even after we included the interaction variables for financial education and socialization by parents in Model 2. Among the financial knowledge and socialization related characteristics,

**Table 2** Probit analysis of late student loan payments

	Coef.	St. error	ME	Sig	Coef.	St. error	ME	Sig
Student loans (ref: only fed)								
Only private	0.121	0.109	0.031		0.074	0.107	0.021	
Federal and private	0.338	0.075	0.089	***	0.261	0.053	0.074	***
Financial education (HS, col, empl)	-0.011	0.007	-0.003		-0.135	0.067	-0.035	*
Financial socialization (parental)	-0.076	0.044	-0.018	*	-0.098	0.054	-0.026	*
Fin educ*fin social					-0.236	0.209	-0.058	
Objective financial knowledge	-0.060	0.022	-0.015	***	-0.053	0.014	-0.013	***
Other debt (CC, auto, medical)	0.303	0.096	0.065	***	0.283	0.054	0.063	***
Income shock	0.477	0.066	0.127	***	0.314	0.043	0.080	***
Age (ref: age 25–34)								
Age 35–44	0.199	0.072	0.049	**	0.283	0.052	0.073	***
Age 45–54	0.254	0.096	0.067	***	0.269	0.061	0.071	***
Age 55–64	0.501	0.132	0.147	***	0.405	0.074	0.113	***
Income (ref: \$150,000+)								
Less than \$15,000	0.472	0.225	0.138	**	0.558	0.134	0.162	***
\$15,000–\$25,000	0.637	0.192	0.194	***	0.730	0.130	0.223	***
\$25,000–\$35,000	0.552	0.181	0.163	***	0.663	0.127	0.198	***
\$35,000–\$50,000	0.419	0.167	0.116	**	0.591	0.124	0.171	***
\$50,000–\$75,000	0.266	0.158	0.068	*	0.393	0.120	0.105	***
\$75,000–\$100,000	0.192	0.160	0.049		0.243	0.124	0.063	*
\$100,000–\$150,000	-0.012	0.165	-0.004		0.090	0.127	0.022	
Female	-0.032	0.014	-0.008	**	-0.077	0.042	-0.019	*
Married	0.112	0.078	0.029		0.002	0.049	0.000	
Number of financially dep children	0.088	0.028	0.021	***	0.097	0.019	0.023	***
White	-0.242	0.066	-0.061	***	-0.097	0.046	-0.026	***
Education (ref: college)								
Some college	0.259	0.082	0.067	***	0.099	0.043	0.020	*
Graduate education	-0.159	0.078	0.037	**	-0.229	0.066	-0.025	***
Intercept	-1.712	0.235		***	-1.36	0.174		***
N = 2662								
Pseudo R <sup>2</sup> = 0.1792								

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

receiving financial socialization through parents was negatively associated with late student loan payments in Models 1 (ME = -1.8%;  $p < 0.05$ ) and 2 (ME = -2.6%;  $p < 0.05$ ). Receiving a financial education was also negatively associated with late student loan payments in Model 2 (ME = -3.5%;  $p < 0.05$ ). Objective financial literacy was negatively associated with late student loan payments in both Models 1 (ME = -1.5%;  $p < 0.001$ ) and 2 (ME = -1.3%;  $p < 0.001$ ).

Having other types of debt was also positively associated with late student loan payments in Models 1 (ME = 6.5%;  $p < 0.001$ ) and 2 (ME = 6.3%;  $p < 0.001$ ). Experiencing a large drop in income over the previous year was positively associated with late student loan payments over the previous year in Models 1 (ME = 12.8%;  $p < 0.001$ ) and 2 (ME = 8%;  $p < 0.001$ ).

Among the demographic and socioeconomic factors, compared to the reference group of respondents between 25 and 34 years of age, being 35 or older was positively associated with late student loan payments in both models. Compared to the reference group of respondents with an income of \$150,000 or more, the respondents with an income of \$75,000 or less were more likely to be late on student loan payments in both Models 1 and 2. Additionally, respondents with an income of \$75,000–\$100,000 were also more likely to be late on student loan payments in Model 2.

Being female and White was negatively associated with late student loan payments in both models. The number of financially dependent children was positively associated with late student loan payments in both models. Compared to the respondents who completed college, those who completed some college were more likely to be late on student loan payments in Models 1 (ME = 6.7%;  $p < 0.001$ ) and 2

**Table 3** Probit analysis of worry about student loan debt

	Coef.	St. error	ME	Sig	Coef.	St. error	ME	Sig
Student loans (ref: only fed)								
Only private	-0.022	0.006	-0.009	***	-0.021	0.067	-0.008	***
Federal and private	0.464	0.040	0.198	***	0.464	0.048	0.183	***
Financial education (HS, col, empl)	-0.009	0.101	0.003		-0.052	0.025	-0.021	*
Financial socialization (parental)	-0.075	0.029	-0.029	***	-0.098	0.048	-0.038	**
Fin educ*fin social					-0.085	0.011	-0.031	***
Objective financial knowledge	-0.138	0.016	-0.054	***	-0.098	0.009	-0.037	***
Other debt (CC, auto, medical)	0.261	0.049	0.101	***	0.201	0.050	0.078	***
Income shock	0.528	0.051	0.208	***	0.528	0.045	0.208	***
Age (ref: age 25–34)								
Age 35–44	0.151	0.041	0.061	***	0.083	0.045	0.033	
Age 45–54	0.182	0.071	0.069	**	0.115	0.069	0.035	*
Age 55–64	0.229	0.095	0.092	***	0.201	0.073	0.081	***
Income (ref: \$150,000+)								
Less than \$15,000	1.145	0.152	0.491	***	1.134	0.137	0.467	***
\$15,000–\$25,000	1.092	0.151	0.409	***	1.078	0.138	0.399	***
\$25,000–\$35,000	1.021	0.146	0.378	***	0.982	0.135	0.368	**
\$35,000–\$50,000	0.771	0.137	0.298	***	0.726	0.132	0.282	***
\$50,000–\$75,000	0.642	0.133	0.251	***	0.641	0.129	0.251	***
\$75,000–\$100,000	0.571	0.131	0.227	***	0.543	0.131	0.212	***
\$100,000–\$150,000	0.434	0.130	0.191	***	0.415	0.135	0.164	***
Female	0.093	0.030	0.053	***	0.089	0.044	0.036	**
Married	-0.277	0.065	-0.103	***	-0.301	0.048	-0.118	***
Number of financially dep children	0.109	0.014	0.039	***	0.083	0.019	0.032	***
White	-0.123	0.027	-0.053	***	-0.108	0.042	-0.043	**
Education (ref: college)								
Some college	0.109	0.041	0.043	**	0.205	0.054	0.081	***
Graduate education	-0.001	0.059	0.001		0.012	0.049	0.007	
Intercept	-2.616	0.120		***	-1.264	0.148		***
N = 2662								
Pseudo R <sup>2</sup> = 0.1848								

\*p &lt; 0.05; \*\*p &lt; 0.01; \*\*\*p &lt; 0.001

(ME = 2%; p < 0.05). Conversely, those who completed a graduate degree were less likely to be late on student loan payments across both Models 1 (ME = -3.7%; p < 0.01) and 2 (ME = -2.5%; p < 0.001).

### Worry About Student Loans

As stated previously, being worried about student loan payments was the dependent variable. The results of the probit analysis are illustrated in Table 3. In relation to the debt-related characteristics, having both federal and private student loans was found to be positively associated with worrying about student loans in Models 1 (ME = 19.8%; p < 0.001) and 2 (ME = 18.3%; p < 0.001). Conversely, having only private student loan debt was negatively associated with worrying about student loans in Models 1 (ME = -0.9%; p < 0.001) and 2 (ME = -0.8%; p < 0.001). Among the

financial knowledge and socialization related characteristics, receiving a financial education was negatively associated with student loan worry in Model 2 (ME = -2.1%; p < 0.05). Financial socialization through parents was significant and negatively associated with student loan worry in Models 1 (ME = -2.9%; p < 0.001) and 2 (ME = -3.8%; p < 0.01). Similarly, the interaction term of receiving a financial education and learning about money from parents reduced the probability of being worried about paying off student loans (ME = -3.1%; p < 0.001). Objective financial literacy was found to be negatively associated with being worried about student loans in Models 1 (ME = -5.4%; p < 0.001) and 2 (ME = -3.7%; p < 0.001).

Having other types of debt was also positively associated with student loan-related worry in Models 1 (ME = 10.1%; p < 0.001) and 2 (ME = 7.8%; p < 0.001). Experiencing an income shock in the previous period was also



positively associated with student loan worry in Models 1 (ME = 20.8%;  $p < 0.001$ ) and 2 (ME = 20.8%;  $p < 0.001$ ). Among the demographic and socioeconomic factors, compared to the reference age group of 25–34, those who were 45 and older were less likely to be worried about student loans in Models 1 and 2. Respondents who were 35–44 were more likely to be worried about student loan debt in Model 2. Compared to respondents with an income of \$150,000 or higher, those with an income of less than \$150,000 were more likely to be worried about student loans.

Women were more likely to be worried about student loans than men. The variable for married respondents was found to be negatively associated with student loan worry. Conversely, the association between student loan worry and the number of dependent children was positive. Being White was found to be negatively associated with worrying about student loan debt. Compared to the reference group of respondents who completed college, the respondents who did not complete college were more likely to be worried about paying off student loan debt (ME = 4.3%;  $p < 0.01$ ).

## Discussion and Implications

This study examined whether receiving financial education, parents providing financial socialization, and financial knowledge reduced the probability of respondents being late on student loan payments and worrying about student loan debt. The findings from this study support H1 that financial socialization through financial knowledge learned from parents is negatively associated with late student loan payments and worry about student loan debt situations. The findings also partially support H2 that financial knowledge learned through school- and college-based curricula or financial training offered by an employer are negatively associated with late student loan payments and worry about student loan debt situations. Although the financial education variable was not significant in the first model, the financial education variable was found to be negatively associated with late student loan payments and student loan worry in Model 2. Consistent with H3, the results indicate that financial knowledge was negatively associated with late student loan payments and student loan-related worry. The findings supporting H1, H2, and H3 concurred with the results from previous studies (Lusardi 2003; Jorgensen and Savla 2010; Shim et al. 2010, 2013; Brown et al. 2016).

Interestingly, the interaction of parents providing financial socialization, along with receiving a formal financial education, further reduced the probability of being worried about student loan debt. The findings from this study indicate that all three financial knowledge and socialization agents from the conceptual framework shown in Fig. 1 were significantly associated with the respondents' financial

attitude and behavior related to student loan debt. The negative and significant association between receiving financial education and financial knowledge with late student loan payments illustrates the importance of financial literacy in the financial well-being of households. The significance of the interaction between a formal financial education and learning from parents and guardians also highlighted the importance of the financial behavior and habits of parents and guardians who have an influence on their children's future student loan behavior and satisfaction.

Consistent with the findings of previous studies, debt-related stressors, including experiencing a sudden drop in income, having both federal and private student loans, and having other types of loans (e.g., credit card debt, medical debt, auto loans), were positively associated with being late on student loan payments and worrying about student loan debt (Ratcliffe and McKernan 2015).

The associations between the demographic variables and student loan-related behavior and stress were consistent with that of previous findings (Moschis and Churchill 1978; Danes 1994; King and Bannon 2002; Gundmunson and Danes 2011; Kim and Chatterjee 2013). Interestingly, our results were consistent with the findings in Ratcliffe and McKernan (2013), who stated that women were more worried about student loan debt than men; in addition, we found in this study that women were less likely to be late on their student loan payments.

It is interesting that the income strain resulting from a large drop in income over the previous year increased the probability of being late on student loan payments by approximately 10%. Even more concerning is the finding that it also increased the probability of being worried about student loans. One well-known strategy to buffer against the financial strain of sudden income shocks is to have adequate emergency funds (Skinner 1988). The importance of emergency funds and precautionary savings are included as a topic in most basic financial education courses and textbooks (Anong and DeVaney 2010; Garman and Fogue 2011). Since the findings from this study indicate that financial knowledge and education are negatively associated with late student loan payments or student loan debt worry, perhaps financial counselors, planners, and advisors should include financial education when meeting with their clients.

Findings from this study have implications for financial counselors, therapists, and planners. For example, women were found to be less likely to be late on student loan payments but more likely to feel worried about their student loans. On the contrary, men were less likely to be worried even with a higher likelihood of being late on student loan repayments. It is recommended that more research be conducted in the future on this topic to better understand this relationship. That being said, the results reveal that financial practitioners should develop customized strategies

depending on the borrowers' gender and emphasize stress management, financial therapy, and psychological interventions when working with female borrowers while focusing more on behavioral control and actual debt management behavior for male borrowers.

When working with older student loan borrowers (45+), especially those who are closer to retirement ages, financial practitioners should also consider specific needs and financial constraints. Although the population of older borrowers who had student loan debt for themselves and still in repayment status is relatively small, their suffering from student loan stress is a cause for concern, as debt-related stress could lead to other health issues (Kahn and Pearlin 2006). On the other hand, in order to prevent post-retirement income shortage, most people decide to refinance and pay off their mortgages before retirement. Student loan borrowers are faced with the dilemma that student loan repayments in later life, if together with refinancing mortgages, would cause financial difficulties and stress and risky financial behaviors. A study by Wrosch et al. (2000) suggested that counselors use positive reappraisal strategies, where positively reframing the current financial situation to clients helps to reduce their stress, increase their subjective well-being, and helps them to improve their financial behavior.

According to a recent report by the CFPB (2015), although the commonly used income-driven repayment plans, such as Income-Contingent Repayment (ICR), Income-Based Repayment (IBR), and Pay as You Earn (PAYE), are available and can help to alleviate student loan borrowers' financial strain, student loan borrowers have reported that they were either not informed by student loan service providers of these repayment options or were provided with inconsistent information when they contacted the loan servicing agencies with questions. The complexity and duration of these income-driven repayment plan enrollments have also caused many borrowers to pay high monthly repayments. It is possible that adding a financial literacy component to the student loan repayment program could help the borrowers in making more informed student loan payment decisions in the future.

### Limitations

One of the limitations of this study was that the empirical analyses were constrained by the cross-sectional nature of the NFCS dataset. Future studies need to focus on examining the effects of student loan debt on the financial well-being of households across time using a longitudinal dataset. It will be interesting to see whether the human capital gained from

college education moderates the unwholesome consequences of student loan debt on the financial well-being of people or vice-versa as young adults graduate from college and move through the wealth accumulation phase of their life cycle.

Another limitation of this study was that there was no information on the content and duration of the education sessions. For example, it was not known if these education sessions were a full class session, one-time education session of a fixed duration, or a series of short programs. More research is needed in the future to examine whether the content and duration of the financial education programs have an effect on the outcomes of the attendees over time.

### Conclusion

This study used the 2015 state-by-state NFCS dataset to examine the relationships between financial knowledge and socialization agents and peoples' financial attitudes and behaviors related to student loan debt. Key findings suggest that financial influence and knowledge gained were negatively associated with student loan stress and risky student loan repayment behavior. Additionally, types of student loan owed, financial knowledge levels, and other debt situations, along with demographic and socioeconomic characteristics, also contributed to the variations of student loan stress and behavior. Policymakers may find the information in this study to be useful for developing financial educational programs and debt management counseling programs for a wide range of constituents (e.g., parents with financially dependent children, young adults, women, households that recently experienced an income drop, etc.). The findings from this study also challenge Congress and the Department of Education to take more steps to increase the adoption of income-driven repayment plans by the eligible student loan borrowers.

### Compliance with Ethical Standards

**Ethical Approval** This article does not contain any studies with human participants or animals performed by any of the authors.

### Appendix

See Table 4.

**Table 4** Measure of objective financial knowledge

Question	Coding
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?	1 = Correct answer 0 = Otherwise
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?	1 = Correct answer 0 = Otherwise
If interest rates rise, what will typically happen to bond prices?	1 = Correct answer 0 = Otherwise
Suppose you owe \$1000 on a loan and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?	1 = Correct answer 0 = Otherwise
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	1 = Correct answer 0 = Otherwise
Buying a single company's stock usually provides a safer return than a stock mutual fund	1 = Correct answer 0 = Otherwise

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