Student Loans and Financial Satisfaction: The Moderating Role of Financial Education

Kyoung Tae Kim,[a] Jae Min Lee,[b] and Jonghee Lee[c]

We examined the relationship between holding a student loan and financial satisfaction and financial education's moderating role using the 2015 National Financial Capability Study dataset. Households with a student loan had lower levels of financial satisfaction than those without one. We found a moderating role of receiving both formal and informal financial education on the relationship between a student loan and financial satisfaction, regardless of for whom the loans were taken. Our findings confirm the importance of financial education and suggest that receiving a thorough combination of formal and informal education will improve student loan holders' financial satisfaction.

Keywords: financial education, financial satisfaction, National Financial Capability Study, student loan

Students who complete high school are on the verge of adulthood and are making significant and complex decisions that will affect the remainder of their lives, including whether to go to college and how to pay for it (Financial Literacy and Education Commission, 2015). While an increasing number of people go to college, higher education (e.g., college tuition fees) costs more now than ever (Bureau of Labor Statistics, 2016; National Center for Education Statistics, 2016). For example, the amount of a student loan has doubled since 2009, and no other form of household debt has shown such a rapid increase (Nasiripour, 2017). According to the Federal Reserve Bank of St. Louis (2016), the amount of student loan debt has tripled, from $435 billion in the first quarter of 2006, to $1.31 trillion in the fourth quarter of 2016. Outstanding student loan debt accounted for approximately 7.45% of the Gross Domestic Product (GDP) in 2016, compared to 3.53% in 2006. Accordingly, how to finance higher education and manage the debt incurred to pay for it matters significantly to more young adult Americans and their families. Student loans influence young debtors' lives, from job choice and location to the decision to pursue further education (Asher, 2009). As the amount of student loan debt has escalated, researchers have paid much attention to its negative influences on financial outcomes, such as *student loan* default and bankruptcy (e.g., Dynarski, 1994; Pearson, 2015; Perna et al., 2017).

However, previous research on student loan holders' increasing debt burden has not incorporated the issue of the psychological aspect of life associated with these loans. For example, both theoretical and conceptual studies leading to measures of financial satisfaction of student loan debtors, or examinations of their low financial satisfaction, are lacking. Some studies (e.g., Drentea, 2000; Jenkins et al., 2008; Norvilitis et al., 2006; Roberts et al., 1999) have demonstrated a relationship between holding debt and mental health or financial well-being. Generally, high levels of debt associate with a decreased sense of financial well-being and poorer mental health overall.

Despite the growing debt burden of student loans and the importance of financial satisfaction, there is limited knowledge about the relationship and ways to improve it through education, in particular. Although education empowers

[a] *Associate Professor, Department of Consumer Sciences, University of Alabama, 316-C Adams Hall, Box 870158, Tuscaloosa, AL 35487. E-mail: ktkim@ches.ua.edu*
[b] *Associate Professor, Department of Family Consumer Science, Minnesota State University, Mankato, 102 Wiecking Center, Mankato, MN 56001. E-mail: jae-min.lee@mnsu.edu*
[c] *Associate Professor, Department of Consumer Science, Inha University, 100 Inha-ro, Michuhol-gu, Incheon 22212, Korea. E-mail: jay.jongheelee@gmail.com*

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people to make better decisions and solve problems, the role of financial education as a medium to manage the relationship between student loan debt and financial satisfaction comes into question. The effect of financial education is not evident in the empirical findings of previous studies. Norvilitis et al. (2006) highlighted the need for comprehensive financial education among college students to improve their financial satisfaction. Conversely, Cole et al. (2016) have found no significant relationship between high school personal finance education and financial outcomes in later life. Therefore, the primary goal of this study is to examine the relationship between student loan debt and individuals' financial satisfaction, conditional on other measures of socioeconomic characteristics.

In particular, we examine how student loans incurred for one's own or others' education relates to one's subjective assessments of their financial condition. Further, we analyze whether the relationship between student loans and financial satisfaction varies, depending on formal or/and informal financial education. Hence, our analyses consider the history of enrollment in formal education and informal education about ways to manage finances taught by parents or guardians as a moderator. We use the 2015 National Financial Capability Study (NFCS) dataset, a representative U.S. national dataset managed by the Financial Industry Regulatory Authority (FINRA) Investor Education Foundation, to conduct the empirical analyses. The overall findings underscore financial education's potential to improve financial satisfaction, as well as the relationship between student loan debt and financial satisfaction, by confirming financial education's moderating role. Our findings suggest that both formal and informal education are essential to improving student loan holders' financial satisfaction.

Our study contributes to the existing literature distinguished from other studies on the relationship between financial satisfaction and student loan or the relationship between financial education and financial knowledge such as Robb et al. (2019) and Jin and Chen (2020). First, this study examines the moderating effect of financial education on the relationship between student loans and financial satisfaction, not previously discussed in the literature. Second, this study includes the different types of student loan holders by whom they borrowed the loan. Therefore, this study provides evidence about the roles of the above variables on financial satisfaction under certain assumptions. As such, this study contributes to the literature on financial satisfaction.

Literature Review

Measurement of Financial Satisfaction

Financial satisfaction refers to subjective evaluations of one's financial circumstances (Hsieh, 2004; Xiao et al., 2014) or assessments of the level of financial resources that are considered adequate or satisfactory (Hira & Mugenda, 1998). Previous studies have used financial satisfaction as a specific domain of life satisfaction or well-being (e.g., Vera-Toscano et al., 2006), as a mediator of the relationship between income and happiness (Diener & Biswas-Diener, 2002), and as subjective well-being and life satisfaction overall (e.g., Archuleta et al., 2013; Hsieh, 2001, 2004; Plagnol, 2011).

Researchers have measured financial satisfaction as one's financial status at a specific time using either single or multiple items. Some studies have used a single question to measure financial satisfaction. For example, Hsieh (2004) employed the General Social Surveys to measure financial satisfaction with the following question: "So far as you and your family are concerned, would you say that you are pretty well satisfied with your present financial situation, more or less satisfied, or not satisfied at all?" Archuleta et al. (2013) and Britt et al. (2015) measured financial satisfaction with a single question, "How satisfied are you with your overall current financial situation?" using a sample of college students seeking counseling services in a Midwestern university's peer financial counseling center. Studies using the NFCS dataset (e.g., Fan & Babiarz, 2019; Robb et al., 2019; Xiao et al., 2014; Xiao & O'Neill, 2016) also measured financial satisfaction with a single item in the dataset: "Overall, thinking of your assets, debts, and savings, how satisfied are you with your current personal financial condition?"

Other studies have used multiple items to measure the level of financial satisfaction. Montalto et al. (2019) used the Study on Collegiate Financial Wellness and proposed financial wellness as a multidimensional measure that includes various aspects of one's financial situation, not only having adequate levels of resources and knowledge, but also understanding financial situations and behaviors. Loibl and Hira (2005) examined self-directed financial learning's effects on employees' financial and career satisfaction, using a

sample collected from an insurance company across eight geographic regions in the United States. They measured seven aspects of financial satisfaction, including the use of funds, ability to make investment decisions, preparation for long-term financial goals, ability to meet significant unexpected expenses, outstanding credit card balances, ability to manage finances, and estate planning.

Determinants of Financial Satisfaction

Previous studies of financial satisfaction have demonstrated the effects of household demographic characteristics, including age, gender, household size, health status, number of children, employment status, income, homeowners, or various forms of financial ability, including debt holding. Vera-Toscano et al. (2006) found that respondents' age and age squared had a healthy relationship with financial satisfaction, in which people were least satisfied financially at age 35. Attaining a college education (compared to a high school diploma) related positively to financial satisfaction. However, people with larger households (number of adults and children living in the house) were less satisfied financially, and those who were retired and unemployed also were less satisfied compared to those employed. Robb et al. (2019) found that status as a widow/er, homeownership, and taking a loan or hardship withdrawal from retirement savings related positively to financial satisfaction. Conversely, single, older (45–54), unemployed, and other financial strain variables, including experience of a financial shock, financial fragility, and difficulty meeting expenses, related negatively to financial satisfaction among those with student loan debt.

Some studies have suggested a significant relationship between attitudinal and behavioral variables and financial satisfaction. Robb et al. (2019) found that financial knowledge, behaviors, and attitudes affected financial satisfaction among adults with student loan debt. Objective financial knowledge, spending behavior (spending more than one's income), having retirement plans, and negative self-reported credit record (worse than average) associated negatively with financial satisfaction. In contrast, subjective financial knowledge, risk tolerance, setting long-term goals, and having an emergency fund and savings account related positively to satisfaction. Xiao et al. (2014) found that individuals with specific characteristics had higher levels of financial satisfaction. For instance, these individuals were often younger than 35 or over 64, male, employed, owned a home, earned $74,999+ annually, held investments, and practiced positive financial behaviors. Examples of positive financial behaviors include having an emergency fund and education fund, a 529 fund, a 401(k) account, calculating retirement needs, requesting credit report/credit score requests, consulting financial professionals for advice, comparing offers for mortgages, loans, and credit, rebalancing one's 401(k) account, and staying current with economic and financial news.

Woodyard and Robb (2016) documented that certain financial behaviors associated positively with financial satisfaction. These behaviors included having emergency funds, planning for retirement, accessing one's credit report, owning a retirement account outside the workplace, regular contribution to a retirement account, paying off credit card balances in full, and having access to health insurance and hardship withdrawal. Conversely, financial strain variables (e.g., having an overdrawn account, experiencing financial fragility, having difficulty paying bills, or experiencing financial shock) associated negatively with one's financial satisfaction. Xiao and Porto (2017) examined the effect of financial education on financial satisfaction using the 2012 NFCS. They found that subjective financial literacy, desirable financial behavior, and financial capability are strong mediators.

However, previous studies have yielded mixed results of financial knowledge's role. For example, Xiao et al. (2014) found that objective financial knowledge and negative financial behaviors (spending more than one's income, overdrawing a checking account, using a 401(k) loan, holding outstanding credit card balances, making only minimum or late payments, overusing credit cards, seeking cash advance service, and making late mortgage payments) associated negatively with financial satisfaction. However, subjective financial knowledge associated positively with financial satisfaction. Woodyard and Robb (2016) found that individuals with high objective and low subjective financial knowledge reported low levels of financial satisfaction. Conversely, those with low objective and high subjective financial knowledge reported high financial satisfaction when compared to those with low levels of both types of financial knowledge. Gerrans et al. (2014) examined the construct of financial wellness, and its relationship to personal well-being, with a focus on financial knowledge's role. They found that financial knowledge provided

satisfaction for males, while financial status provided satisfaction for females.

Effect of Financial Education

Financial decisions' importance and complexity underscore the need to provide young adults, and even their families, with financial education to increase their financial ability. Individuals may acquire financial knowledge and skills through formal or informal sources of financial education. Informal sources include parents, other relatives, and friends, while formal sources include financial education courses public and private organizations offer (Alex & Amos, 2014). Jin and Chen (2020) examined how formal financial education and family financial socialization help people increase their financial knowledge and skills. NFCS data from 2015 revealed that those who had any form of financial education or financial socialization were more likely to have a higher level of objective financial knowledge. A positive relationship between financial education and financial knowledge was found for workplace-based financial education, school-based financial education, and financial socialization. Having such skills, information, resources, and tools will help ensure that young people and their families can make rational financial decisions before, during, and after college so they can begin to build their financial futures (Financial Literacy and Education Commission, 2015).

When one considers the cost of college, which has risen for decades and far outstripped inflation (Holland, 2015), financial education is increasingly vital to student loan holders and their families. Brown et al. (2016) studied the effects of exposure to math and financial literacy education on debt outcomes in early adulthood. They found that both mathematics and financial education decreased reliance on non-student debt and improved repayment behavior. Wagner (2015) examined how financial education affected a person's financial literacy score, as well as short- and long-term financial behaviors. Wagner used the 2012 NFCS dataset and found that, in general, a financial education course affected long-term behaviors positively to a higher degree than short-term behaviors.

While financial literacy seems to affect financial behavior positively, financial education's effects on financial behavior are less clear. Batty et al. (2015) experimented with evaluating a set of standardized financial education lessons delivered to fourth and fifth graders. They found that younger students exposed to financial education had more positive attitudes about personal finance and were more likely to save. Gudmunson and Danes (2011) provided a theoretical discussion of family financial socialization and financial education. They suggested that two-way purposive financial socialization occurs among many family members, not solely from parents to children. Beutler et al. (2008) provided a comprehensive view of how family members influence intermediate outcomes, such as the development of money attitudes that are related to financial behaviors. However, Friedline and West (2016) suggested that financial education may be insufficient to shape financial behaviors, particularly for Millennials, who often make financial decisions in a macroeconomic environment that is changing rapidly.

Theoretical Background

Two useful theoretical orientations for exploring financial satisfaction with student loan debt are human capital theory (Becker, 1975) and social stress theory (Pearlin, 1999). Becker (1975) posited that people invest in their human capital to achieve better jobs with higher occupational prestige and income, which leads subsequently to higher social status. Given the underlying expectation that more educated people are more likely to have a better future, people with financial obligations from higher educational expenses rationalize that their financial situation is not severe, and are even satisfied with it.

The social stress theory (Pearlin, 1999) addresses the financial burden associated with assuming a loan. The burden on student loan borrowers is evident. For example, a high level of college loan debt leaves students with insurmountable payments and prevents them from starting a family, buying a home, or saving for retirement (Wermuth, 2017). Benefits accompany the completion of a college degree, which may lead to opportunities to achieve a higher income and financial improvement (Becker, 1993). However, students are much less likely to achieve these opportunities when he or she fails to obtain a degree. A student loan burden can be a significant source of stress concerning repayment, especially when one does not earn a degree (Steele & Williams, 2016). More significant financial burdens may lead students to reduce coursework or drop out of school to obtain paid work (Joo et al., 2008). Overall, this study makes the fundamental assumption that having financial obligations (e.g.,

holding student loans) for investments in human capital are expected to influence an individual's financial satisfaction negatively despite the possible offset effect from one's expectation of a better future.

Based on the theoretical background and literature review, the primary research hypotheses are as follows:

H1: Holding a student loan associates negatively with one's financial satisfaction.
H2: Financial education moderates the relationship between having a student loan and financial satisfaction.

Methods

Dataset and Sample Selection

We used the 2015 U.S. state-by-state NFCS dataset released by the FINRA. The FINRA Investor Education Foundation commissioned the first NFCS in 2009, in consultation with the U.S. Department of the Treasury, to explore the financial ability of U.S. households. This survey measures financial satisfaction, education, and financial knowledge among U.S. households, as well as information about student loans and respondents' sociodemographic, behavioral, and attitudinal characteristics. The survey was administered on a state-by-state basis, with approximately 500 observations from each state and the District of Columbia. The total sample size was 22,958 households, after dropping households with respondents who answered "prefer not to say" and "don't know" to the questions associated with our analytic variables. The NFCS weighted the population to represent the general U.S. population accurately

Dependent Variable

The dependent variable was the respondents' financial satisfaction at the time of the survey. Survey respondents answered, "Overall, thinking of your assets, debts, and savings, how satisfied are you with your current personal financial condition?" Their responses were measured on a 10-point scale that ranged from 1 (not at all satisfied) to 10 (extremely satisfied). The mean (standard deviation) level of financial satisfaction was 5.78 (2.77) out of 10.

Key Independent Variables: Student Loans and Financial Education

The NFCS indicates whether respondents currently have any student loans and identifies for whom they borrowed the loan. To distinguish for whom the loan was taken (G30), we used two different types of student loan holders: (a) whether or not respondents hold a student loan for themselves and (b) whether or not they hold a student loan for a family member (spouse, child, grandchild, others), or others. To test the combined effect of these two different types of student loan holders, we created a composite variable of the student loan that included (a) student loan both for themselves and others; (b) student loan only for themselves; (c) student loan only for others, and (d) do not hold a student loan.

Financial education types included both formal and informal. Formal financial education (M20) referred to receiving or participating in financial education at an educational institution or their workplace. The financial education variable includes three responses: (a) offered but did not participate (11.3%), (b) offered and participated (23.6%), or (c) no education offered (65.1%). We used the second category of the response as a measure of formal financial education experience (i.e., whether respondents had received and participated in formal financial education at an educational institution or in their workplace). Informal financial education (M30) refers to whether the respondent's parents or guardians had taught them how to manage finances. To test the combined effect of these two types of financial education, we created a composite variable that included (a) both formal and informal financial education, (b) formal education only, (c) informal education only, and (d) no financial education.

Control Variables

We included independent variables based on previous studies of financial satisfaction. Xiao et al. (2014) measured objective financial knowledge as the number of correct answers to the fundamental concept and simple application questions about personal finance with scores ranging from 0 to 5. The subjective measure of financial knowledge was measured based on the respondents' answer to the following question: "On a scale from 1 (very low) to 7 (very high), how would you assess your overall financial knowledge?" This study also included the following household characteristic variables: Age; gender (male, female); race (White, Black, Hispanic, Asian/others); marital status (married, single, separated/divorced/widowed); the presence of a dependent child (yes, no); employment status (self-employed, salaried worker, part-time worker, homemaker, student, disabled, unemployed); education (less than

high school, high school diploma, some college, bachelor's degree, post-bachelor's degree); household income; and experience of an unexpectedly large drop in income (yes, no). Lastly, we used the state of residence to control for the variation in unobserved regional effects attributable to state-level policies.

Empirical Model Specification

We used Ordinary Least Squares (OLS) regression models to analyze the relationship between student loan ownership and financial satisfaction while controlling for various household characteristics. We assumed that the inclusion of financial education variables would increase the explanatory power of a household's financial satisfaction level and that financial education would moderate the relationship between student loan ownership and the level of financial satisfaction. We used three OLS regression models, as follows. First, we conducted a baseline regression to analyze the relationship between different types of student loan holders and level of financial satisfaction (Model 1). Second, to test the explanatory power of financial education, we constructed a hierarchical model and performed an F-test, with the null hypothesis that the regression coefficients of financial education variables were zero (Model 2). Third, we estimated the moderating effect of financial education by adding interaction terms of student loan ownership and financial education variables and modelled and performed an F-test (Model 3).

Model 1: Financial satisfaction = f (student loan, socioeconomic status, state of residence)
Model 2: Financial satisfaction = f (student loan, financial education, socioeconomic status, state of residence)
Model 3: Financial satisfaction = f (student loan, financial education, interaction terms, socioeconomic status, state of residence).

Results

Descriptive Results

Households' mean level of financial satisfaction was 5.78 of 10. Approximately 16% of households reported that they had a student loan only for themselves, and 7% answered "had student loan only for others (spouse, partner, child, grandchild, or another person)," while 4% had both types of student loan. Regarding the financial education variable, approximately 10% of households had received only formal financial education offered by their school, employer, or the military. In comparison, 32% of households had received only informal financial education from parents or guardians; 13% of households had both formal and informal education, and 44% of households never had any form of financial education. The mean of objective financial knowledge was 2.96 of out of 5, and the mean of subjective financial knowledge was 5.28 of 7. Concerning households' general sociodemographic characteristics, respondents' mean age was 46. The majority of households had completed some college or more (72%), 53% were married, and 66% were Caucasian. Approximately 37% had at least one financially dependent child. 46% of respondents were full-time workers (i.e., salaried and self-employed), 10% were part-time workers, and 20% were retired. Lastly, 22% of households had experienced a substantial drop in income during the 12 months before the survey. Full results are available from the authors upon request.

Multivariate Results

Table 1 shows the regression results from the hierarchical models, including a baseline model and an extended model that incorporates formal and informal financial education. The results revealed that holding a student loan related negatively to financial satisfaction across all types of student loan holders. In the baseline model (Model 1), households with student loans for both themselves and others had a 0.43 lower level of financial satisfaction than did those without any student loan. Those with a student loan only for themselves had a 0.41 lower level of financial satisfaction, while those with a student loan only for others had a 0.62 lower level than did those without any student loan. Additionally, we conducted similar regressions for all pairwise comparisons of student loan categories by changing the reference category. Households with a student loan only for others had lower financial satisfaction than all other categories, which supports the first hypothesis.

The results were similar when adding financial education variables to Model 2, and holding a student loan only for others decreased the level of financial satisfaction. We also performed an F-test, with the null hypothesis that the regression coefficients of the financial education variables were zero. When adding the financial education variables to the baseline model, the null hypothesis was rejected, which implies that the regression models' explanatory power significantly increased when we included financial education variables.

TABLE 1. Hierarchical regression results: The effect of student loan and financial education on financial satisfaction, 2015 NFCS (*N* = 22,958)

Variables	Model 1			Model 2		
	Coefficient	Standard error	*p*-value	Coefficient	Standard error	*p*-value
Student loan (ref: Not holding student loan)						
Student loan for both	−0.4331	0.0786	<.0001	−0.3982	0.0845	<.0001
Student loan only for themselves	−0.4081	0.0464	<.0001	−0.3715	0.0474	<.0001
Student loan only for others	−0.6213	0.0595	<.0001	−0.6052	0.0610	<.0001
Financial education (ref: Not receiving any form of financial education)						
Both financial education	-	-		0.5829	0.0494	<.0001
Formal financial education only	-	-		−0.0520	0.0536	.3324
Informal financial education only	-	-		0.4505	0.0358	<.0001
Intercept	2.1296	0.1530	<.0001	2.0243	0.1525	<.0001
Control variables	Yes			Yes		
Adjusted R-squared	0.3039			0.3117		
F-test for financial education variable	-	-	-	62.26	-	<.0001

Note. NFCS = National Financial Capability Study.
Weighted results. Control variables include financial knowledge, age, gender, education, marital status, race/ethnicity, presence of a dependent child/children, employment status, household income, transitory income drop, and state of residence.

Receiving both formal and informal financial education and having only informal education increased the level of financial satisfaction by 0.58 and 0.45, respectively, while the effect of receiving only formal financial education was not significant. To test pairwise comparisons of the financial education variable, we conducted additional regression analyses by changing the reference category. Those who received both formal and informal financial education had higher financial satisfaction than all other categories did, partially supporting the second hypothesis.

To test the moderating effect of financial education on the relationship between student loans and financial satisfaction, we conducted analyses that incorporated the interaction terms, as shown in Table 2. The results of student loans and financial education remained similar to those of the previous models, even after including the interaction terms, which indicates that student loan variables associated negatively with the level of financial satisfaction. Compared to respondents who received no financial education, those who received both formal and informal financial education had a 0.43 higher level of financial satisfaction. Those who received only informal financial education had a 0.39 higher level of financial satisfaction. However, the effect of formal financial education was insignificant.

Regarding the moderating effect of financial education, receiving both formal and informal financial education played a significant moderating role in the relationship between holding student loans and financial satisfaction, regardless of for whom the loans were taken. In particular, receiving both types of financial education had a positive moderating effect on financial satisfaction for all three types of student loan holders. Among those who held student loans both for themselves and for others, those who had received both types of financial education had 0.97 higher financial satisfaction than did similar households who received no financial education. Those who held a student loan only for

TABLE 2. Regression results on financial satisfaction with interaction term, 2015 NFCS (*N* = 22,958)

Variable	Coefficient	Standard error	*p*-value
Student loan (ref: Not holding student loan)			
A: Student loan for both	−0.6184	0.1333	<.0001
B: Student loan only for themselves	−0.5157	0.0686	<.0001
C: Student loan only for others	−0.8292	0.0910	<.0001
Financial education (ref: Not receiving any form of financial education)			
D: Both financial education	0.4318	0.0586	<.0001
E: Formal financial education only	−0.1163	0.0650	.0738
F: Informal financial education only	0.3910	0.0409	<.0001
Interaction terms			
A*D	0.5419	0.2358	.0216
A*E	0.1424	0.2498	.5685
A*F	0.3863	0.1975	.0505
B*D	0.3820	0.1258	.0024
B*E	0.1205	0.1365	.3772
B*F	0.2522	0.1020	.0134
C*D	0.8085	0.1823	<.0001
C*E	0.5600	0.1967	.0044
C*F	0.1481	0.1396	.2889
Financial knowledge			
Objective financial knowledge	−0.2085	0.0125	<.0001
Subjective financial knowledge	0.7334	0.0135	<.0001
Age	−0.0101	0.0015	<.0001
Gender (ref: Female)			
Male	0.3488	0.0329	<.0001
Education (ref: Less than high school)			
High school diploma	−0.2004	0.1062	.0593
Some college	−0.2933	0.1069	.0061
Associate degree	−0.2008	0.1127	.0749
Bachelor degree	0.0070	0.1119	.9500
Post-bachelor degree	0.0782	0.1169	.5034
Marital status (ref: Married)			
Single	−0.1126	0.0453	.0130
Separated/divorce/widow	−0.3797	0.0480	<.0001
Race/Ethnicity (ref: White)			
Black	−0.0408	0.0504	.4181
Hispanic	0.1950	0.0451	<.0001
Asian/others	0.1784	0.0598	.0029
Presence of a dependent child/children (ref: No)	−0.1337	0.0373	.0003
Employment status (ref: Salaried worker)			
Self-employed	0.0321	0.0630	.6102

(*Continued*)

TABLE 2. Regression results on financial satisfaction with interaction term, 2015 NFCS (*N* = 22,958) (*Continued*)

Variable	Coefficient	Standard error	*p*-value
Part-time worker	0.2854	0.0567	<.0001
Homemaker	0.0884	0.0629	.1595
Student	0.1083	0.0785	.1676
Disabled	−0.5136	0.0829	<.0001
Unemployed	−0.6571	0.0719	<.0001
Retired	0.8704	0.0548	<.0001
Income (ref: Less than $15,000)			
At least $15,000 but less than $25,000	0.1626	0.0645	.0117
At least $25,000 but less than $35,000	0.5767	0.0665	<.0001
At least $35,000 but less than $50,000	0.8809	0.0644	<.0001
At least $50,000 but less than $75,000	1.2823	0.0638	<.0001
At least $75,000 but less than $100,000	1.6873	0.0716	<.0001
At least $100,000 but less than $150,000	1.9518	0.0751	<.0001
$150,000 or more	2.2241	0.0909	<.0001
Had unexpected large drop in income (ref: No)	−0.9907	0.0376	<.0001
Intercept	2.0206	0.1526	<.0001
State fixed effect	Yes		
Adjusted R-squared	0.3125		
F-value	227.89	*p*-value (<.0001)	

Note. NFCS = National Financial Capability Study.
Weighted results.

themselves and who received both types of financial education had a 0.81 higher level of financial satisfaction than did those who received no financial education. Finally, those who held a student loan only for others and had received both types of financial education had a 1.24 higher level of financial satisfaction than did those who had not received any financial education.

The moderating effect of receiving either type of financial education on the relationship between student loans and financial satisfaction was dependent on whether people held a student loan for themselves or others. The moderating effect of receiving only informal financial education was significant only for the financial satisfaction of those who held student loans for their education. Their level of financial satisfaction was 0.64 higher than it was for those who had not received any financial education. In contrast, the moderating effect of receiving only formal education was significant only for those who held student loans for others. Those who incurred a student loan for others had a 0.44 higher level of financial satisfaction than did those who had received no formal financial education.

The results also revealed that households with a higher level of objective financial knowledge were less satisfied financially. However, those with a higher level of subjective financial knowledge were more satisfied financially. Concerning household sociodemographic characteristics, male respondents, Hispanic and Asian/other households, part-time workers, those who were retired, and households with higher incomes had greater financial satisfaction than did the reference groups. In contrast, older households, those who had some college education, were nonmarried couples, had a dependent child, were disabled, were unemployed, and had experienced transitory income shock had less financial satisfaction than did the reference groups.

Robustness Check

To check the robustness of our results, we conducted additional analyses (similar to Model 2 shown in Table 1) across three different generations, Millennials, Generation X, and Baby Boomers. Following Pew Research Center (2015), we defined these generations as follows: Millennials (born 1981–1997), Generation X (born 1965–1980), and Baby

Boomers (born 1946–1964). Given the small sample sizes, we exclude both the Greatest Generation (born before 1928) and Silent Generation (born 1928–1945) in the robustness check. The results indicate that holding a student loan relates negatively to financial satisfaction across different types of student loan holders, and a similar pattern emerges across all three generations. Additionally, receiving both formal and informal financial education and receiving only informal education increased financial satisfaction. The effects of receiving only formal financial education were not significant across all generational groups; overall, our main results are robust across different generations. Full results are available from the authors upon request.

Discussion

In this study, we analyzed how holding student loan debt (for oneself or others) related to one's financial satisfaction. The results showed that being responsible for repaying a student loan decreased individuals' level of financial satisfaction, consistent with Robb et al. (2019). In particular, households with a student loan for others had a lower level of financial satisfaction than that of holding their student loans. The results were similar, even when considering financial education's moderating role in financial satisfaction. We used three forms of financial education: formal and informal, only formal, and only informal. We found that those receiving both formal and informal financial education or receiving only informal education had a higher level of financial satisfaction than those not receiving any financial education. However, receiving only formal financial education offered by their school, employer, or the military had no significant effect on financial satisfaction. This finding is consistent with previous research, indicating that both channels had positive but different degrees of relationships with the level of financial knowledge (Jin and Chen, 2020).

Further analyses showed that those receiving both formal and informal financial education had higher financial satisfaction than those in the other categories. We then investigated financial education's moderating role in the relationship between holding student loan debt and financial satisfaction using the interaction terms between student loan debt and the financial education variables. Overall, financial education's moderating effect decreased the negative effect of holding student loans on the level of financial satisfaction. Notably, the moderating effect of receiving both formal and informal education was significant for all three types of student loan holders. This result implies that student loan holders who received both types of financial education had a higher level of financial satisfaction regardless of for whom they took the loan. Further, we obtained mixed results about the effect of receiving only one type of education. The moderating effect of receiving either formal or informal education was significant only for a particular type of student loan holder.

This study provides significant contributions in the context of two important takeaways. First, we demonstrated that the person for whom one assumes a student loan is an essential factor in explaining student loan holders' level of financial satisfaction. Specifically, we found that holding a student loan only for others had a more substantial negative effect on the level of financial satisfaction. Our findings are consistent with those of previous studies, in that student loan holders were more likely to experience a higher level of financial stress (Archuleta et al., 2013; Heckman et al., 2014). A recent report (PRNewswire, 2017) on student loans revelated that almost half of Gen Xers and Baby Boomers who cosigned student loans for others are concerned that the borrower may or may not fail to pay off the loans. We note that family members and even nonfamily members share the financial obligation. However, this study did not consider types of student loans (e.g., federal vs. private loans) or specific repayment options because of the dataset's limitations. A household refers to a collective unit that makes decisions based on its members' financial interdependence, and, thus, one member's financial obligation, such as a student loan, influences another's financial status and decisions (Lee et al., 2018).

To our knowledge, little has been studied about household dynamics concerning educational loan obligations. This study's findings provide additional insight into the financial obligations of those who hold student loans for others' education. Future studies could investigate this topic further by including more variables at the individual and household levels, such as attitudinal (e.g., debt belief), behavioral (e.g., positive and negative financial behaviors), and financial strain variables (e.g., financial fragility, financial shock). Financial practitioners, educators, and researchers can benefit from further analyses of financial obligation or financial well-being associated with student loans that focus on more general

characteristics and the potential dynamics of student loan debt burden (e.g., loan amount).

Second, there has been controversy about the effect of financial education, and little evidence has demonstrated a positive relationship between financial education and financial outcomes (Hastings et al., 2012). However, our findings support financial education's decisive role in financial satisfaction through its interaction with the ownership of student loans. Nevertheless, we found no empirical evidence that formal financial education plays an independent role in financial satisfaction. The U.S. federal and state governments have advocated for financial education programs, yielding substantial progress toward providing such education to the public. For example, 44 U.S. states included "personal finance" in their standard high school curricula as of 2018, which is double the number of participating states in 1998 (Council for Economic Education, 2018). However, implementation of the mandated financial education differs across states and still includes areas that may be improved: Some states simply suggest that schools should offer a course (22), while others require the course for graduation (17) and test students on what they have learned (7). Our findings suggest that state-mandated financial education may not be the sole determinant of effective financial education for student loan holders who can exist outside high school or college education settings.

This study included survey participants who had been offered financial education but did not examine the ideal combination of formal and informal education. The moderating effects of financial education variables showed that the different types of financial education could supplement each other to improve financial satisfaction. Thus, financial educators and practitioners should offer comprehensive financial education that encompasses various long-range financial decisions through multiple different channels, which would affect financial well-being and life satisfaction. Future studies should incorporate more details on financial education, which we could not do because of data unavailability (e.g., the timing of financial education or type of financial education curriculum). These resulting analyses should provide greater insight into the effects of formal financial education.

This study has some limitations to note. Given the purpose of this study and constructed empirical models, we did not examine the group who have not participated in financial education though it was available. Further, we assumed that missing values of selected variables were random because we did not assume any particular situations that would potentially cause missingness. Further studies can extend our findings when particular situations are assumed to affect missingness by handling the missing responses rather than removing them (Lodder, 2013). Lastly, the limitation of the cross-sectional design of this dataset does not allow us to address the possible issue of causality between holding a student loan and financial satisfaction, and the use of longitudinal datasets would allow future researchers to address this potential issue.

Implications for Practitioners

One of our key findings shows that the negative relationship between student loans and financial satisfaction was higher among the student loan holders for others. As a cosigner or the primary debtor of student loans, this group of student loan holders would feel financial responsibility and experience financial stress (PRNewswire, 2017). This claim suggests that taking a student loan and paying off the loan would not be an issue of a young adult for her or his education. Often, individuals who lack proper financial knowledge and skill share in the decision and repayment process, though they are ill-equipped to do so. Previous studies indicated that the complexity of the student loan system compounds the repayment issues and even puts the middle class at risk (Pew Charitable Trust, 2019; Zaloom, 2019). Student loan holders or their families captured through a wide range of sociodemographic characteristics may demand a higher level of attention and assistance from practitioners. Before, during, after the student loan process, they could get their decision and payment plans reviewed through financial counseling and planning based on up-to-date information reflecting changing policies and repayment systems. Financial practitioners could help them make an informed decision and keep them on track of payments, which could contribute to greater financial satisfaction.

Further, this study confirms that two forms of financial education can supplement each other and suggests the importance of a combination of formal and informal financial education. That is, one's financial capability and satisfaction can be a result of complex interactions between surroundings, including formal institutions and informal educators or socialization agents. Thus, it is crucial to guarantee access to

quality financial education in both forms to increase financial education's effect on financial satisfaction. Financial practitioners can work with not only the direct recipients of financial education but also educators to identify their needs and consider their circumstances in financial counseling and planning. Financial practitioners should address specialized topics such as student loan analysis for current and future demand for student loans. As such, practitioners can provide insights into effective and diverse financial education and alternative policy options to improve consumers' financial satisfaction.

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