

Financial stress among college students: New data about student loan debt, lack of emergency savings, social and personal resources

Rachel Danahy  | Căzilia Loibl  | Catherine P. Montalto  |
Dean Lillard 

Department of Human Sciences,
The Ohio State University, Columbus,
Ohio, USA

Correspondence

Căzilia Loibl, Department of Human
Sciences, The Ohio State University,
1787 Neil Avenue, Columbus,
Ohio 43220, USA.
Email: loibl.3@osu.edu

Abstract

We provide updated results about the link between student loan debt and emergency savings with financial stress, and after conditioning for differences in social and personal resources. We use the stress process model framework and data from the 2020 Study on Collegiate Financial Wellness ($N = 25,310$) to estimate ordered probit regression models. The 2020 data confirm that students report higher levels of stress if they hold more loan debt and have lower emergency savings. Students with higher levels of financial socialization and financial self-efficacy experience less financial stress and experience more stress when they report both positive and negative financial management behaviors. Among student-borrowers, the role of social and personal resources is weakened. The data confirm ongoing financial stress among college students and points to the important role of financial socialization through parents and financial skill in students' ability to cope with financial stress.

KEYWORDS

college students, financial stress, student loan debt

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1 | INTRODUCTION

In this short “Trends and Applications” article, we provide an update on factors associated with financial stress among college students. This short article contributes new data from a particularly robust data collection effort and applies the stress process model (Pearlin, 1989) as extended by Drentea and Reynolds (2015) to the college student population.

The Consumer Financial Protection Bureau (CFPB) defines financial stress as a negative emotional response people experience when their financial situation exposes them to uncertainty and (severely) constrains their current and future choices (CFPB, 2015). This focus is important because households hold roughly equal shares of non-mortgage related debt in student loans as they do in auto, credit card, and other debt types (combined) until mid-life (New York Fed, 2022). People who hold student loan debt choose to organize their lives differently than people who do not. On average, students who take on student loan debt wait longer to marry (Addo, 2014; Bozick & Estacion, 2014), have children (Nau et al., 2015), and buy homes (Houle & Berger, 2015). Student loan debt reduces the probability that students choose low-paid public interest jobs (Rothstein & Rouse, 2011), but more often experience personal financial distress (Dunn & Mirzaie, 2016), troubled marriages, and overextended family finances well into retirement (Walsemann & Ailshire, 2017). While none of these studies identify a causal link, the underpinnings of these associations merit further study.

To that end, we provide new data to investigate factors that differentiate students who hold student loan debt but differ in the amount of financial stress they reportedly experience. We focus on students still in college to align with previous research. Students who experience financial stress have been shown to more often report short- and long-run negative mental health outcomes (Fosnacht & Calderone, 2017; Heckman et al., 2014); food and housing insecurity (Goldrick-Rab et al., 2017); forgoing medical care (Anong & Henager, 2021); and negative physical health outcomes (Rice, 2011; Turner, 2013). Gutter and Copur (2011) posit that students will be more likely to mismanage their money if they did not have positive financial role models. Montalto et al. (2019) suggest that a student's financial stress will be correlated with his or her financial self-efficacy.

We contribute new evidence flowing from new data on undergraduate college students from the 2020 Study on Collegiate Financial Wellness. To inform our empirical models, we draw insights from the stress process model (Pearlin, 1989) as extended by Drentea and Reynolds (2015). Because the framework proposes more nuanced pathways that link financial stress to money-related stressors, our empirical models allow us to test assumptions about new potential correlates. Finally, we specify models that allow for the possibility that social and personal resources moderate the association between financial stress and money-related stressors.

Overall, we aim to provide updated estimates of the association between student loan debt, liquidity constraints, and college students' feelings of financial stress. We empirically investigate two research questions:

1. Is exposure to money-related stressors associated with college students' financial stress?
2. Does financial stress differ for students with fewer and greater levels of social and personal resources?

Figure 1 illustrates the proposed relationships.

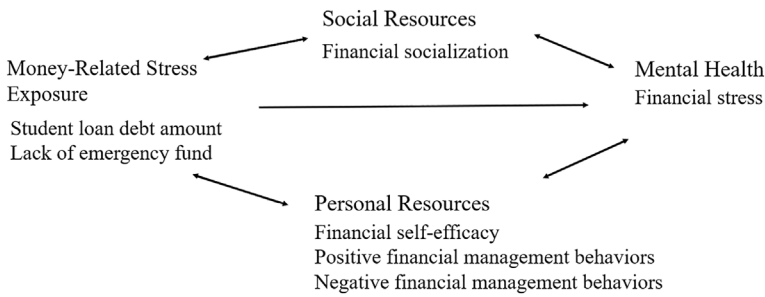


FIGURE 1 Study framework.

2 | METHODS

2.1 | Data and measures

Our data are from the February 2020 administration of the Study on Collegiate Financial Wellness.¹ The study sampled 236,112 college students at the 60 two-and four-year US higher education institutions; 29,883 students agreed to participate in this cross-sectional study design (SCFW, 2020). The overall response rate at participating institutions was 12.7%; 7% at 2-year institutions ($n = 9$), 13% at 4-year public institutions ($n = 38$), and 17% at 4-year private institutions ($n = 13$). The 60 participating institutions do not represent the national distribution of the institution types. In addition, among the institutions that agreed to participate in this study, respondents from four-year public universities are overrepresented in the sample while public and private two-year institutions and four-year private institutions are underrepresented.

The dependent variable is a composite index of opinions about four statements about personal finances (example: “I feel stressed about my personal finances in general”; $\alpha = 0.832$). For each statement, respondents pick one of four responses that most closely reflect how they feel. Response options range from 1 = strongly disagree to 4 = strongly agree. The summed measure ranges from 4 to 16. Higher values represent greater financial stress. For descriptive analysis, we split the sample according to the distribution of responses. We categorize respondents as experiencing low financial stress if scores ranged from 4 to 10; and as experiencing high financial stress if scores ranged from 11 to 16. Of the 25,310 respondents in the analysis sample, 12,245 are in the “low” sub-sample and 13,065 are in the “high” sub-sample.

We aim to estimate the association between an individual’s reported financial stress, student loan debt, and (lack of) emergency savings. Survey respondents report if they have any student loan debt and in which of seven categories of \$10,000 each the debt falls (\$0, \$1–9999 to \$60,000 or higher). The data that characterize a lack of emergency savings consists of answers to the question, “How likely is it that you could come up with \$400 in cash in the event of a financial emergency during the school year?” Respondents pick from one of four categories that range from 1 = very likely to 4 = very unlikely.

To control for individual differences in social and personal resources, positive and negative financial behaviors, we construct indices. For each index, we sum values that represent the degree to which survey respondents agreed with questions and statements about the particular topic. Examples of the statements include: Social resources (four items): “Prior to and/or during college, did your parents and guardians provide financial advice?”; $\alpha = 0.832$). Personal

resources (four items): “Please indicate the extent to which you agree or disagree with the following statements: -I am confident that I can manage my finances”; $\alpha = 0.876$. Positive financial behaviors (three items), for example, “Please indicate how often you have done the following in the past 12 months: -I tracked my spending”; $\alpha = 0.662$. Negative financial behaviors (three items), for example, “Please indicate how often you have done the following in the past 12 months: -I overdraw my bank account”; $\alpha = 0.667$. For each question/statement, respondents choose one of four answers that range from 1 = strongly disagree to 4 = strongly agree. The index values range from 4 to 16 for 4-item scales and 3 to 12 for 3-item scales. Higher scores indicate that a person rates themselves as having more of each resource.

Our models control for gender, race/ethnicity, employment status, year in college, and whether respondents met with a financial aid counselor in either high school or college. Table 1 presents descriptive statistics. We list the survey questions in Appendix 1.

We drop 4573 of 29,883 respondents who did not report the key data we need (15.3%); the analytical sample is $n = 25,310$. The predictor variables with the most missing values were financial stress (n missing = 1958, 6.5%), employment (n missing = 1881, 6.3%), student loan debt (n missing = 1132, 3.8%), and financial socialization (n missing = 1036, 3.5%).

2.2 | Sample characteristics

Table 1 describes the characteristics of the analysis sample, overall and for respondents who report low and high stress. Half of respondents have no student loan debt (51%). Most respondents are employed (61%) and more than half (58%) have had not met with a financial aid counselor. Of students with debt, most report debt of less than \$10,000 (33% of students with some debt). Using midpoint values of the debt ranges and an assumption of a uniform distribution in each range, the average student who borrowed has \$12,926 of student loans. Fewer than half of respondents (45%) reported that they would be either “very unlikely” or “somewhat unlikely” to be able to come up with \$400 in an emergency. The average sample member reported a financial stress index value of 10.54 (S.E. = 0.02). That value is midway between the lowest and highest possible index values (four and 16). The average respondent reports index values for financial socialization and financial self-efficacy of 11.51 (S.E. = 0.02) and 11.67 (S.E. = 0.02) respectively. These indices also have a range from four to 16 so the mean value puts the average student in the upper half of the range of average financial socialization and self-efficacy scores. The average student rates themselves as having positive financial behaviors and not many negative financial behaviors. The average index scores for the positive and negative financial behaviors were 10.56 (S.E. = 0.01) and 4.46 (S.E. = 0.01) respectively. Table 1 shows that the samples of students who rated themselves with low and high financial stress are very different from each other. The high stress group is more often female, Hispanic, multiracial, and employed.

3 | RESULTS

We use STATA 17.0 to estimate all models. Because our dependent variable is an ordered categorical variable, our main model specifies an ordered probit.

We first present simple correlations in Table 2 to describe the relationship of money-related stressors and college students' financial stress. Results show that greater financial stress is correlated with higher levels of student loan debt ($r = 0.31^{***}$) and lack of cash on hand to pay

TABLE 1 Sample characteristics and means comparison between college students who experience lower/higher levels of financial stress, full sample.

	(1) Full sample	(2) Full sample: Low financial stress (scale: 4–10)	(3) Full sample: High financial stress (scale: 11–16)
	Mean (Std. err.)	Mean (Std. err.)	Mean (Std. err.)
Dependent measure:			
Financial stress (4–16)	10.538 (0.020)	7.826 (0.017)	13.079*** (0.014)
Money-related stress exposure:			
Student loan debt amount			
\$0	0.506 (0.003)	0.658 (0.004)	0.363*** (0.004)
\$1–\$9999	0.161 (0.002)	0.129 (0.003)	0.192*** (0.003)
\$10,000–\$19,999	0.135 (0.002)	0.096 (0.003)	0.170*** (0.003)
\$20,000–\$29,999	0.081 (0.002)	0.055 (0.002)	0.107*** (0.003)
\$30,000–\$39,999	0.044 (0.003)	0.026 (0.001)	0.062*** (0.002)
\$40,000–\$49,999	0.026 (0.001)	0.013 (0.001)	0.038*** (0.002)
\$50,000–\$59,999	0.016 (0.001)	0.008 (0.001)	0.023*** (0.001)
\$60,000+	0.031 (0.001)	0.015 (0.001)	0.045*** (0.002)
Lack of emergency savings			
Very likely	0.283 (0.003)	0.479 (0.005)	0.098*** (0.003)
Somewhat likely	0.267 (0.002)	0.295 (0.004)	0.239*** (0.004)
Somewhat unlikely	0.204 (0.003)	0.131 (0.003)	0.272*** (0.004)
Very unlikely	0.247 (0.003)	0.094 (0.003)	0.390*** (0.004)
Social resources:			
Financial socialization (4–16)	11.511 (0.020)	12.327 (0.027)	10.746*** (0.028)
Personal resources:			
Financial self-efficacy (4–16)	11.672 (0.016)	12.548 (0.022)	10.850*** (0.021)
Positive financial behaviors (3–12)	10.562 (0.011)	10.456 (0.016)	10.661*** (0.014)
Negative financial behavior (3–12)	4.457 (0.012)	3.878 (0.012)	5.000*** (0.018)
Socio-demographic controls:			
Male (Yes = 1)	0.316 (0.003)	0.365 (0.004)	0.270*** (0.004)
White or European American (Yes = 1)	0.644 (0.003)	0.680 (0.004)	0.611*** (0.004)
Asian/Asian American (Yes = 1)	0.092 (0.002)	0.107 (0.003)	0.078*** (0.002)
Black or African American (Yes = 1)	0.058 (0.002)	0.044 (0.002)	0.071*** (0.002)
Hispanic/Latinx (Yes = 1)	0.113 (0.002)	0.084 (0.003)	0.141*** (0.003)

(Continues)

TABLE 1 (Continued)

	(1) Full sample	(2) Full sample: Low financial stress (scale: 4–10)	(3) Full sample: High financial stress (scale: 11–16)
	Mean (Std. err.)	Mean (Std. err.)	Mean (Std. err.)
Multiracial or Multiethnic (Yes = 1)	0.072 (0.002)	0.066 (0.002)	0.078** (0.002)
Other Race/Ethnicity (Yes = 1)	0.019 (0.001)	0.018 (0.001)	0.021 (0.001)
Employment Status (Employed = 1)	0.605 (0.003)	0.549 (0.004)	0.658*** (0.004)
Year in College (1–5)	2.564 (0.008)	2.541 (0.011)	2.586 (0.011)
Met With Financial Aid Counselor in High School or College (No = 1)	0.415 (0.003)	0.318 (0.004)	0.504*** (0.004)
N	25,310	12,245	13,065

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

TABLE 2 Pearson correlations.

	Financial stress	Student loan debt amount	Lack emergency savings	Financial socialization	Financial efficacy	Positive financial behaviors
Student loan debt amount	0.31***					
Lack emergency savings	0.58***	0.19***				
Financial socialization	−0.30***	−0.19***	−0.23***			
Financial efficacy	−0.42***	−0.13***	−0.37***	0.25***		
Positive financial behaviors	0.09***	0.05***	0.01	0.09***	0.29***	
Negative financial behaviors	0.36***	0.22***	0.31***	−0.21***	−0.33***	−0.01*

Note: $N = 25,310$, * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

unforeseen expenses ($r = 0.58^{***}$). Negative financial behaviors are associated with higher levels of financial stress ($r = 0.36^{***}$) and, to a lesser extent, positive financial behaviors ($r = 0.09^{***}$). Turning to negative associations of financial stress, students who benefitted from financial socialization through parents who provided financial advice, discussed personal finances with and modeled sound financial management for them experienced lower financial

stress ($r = -0.30^{***}$). Similarly, higher levels of financial self-efficacy, including confidence about finances and being in control of their finances, is correlated with lower financial stress ($r = -0.42^{***}$).

The correlation results are robust to the addition of controls in the multi-variate models. Table 3 presents the results of ordered probit regressions. Controlling for differences in socio-demographic characteristics, students experience more financial stress when they hold more debt and are less likely to have emergency savings. We then consider how experienced financial stress varies across groups of students who hold increasingly higher amounts of student loan debt. The change in stress is relative to the average financial stress among students who hold no student loan debt, holding constant other sociodemographic factors. The conceptual exercise compares the likelihood that would be reported if the “treated” students (those who chose to take on student loan debt) were alike on all other dimensions.

As shown in Table 3 Column 1, students who choose to take on student loan debt report greater financial stress compared to students who do not take on student loans. This finding applies across student loan amounts. On the lower end, for students who choose to borrow up to \$10,000 in student loans, results show a 0.4 higher likelihood of being under financial stress ($p < 0.001$), compared to students who do not take on student loans. On the upper end, for students who choose to borrow \$60,000 and more in student loans, results show a 0.8 higher likelihood of being under financial stress ($p < 0.001$), compared to students who do not take on student loans. The coefficient for association between the highest student loan amount and financial stress is twice as large as the smallest loan amount category. Relative to students who report that they are very likely to come up with \$400 in the event of a financial emergency, the students who say this is very unlikely report a 1.7 times greater likelihood of financial stress ($p < 0.001$).

Turning to control measures, male students are less likely to report high financial stress compared to female students, $p < 0.001$. Students from Hispanic/Latinx ethnicities or from multiracial/multiethnic backgrounds are more likely to report higher financial stress compared to White students. Students with employment are more likely to report higher financial stress compared to students who are not employed, $p < 0.001$. The predicted probability of reporting higher financial stress is lower for third- and fourth-year undergraduate students compared to first year undergraduate students, $p < 0.001$. Students who have not met with a financial aid counselor at some point during high school or college are more likely to report higher financial stress than students who have, $p < 0.001$.

In a second step, we examine the role of social and personal resources for the relationship of financial stress with student loan debt and emergency savings. We test whether these relationships hold after we add controls in the multi-variate model for financial socialization, self-efficacy, and financial behaviors, see Table 3 Column 2. Controlling for student loan debt amount, emergency savings, and demographics, a unit increase in financial socialization is associated with a 0.05 lower likelihood of financial stress ($p < 0.001$). With regard to personal resources, a unit increase in self-efficacy is associated with a 0.1 lower likelihood of financial stress ($p < 0.001$). In contrast, a unit increase in positive or negative financial behaviors is associated with 0.12 and 0.10 higher likelihood of financial stress ($p < 0.001$).² The size of the coefficients of the focal associations between student loan debt amount and financial stress as well as lack of emergency funding and financial stress is smaller at 80 to 90% of the baseline specification, but remain significant at $p < 0.001$.

We specify a third model in Table 3, Column 3 that allows the association between financial stress and these variables to vary with the amount of debt students hold and whether they have emergency savings. Adding these interactions does not statistically change the association between financial stress and financial socialization but does strengthen the association between

TABLE 3 Results of ordered probit regression of financial strain on financial stressors, social and personal resources, and controls, full sample.

	(1) Financial stress	(2) Financial stress	(3) Financial stress
	Beta (S.E.)	Beta (S.E.)	Beta (S.E.)
Money-related stress exposure:			
Student loan debt amount			
\$0	Omitted	Omitted	Omitted
\$1–\$9999	0.390*** (0.019)	0.349*** (0.019)	0.385*** (0.037)
\$10,000–\$19,999	0.514*** (0.020)	0.450*** (0.020)	0.532*** (0.067)
\$20,000–\$29,999	0.594*** (0.025)	0.500*** (0.025)	0.631*** (0.098)
\$30,000–\$39,999	0.635*** (0.033)	0.528*** (0.033)	0.715*** (0.132)
\$40,000–\$49,999	0.738*** (0.042)	0.571*** (0.042)	0.824*** (0.164)
\$50,000–\$59,999	0.695*** (0.053)	0.528*** (0.053)	0.838*** (0.199)
\$60,000+	0.786*** (0.039)	0.610*** (0.039)	0.968*** (0.226)
Lack emergency savings			
Very likely	Omitted	Omitted	Omitted
Somewhat likely	0.779*** (0.018)	0.624*** (0.018)	0.462*** (0.053)
Somewhat unlikely	1.238*** (0.020)	0.995*** (0.021)	0.681*** (0.100)
Very unlikely	1.740*** (0.020)	1.395*** (0.021)	0.975*** (0.148)
Social resources:			
Financial socialization	–	–0.045*** (0.002)	–0.049*** (0.005)
Financial socialization*Student loan debt amount	–	–	0.004** (0.001)
Financial socialization*Lack emergency savings	–	–	–0.001 (0.002)
Personal resources:			
Financial self-efficacy	–	–0.126*** (0.003)	–0.159*** (0.007)
Positive financial behaviors	–	0.123*** (0.004)	0.116*** (0.010)
Negative financial behavior	–	0.096*** (0.004)	0.154*** (0.011)
Financial self-efficacy*Student loan debt amount	–	–	–0.001 (0.002)
Positive financial behaviors*Student loan debt amount	–	–	–0.005* (0.002)
Negative financial behaviors*Student loan debt amount	–	–	–0.007*** (0.002)
Financial self-efficacy*Lack emergency savings	–	–	0.014*** (0.003)
Positive financial behaviors*Lack emergency savings	–	–	0.005 (0.004)
Negative financial behaviors*Lack emergency savings	–	–	–0.016*** (0.004)

TABLE 3 (Continued)

	(1) Financial stress	(2) Financial stress	(3) Financial stress
	Beta (S.E.)	Beta (S.E.)	Beta (S.E.)
Socio-demographic controls:			
Male (Yes = 1)	-0.132*** (0.014)	-0.027 (0.014)	-0.025 (0.014)
White or European American	Omitted	Omitted	Omitted
Asian/Asian American (Yes = 1)	0.002 (0.023)	-0.023 (0.023)	-0.033 (0.023)
Black or African American (Yes = 1)	-0.032 (0.028)	-0.127*** (0.028)	-0.130*** (0.028)
Hispanic/Latinx (Yes = 1)	0.177*** (0.021)	0.115*** (0.021)	0.109*** (0.021)
Multiracial or Multiethnic (Yes = 1)	0.114*** (0.025)	0.060** (0.025)	0.057* (0.025)
Other Race/Ethnicity (Yes = 1)	0.081 (0.047)	-0.016 (0.047)	-0.026 (0.047)
Employment Status (Employed = 1)	0.207*** (0.014)	0.176*** (0.014)	0.180*** (0.014)
Year in College (1–5)			
First year	Omitted	Omitted	Omitted
Second year	-0.034 (0.018)	-0.053** (0.019)	-0.058** (0.019)
Third year	-0.062** (0.019)	-0.104*** (0.019)	-0.107*** (0.019)
Fourth year	-0.143*** (0.020)	-0.188*** (0.020)	-0.194*** (0.020)
Fifth year or more	-0.028 (0.030)	-0.128*** (0.030)	-0.127*** (0.031)
Financial Aid Counselor (No = 1)	0.220*** (0.013)	0.219*** (0.014)	0.217*** (0.014)
LR chi ²	13125.79***	16792.42***	16907.55***
Pseudo R ²	0.104	0.133	0.134

Note: $N = 25,310$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

financial stress and financial self-efficacy, positive financial behaviors, and negative financial behaviors. There is a small but statistically significant interaction term between student loan debt amount and higher socialization, $p < 0.001$. A higher student loan debt amount is associated with lower financial stress for both those who report more positive or more negative financial behaviors, $p < 0.001$. The relationship between higher student loan debt amount and financial stress does not significantly differ between students who report lower or higher levels of financial self-efficacy.

A greater lack of emergency savings is associated with higher financial stress for students with greater financial self-efficacy, $p < 0.001$. Similar to the finding for student loan debt amount, a greater lack of emergency savings is associated with lower financial stress for students who report more both more positive and negative financial behaviors, $p < 0.001$. The relationship between lack of emergency savings and financial stress does not significantly differ between students who report stronger or lesser socialization.

3.1 | Robustness tests

In a robustness test, we repeated the analysis for the subsample of student loan borrowers only (48% of sample, $n = 12,519$), excluding students with a zero student loan debt amount, see Table 4.

TABLE 4 Results of ordered probit regression of financial strain on financial stressors, social and personal resources, and controls, borrower-only subsample.

	(1) Financial stress	(2) Financial stress	(3) Financial stress
	Beta (S.E.)	Beta (S.E.)	Beta (S.E.)
Money-related stress exposure:			
Student loan debt amount			
\$1–\$9999	Omitted	Omitted	Omitted
\$10,000–\$19,999	0.137*** (0.024)	0.119*** (0.024)	0.173** (0.056)
\$20,000–\$29,999	0.224*** (0.029)	0.182*** (0.029)	0.290** (0.105)
\$30,000–\$39,999	0.273*** (0.036)	0.217*** (0.036)	0.380* (0.156)
\$40,000–\$49,999	0.375*** (0.044)	0.270*** (0.044)	0.496* (0.207)
\$50,000–\$59,999	0.334*** (0.055)	0.231*** (0.055)	0.510 (0.260)
\$60,000+	0.424*** (0.042)	0.311*** (0.042)	0.642* (0.306)
Lack emergency savings			
Very likely	Omitted	Omitted	Omitted
Somewhat likely	0.640*** (0.028)	0.519*** (0.029)	0.433*** (0.088)
Somewhat unlikely	1.12*** (0.029)	0.905*** (0.030)	0.790*** (0.167)
Very unlikely	1.70*** (0.029)	1.40*** (0.031)	1.291*** (0.245)
Social resources:			
Financial socialization	–	–0.036*** (0.003)	–0.031*** (0.008)
Financial socialization*Student loan debt amount	–	–	0.000 (0.002)
Financial socialization*Lack emergency savings	–	–	–0.002 (0.003)
Personal resources:			
Financial self-efficacy	–	–0.112*** (0.004)	–0.174*** (0.012)
Positive financial behaviors	–	0.053*** (0.006)	0.091*** (0.017)
Negative financial behavior	–	0.073*** (0.005)	0.121*** (0.017)
Financial self-efficacy*Student loan debt amount	–	–	0.001 (0.002)
Positive financial behaviors*Student loan debt amount	–	–	–0.005 (0.003)
Negative financial behaviors*Student loan debt amount	–	–	–0.001 (0.003)
Financial self-efficacy*Lack emergency savings	–	–	0.022*** (0.004)
Positive financial behaviors*Lack emergency savings	–	–	–0.009 (0.005)
Negative financial behaviors*Lack emergency savings	–	–	–0.015** (0.005)

TABLE 4 (Continued)

	(1) Financial stress	(2) Financial stress	(3) Financial stress
	Beta (S.E.)	Beta (S.E.)	Beta (S.E.)
Socio-demographic controls:			
Male (Yes = 1)	-0.151*** (0.020)	-0.049* (0.020)	-0.044* (0.020)
White or European American	Omitted	Omitted	Omitted
Asian/Asian American (Yes = 1)	0.017 (0.040)	0.004 (0.040)	-0.002 (0.040)
Black or African American (Yes = 1)	-0.067 (0.035)	-0.157*** (0.036)	-0.162*** (0.036)
Hispanic/Latinx (Yes = 1)	0.120*** (0.029)	0.059* (0.029)	0.055 (0.029)
Multiracial or Multiethnic (Yes = 1)	0.122** (0.036)	0.071* (0.036)	0.069 (0.036)
Other Race/Ethnicity (Yes = 1)	0.074 (0.076)	0.005 (0.077)	-0.001 (0.077)
Employment Status (Employed = 1)	0.202*** (0.020)	0.174*** (0.020)	0.177*** (0.020)
Year in college (1-5)			
First year	omitted	omitted	omitted
Second year	-0.074* (0.028)	-0.076* (0.029)	-0.077* (0.029)
Third year	-0.092** (0.028)	-0.124*** (0.028)	-0.125*** (0.029)
Fourth year	-0.185*** (0.030)	-0.217*** (0.030)	-0.221*** (0.030)
Fifth year or more	-0.120** (0.039)	-0.196*** (0.039)	-0.200*** (0.039)
Financial Aid Counselor (No = 1)	0.150*** (0.018)	0.173*** (0.018)	0.171*** (0.018)
LR chi ²	4556.24***	5956.07***	6015.85***
Pseudo R ²	0.076	0.099	0.100

Note: $N = 12,519$, * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The ordered probit results in Column 1 Table 4 for the student-borrower subsample indicate that student-borrowers report higher levels of financial stress when they hold increasingly higher student loan debt amounts; log odds increase from 0.137 among students who borrow \$10,000–19,999 to 0.424 among those who borrow \$60,000 or more compared to students who borrow up to \$10,000. Student borrowers who are very unlikely to come up with \$400 in the event of a financial emergency have 1.7 higher log odds of being under financial stress, $p < 0.001$, relative to student borrowers who report that they are very likely to cover such an emergency.

Adding the measures of financial socialization, self-efficacy, and financial behaviors in Column 2 indicates that the results borrower-only sample reflects the results for the full sample. The interaction results the borrower sample in Column 3 differ from the results from the full sample in two ways. First, moderating roles are limited to two associations. A greater lack of emergency funding is associated with higher financial stress for those who report higher levels of financial self-efficacy, $p < 0.001$. In contrast, a greater lack of emergency funding is associated with lower financial stress for those who report more negative financial behaviors, $p < 0.01$.

Second, we do no longer observe a moderating role of financial socialization for the relationship between student loan debt amount and financial stress for the sample of student-loan borrowers. The results indicate that the relationship between higher student loan debt amount and

financial stress and lack of emergency savings and financial stress does not differ between student-borrowers who report lower or higher levels of financial socialization. Similarly, for the subsample of student-borrowers, we do not find a moderating role of positive financial behaviors. Further, the relationship between student loan debt among and financial stress does not significantly differ between students who report higher or lower financial self-efficacy or more or less negative financial behaviors.

Taken together, these findings indicate a weakened role of social and personal resources for the association of student loan debt and emergency savings with financial stress among student-borrowers.

4 | DISCUSSION

This short “Trends and Applications” article provides updated evidence that college students are more likely to experience financial stress if they borrow more and fail to save money for unforeseen expenditures. In samples that include and exclude non-borrowers, financial stress is higher among those who report having higher student loan debt and being more unlikely to have emergency savings. The evidence suggests that one can use the stress process model (Pearlin, 1989) to model personal finance decisions of college students.

Our results support the notion that social and personal resources can help students deal with the underlying determinants of financial stress. The results from the new data are consistent with earlier studies on the relationship between parental financial socialization and college student financial behaviors (Ahn et al., 2018; Allsop et al., 2020; Fan & Chatterjee, 2018). It is possible that students with parents that are good role models may not need to take on additional student loans in the first place (Fan & Chatterjee, 2018) and may receive more financial assistance from their parents (Allsop et al., 2020). The personal resource of financial self-efficacy, consistent with older findings from Heckman et al. (2014), is inversely related with financial stress, as well as the focal predictors of student loan debt amount and lacking emergency savings in correlation analysis.

We were somewhat surprised to observe in this new dataset higher financial stress among students who had both positive and negative financial management behaviors. The association of negative financial behaviors and financial stress is well documented for college students (Babiarz & Robb, 2013; Zhan, 2022). We have no obvious explanation for the observation of higher financial stress among students with more positive financial behaviors but this finding merits more attention. It is possible that those engaging in positive financial behaviors experience higher levels of financial stress because they are more aware of their accumulating student loan debt and their limited ability to deal with financial emergencies. This higher level of awareness could also mean they are more sensitive to changes. Overall, our evidence points to the benefit of more nuanced models that control for college student personality, behaviors, and attitudes, both related to finances and in general. Specifically, future research could explore longitudinal changes in students' self-efficacy, social support, and the experience of stress. We hope that this study encourages ongoing research and robust data collection efforts to continue monitor and address student financial stress burdens in the United States.

AUTHOR CONTRIBUTIONS

Rachel Danahy: Conceptualization; data curation; formal analysis; methodology; project administration; writing – original draft. **Căzilia Loibl:** Conceptualization; data curation; formal

analysis; investigation; methodology; project administration; writing – original draft; writing – review and editing. **Catherine P. Montalto**: Conceptualization; data curation; formal analysis; investigation; methodology; resources; writing – review and editing. **Dean Lillard**: Conceptualization; formal analysis; investigation; methodology; software; supervision; writing – review and editing.

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ORCID

Rachel Danahy  <https://orcid.org/0000-0003-2114-9472>

Căzilia Loibl  <https://orcid.org/0000-0002-7586-3295>

Catherine P. Montalto  <https://orcid.org/0000-0001-7475-8656>

Dean Lillard  <https://orcid.org/0000-0002-9960-7616>

ENDNOTES

¹ For more information on the Study on Collegiate Financial Wellness, please visit this website: <https://cssl.osu.edu/research-projects/study-on-collegiate-financial-wellness>.

² The results for a single, combined financial behavior variable are shown in Appendix Table A1. The positive association remains positive and significant ($p < 0.001$).

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APPENDIX A

A.1 | Appendix 1: Text of survey questions

Detailed information about this survey effort, including the variable coding and descriptive results, is available here: <https://cssl.osu.edu/research-projects/study-on-collegiate-financial-wellness>.

The survey questionnaire is not publicly available but can be requested at The Ohio State University Center for the Study of Student Life (email: scfw@osu.edu).

Financial stress (Q18 strain_mean):

Please indicate the extent to which you agree or disagree with the following statements:

- a. I have enough money to participate in most of the same activities as my peers.
- b. I feel stressed about my personal finances in general.
- c. I worry about being able to pay my current monthly expenses.
- d. I worry about having enough money to pay for school.

Coding used in data analysis: 1 = Strongly Disagree 2 = Disagree 3 = Agree 4 = Strongly Agree.

Focal predictor variables:

Student loan debt amount (Q33 studentloan_amount):

How much student loan money have you borrowed up to this point in time?

0 = \$0

0.5 = \$1–\$9999

1.5 = \$10,000–\$19,999

2.5 = \$20,000–\$29,999

3.5 = \$30,000–\$39,999

4.5 = \$40,000–\$49,999

5.5 = \$50,000–\$59,999

6 = \$60,000+

Missing = Don't know

Lack emergency savings (Q14 cash400):

How likely is it that you could come up with \$400 in cash in the event of a financial emergency during the school year?

1 = Very likely

2 = Somewhat likely

3 = Somewhat unlikely

4 = Very unlikely

Moderator variables:

Financial socialization (Q17 socialization_mean)

Prior to and/or during college, did your parents and guardians:

- a. Provide financial advice?
- b. Have conversations about money with you?
- c. Tell you what you needed to know about money management?
- d. Model sound financial management?

Coding used in data analysis: 1 = Strongly Disagree 2 = Disagree 3 = Agree 4 = Strongly Agree.

Financial self-efficacy (Q16 efficacy_mean)

Please indicate the extent to which you agree or disagree with the following statements:

- a. I am confident that I can manage my finances.
- b. I feel in control of my finances.
- c. I am confident in my ability to plan for my financial future.
- d. When faced with a financial challenge, I can figure out a solution.

Coding used in data analysis: 1 = Strongly Disagree 2 = Disagree 3 = Agree 4 = Strongly Agree.

Positive financial behaviors (Q15 pos_management_mean)

Please indicate how often you have done the following in the past 12 months:

- a. I tracked my spending.
- b. I planned ahead for major purchases.
- c. I monitored my account balances.

Coding used in data analysis: 1 = Never 2 = Rarely 3 = Sometimes 4 = Frequently.
Negative financial behaviors (Q15 neg_management_mean)

Please indicate how often you have done the following in the past 12 months:

- a. I overdrew my bank account.
- b. I purchased things I could not afford.
- c. I made late payments on bills or educational expenses.

Coding used in data analysis: 1 = Never 2 = Rarely 3 = Sometimes 4 = Frequently.

Sociodemographic control variables:

Gender (q4_gender)

What is your gender?

- 1 = Agender
- 2 = Genderqueer or Gender fluid
- 3 = Man
- 4 = Trans Man
- 5 = Trans Woman
- 6 = Woman
- 7 = Another Preferred Identity
- 8 = Prefer not to answer
- 9 = More than one gender selected

Coding used in data analysis: 1 = Male 2 = Female.

Race (q5_race2)

Which of the following represents your race/ethnicity?

- 1 = Asian or Asian American
- 2 = Black or African American
- 3 = Hawaiian or Pacific Islander
- 4 = Hispanic or Latinx
- 5 = Middle Eastern or Arab American
- 6 = Native American or American Indian or Alaskan Native
- 7 = White or European American
- 8 = More than one race or ethnicity
- 9 = Other
- 10 = Prefer not to answer

Coding used in data analysis: 1 = Asian or Asian American 2 = Black or African American
3 = Hispanic or Latinx 4 = White or European American 5 = Multiracial 6 = Other.

Employment status (q21_employmentstatus)

Are you currently employed?

- 0 = No
1 = Yes

Year in school (q21_employmentstatus)

What is your year in school?

- 1 = First-year undergraduate
2 = Second-year undergraduate
3 = Third-year undergraduate
4 = Fourth-year undergraduate
5 = Fifth-year or beyond undergraduate
6 = Graduate/Professional student

Coding in data analysis: 1 = First-year undergraduate 2 = Second-year undergraduate
3 = Third-year undergraduate 4 = Fourth-year undergraduate 5 = Fifth-year or beyond undergraduate 6 = Graduate/Professional student.

Financial aid counselor (q8a_financialaidcounselor)

I have met with a financial aid counselor about my finances.

- 0 = Yes
1 = Never

TABLE A1 Results of ordered probit regression of financial strain on financial stressors, social and personal resources, and controls, full sample (analysis uses single and combined financial behaviors variable).

	(1) Financial stress	(2) Financial stress	(3) Financial stress
	Beta (S.E.)	Beta (S.E.)	Beta (S.E.)
Money-related stress exposure			
Student loan debt amount			
\$0	Omitted	Omitted	Omitted
\$1–\$9999	0.390*** (0.019)	0.366*** (0.019)	0.385*** (0.035)
\$10,000–\$19,999	0.514*** (0.020)	0.481*** (0.020)	0.524*** (0.063)
\$20,000–\$29,999	0.594*** (0.025)	0.542*** (0.025)	0.607*** (0.091)
\$30,000–\$39,999	0.635*** (0.033)	0.587*** (0.033)	0.673*** (0.120)
\$40,000–\$49,999	0.738*** (0.042)	0.641*** (0.042)	0.757*** (0.149)
\$50,000–\$59,999	0.695*** (0.053)	0.616*** (0.053)	0.753*** (0.178)
\$60,000+	0.786*** (0.039)	0.687*** (0.039)	0.840*** (0.201)
Lack emergency savings			
Very likely	Omitted	Omitted	Omitted
Somewhat likely	0.779*** (0.018)	0.668*** (0.018)	0.543*** (0.056)
Somewhat unlikely	1.238*** (0.020)	1.057*** (0.021)	0.830*** (0.105)
Very unlikely	1.740*** (0.020)	1.496*** (0.021)	1.183*** (0.150)

(Continues)

TABLE A1 (Continued)

	(1) Financial stress	(2) Financial stress	(3) Financial stress
	Beta (S.E.)	Beta (S.E.)	Beta (S.E.)
Social resources:			
Financial socialization	–	–0.044*** (0.002)	–0.048*** (0.005)
Financial socialization*Student loan debt amount	–	–	0.004** (0.001)
Financial socialization*Lack emergency savings	–	–	–0.001 (0.002)
Personal resources:			
Financial self-efficacy	–	–0.116*** (0.003)	–0.150*** (0.007)
Financial behaviors ^a	–	0.010*** (0.003)	0.020** (0.007)
Financial self-efficacy*Student loan debt amount	–	–	–0.00001 (0.002)
Financial behaviors*Student loan debt amount	–	–	–0.003* (0.001)
Financial self-efficacy*Lack emergency savings	–	–	0.014*** (0.002)
Financial behaviors*Lack emergency savings	–	–	–0.002 (0.002)
Socio-demographic controls:			
Male (Yes = 1)	–0.132*** (0.014)	–0.049** (0.014)	–0.047** (0.001)
White or European American	Omitted	Omitted	Omitted
Asian/Asian American (Yes = 1)	0.002 (0.023)	–0.035 (0.023)	–0.039 (0.023)
Black or African American (Yes = 1)	–0.032 (0.028)	–0.044 (0.028)	–0.049 (0.028)
Hispanic/Latinx (Yes = 1)	0.177*** (0.021)	0.144*** (0.021)	0.141*** (0.021)
Multiracial or Multiethnic (Yes = 1)	0.114*** (0.025)	0.089*** (0.025)	0.087** (0.025)
Other Race/Ethnicity (Yes = 1)	0.081 (0.047)	0.045 (0.047)	0.042 (0.047)
Employment Status (Employed = 1)	0.207*** (0.014)	0.218*** (0.014)	0.219*** (0.014)
Year in College (1–5)			
First year	Omitted	Omitted	Omitted
Second year	–0.034 (0.018)	–0.026 (0.019)	–0.026 (0.019)
Third year	–0.062** (0.019)	–0.058** (0.019)	–0.058** (0.019)
Fourth year	–0.143*** (0.020)	–0.136*** (0.020)	–0.136*** (0.020)
Fifth year or more	–0.028 (0.030)	–0.039 (0.030)	–0.038 (0.030)
Financial Aid Counselor (No = 1)	0.220*** (0.013)	0.253*** (0.013)	0.252*** (0.014)
LR chi ²	13125.79***	15445.08***	15489.43***
Pseudo R ²	0.104	0.122	0.123

Note: $N = 25,310$, * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

^aNew variable that combines positive and negative financial behaviors, with negative items reverse coded. Combined variable with higher scores indicates more positive and less negative financial behaviors. Range of combined financial behavior variable is min = 6 and max = 24; mean = 21.10; SD = 2.63; Alpha = 0.594. Combined financial behavior variable is negatively correlated with financial strain (–0.197), student loan amount (–0.119), lack of emergency savings (–0.214) and positively with financial socialization (0.206) and self-efficacy (0.413), all at $p < 0.001$.