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Student Loans and Health-related Financial Hardship

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Research has shown that student loan borrowers in repayment exhibit physical and mental health problems. These can be exacerbated by and contribute to health-related financial hardship. We use the 2015 U.S. National Financial Capability Study to examine the likelihood of having past due medical bills and of avoiding health care services by not purchasing prescribed medication, skipping tests or follow-up with a doctor or not seeking care for a medical problem. Borrowers on income-driven repayment plans and those who made late payments are found to be more likely to have unpaid medical bills and to have avoided required medical attention. In addition, those who completed their funded education program but had made a late payment were more likely to avoid seeking medical attention when needed. Practical implications for loan administrators and those working with students are discussed.

Keywords: **Student loans, income-driven plans, medical bills**

Despite higher earnings for college graduates, student loan debt has been associated with household financial distress even in the long-term (Bricker and Thompson 2016; Gicheva and Thompson 2015). The U.S. Pew Research Center (2014) found that the percentage of young households with student debt increased from 16% to 37% between 1989 and 2010 (Fry 2014). On average, recent U.S. graduates are carrying a loan balance of $25,600 (College Board 2015) and the number of defaults grew from 2.4% in 2004 to 6.0% in 2015 (Verschoor 2015). Not only does existing literature on student debt focus on defaults or delinquency but also it highlights unintended consequences that debt servicing has had on borrower consumption and life patterns such as job selection, homeownership, and marriage (Rothstein and Rouse 2011; Gicheva 2016).

In times of financial hardship, some consumers skip or skimp on prescribed medications or postpone or ignore seeking required treatment (Grande et al. 2013). While health care costs are generally high, the perceived cost for financially-strained student loan debtors may be even greater. Student loans have also been associated with poorer mental health or poorer psychological functioning due to worries and stress about repayment (Walsemann et al. 2015). Sweet et al. (2013) reported that following graduation, student loan borrowers and those with high debt-to-asset ratios had higher perceived stress, depression, and worse general health. Another more recent study surveyed students at a major university and found that having federal student loans and outstanding balances were associated with financial stress, which also ultimately influenced self-reported health status (Poplaski et al. 2019).

The aim of this study was to investigate the relationship between student loan hardship and the likelihood of financial hardship in accessing health care. Two dependent variables were examined—the likelihood of having past-due medical bills, and the likelihood of avoiding health care services because of the expense by not purchasing prescribed medication, skipping tests or medical follow-up or not seeking care for a medical problem. Student loan debt hardship is measured by being on an income-driven repayment (IDR) plan and having paid late at least once in the last 12 months. The significance of this study is that it examines the impact of student loan repayment strain on health-related financial hardship using loan measures available in the 2015 U.S. National Financial Capability Study (NFCS) for the first time. The study accounts for borrower characteristics, repayment status and whether one is on a standard or IDR plan, completion of educational program which was funded, financial socialization, financial knowledge and self-efficacy, and health insurance coverage. Information about whether federal hardship repayment plans actually reduce default and delinquency is particularly lacking (Hillman 2015). Thus, this is another key contribution of the study

Review Of Literature

Theoretical Framework

The human capital theory is applicable for this study as it pertains to investments in education and health (Becker 1962; 2007). An individual will make investments in human capital when the potential benefits surpass the associated costs (Schultz 1961; Mincer 1962; Becker 1964; Becker 1993). The application of the theory for college education is that it brings a return in the form of future earnings. Nonis et al. (2015) used a simple net present value analysis to calculate the investment in a college education, and found, even including the cost of a student loan, a college degree still produces a significant return on investment in terms of salary that surpasses wages of high school graduates. Despite parallel research and anecdotal reporting on the negative impact of student loans, bachelor's degrees bring a return of about 15% in earnings even with substantial tuition inflation (Abel and Deitz 2014). In addition, the unemployment rate in 2012 for college graduates was 4.0% compared to 8.3% for high school graduates (Baum et al. 2013). Overall, college costs do not vary much across the various disciplines of study, while earnings for college graduates differ by profession, potentially making the repayment process an issue for some and not for others (Ward and White 2015).

Student loans have had unintended spillover effects for some borrowers from delaying marriage, car purchases, and homeownership to altering occupational choices following graduation choosing higher salary jobs as opposed to public interest jobs (Baum and Saunders 1998; Millett 2003; Rothstein and Rouse 2011; Malcolm and Dowd 2012; Zhang 2013; Gicheva 2016). The primary reason for all these spillover effects may be that the payment obligations for student loans magnify the budget constraint to accommodate large purchases or certain life choices. It is important to determine how hardship from the investment in one area may be associated with hardship or compromise in another.

We asked how the burden of one type of human capital investment (student loans for education) affects meeting obligations or investments for another (health expenses and seeking care or treatment). Even with health insurance, unpaid medical bills of the patient's responsibility may be symptomatic of other competing burdens on household budgets such as student loan debt. Grossman (1972) argued that health capital is a special type of human capital where increased investment in health determines the amount of time individuals spend earning wages. Household production functions allocate input investments such as purchasing medical services, and investing in education while efficiency factors like financial knowledge, budgeting, and day-to-day financial management influence allocations of all inputs, which could also incorporate health insurance in this case to attain desired utility. We extend the literature by showing that when we consider the budget constraint, leveraging student loans can become problematic because of unintended consequences on other areas of the household budget and human capital. This again could underscore the notion of competing human capital obligations and unintended consequences of student loans for overburdened borrowers.

Student Loan Repayment Hardship

Federal student loan borrowers in the U.S. have standard, income-driven, and graduated repayment plans (Hoyt 2015). The default for all borrowers is the standard repayment plan. IDR plans with subtle differences all use the borrower's income to determine monthly payments. Income-Based Repayment (IBR) plans require that any new borrower without previous loans meet the partial financial hardship criterion based on their income and family size (Consumer Financial Protection Bureau 2017). With an IBR plan, the payment amount is capped at a certain percentage of discretionary income or the amount that would be paid under the 10-year Standard Repayment Plan. The percentage rate is 10 percent of discretionary income if borrowed on or after July 1, 2014. For loans originated before July 2014, monthly payments are required to be under 15% of discretionary income, and cannot not exceed the monthly payment amount calculated for the standard repayment plan. The old IBR was revised to increase the group of borrowers demonstrating

'partial financial hardship' through the Health Care and Education Reconciliation Act of 2010 (Hoyt 2015). However, in a comprehensive analysis of literature focused on student loan repayment, Hillman (2015) concluded there was not enough information about whether such alternate plans reduce default or delinquency.

Several studies have emerged showing the link between student loans and financial hardship in general. College graduates and those with some college education in the 1992 through 2007 rounds of the Survey of Consumer Finances (SCF) were found to be more likely to pay out more than 40% of their income towards housing, vehicles, property taxes, homeowners' insurance, and debt payments which included student loans (Hanna et al. 2012). Bricker and Thompson (2016) more specifically examined the influence of student loan debt on households becoming financially distressed using data from the 2007 and 2009 SCF. Families with average amounts of student loan debt were 3.1 percentage points more likely to be 60 days late in paying household bills. However, families with other types of debt were neither more nor less likely to be financially stressed suggesting the detrimental impact of student loan burden. Financial stress was signaled by being denied credit, late payment of bills 60 days or more past-due as well as having high payment-to-income ratios exceeding 40 percent.

Having student loans and the amount of debt predicted three types of hardship in the six months after filing taxes in a large sample of low-to-moderate income households in another multi-year project (Despard et al. 2016). Material hardship was being unable to make a full rent or mortgage payment, skipped or late bill payment, or could not afford the type or amount of food desired. Financial hardship was experiencing a bank overdraft or credit card being declined for being over the credit limit in the six months after filing taxes. Health care hardship was not being able to afford to see a doctor or to go to a hospital for medical care, to see a dentist, or to fill a prescription in the six months after filing taxes.

Despard et al. found that over half the sample experienced one more or of these hardships. Hardship was common even among those who were already repaying their loans. Using propensity score analysis to balance out various characteristics, having student loans increased the odds of experiencing material hardship by 51%, health care hardship by 19%, and financial hardship by 27% compared to not having student loans. When they decomposed specific hardship events even further, they found those with debt had greater odds of skipping a housing payment, skipping bills, skipping necessary medical care, dental care, or prescription medications. However, the relationship between outstanding amounts of student loans and hardship was not clear. There was no significant association with material and financial hardship but borrowers in the third and fourth quartiles of debt amounts had greater odds of health care hardship. The odds of skipping bills, medical care, and dental care were greater for those in the third and fourth quartile and even skipping prescription medications for those in the fourth quartile.

In examining academic literature for research gaps on the impact of borrowing and repaying student loans Hillman (2015) concluded that there seemed to be a consensus that dropping out of college, post-college unemployment, and attending for-profit schools were the strongest predictors of loan default or low repayment rates. However, Britt et al. (2017) determined that students who had the highest amount of student loan debt had a decreased likelihood of discontinuing college. The present study may produce further insight into whether the completion status of a program funded by a student loan may be associated with making tough health-related decisions among borrowers.

Previous research has also focused on the financial barriers to seeking health care in particular regarding those without insurance and high out-of-pocket burden even for those with insurance coverage. On the other hand, student debt may actually be crowding out health-related obligations. This paper extends the literature by focusing on the impact of student loans on health-related financial obligations. While the studies reviewed regarded financial hardship as late or skipped bills, one made specific reference to housing payments but none focused specifically on difficulty with health-related bills and fewer have focused on the association between student loans and health care access decisions. In addition, previous literature has not

addressed the role of financial capability factors such as financial education, financial literacy or self-efficacy on the broader impact of student loans in other consumption patterns except for one that incorporated budgeting. This study is novel in that it attempts to address some gaps in studies examining the impact of student loans as well as what we know about health-related financial hardship.

Methods

Data and Sample

The study used data from the 2015 National Financial Capability Study that introduced questions on student loans as well as health expense variables that measured insurance coverage, and medical bill payment difficulties as well as avoiding health care services or medication due to cost. The sample only included respondents who had indicated that they or their spouse had student loans and those who had valid responses for completion status of the educational program that they had funded with student loans. The final sample consisted of 4,271 respondents after also removing those with ambiguous responses such as 'don't know' or 'prefer not to say' for key variables included in the study.

Empirical Model

We estimated a biprobit model to account for bias using financial self-efficacy as a selection variable. Financial self-efficacy is one's perceived judgement in their ability to manage finances and has been shown to influence financial decisions (Xiao 2014). The selection equation was estimated simultaneously. This accounts for bias from confounding factors relating to financial management abilities that could lead to medical bill delinquency regardless of student loan debt burden.

We investigated the relationships between student debt IDR or payment difficulty and health-related financial hardship indicators while also accounting for the potential impact of the presence of more than one borrower in the household, completion status of funded educational program, debt collection, household budgeting, financial literacy, and health insurance. While similar variables were included in both equations, the selection equation also included financial education, parental socialization, and financial literacy.

Overall, graduates who did not complete their degree are more worried about repayment than those who did (Ratcliffe and McKernan 2015). Health care expenditures for insurance premiums and out-of-pocket expenses have been found to be higher for poorer and older consumers (Sharpe et al. 2001). Thus, even with private or public insurance, health care may still impose a heavy burden affecting spending on health and other obligations. In fact, Despard et al. had found that health insurance and household budgeting had lowered the odds of avoiding medical treatment or medications. Sociodemographic controls for both equations included age, race, gender, education, income, marital status, the presence of children, and the employment status of self or a spouse to account for expected variation. For instance, African American students tend to have higher levels of student loan debt and greater odds of financial difficulty compared to White borrowers (Despard et al.; Kim et al. 2012; Javine 2013).

Measures

The first dependent variable, past-due medical bills, is a binary indicator derived from "Do you currently have any unpaid bills from a health care or medical service provider (e.g., a hospital, a doctor's office, or a testing lab) that are past due?" The second dependent variable was avoiding or ignoring health care in the last 12 months. It was coded '1' if respondents said yes to "Did not fill a prescription for medicine because of the cost", "Skipped a medical test, treatment or follow-up recommended by a doctor because of the cost", or "Had a medical problem but did not go to a doctor or clinic because of the cost".

The possession of student loans was captured by three variables, the respondent having their own loan or loans, a partner having student loans or both in a couple having student loans. This was important to include the presence of student loan debt at the household level has been shown to be influenced by marital

status among other socioeconomic factors (Hsu and Fisher 2016). Student loan hardship was measured by two variables, whether one had been late at least once on a student loan payment in the past 12 months, and whether the repayment amount was prorated based on income. The latter was derived from the question, "For any of these loans, is the amount you owe each month determined by your income (e.g. Income-based repayment plan, Pay as You Earn plan, or Income-contingent repayment plan)?"

The debt collection variable was derived from the question, "Have you been contacted by a debt collection agency in the past 12 months?" but there was no other follow up in the survey specifying which debts were being pursued. Finally, among the key variables relating to student loans we included dummy indicators for three responses to "Did you complete the most recent educational program for which you borrowed money?" which were 'still enrolled in program', 'yes, or 'no'. Other covariates included household budgeting, financial literacy measured by five financial principle questions for a total possible score of 5 correct answers, financial self-efficacy measured by one's self-rated ability for dealing with day-to-day financial matters, participating in a financial education program, parental financial socialization, and health insurance coverage. Demographic controls included age, race, gender, education, income, marital status, and employment status. While descriptive statistics were weighted to be representative of national statistics, the regression estimation was unweighted.

Results And Discussion

Summary Characteristics

The descriptive statistics of all variables used in the study are presented in Table 1. Thirty-seven percent of the full sample currently had past-due medical bills. Almost 70% of the respondents had student loans, 15% were part of a couple that both had student loans, and almost 15% said only a spouse had student loans. One-third of the respondents had been late at least once on repayment in the past 12 months, while 47.68% were on an IDR plan. Half the full sample had completed the educational program for which they had borrowed money, 23.46% did not complete the program, 11.75% were still enrolled, and 36.22% had been contacted by a debt collection agency in the last 12 months.

Among those who had past-due medical bills, 68.38% had avoided health care or medication in the past 12 months. Also, 48.36% had been late on a student loan, 65% were on an IDR plan, and 9% were still enrolled. More than two-thirds had been contacted by a debt collection agency. Among those who reported avoiding health care or medication, 57.76% had unpaid past-due medical bills. Only 40% had been late on a student loan, almost 60% were on an IDR plan, 11.17% were still enrolled, and 54.25% had been contacted by a debt collection agency in the last 12 months.

The Impact of Student Loans on Unpaid Medical Bills

Table 2 shows that being late at least once in the previous 12 months or being on an IDR plan are both associated with a higher probability of having unpaid past-due medical bills. Late loan payments increased the probability of having unpaid medical bills by 41 percentage points. Being on an IDR plan increased the probability by 37 percentage points. Debt collection also significantly increased the probability of unpaid bills by 118 percentage points. However, a limitation of the measure was whether the collection was for student loans, some other loans or outstanding bills such as the unpaid medical bills themselves. It is interesting that the completion status of the educational program, having a household budget, and having health insurance were insignificant factors. The rho statistic was non-zero but it was not statistically different from zero, hence selection bias was not an issue ($chi2\ (1) = 0.62$, $p > 0.4318$).

Table 1

Sample characteristics

	Full sample *N=4,271*		Past-due medical bills *n=1,498*		Avoid health care *n=1,845*	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Past-due medical bills	37.14%	48.33%	100.00%	0.00%	57.76%	49.41%
Avoided health care or medication	43.98%	49.64%	68.38%	46.51%	100.00%	0.00%
Own student loan(s)	69.77%	45.93%	69.26%	46.16%	69.24%	46.16%
Couple's loans	15.41%	36.11%	17.88%	38.33%	17.07%	37.64%
Spouse's loan(s)	14.83%	35.54%	12.87%	33.49%	13.69%	34.38%
Late loan payment last 12 months	30.67%	46.12%	48.36%	49.99%	40.02%	49.01%
IDR plan	47.68%	49.95%	64.65%	47.82%	59.71%	49.06%
Graduated from education program	49.96%	50.01%	52.53%	49.95%	52.05%	49.97%
No degree from program	23.46%	42.38%	25.29%	43.48%	23.10%	42.16%
Still enrolled in educational program	11.75%	32.20%	9.31%	29.06%	11.17%	31.51%
Debt collection in last 12 months	36.22%	48.07%	68.47%	46.48%	54.25%	49.83%
Household budgeting	66.42%	47.23%	69.84%	45.91%	71.32%	45.24%
Have health insurance	87.11%	33.51%	86.34%	34.35%	82.86%	37.70%
Financial literacy score (0-5)	2.694	1.365	2.382	1.258	2.486	1.305
Financial self-efficacy	82.04%	38.39%	79.22%	40.59%	78.60%	41.02%
Financial education	30.08%	45.87%	30.83%	46.20%	32.50%	46.85%
Parent socialization	47.55%	49.95%	50.01%	50.02%	51.23%	50.00%
Age 18 to 24	20.20%	40.15%	15.53%	36.24%	21.38%	41.01%
Age 25 to 34	39.11%	48.81%	40.26%	49.06%	41.90%	49.35%
Age 35 to 44	23.28%	42.27%	25.26%	43.46%	22.30%	41.64%
Age 45 to 54	10.66%	30.86%	12.20%	32.74%	9.25%	28.99%
Age 55 to 64	5.16%	22.13%	5.74%	23.27%	4.36%	20.42%
Age 65 plus	1.59%	12.49%	1.01%	10.00%	0.81%	8.96%
White	53.92%	49.85%	52.05%	49.97%	54.14%	49.84%
Male	49.80%	50.01%	48.73%	50.00%	48.74%	50.00%
High school or less	13.66%	34.35%	16.69%	37.30%	15.74%	36.43%
Some college	32.08%	46.68%	35.62%	47.90%	32.17%	46.73%
College degree	39.12%	48.81%	36.70%	48.21%	39.17%	48.83%
Graduate school	15.14%	35.85%	10.99%	31.29%	12.91%	33.54%
Less than $25,000	22.57%	41.81%	23.80%	42.60%	24.81%	43.20%
$25,000 to less than $50,000	26.79%	44.29%	27.46%	44.65%	27.40%	44.61%
$50,000 to less than $100,000	35.79%	47.94%	38.33%	48.64%	37.08%	48.32%
$100,000 or more	14.86%	35.57%	10.40%	30.54%	10.71%	30.93%
Married	48.50%	49.98%	54.63%	49.80%	49.43%	50.01%
Single	42.81%	49.49%	34.89%	47.68%	41.75%	49.33%
Separated/Widow	8.69%	28.17%	10.47%	30.63%	8.82%	28.36%
Dependent children	51.54%	49.98%	65.99%	47.39%	57.08%	49.51%
Self/spouse employed	80.71%	39.47%	82.41%	38.09%	80.96%	39.27%

Table 2

Marginal effects of student loans on the likelihood of unpaid medical bills and of avoiding care

	Past-due bills	Std. Err.	P>z		*Avoid care*	Std. Err.	P>z	
Own student loan(s)	0.082	0.109	0.452		-0.105	0.097	0.278	
Couple's loans	0.125	0.118	0.288		-0.087	0.104	0.404	
Spouse's loan(s)	(omitted)				(omitted)			
Late loan payment last 12 months	0.407	0.059	0.000	***	0.281	0.055	0.000	***
IDR plan	0.366	0.053	0.000	***	0.282	0.048	0.000	***
Graduated from education program	0.040	0.090	0.660		0.114	0.079	0.148	
No degree from program	-0.052	0.097	0.595		0.014	0.086	0.872	
Still enrolled in educational program	(omitted)				(omitted)			
Debt collection in last 12 months	1.182	0.058	0.000	***	0.726	0.056	0.000	***
Household budgeting	0.030	0.055	0.593		-0.076	0.020	0.000	***
Financial literacy score	-0.116	0.022	0.000	***	0.188	0.050	0.000	***
Have health insurance	-0.079	0.079	0.317		-0.488	0.072	0.000	***
Age	0.007	0.025	0.769		-0.125	0.024	0.000	***
White	0.050	0.053	0.346		0.075	0.048	0.115	
Education	-0.090	0.021	0.000	***	-0.015	0.019	0.448	
Income	-0.018	0.016	0.264		-0.033	0.014	0.023	**
Married (Separated/Widow omitted)	0.052	0.099	0.599		-0.069	0.091	0.446	
Single	-0.160	0.103	0.120		-0.149	0.095	0.116	
Dependent children	0.315	0.056	0.000	***	0.050	0.051	0.328	
Self/spouse employed	0.052	0.075	0.488		0.039	0.067	0.558	
Financial self-efficacy equation								
Financial education	0.090	0.053	0.088	*	0.101	0.053	0.056	*
Parent socialization	0.337	0.049	0.000	***	0.336	0.049	0.000	***
Financial literacy score	0.127	0.019	0.000	***	0.129	0.019	0.000	***
Age	-0.008	0.023	0.724		-0.009	0.023	0.695	
White	-0.046	0.050	0.358		-0.044	0.050	0.383	
Education	0.076	0.017	0.000	***	0.076	0.017	0.000	***
Income	0.056	0.014	0.000	***	0.057	0.014	0.000	***
Married	0.030	0.091	0.742		0.028	0.092	0.756	
Single	-0.129	0.095	0.174		-0.132	0.095	0.165	
Separated/Widow	(omitted)				(omitted)			
Dependent children	-0.026	0.054	0.626		-0.030	0.054	0.580	
Self/spouse employed	0.036	0.065	0.582		0.038	0.065	0.561	
rho	-0.171	0.212			-0.369	0.185		

*** p<0.01, ** p<0.05, * p<0.1

The Impact of Student Loans on Avoiding Health Care or Treatment

Similar to current unpaid medical bills, the student loan hardship indicators were also associated with an increased probability of avoiding health care or medication. Borrowers who were on an income-drive repayment plan and had been contacted by a debt collection agency each had 28 percentage points higher probability of avoiding or ignoring health care. Debt collection was highly significant, but the probability only increased by 73 percentage points for avoiding care compared to 118 points for having current unpaid medical bills. In addition, those who were more financially literate were actually more likely to avoid care. Two other influences were associated with decreased probability of avoiding health care. Household budgeting significantly decreased the probability by almost 8 percentage points, and health insurance coverage by 49 percentage points. Financial education, parent socialization, and financial literacy, not surprisingly, significantly influenced financial self-efficacy sample selection for avoiding care due to cost. Due to the strong influence of debt collection, we conducted a sensitivity analysis where we interacted the two student loan hardship variables with this variable. It was also surprising that educational program completion was not a factor for any of the two dependent variables; therefore, we also examined this further by interacting the program completion variables with student loan hardship.

Robustness Checks

In Table 3 are the results of interaction terms. For past-due medical bills, only the interaction term between late loan payment and having completed the program was significant. Those who had been late at least once and had completed their education program had 55 percentage points higher probability of having current past-due medical bills compared to their counterparts. This could be because those who have completed college may have borrowed more hence presumably had a higher payment due to higher balances (Britt et al.). The late loan variable by itself was no longer significant but program completion was now influential. However, in the absence of hardship, no late payment or IDR plan, those who had completed the program for which they had student loans had 21 percentage points lower probability of having past-due medical bills. Despite borrowing more, college graduates do fare better in general (Despard et al.). Debt collection in general was still associated with an increased probability of past-due medical bills. This result suggests that only those who are financially distressed with repaying their student loans and possibly other consumer debt, will more likely that not have unpaid medical bills.

Table 3

Sensitivity analysis with interaction effects of student loan characteristics

	Past-due bills	Std. Err.	P>z		*Avoid care*	Std. Err.	P>z	
Own student loan(s)	0.096	0.142	0.500		-0.022	0.124	0.861	
Couple's loans	0.138	0.150	0.355		-0.002	0.130	0.985	
Spouse's loan(s)	(omitted)				(omitted)			
Late loan payment last 12 months	0.149	0.155	0.336		0.443	0.145	0.002	***
IDR plan	0.253	0.136	0.063	*	0.207	0.125	0.099	*
Graduated from education program	-0.207	0.122	0.091	*	0.036	0.104	0.731	
No degree from program	-0.042	0.136	0.758		0.096	0.119	0.419	
Still enrolled in educational program	(omitted)				(omitted)			
Debt collection in last 12 months	1.210	0.092	0.000	***	0.529	0.085	0.000	***

	Past-due bills	Std. Err.	P>z		*Avoid care*	Std. Err.	P>z	
IDR plan x Debt collection	0.029	0.108	0.790		0.348	0.102	0.001	***
Late loan x Debt collection	-0.134	0.116	0.248		0.006	0.109	0.959	
IDR plan x Graduated	0.191	0.150	0.203		0.054	0.138	0.695	
IDR plan x No degree	0.028	0.172	0.869		-0.223	0.161	0.166	
IDR plan x Enrolled	-0.145	0.202	0.473		-0.119	0.182	0.512	
Late loan x Graduated	0.545	0.166	0.001	***	-0.190	0.156	0.222	
Late loan x No degree	0.074	0.184	0.686		-0.224	0.173	0.195	
Late loan x Enrolled	0.131	0.271	0.631		-0.059	0.253	0.817	
Household budgeting	0.024	0.055	0.670		-0.068	0.020	0.001	***
Financial literacy score	-0.109	0.023	0.000	***	0.186	0.050	0.000	***
Have health insurance	-0.085	0.079	0.284		-0.495	0.073	0.000	***
Age	0.005	0.026	0.833		-0.122	0.024	0.000	***
White	0.053	0.054	0.330		0.071	0.048	0.139	
Education	-0.088	0.021	0.000	***	-0.012	0.019	0.553	
Income	-0.017	0.017	0.293		-0.038	0.015	0.010	**
Married	0.054	0.099	0.586		-0.064	0.091	0.485	
Single	-0.162	0.104	0.119		-0.149	0.095	0.118	
Separated/Widow	(omitted)				(omitted)			
Dependent children	0.309	0.057	0.000	***	0.040	0.052	0.435	
Self/spouse employed	0.042	0.076	0.578		0.047	0.068	0.484	

*** p<0.01, ** p<0.05, * p<0.1

With respect to avoiding care, the only interaction term that was significant is having an IDR plan and debt collection. The probability was 35 percentage points greater to avoid care due to cost. This finding may indicate that student loan debt collection may play a role in how borrowers prioritize their obligations. For those who had been late at least once in the past 12 months, the probability was now even greater, 44 percentage points, compared to 28 points in the model without the interactions. Being on an IDR plan still significantly increased the probability of avoiding care by 20 percentage points compared to 28 points in the model without interactions.

Implications for Practice

Almost a third of the sample reported being late on student loan payments and almost half of the sample were on an income-driven payment plan. An increased probability of having current unpaid past-due medical bills was found with each of these student loan hardship indicators. Similar effects were found on avoiding health care by skipping medications, follow-up or testing, or new consultations for medical problems due to cost. Our findings suggest that IDR plans may not be doing enough to alleviate the financial strain of student loan repayment and their impact on other areas of life such as health-related financial decisions. Financial counselors and policymakers should take note of this as it points to the broader impact of the student loan crisis on household budgets and the overall welfare of borrowers. There could be a need to recalibrate existing IDR plans or use late payments as triggers for counseling interventions to assist borrowers with regaining control of their finances to avoid bankruptcy. Though the

latter could provide relief for federal student loan borrowers to have their debt discharged under the undue hardship presumption (Pereyda 2016).

Even though the completion of the education program generally showed graduates face less health-related financial hardship, we see that graduates are more vulnerable when in fact they do show repayment hardship perhaps for other reasons not examined here. This is probably due to higher average student loan balances associated with actually completing the program. It is important to continue to devise strategies to help students monitor their spending and borrowing levels during college. Our findings also showed that possessing student loans in itself is not detrimental but rather it is the emergence of hardship during repayment.

Given the significant impact of financial literacy and budgeting on having unpaid medical bills and avoiding health care, consumer educators need to continue to emphasize good financial management principles and practices that encourage budgeting and conservative borrowing of student loans as well as other consumer debt. In addition, the notion that those who are more financially knowledgeable may opt out of seeking required care or medication for medical problems is a disturbing find. It is important for health promotion programs to promote consumer-driven preventive health care that emphasizes the overall life benefits of addressing health needs in the short term. Finally, comprehensive financial planning and extension should stress health insurance so that consumers do not postpone or forgo healthcare, which can ultimately be more costly financially as well as for the quality of life.

Nexus

- Student loan borrowers who have not completed their education programs are more likely to have health-related hardship later in life. Academic advisors, financial aid counselors, student health administrators, and Student Affairs departments can work holistically to identify and monitor patterns of student distress, and to also develop and promote targeted mentoring and retention counseling programs to help reduce truancy and dropout rates.
- Late repayments are associated with avoiding medical attention for known issues. Policy makers and loan administrators may advocate for administrative interventions where late payments trigger a requirement for financial or life counseling to protect the short-term and long-term financial and maybe health interests of borrowers if the latter is so determined.
- Debt collection emerged as an important indicator for health-related hardship. Future researchers and advocates must seek to clarify if student loan debt collection may be also driving unpaid medical bills or the avoidance of medical care or treatment when needed.

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