How Financial Literacy, Federal Aid Knowledge, and Credit Market Experience Predict Loan Aversion for Education

By
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and
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Many students are averse to taking out loans to pay for education—a phenomenon that is commonly discussed but rarely systematically analyzed. This study explores the relationship between student loan aversion and individual financial characteristics. In this analysis, we rely on a unique dataset of survey responses from more than 5,000 high school seniors, community college students who did and did not borrow for higher education, and adults without a college degree. Regression analyses, using a robust set of controls and institutional fixed effects, show that higher financial literacy and higher knowledge of federal student loans are related to lower loan aversion for education. The magnitude of these effects is large, as much as a 30 to 50 percent reduction in loan aversion in some samples. There is also evidence that prior experience with payday lending is related to increased loan aversion for community college students who did not borrow for college.

Keywords: loan aversion; financial aid; financial literacy

Student loans are a reality of financial life for many American families. Collectively, student debt comprises the second largest source of household debt in the nation at $1.3 trillion (Federal Reserve Bank of New York 2016), with 21 percent of households reporting some level of education-related debt (Pew Charitable Trusts 2015). Student loans have become an

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essential tool for many students to pay for postsecondary education. As the cost of college continues to rise, students are asked to weigh the cost of borrowing money for their education with the potential returns on that investment.

On average, the individual returns to college enrollment and completion are large, with gains in income of around 10 percent for each year of postsecondary education (College Board 2013; Kane and Rouse 1995). Although variation in the college wage premium exists across occupations, there are payoffs to a college degree in all fields, with median earnings of bachelor's degree recipients 67 percent higher than median earnings of those with only a high school diploma (Oreopoulos and Petronijevic 2013).

Despite these average returns, there is concern that some potential students underinvest in higher education due to unwillingness to borrow to finance that education. Avery and Turner (2012) argue that average returns far surpass average student loan debt and that students should be willing to borrow to relieve any financial constraints in order to invest in postsecondary education. Yet many students avoid borrowing. With the rising cost of college, those who are averse to borrowing money for college may underinvest in higher education, leading them to work for pay, enroll part time, or stop attending altogether (Perna 2008). These actions have been shown to have negative implications on student success in college (Attewell, Heil, and Reisel 2012; DesJardins, Ahlburg, and McCall 2006).

Loan aversion in education is a phenomenon that has been documented in the literature and serves as a potential explanation for why students underinvest in higher education (Boatman, Evans, and Soliz 2016; Burdman 2005; Caetano, Palacios, and Patrinos 2011; Callender and Jackson 2005; Goldrick-Rab and Kelchen 2013; Palameta and Voyer 2010). Being averse to borrowing for certain goods, such as a car, may have an effect on individual behavior, such as needing to ride the bus, for example; being averse to borrowing for higher education may limit human capital development and be a long-term detriment to individuals and society. Scholars have argued that the goals of federal financial aid policy are to ensure affordability, but the increasing reliance on loans may differentially limit the educational opportunities of loan-averse students (Cunningham and Santiago 2008). Understanding this phenomenon is important at both the individual and societal levels. However, little prior work examines the characteristics of those who are loan averse. In a prior article, we demonstrated that women are less loan averse than men and that Hispanics are more loan averse than whites (Boatman, Evans, and Soliz 2016), but many questions remain about nondemographic characteristics and the underlying explanations for why a potential college student might be loan averse.

To shed light on loan aversion, this article explores the relationship between individual financial characteristics and loan aversion in three different populations. We measure three financial characteristics: financial literacy, knowledge about federal student loans, and prior experiences in the credit market. Because the preference to borrow money is inherently fiscally motivated, our focus on financial characteristics is a logical and important next step in developing a collective understanding of loan aversion. We administered a survey to 834 high school seniors, 3,489 community college students, and 841 adults without a
college degree who are not currently enrolled in higher education to measure their financial characteristics and their beliefs about borrowing money for education. These three populations offer diverse perspectives on attitudes toward borrowing. High school students and adults without a degree are two groups of potential future college students, albeit with different prior experiences in the credit market. Community college students have already made the decision of whether to borrow money to finance their enrollment.

Our three financial characteristics inform individuals’ attitudes toward borrowing money generally and may directly relate to one’s preference to borrow for education. A basic understanding of interest rates is likely positively related to a willingness to borrow money for college expenses, as is knowledge about the federal student loan system. Prior positive experiences in the credit market may be positively correlated with decreased loan aversion, while negative prior experiences with debt may be associated with an increased aversion to borrow. To test these relationships, we address the following two research questions.

1. How do financial literacy, knowledge about federal student loans, and prior experiences in the credit market predict loan aversion for education?
2. Do these relationships differ based on whether respondents are in high school, are enrolled in a community college, have borrowed for community college, or are adults without a college degree?

We do not directly measure whether the decision to borrow can be influenced by changing financial characteristics. But if people are averse to borrowing money for education due to lack of knowledge about financial aid or basic financial literacy, the knowledge gap could be targeted with state and federal policy interventions.

In this article, we find awareness of income-based repayment is associated with lower rates of loan aversion for both high school seniors and adults of between 6 and 8 percentage points. This corresponds to a 30 percent reduction in loan aversion for adults and a 37 percent reduction for high school students relative to the average levels of loan aversion that we observe in both samples. We also find that community college students and adults without a college degree who have greater financial literacy are more willing to borrow for education.

**Theory and Prior Literature**

Neoclassical economic theory posits that people are rational actors with perfect information and make decisions that maximize their utility but are subject to some constraint. This model has been challenged on theoretical and empirical grounds. DesJardins and Toutkoushian (2005) argue a decision may still be rational in the absence of complete or perfect information as long as it is based on the information that is available at the time. However, individuals have differential access to information regarding the costs and benefits of a college education (Kane 1999), with many students and families lacking accurate information.
about financial aid (Perna 2004). These gaps in knowledge are particularly common among black, Hispanic, and low-income families (Horn and Flores 2003; Perna 2004). Limited information deters individuals from making optimal decisions (Simon 1972). Manski (1993) notes that prospective students approach the college application process as “adolescent econometricians.” Prospective students are assumed to conduct an informal cost benefit analysis with limited information required to make an optimal decision, leading some to make financial decisions not in their best interest. Prospective students may overestimate the benefits of a college degree and borrow too much or, alternatively, underestimate the benefits, not understand the financial costs, or be unwilling to borrow at all (Dominitz and Manski 1996; Perna 2006). Many families make errors in predicting college costs, but low-income and minority families tend to make the largest errors (Grodsky and Jones 2007).

Some students may be deterred from borrowing to invest in college due to their perceptions of risk. Two major components of risk in realizing the average returns to postsecondary education are completion of the degree and labor market outcomes. Twenty percent of student borrowers take on substantial debt and fail to earn a degree, often resulting in poor employment outcomes and high loan default rates (Gladieux and Perna 2005). A potential borrower who assesses a high likelihood of failing to earn a degree may reasonably be averse to borrowing. There is also risk in poor labor market outcomes even for degree earners. College graduates who enter the labor market during a recession experience lower earnings and lower employment rates that persist for a decade or more after labor market entry (Kahn 2010; Oreopoulos, von Wachter, and Heisz 2006).

Due to these risk factors, loan aversion may be appropriate for some potential college students. However, “adolescent econometricians” are unlikely to be perfectly accurate in their assessments of risk and reward (Manski 1993). While we cannot test the accuracy of these assessments, there are likely many students who would be successful in college and the labor market who are loan averse and underinvest in higher education.

Our goal is not to assess the rationality of individual attitudes and behaviors, or to suggest that all prospective students should be willing to borrow. Instead, we focus on examining the relationship between financial information and borrowing attitudes. Ample evidence documents that information plays an important role in both financial and education decisions (Bettinger et al. 2012; Castleman and Page 2014; Ekstrom 1992; Oreopoulos and Dunn 2013), which suggests that information plays an important role in the decision to borrow to invest in higher education. Financial literacy, financial aid knowledge, and prior experience in the credit market are all indicators of knowledge and information, and we hypothesize that all three factors predict loan aversion for education.

**Loan aversion**

Researchers have typically examined race, age, and other demographic characteristics to understand who may be averse to borrowing money for education. Hispanic students are commonly cited as being less willing to take out student
loans (Boatman, Evans, and Soliz 2016; Burdman 2005; Paulsen and St. John 2002; Santiago and Cunningham 2005). Low-income students may also be reluctant to borrow for education (Baum and Schwartz 2013; Callender and Jackson 2005; McDonough and Calderone 2006; Mortenson 1988).

Although important, these demographic characteristics do not likely fully explain loan aversion. As stated above, students are making decisions about investing in higher education based on the (typically incomplete) information available to them. For credit-constrained students, a major component of that decision is whether to borrow to finance their investment in college. Theory suggests that those with accurate and relevant information would make different decisions than those with less information. Specifically, we focus on information about loan concepts, such as interest rates, as well as information on federal student loan programs, such as repayment plans. As we demonstrate empirically, this information is not widely known.

In this study, we observe preferences regarding borrowing as opposed to actual borrowing behavior for the high school and adult student samples. There is evidence that financial attitudes predict actual financial behaviors after controlling for relevant knowledge (Shim et al. 2015). We do observe self-reported borrowing behavior for the community college sample. Students currently enrolled in college are likely to understand the financial aid system, as many of them have already faced the decision to borrow. For this reason, we examine the relationship between loan aversion and financial information measures separately for students who report borrowing money while enrolled in community college compared with those who did not borrow.

We measured loan aversion akin to Mortenson (1988) through the question, “Do you think it is ok to borrow for education?” Respondents answered yes or no for this survey question. High school students could also respond “don’t know.” We consider respondents as loan averse if they did not answer “yes.” We prefer this measure over other measures of loan aversion that exist in the literature for two primary reasons: it is a direct measure of attitudes specific to borrowing for education, and it is simple. Measures from Palameta and Voyer (2010) and Caetano, Palacios, and Patrinos (2011) asked students their preference for hypothetical financial aid packages that were potentially difficult to understand. Although our measure may have limited content validity in that it does not assess all of the dimensions of loan aversion, we believe the simplicity of our measure likely increases the consistency of responses relative to measures that ask students to choose hypothetical aid packages.

In this study we consider three measures of financial information: general financial literacy, knowledge about federal student loans, and credit market experience.

**General financial literacy**

Financial literacy is commonly defined as the ability to perform basic economic calculations, such as multiplication and division, and understand financial concepts, such as interest and inflation. Surveys of nationally representative samples document that the majority of respondents lack basic financial knowledge
and numeracy (Johnson and Sherraden 2007; Lusardi and Mitchell 2007), with only about one third of Americans understanding compounding interest (Lusardi and Tufano 2015). Research has found financial literacy predicts a range of financial behaviors and outcomes including cash-flow management, credit management, saving, investment, retirement planning, and accumulation of wealth (Hilgert, Hogarth, and Beverly 2003; van Rooij, Lusardi, and Alessie 2012; Chen and Volpe 1998; Borden et al. 2008). Financial literacy also predicts improved loan-related behaviors such as borrowing at lower interest rates (Lusardi and de Bassa Scheresberg 2013; Lusardi and Tufano 2015). Adults with low financial literacy tend to make financial management errors that result in preventable fees and use risky financial services like payday loans (Lusardi and Tufano 2015).

Human capital theory suggests that making a borrowing decision with a lack of basic financial literacy leads to a different decision than if the potential borrower had greater financial literacy (DesJardins and Toutkoushian 2005). Increased financial literacy may mean a better understanding of promissory notes, interest accumulation, and repayment on a loan over time, which may change attitudes toward borrowing for higher education. A potential college student without this information may decide not to borrow, while one with the information may be more likely to borrow, ceterus paribus.

There is empirical evidence to support this hypothesis. Among a sample of high school students in Canada who had not yet made the decision to borrow for college, low numeracy skills were found to be highly predictive of loan aversion (Palameta and Voyer 2010). Qualitative research revealed that students in the United States who lacked financial literacy were more averse to debt (Burdman 2005). In states where the high school graduation requirements require math and financial literacy, students were more likely to take out a student loan, suggesting that financial literacy could be negatively related to loan aversion (M. Brown et al. 2016). We hypothesize that those defined as financially literate are less likely to be loan averse, as they may possess a better understanding of the financial risks and rewards of borrowing money for college, especially those who are not deterred by the risk of completion or poor financial outcomes in the labor market.

We define financial literacy similarly to Lusardi and Mitchell (2008). Each respondent was asked to complete two multiple-choice questions. The first question explicitly tested a basic understanding of interest rates, while the second assessed a broader understanding of inflation and purchasing power. We use a binary measure of financial literacy that indicates whether a respondent answered both questions correctly. We depart from Lusardi and Mitchell (2008) by not allowing for an “I don’t know” response.

Although these two financial literacy questions have been used in prior research, Hastings, Madrian, and Skimmyhorn (2013) expressed concern that an understanding of financial concepts is only one component of financial literacy. Research suggests personality traits and characteristics such as patience or forward-looking behavior are positively related to both financial literacy and outcomes (Borghans et al. 2008; Meier and Sprenger 2010). Financial literacy assessments such as those used by the Program for International Student Assessment (PISA) and the National Finance Capability Survey (NFCS) include
additional components in an attempt to provide a holistic measure of financial literacy. We acknowledge that responses to the knowledge-based financial literacy questions collected in this study do not measure all facets of financial literacy, yet they may still be useful in developing our understanding of the intersections among knowledge, information, and loan aversion.

Knowledge about federal student loans

The same argument applies to specific information about federal student loans. Information about the availability of federal loans, subsidized interest, and forms of income-based repayment may alter the calculation about whether to borrow for higher education. If a prospective student does not know of, or understand, the benefits of federal student loans over private loans, she may be less likely to borrow, given empirical evidence that individuals lacking awareness of or having a misunderstanding of incentive programs for which they are eligible make less desirable economic decisions (Bhargava and Manoli 2012; Liebman and Luttmer 2015).

There is ample evidence that even borrowers do not fully understand the advantages of federal student loans. It is not uncommon for students to take out private loans without exhausting their eligibility for federal student loans (Baum and Schwartz 2013), as many people do not know the difference between the two forms of borrowing (CFPB 2012). If borrowers are not comprehending the advantages, it is likely that nonborrowers lack even more information about federal student loans.

We hypothesize that a prospective student’s assessment of an aid package is correlated with knowledge of federal aid programs. Bounded rationality suggests that a student may make a different decision about borrowing money to finance education if he or she knows the federal government subsidizes interest or offers income-based repayment plans. Our analysis provides the first investigation of how federal student loan knowledge is related to preference to borrow.

We asked survey respondents to complete three true/false/yes/no questions to measure their awareness of federal student loans and two specific components of federal student loans: subsidized interest and income-based repayment. We focused on these two features because they are distinct advantages of federal student loans relative to private loans. Measures of financial aid knowledge of federal loans do not exist in the prior literature. We designed these three questions to be easy to understand. For example, instead of asking whether the government offers subsidized interest, we explain subsidized interest: “Does the government pay the interest on student loans while students are still in college for some types of federal student loans?” We coded whether each respondent answered each individual question correctly, and examined the relationship between loan aversion for education and each of these binary measures.

Credit market experience

Prior experience in the credit market likely affects borrowing attitudes in two ways. First, having prior experience with borrowing likely improves financial
literacy and knowledge about loans generally. An analysis of the Surveys of Consumers found prior experience in the credit market was the most frequently reported source of information about financial management, with respondents who had prior experience more likely to exhibit positive financial behaviors such as paying bills on time, reviewing credit reports, having an emergency fund, and investing for retirement than those with limited experience (Hilgert, Hogarth, and Beverly 2003). Because our empirical model simultaneously includes financial literacy and prior credit market experience, we are testing a different mechanism of prior credit experience on loan aversion for education: whether that prior experience was positive enough for the individual to be willing to interact with the credit market again.

A negative prior experience in the credit market may deter potential students from borrowing again. A 2016 survey of more than 10,000 U.S. citizens who recently reported a positive or negative experience with a business found that following a negative experience, 24 percent of people engage less or never again with that business, while 17 percent of those with a positive experience engage more (Ipsos 2016). In terms of the credit market, those with negative experiences involving creditors, debt-collection agencies, delinquent payments, or large fees may be less likely to borrow in the future.

Although we do not measure whether respondent’s prior experiences were positive or negative, borrowing a payday or title loan may be a proxy for negative prior experiences with credit. Both types of loans offer typically small lines of credit over short terms to borrowers with poor credit. While title loans normally use a vehicle as collateral, payday loans are unsecured. Only 9 percent of Americans view payday lenders favorably compared to 49 percent who hold negative opinions of them (Pew Charitable Trusts 2015). Typical annualized compounded interest rates on payday loans exceed 7,000 percent, and half of borrowers default on these loans within a year after making interest payments that, on average, sum to 90 percent of the original loan principle (Skiba and Tobacman 2008). We hypothesize that having a prior payday or title loan experience will be associated with greater rates of loan aversion than having prior experience with a mortgage or student loan.

To assess prior experience in the credit market, we asked respondents whether their household currently had any of the following three forms of debt: mortgage, student debt, and payday loan or title loan. Each type of debt was coded as a binary measure. We target household debt given research suggesting that student aversion to loans was correlated with negative opinions of debt by parents and friends (Perna 2008), and that observed negative experiences with parental credit card debt was linked to negative perceptions of credit card usage (Joo, Grable, and Bagwell 2003). While targeting household debt is preferable for these reasons, it may introduce error in measurement if respondents are unaware of family members’ debt obligations. We did not ask high school seniors if their household had payday or title loans because we did not believe they could accurately report this information.
Survey Design and Data

The data derive from anonymous surveys that we administered in 2015 to more than 800 seniors attending eleven diverse high schools in six states, more than 3,400 community college students attending seven community colleges in four states, and more than 800 adults in their twenties and thirties who had not completed a college degree and were not currently enrolled in college. The sampling frame for the high school sample was all high schools with at least 500 students that had a student body at least 10 percent white, black, and Hispanic and at least 10 percent free or reduced price lunch in Massachusetts, Kentucky, Tennessee, and Texas. Stratifying by state, high schools were randomly asked to participate until we reached five schools in a state or exhausted all of the high schools meeting our conditions. To increase sample size and provide regional variation, we supplemented this sample with three smaller high schools from Illinois and Michigan (results are robust to the exclusion of these three schools). Racially and socioeconomically diverse colleges within four of the same states (Illinois, Michigan, Tennessee, and Texas) were intentionally chosen to provide community college data. We hired the survey firm Qualtrics to identify the adult sample from marketing lists. We captured more than 80 percent of high school seniors in each high school. Response rates for the community college and adult surveys were much lower at 5 and 12 percent, respectively, likely due to the online nature of the survey. Due to the nonrandom sampling, low response rate, and likelihood that community college borrowers are more likely to respond to a survey about student loans than nonborrowers, we do not claim that any of our samples are nationally representative.

To improve the reliability and validity of the survey instrument, we pilot tested it with high school students, held focus groups with high school respondents from the pilot test, and went through two rounds of revisions relying on academic experts in both survey design and loans. Through this feedback, we shortened the survey and clarified the wording on several questions deemed confusing. We did not alter our main measures of loan aversion or our measures of financial characteristics.

Descriptive statistics for each of our three samples are provided in Table 1. Just over a third of the high school and adult samples answered both financial literacy questions correctly, compared to 44 percent of community college students. More than 80 percent of all three samples are aware of the existence of federal student loans, although fewer respondents are aware that the government offers subsidized interest on some loans or are aware of the existence of income-based repayment programs. Eighteen and 21 percent of the high school and adult samples, respectively, report that their household currently has student loan debt, compared to 48 percent of students currently enrolled in a community college. Less than 10 percent of community college and adult students report taking out a payday or title loan. Overall, the sample is demographically diverse, despite Asians being underrepresented in the high school and community college samples and males being underrepresented in the community college and adult samples.
The outcome for this analysis, our measure of loan aversion, captures preferences about borrowing as opposed to actual observed borrowing behavior. However, we are able to observe borrowing behavior for the community college sample, all of whom have enrolled in higher education and faced the decision to borrow. Table 2 reports this outcome across our samples. The lowest levels of loan aversion in education are for community college students, with only 9 percent reporting that they do not think it is okay to borrow money for education, compared to 21 percent of high school students and 20 percent of adults. By separating community college borrowers and nonborrowers, we see stark differences. Among community college borrowers, 5.3 percent expressed loan-averse attitudes relative to a rate nearly three times that for nonborrowers. This pattern

<table>
<thead>
<tr>
<th>Financial literacy and loan knowledge</th>
<th>High School</th>
<th>Community College</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial literacy</td>
<td>.369</td>
<td>.436</td>
<td>.342</td>
</tr>
<tr>
<td>Awareness of federal student loans</td>
<td>.833</td>
<td>.854</td>
<td>.819</td>
</tr>
<tr>
<td>Awareness of subsidized interest</td>
<td>.253</td>
<td>.446</td>
<td>.299</td>
</tr>
<tr>
<td>Awareness of income-based repayment</td>
<td>.408</td>
<td>.478</td>
<td>.376</td>
</tr>
<tr>
<td><strong>Household has the following debt</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortgage</td>
<td>.250</td>
<td>.354</td>
<td>.266</td>
</tr>
<tr>
<td>Student loans</td>
<td>.180</td>
<td>.477</td>
<td>.208</td>
</tr>
<tr>
<td>Payday/title loans</td>
<td>—</td>
<td>.096</td>
<td>.074</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>.489</td>
<td>.720</td>
<td>.743</td>
</tr>
<tr>
<td>White</td>
<td>.409</td>
<td>.496</td>
<td>.287</td>
</tr>
<tr>
<td>Black</td>
<td>.291</td>
<td>.114</td>
<td>.250</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.306</td>
<td>.316</td>
<td>.253</td>
</tr>
<tr>
<td>Asian</td>
<td>.035</td>
<td>.060</td>
<td>.211</td>
</tr>
<tr>
<td>Low-income</td>
<td>.469</td>
<td>.565</td>
<td>.423</td>
</tr>
<tr>
<td>U.S. citizen</td>
<td>.950</td>
<td>.918</td>
<td>.937</td>
</tr>
<tr>
<td>Parents attended college</td>
<td>.639</td>
<td>.602</td>
<td>.425</td>
</tr>
<tr>
<td>Parents graduated from college</td>
<td>.500</td>
<td>.408</td>
<td>.296</td>
</tr>
<tr>
<td>Aspire to BA or higher</td>
<td>.796</td>
<td>.703</td>
<td>.369</td>
</tr>
<tr>
<td>High school GPA</td>
<td>2.765</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>–</td>
<td>26.1</td>
<td>29.6</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>834</td>
<td>3,489</td>
<td>841</td>
</tr>
</tbody>
</table>

NOTE: Low-income is defined for high school seniors as those who reported being eligible for free or reduced price lunch and for the community college and adult samples as having received a form of federal assistance within the last two years (Pell, TANF, WIC, or SNAP). Data are all self-reported from surveys collected by the author.
demonstrates that our loan aversion measure is positively correlated with borrowing behavior.

**Empirical Methods**

We rely on fixed effect regressions with controls for demographic characteristics and educational aspirations to measure the relationship between financial characteristics and loan aversion. We begin by examining the relationship of loan aversion for education with the series of independent variables using the following regression model:

\[
\text{loanaverse}_{ij} = \mathbf{X}_{ij}\beta + \mathbf{Z}_{ij}\theta + \gamma_j + \varepsilon_{ij},
\]

in which \(i\) indexes respondents and \(j\) indexes high school or community college (adults are not indexed by \(j\)). The independent variables of interest (financial characteristics) are collectively entered as the vector \(\mathbf{X}\), and \(\mathbf{Z}\) is a vector of covariates that include controls for gender, race, age, citizenship status, a measure of low-income status (free or reduced price lunch for high school students and eligibility for SNAP, WIC, Pell, or TANF for community college students and adults), parental education, GPA (for high school students), and educational aspirations. The inclusion of demographic characteristics and educational aspirations and achievement is necessary given prior research showing the relationship of loan aversion with these characteristics (Baum and Schwartz 2013; Callender and Jackson 2005; Boatman, Evans, and Soliz 2016; Burdman 2005; McDonough and Calderone 2006; Paulsen and St. John 2002; Santiago and Cunningham 2005). Fixed effects for school (either high school or community college) are included as \(\gamma\). We do not include fixed effects for adults.

**Results**

Results from the full model exploring the relationship between financial characteristics and loan aversion are reported in Table 3. Being more financially literate is negatively associated with loan aversion for education in the community
college and adult samples. In other words, community college students and adults without a college degree who have greater financial literacy are more willing to agree that it is okay to borrow for education. Being financially literate as measured in this study is associated with a nearly 10 percentage point reduction in loan aversion among adults, which corresponds to nearly a 50 percent reduction relative to the average level of loan aversion (19.7 percent). The magnitude of the result for community college students is smaller. Financial literacy is associated with a 2.5 percentage point reduction in loan aversion, corresponding to a 28 percent decline relative to the average rate of loan aversion for community college students (9.4 percent).

When we regress loan aversion on all of our independent variables collectively, we find that awareness of various components of federal loans is also related to decreased loan aversion, but the results vary for different components across the samples. Simply being aware that the federal government offers student loans is related to reduced rates of loan aversion by nearly 8 percentage points for high

<table>
<thead>
<tr>
<th>Financial Characteristics</th>
<th>High School</th>
<th>Community College</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial literacy</td>
<td>.018</td>
<td>-.026***</td>
<td>-.097***</td>
</tr>
<tr>
<td>( .025)</td>
<td>(.005)</td>
<td>(.028)</td>
<td></td>
</tr>
<tr>
<td>Knowledge about federal student loans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware of federal student loans</td>
<td>-.079**</td>
<td>-.038**</td>
<td>-.027</td>
</tr>
<tr>
<td>( .027)</td>
<td>(.013)</td>
<td>(.037)</td>
<td></td>
</tr>
<tr>
<td>Aware of subsidized interest</td>
<td>-.006</td>
<td>-.021*</td>
<td>-.036</td>
</tr>
<tr>
<td>( .023)</td>
<td>(.009)</td>
<td>(.029)</td>
<td></td>
</tr>
<tr>
<td>Aware of income-based repayment</td>
<td>-.078**</td>
<td>-.014</td>
<td>-.060**</td>
</tr>
<tr>
<td>( .030)</td>
<td>(.009)</td>
<td>(.027)</td>
<td></td>
</tr>
<tr>
<td>Prior experience in the credit market</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household has mortgage</td>
<td>-.016</td>
<td>-.013</td>
<td>-.053*</td>
</tr>
<tr>
<td>( .030)</td>
<td>(.011)</td>
<td>(.032)</td>
<td></td>
</tr>
<tr>
<td>Household has student debt</td>
<td>-.098***</td>
<td>-.064***</td>
<td>-.021</td>
</tr>
<tr>
<td>( .030)</td>
<td>(.014)</td>
<td>(.033)</td>
<td></td>
</tr>
<tr>
<td>Household has payday or title loan</td>
<td>—</td>
<td>.019</td>
<td>-.055</td>
</tr>
<tr>
<td>( —)</td>
<td>(.018)</td>
<td>(.050)</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>834</td>
<td>3,493</td>
<td>841</td>
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</table>

**NOTE:** Coefficients are from a linear probability model regression of loan aversion for education on all of the characteristics for each sample. Covariates include controls for gender, race, educational aspirations, parental education, citizenship, and a measure of low-income status. Community college and adult samples include a control for age. High school and community college samples include fixed effects for school or college. Standard errors are clustered at the school level for the high school and college level for the community college samples.

*  \( p < .10 \)
**  \( p < .05 \)
***  \( p < .01 \)
school seniors and almost 4 percentage points for community college students (38 and 40 percent change relative to average loan aversion rates, respectively). Awareness of income-based repayment is associated with reduced loan aversion for both high school seniors and adults of between nearly 6 and 8 percentage points. The size of these coefficients is large when compared to the average levels of loan aversion in the samples, suggesting a 30 to 38 percent decline in the likelihood of being loan averse. Awareness of subsidized interest is the least predictive of this set of survey responses with only the community college sample having a marginally significant 2 percentage point result. Subsidized interest is also the most unknown component of the federal loan system, with only a quarter of the high school sample having knowledge of this feature (see Table 1).

In our test of prior experience in the credit market, we note that households having student loan debt are, perhaps unsurprisingly, the most likely to find borrowing for education acceptable with a negative 10 and 6 percentage point coefficient for high school and community college students, respectively. Having a mortgage is marginally significant for adult respondents, but we see no relationship between having a payday or title loan and loan aversion for education for community college students or adults. (We did not ask this question to the high school sample.)

The community college sample is currently enrolled in higher education, enabling us to further explore differences in aversion to loans for borrowers and non-borrowers. As we established in Table 2, community college students who have borrowed are less loan averse than those who have not borrowed, but they also are more likely to have systematically different financial characteristics such as information about federal student loans, having gone through loan entrance counseling.

In Table 4, we replicate the regression analysis for the borrower and non-borrower subgroups of community college students. This analysis reveals interesting heterogeneity. The observed financial literacy relationship is being driven by nonborrowers for whom increased financial literacy is associated with more than a 5 percentage point reduction in being loan averse for education (corresponding to a 37 percent reduction relative to baseline rates). The community college students who borrowed have a precisely estimated zero. Among the student loan knowledge variables, there is variation for only the awareness of income-based repayment. Nonborrowers experience a negative relationship between awareness of income-based repayment and loan aversion that is smaller in magnitude, but consistent in direction, with the high school and adult samples. Having a payday or title loan has a large positive relationship with loan aversion for nonborrower community college students.

Discussion and Conclusion

Our study contributes to a better understanding of the characteristics of people who believe it is not acceptable to borrow money for educational purposes. While 80 percent of American households carry some type of debt, close to 70 percent report that their debt offers expanded opportunities, even if they may prefer not to have it (Pew Charitable Trusts 2015). Student loans expand the opportunities
to postsecondary education, but loan aversion may pose a barrier for many potential postsecondary education students. The findings from our analysis suggest that financial characteristics are related to preferences for borrowing, as those with higher levels of financial literacy, increased knowledge of the federal student loan system, and past borrowing experience with mortgages and student loans exhibit lower levels of loan aversion.

**Financial literacy**

We find familiarity with general financial concepts, even after controlling for specific knowledge about federal student loans and past household borrowing experience, is positively related to willingness to borrow for education for community college students and adults. This result may be explained by an increased understanding of important borrowing concepts such as interest rates, which are required to fully comprehend the costs and benefits associated with borrowing. We do not observe any relationship between financial literacy and loan aversion among high school students, which is somewhat surprising given the observed association for the other two samples. One possible explanation is that basic

<table>
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<tr>
<th>Financial Characteristics</th>
<th>CC Borrowers</th>
<th>CC Nonborrowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial literacy</td>
<td>–.005</td>
<td>–.053***</td>
</tr>
<tr>
<td></td>
<td>(.010)</td>
<td>(.012)</td>
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<tr>
<td>Knowledge about federal student loans</td>
<td></td>
<td></td>
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<tr>
<td>Aware of federal student loans</td>
<td>–.042</td>
<td>–.025</td>
</tr>
<tr>
<td></td>
<td>(.022)</td>
<td>(.026)</td>
</tr>
<tr>
<td>Aware of subsidized interest</td>
<td>–.022</td>
<td>–.010</td>
</tr>
<tr>
<td></td>
<td>(.013)</td>
<td>(.017)</td>
</tr>
<tr>
<td>Aware of income-based repayment</td>
<td>.001</td>
<td>–.029*</td>
</tr>
<tr>
<td></td>
<td>(.011)</td>
<td>(.014)</td>
</tr>
<tr>
<td>Prior experience in the credit market</td>
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<td></td>
</tr>
<tr>
<td>Household has mortgage</td>
<td>.009</td>
<td>–.044*</td>
</tr>
<tr>
<td></td>
<td>(.006)</td>
<td>(.021)</td>
</tr>
<tr>
<td>Household has student debt</td>
<td>–.018*</td>
<td>–.046*</td>
</tr>
<tr>
<td></td>
<td>(.009)</td>
<td>(.019)</td>
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<tr>
<td>Household has payday or title loan</td>
<td>.007</td>
<td>.058**</td>
</tr>
<tr>
<td></td>
<td>(.017)</td>
<td>(.024)</td>
</tr>
</tbody>
</table>

**NOTE:** Coefficients are from a linear probability model regression of loan aversion for education on all of the characteristics for each subsample. Covariates include controls for gender, race, age, educational aspirations, parental education, citizenship, and a measure of low-income. College fixed effects are included. Standard errors are clustered at the college level.

*p < .10. **p < .05. ***p < .01.
numeracy skills would drive loan aversion more than financial literacy among this population. It could also be that student loan knowledge is highly correlated with financial literacy among the high school sample such that the independent effect of financial literacy on loan aversion is small, but we do not have a complete explanation for this finding.

**Knowledge about federal student loans**

Our findings suggest that having knowledge about federal student loans may reduce loan aversion for high school and community college students. Federal student loans provide enhanced benefits relative to most private loans, including subsidized interest while enrolled (for some Stafford loans) and an opportunity to enroll in an income-based repayment plan. Becoming aware of the relative advantages of federal student loans may alter individuals’ cost-benefit analysis and induce them to believe borrowing for education is acceptable.

Income-based repayment reduces the risk associated with borrowing for higher education by limiting the amount that must be repaid monthly on a federal student loan to a portion of the borrower’s discretionary income. This repayment option is expected to reduce the risk of default in the case of poor financial outcomes after leaving postsecondary education (Dynarski and Kreisman 2013). Awareness of income-based repayment is negatively related to loan aversion for high school seniors, community college nonborrowers, and adults suggesting that the risk associated with the ability to repay the loan plays a major role loan aversion.

**Prior experience in the credit market**

Prior literature has suggested loan aversion may arise out of previous negative experiences in the credit market by borrowers or their families (Joo, Grable, and Bagwell 2003). We used household payday or title loan as a proxy for having a negative experience with debt, given the extraordinary interest rates and high levels of default associated with this form of borrowing, and expected those experiences would lead to increased loan aversion. There is evidence for this hypothesis, but it is not consistent across samples. We observe the predicted increase in loan aversion among nonborrower community college students with payday or title loans, suggesting that prior negative credit market experience may play a role for that population and may have deterred them from borrowing for college. There is no relationship between payday or title loans and educational loan aversion for adults. We observed decreased levels of loan aversion for education among adults who have mortgages and high school and community college students in households with student loan debt, suggesting that experience with payday loans is different from more traditional and widely accepted forms of borrowing. However, this result should be interpreted with caution as the low take-up of payday/title loans in the sample leads to imprecise estimates of the relationship between payday/title loans and loan aversion for education. The balance of these results supports the notion that negative past credit market experience is positively related to loan aversion for certain populations. This conclusion suggests that policies that make student loans distinct from other forms of debt,
especially negative debt, would benefit respondents who come from families who have previously relied on payday or title loans.

Suggestions for future research

Because we have no exogenous variation among the financial characteristics, this analysis relies on controlling for observable factors to reduce omitted variables bias. We cannot conclude that these findings are causal, and we avoid using causal language. A promising avenue for future research is to experimentally manipulate these financial characteristics to obtain a causal estimate of their effect on both attitudes toward borrowing and actual borrowing behavior. Related to the different perceptions of different types of debt, future research could also target information to clearly delineate the differences between student loans and other forms of credit.

We also use one definition of loan aversion in this article, as opposed to considering multiple ways of defining this concept. Prior work has documented that the level of loan aversion varies across measures (Boatman, Evans, and Soliz 2016). For example, students who believe it is okay to borrow for education may still have attitudes generally opposed to borrowing or may avoid hypothetical financial aid packages that include loans. Future research should consider the role of financial characteristics across these various definitions of loan aversion, so that we can capture the multiple dimensions of this construct.

Policy implications

Our findings lead to policy suggestions at both the state and federal levels. To the extent that financial literacy education improves conceptual understandings of interest rates and helps students to plan for the future, an extension of states’ high school curriculum to include an explicit focus on financing higher education may reduce loan aversion. Such a focus may involve improving high school math courses (Cole, Paulson, and Shastry 2013) or requiring high school students to take a separate course on personal finance. Tennessee, one of the states represented in our sample, began requiring a personal financial education course of high school graduates in 2013; and as of the 2015–2016 school year, Texas, also represented in our data, requires districts to offer a financial math course, which students can optionally take for math credit. Extending these offerings and requirements to additional states may reduce loan aversion. Support for this policy recommendation is seen in A. Brown et al. (2014), who show that states that require some personal finance education have improved students’ credit ratings. Although we do not directly test basic math ability in this study, improvements in mathematics curricula at the secondary level may also lead to more students understanding important borrowing concepts and thereby reduce loan aversion.

At the federal level, our finding that awareness of income-based repayment is related to reduced loan aversion suggests that policy efforts to increase awareness of forms of income-based repayment may reduce loan aversion and enhance higher education enrollment rates. Currently, this information is provided in loan entrance counseling only after students have decided to borrow. Developing a
large-scale information campaign about student loan options (Wakefield, Loken, and Hornik 2010) prior to students applying for financial aid and submitting college applications may reach students who are deterred from higher education because of their reluctance to borrow.

Appendix

Survey Questions Used to Measure Financial Literacy and Knowledge about Student Loans

Financial Literacy

1) Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow:
   - More than $102
   - Exactly $102
   - Less than $102

2) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy: more than, exactly the same as, or less than today with the money in this account?
   - More than today
   - Exactly the same as today
   - Less than today

Knowledge about Federal Student Loans

1) True or False: The federal government offers student loans to help students pay for college.
   - True
   - False
   - I don’t know

2) Does the government pay the interest on student loans while students are still in college for some types of federal loans?
   - Yes
   - No
   - I don’t know

3) True or False: There is a student loan repayment option which allows me to repay my student loans based on how much money I make in my job after college. For example, if I make $35,000 I will pay less each month than someone who makes $65,000.
   - True
   - False
   - I don’t know
Notes

1. For further discussion of the loan-aversion construct including how different measures of loan aversion relate to each other, see Boatman, Evans, and Soliz (2016).
2. See the appendix for the questions used on the survey.
3. By combining the two questions into a single binary measure, we admittedly generate a coarse measure of financial literacy. However, both questions are fairly easy, and getting both right is not a high bar to label a respondent as financially literate.
4. High school surveys were administered in person during the school day. Community college and adult surveys were conducted online. The surveys took approximately 10 to 15 minutes to complete.
5. The national average borrowing rate for community college students is 17 percent, but we observe 55 percent of our community college sample borrowing student loans. The colleges chosen in our sample have higher borrowing rates than the national average, but it is also likely students who borrowed were more motivated than students who did not borrow to respond to a survey about student loans.
6. Currently the available income-based repayment plan for new borrowers is Revised Pay as You Earn, but there are many different income-based repayment plans available to borrowers who are currently in repayment.

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