Putting College First:

How Social and Financial Capital Impact Labor Market Participation

Among Low-Income Undergraduates

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Abstract:
Most undergraduates work despite evidence that working while in college is associated with lower rates of degree completion. Prior research indicates that the propensity to work varies by both family income and education, suggesting that both financial and social capital operate to reduce work and preserve educational advantage. We test that hypothesis with a sample of 3,000 low-income Wisconsin undergraduates enrolled in the state's 42 public two-year and four-year colleges and universities. Leveraging an experiment that distributes financial aid via lottery, we identify effects of financial capital on labor force participation that are comparable in magnitude to the positive benefits of social capital obtained through parental education. Specifically, the allocation of additional financial aid reduces the hours worked by low-income students with high school-educated parents to the point that it nearly fully offsets the socioeconomic advantage (in terms of fewer hours worked) that accrues to students from college-educated families. Need-based financial aid, it appears, may be an equalizer that promises to reduce labor force participation and enhance college attainment.

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The vast majority of undergraduates work for pay while enrolled. On average the employment rate is 80 percent; among younger students (ages 16-24) attending full-time, nearly 50 percent work, as do around 80 percent of part-time students (Horn and Malizio 1998; Planty, Hussar et al. 2008). The trend of increasing undergraduate employment dates back a half-century, concomitant with substantial growth in college costs and shrinkage in the purchasing power of need-based financial aid (Fitzpatrick and Turner 2007; Bowen, Chingos et al. 2009; Goldrick-Rab, Harris et al. 2009). What has increased most is the intensity of student employment: today's students work longer hours more frequently (Planty, Hussar et al. 2008).

Working while in college is associated with lower rates of degree completion (Stinebrickner and Stinebrickner 2003; Fitzpatrick and Turner 2007). That relationship is suggested by empirical research and—despite the lack of evidence establishing a *causal* relationship—believed by most practitioners, policymakers, and families (Stinebrickner and Stinebrickner, 2003). Non-experimental evidence suggests that working leads students to interrupt their studies, particularly when the number of hours they work each week exceeds a critical threshold (e.g. twenty) (Ehrenberg and Sherman 1987; Horn and Malizio 1998; Orszag, Orszag et al. 2001). It therefore appears that the high incidence of undergraduate labor force participation threatens national efforts to increase degree attainment and diminish persistent and troubling social inequalities in college completion (Goldrick-Rab and Roksa 2008; Bowen, Chingos et al. 2009).

It seems paradoxical that despite the widely-held perception (and some evidence) that it is better to avoid working while in college, most students still attempt to put both college and work first. There are few empirically-grounded explanations for this inconsistency (Fitzpatrick and Turner 2007). The most common one is that work simply makes college affordable for the growing numbers of financially constrained students (Keane and Wolpin, 2001; Fitzgerald and Turner, 2007).[1] Indeed, both sociological and economic research suggest that students from lower-income families are more likely to work (e. g. Belley and Lochner 2007; Bozick 2007; Roksa and Velez 2010).

While knowledge of the consequences of work (or too much work) appears widespread, that information is unevenly distributed among students from different educational backgrounds. Not only

does working seem to affect the chances of degree completion, it also affects financial aid. Federal calculations of eligibility for aid are partly determined by students' earnings above an income threshold. The more students earn, the greater their expected family contribution. As a result, even the neediest students can suffer a "work penalty"—working their way out of financial aid without fully replacing that lost income with wages (Goldrick-Rab and Sorensen, 2010). Making decisions about work in the context of a complex administrative system requires substantial social capital, more often found among individuals who themselves have successfully navigated college. Given the benefits of social capital, we posit that even among low-income students, those from college-educated families make different decisions about work, compared to first-generation students. At least one study supports our hypothesis, finding that the relationship between income and work behaviors varies by parental education (Roksa and Velez, 2010).

Thus, sociological theory suggests that the decision to work while in college may be affected by *both* financial and social capital. This has implications for stratification theory and social policy, and points to an important but unresolved question: is the frequency of work among low-income students driven primarily by a need for money or a lack of information? In this paper we rigorously examine that question by leveraging an experiment in which scholarships were assigned to low-income students by lottery. In particular, we consider whether and under what conditions financial and informational constraints affect the work behaviors of low-income undergraduates. We test for whether social capital stemming from parental educational advantage shields low-income undergraduates from engaging in extensive work. We examine whether the moderating influence of social capital on labor market participation acts independently of financial resources. And finally, we question whether the advantages of social capital remain when financial constraints are reduced. In summary, we investigate the relative and intersecting roles that social and financial capital play in the work decision; an important part of the contemporary undergraduate experience.

The data come from the Wisconsin Scholars Longitudinal Study (WSLS), a longitudinal study of 3,000 first-time, traditional-age, low-income students attending the 42 public two-year and four-year colleges and universities throughout Wisconsin.[2] When they began college in 2008, all students were eligible for a private need-based grant (the Wisconsin Scholars grant, hereafter the WSG), in addition to their regular financial aid package. Forty percent (1,200) were then randomly selected to receive

the WSG, with those attending universities receiving $3,500 per year and those at two-year colleges receiving $1,800 per year (for up to five years). The WSLS administered a baseline survey and tracked their outcomes (with administrative and survey data) for the next five semesters. The assembled panel study affords an opportunity to closely examine the relationships between low-income undergraduates' family background, financial aid, work behavior, and college enrollment. Moreover, the random allocation of the WSG makes it possible to estimate the effect of a reduction in financial constraint on work behaviors of low-income students with varying levels of social capital.

Trends in Undergraduate Labor Market Participation

The expansive scope of labor market participation among contemporary college students warrants detailed investigation into the causes of participation, and the relation between work and postsecondary attainment. In 1960, 25 percent of full-time students of traditional age (e.g. between the ages of 16 and 24 at the time of entry) worked while enrolled in college (Stern and Nakata 1991).[3] Growth in student employment began in the mid-1960s and accelerated during the 1970s (Stern and Nakata 1991). By 1985, the percentage of employed full-time traditional-age students stood at 44 percent, and this figure increased to 52 percent by 2000 (Planty, Hussar et al. 2008). Growth in the percentage of students working extensively (e.g. more than 20 hours per week) accounted for almost all of the growth in student employment over the period from 1970 to 2000. The proportion of full-time traditional-age students working more than 20 hours per week increased seven percentage points (from 14 to 21 percent) over the period from 1970 to 1985, and an additional ten percentage points (to 31 percent) between 1985 and 2000. In contrast, the percentage of students in this age/enrollment group working fewer than 20 hours per week increased by only one percentage point (from 19 to 20 percent) over the period from 1970 to 2000 (Planty, Hussar et al. 2008). Between 2000 and 2006, labor market participation among full-time college students was stable—albeit at a high rate—with no significant increases in overall participation or extensive participation.

Working college students typically do not earn high wages, and extensive work undermines financial aid eligibility. One study found that more than one-third of students earn within one dollar of the minimum wage. Wages per hour are higher for part-time students than for those enrolled full-time (Orszag et al. 2001). The more hours that students work, the less likely they are to receive financial aid. Through an income threshold, federal law mandates an employment penalty, effectively reducing

aid eligibility based on student earnings (Goldrick-Rab and Sorenson, 2010). Thus while the relationship is likely bidirectional, 56 percent of undergraduates working less than 15 hours per week receive federal grant aid work, compared to less than 36 percent of undergraduates working 35 or more hours per week (Orzsag et al. 2001).

Labor market participation among undergraduates is uneven. For part-time students, the employment rate was higher (at just over 80 percent) and extensive work (more than 20 hours per week) the norm during the entire period from 1970 to 2000 (Planty, Hussar et al. 2008). A larger proportion of students at two-year institutions work, and work extensively, compared to students at four-year institutions (Ehrenberg and Sherman 1987; Horn and Malizio 1998). Two-year students are also more likely to work off-campus (Harding and Harmon 1999). Employment is more common among students in the lower half of the ability distribution but change over time has been greater for 07 #27" ¶Belley and Lochner 2007)⊥¶‼. Whereas in 1960 men were 15 percentage points more likely than women to work, labor ma(Belley and Lochner 2007). Whereas in 1960 men were 15 percentage points more likely than women to work, labor market participation across genders converged by 1985 (Stern and Nakata 1991). In the new millennium women are more likely than men to work, and more likely to work extensively (Planty, Hussar et al. 2008). According to one study, the share of women ages 18-23 working while in college increased 18 percentage points between 1970 and 2003, while the growth among young men was much more moderate (Fitzpatrick and Turner 2007); this finding is consistent with Bacolod and Hotz (2006) who analyzed three cohorts from the National Longitudinal Surveys. Although the employment rate was higher among white (versus non-white) students during the period from 1960 to 1985 (Stern and Nakata 1991), the Hispanic employment rate converged with that of Whites by 2000, and Hispanic students now slightly exceed Whites in extensive work. Full-time African American students in 2006 were less likely than White students to work, and to work extensively, but slightly more likely to work full-time (10 versus 8 percent) (Planty, Hussar et al. 2008). To summarize: students who are part-time, attending 2-year institutions, lower ability, and/or female are more likely to work, compared to other students.

Effects of Work on Postsecondary Attainment

While the negative implications of work for college attainment are widely accepted (Stinebrickner and Stinebrickner 2003), there is a serious methodological challenge inherent in

establishing that relationship. In particular, since the characteristics (of students and schools) thought to contribute to work behavior also impact the odds of college attainment, examinations of attainment across working and non-working students compare two unequal groups. Quasi-experimental studies are at a disadvantage (relative to experiments) and must engage advanced methods to evaluate the counter-factual of interest: what would the college attainment of a working student have been had they not worked? (Morgan and Winship, 2007) Thus, it is difficult to eliminate the possibility that the negative relationship between work and attainment is biased.

With few exceptions, quasi-experimental using national databases find a negative relation between work and attainment. Ehrenberg and Sherman (1987) identified an inverse relation between working more than 20 hours per week and year-to-year persistence, as well as on-time degree completion.[4] Horn and Malizio (1998) found enrollment interruptions are most frequent among students working 35 or more hours per week, and more frequent among students working 16-34 hours per week than among students working 1-15 hours a week.[5] Bozick found a lower first-to-second-year persistence rate among students that worked extensively (more than 20 hours per week), compared to all others.[6] An exception is work by Harding and Harmon (1999), who concluded that working was not a "major influence" in the probability of reenrollment for four-year students (p.23).[7]

Evidence of an inverse relationship between intensive work and postsecondary persistence align with three prominent theories of student retention (Riggert, Boyle et al. 2006). In Tinto's (1993) interactionist framework, work is an external obligation that may divert attention from college-related activities, thus impeding social and academic integration of the student into the college environment. Astin's (1993) model of student retention—which emphasizes involvement with the institution through engagement with academic work, faculty, and peers—also suggests a negative impact of extensive work on social and academic integration. However, drawing on null findings regarding work and cognitive growth (see Pascarella, Edison et al. 1998; Salisbury, Padgett et al. 2009), Riggert, Boyle et al. (2006) de-emphasize the work-academic integration linkage, and conceptualize work as impacting academic outcomes indirectly through psychological outcomes. Whether extensive work affects academic outcomes directly or indirectly through social-psychological processes deserves further consideration, but is not central to this analysis. It is clear that both sociological theory and

empirical findings support the idea that extensive work during college should be avoided, if degree attainment is the goal.

Financial and Social Capital and the Decision to Work

The benefits of socioeconomic advantage at the educational transition marked by college completion are well-established and evident across generations (Mare 1980; Mare 1981). In other words, despite decades of intervention, the relation between family background and college attainment appears stronger than ever. However, current theory provides few insights into precisely *how* advantage is transmitted. The educational transitions literature forms the conceptual foundation for this study and others examining the relationship between socioeconomic advantage and college attainment. Mare (1980; Mare 1981) initially conceived educational attainment as a sequence of stages in which the student either completes an educational transition, or the student drops out. This theoretical approach rests upon the straightforward insight that completion of each specific transition is conditional upon completion of all transitions that precede it. This conception translates to a methodological approach employing logistic regression models of binary outcomes (continues or drops out) at each transition.

However, as others have noted (Oakes 1985; Gamoran 1987; Lucas 2001) considering only completion (or dropping out) obscures the substantial difference in completing high school via a college-preparatory—academic track—curriculum, as compared to a general or vocationally-oriented curriculum. At the postsecondary level, Breen and Jonsson (2000) document substantial socioeconomic differences in access to and completion of a postsecondary degree at a two-year versus a four-year institution. Thus, subsequent attainment research in the sociology of education has retained the conceptual frame of sequential vertical transitions, while expanding the set of horizontal options within stages to accommodate the complexity of the educational system (and student choices) (Andrew, 2009; Milesi, 2007; Pfeffer and Goldrick-Rab, 2008; Roksa and Velez, 2010).

Of particular relevance to the current analysis, Roksa and Velez (2010) argue that horizontal differentiation occurs not only across institutional sectors, but also via students' decisions to mix college enrollment with labor market participation. Using a nationally representative sample from the National Longitudinal Survey of Youth (NLSY97), they find that both parental education and family income are inversely related to extensive labor market participation during college. Their theory

suggests that better-educated parents shield their children from extensive labor market participation during college to preserve "educationally conducive" conditions for their success (p. 15). According to this model, socioeconomic advantage (via improved social capital) moderates the negative effects of work on attainment, thus reinforcing extant patterns of social advantage.

Similarly, Bozick (2007) uses a nationally representative sample from BPS:96/01 to analyze the relation between family income, wealth and college students' labor market participation. He finds a significant inverse association between family wealth and the probability that a son or daughter will work extensively during college. This finding is echoed in research using the NLSY79 and NLSY97, which identifies effects of family income on work behaviors, particularly among students with high test scores (Belley and Lochner, 2007; see also Keane and Wolpin, 2001).[8] Bozick links his findings to sociological work on poverty (e.g. Edin and Lein 1997; Elder 1974) which posits that when financial supports are weak and costs are high, families respond to the resulting economic strain through coping strategies that allow them to get by in the short-run, even though there may be costs associated with such strategies. Some behavioral economists have begun to describe this kind of thinking (in particular reactions to resource scarcity) as the "psychology of poverty" (Mullainathan, 2010).[9]

Since most studies on the linkage between family background and labor market participation among students use samples with only a token representation of low-income students (e.g. Salisbury, Padgett et al. 2009), relatively little is known about variation in work behaviors within that group.[10] We consider the rational choice hypothesis that predicts that students with lower incomes invest more in work to relieve financial constraints. We also assess the possibility that having more social capital helps low-income students work less, thus contributing to heterogeneity in decision-making among low-income students. This study addresses the following three research questions:

(1) Does social capital (obtained through parental education) shield the children of low-income families from intensive work during college? In particular, are low-income undergraduates from educationally-advantaged families more likely (than students from a family with a high school education) to work fewer hours, or avoid work altogether? Are they more likely to avoid working extensively and/or to work different shifts?

(2) To what degree is the relationship between parental educational advantage and work participation accounted for by the greater financial resources enjoyed by better-educated

parents? In other words, does variation in family financial resources account for observed differences in labor market participation across low-income students from families with different educational backgrounds?

(3) Can the introduction of additional financial resources (e.g. a new grant) provided to the student during college reduce the incidence or change the intensity of work among low-income undergraduates? Does this effect vary by level of parental education?[11]

Taken together, the answers to these three questions will shed light on the potential for financial and informational interventions to reduce student work and facilitate greater degree completion.

Methodology

The Wisconsin Scholars Longitudinal Study (WSLS) is a panel study that includes student surveys, administrative records and qualitative interviews collected for a cohort of Pell Grant-eligible students who began college at a Wisconsin public institution in the fall of 2008. Twin goals of the WSLS study are (1) evaluating the effectiveness of a randomly-allocated financial aid grant, and (2) capturing in detail the academic and life experiences of first-time college students from low-income families.

Sampling

The population of interest in this study includes college students from across Wisconsin who met the following criteria in the fall of 2008: they were a state resident who attended a Wisconsin public high school (on-site and full-time) during the last four semesters prior to graduation and they received a diploma from a Wisconsin public high school or a Wisconsin High School Equivalency Diploma during the three years preceding their commencement of college studies. In addition, in fall 2008 they enrolled full-time in their first semester of college at any of the thirteen University of Wisconsin four-year institutions, thirteen two-year colleges, or sixteen technical colleges, filed a FAFSA and qualified for and received a Federal Pell Grant, and were determined to have at least $1 of calculated unmet financial need. Loans and work study were not considered "aid" for these purposes.[12] These criteria were dictated by the program that distributed the Wisconsin Scholars Grant (see next section). Slightly more than 6,000 (6,011) students met the criteria. Just under one-fifth (1,200) were chosen by lottery to receive the WSG and enrolled in the study. Another 1,800 students not chosen for the grant were also selected (via a stratified random sampling process blocked by college) to enroll in the study. In sum, the WSLS includes 3,000 of the 6,011 students and with the appropriate use of

sampling weights the findings generalize the specific population of low-income undergraduates described above.[13]

Methods

The analysis in this paper includes descriptive and correlational analysis of the relationships between parental education, income, and undergraduate work behavior, as well as an experimental analysis of the impact of a need-based financial grant on those same outcomes. To accomplish this we leverage both detailed longitudinal data and a randomized experiment.

The most essential details of the experiment follow, and additional information can be found in Goldrick-Rab, Harris, Benson, and Kelchen (2010). We examine a private program that uses a lottery to distribute a grant to eligible students. The grant (in the amount of $3,500 per year for 4-year students and $1,800 per year for 2-year students) is awarded during the first semester of college to students who have already enrolled and applied for aid. Students are determined eligible via administrative records rather than a recruitment process, minimizing the potential for experimenter effects. The use of a lottery for allocation greatly enhances the internal validity of estimates of the grant's effect—in essence, differences in student outcomes may be attributed to the grant rather than to pre-existing characteristics.[14] The grant was distributed to students for each of four college semesters and effects on work behaviors were measured over that time. The primary comparison for experimental estimates is based on the "intent-to-treat"—students chosen to receive the grant versus those not chosen to receive it. Actual receipt depended on compliance, as is common in social programs, and this is non-random. The treatment-on-treated effect is not considered in this paper.

Data

Measures of undergraduate labor force participation in this study are based on student self-report in surveys, which required consent.[15] For the protection of human subjects, grant receipt did not mandate research participation, creating threats to internal validity if participation were linked to the grant in the minds of participants. To avoid this, survey recruitment occurred independently of the grant program. Consent rates for a lengthy pencil and paper survey (which yielded the data for the analysis in this paper) were very high and orthogonal to treatment. Specifically, on average 76 percent of all students took the initial survey (differences based on grant status were three percentage points, p=.144), and 75 percent of those original participants completed a second survey a year later.

The surveys included a battery of questions relating to students' work experiences. The fall 2008 items focused on work hours, location (on- or off-campus) and relation of work to career goals. The fall 2009 survey also includes a section pertaining to shift work, with students reporting as to whether or not their work occurs in 4-6 hour windows of time during the morning, afternoon, evening, and nighttime. Work questions are similar to the work measures used in national studies, where students are asked about their work participation in the week directly preceding the interview. Because most respondents answered the fall surveys during October through December, these hours fell during the fall semester. From the survey responses, we coded separate on- and off-campus hour totals, as well as a dichotomous measure indicating any off-campus work. In addition, a total measure of work hours was coded as the sum of on- and off-campus work hours. Several outlying responses were reported in year 1, with respondents possibly reporting monthly rather than weekly work,[16] and these were trimmed to 45 hours. In addition to the continuous measures, we coded an extensive work measure from the total work (hours) measure by assigning a one to each student who worked in excess of 20 hours per week. Dichotomous shift work measures come directly from student reports indicating whether or not some of the student's paid work occurred in one of the 4 to 6 hour time slots provided on the survey instrument.

Measures of family background come from students' FAFSA. We use three measures of family financial resources. Parental adjusted gross income (AGI) is similar to the total income measure used in Bozick (2007), excepting a small set of deductions for self-employment and educational expenses. Given the official nature of these data,[17] we assume better accuracy than for self-reported income data, especially self-reports across generations. Also from the FAFSA, the analysis employs a measure of family wealth, which is the market value (net worth) of investments including homes, rental properties, businesses and investments. This measure is similar to the parent-reported net worth measure from the NLSY97 employed by Roksa and Velez (2010). Finally, we employ the "effective family contribution", a measure germane to the FAFSA. This measure is computed according to a formula set by the Department of Education, which assesses the available family contribution from income and assets, taking into account the number of college students in the family. This measure provides a best estimate of what each student's family can be expected to contribute toward tuition and living expenses.

Measures of gender, race/ethnicity, and parental education come from student self-report items in the fall 2008 survey. Due to the relatively small sample size and minority student population in Wisconsin, we combined measures of group membership from four racial/ethnic categories into a single dummy variable indicating whether or not the student was from a protected minority group or not.[18] We employ a 3-category schema for highest level of parental education, based on categorical student reports of the highest level of education completed by the parent or guardian with whom they lived during high school. Within the initial set of 7 categories, we combined sub-completion categories (grades 1 through 8, and some high school) with the two completion categories (GED and diploma) to make a single "high school or less" category. Parents with an advanced degree were combined with those with a BA to make a single "BA or above" category. Preliminary analyses determined that outcomes did not differ significantly within the combined groups.

There is some missing data on the covariates—in the current analysis we rely on complete cases but in future analysis we will conduct multiple imputation for these key covariates.

Sample Characteristics

Most Wisconsin college students enroll in public institutions. More than 80 percent of the state's undergraduate enrollment is in the public sector (nearly 45% attend public 4-year colleges, while another 39% attend public 2-year and technical colleges). The study includes students attending all 42 public technical, community, and 4-year colleges in the state—with over 80 percent of the sample attending less selective or nonselective institutions. The sample is diverse in parental educational attainment, with 18 percent of WSLS students' households holding at least one BA in fall 2008. This figure is only somewhat less than Census Department (ACS) estimates of educational attainment for Wisconsin adults, which indicate a range of 25 to 31 percent of adults with a college degree.[19] However, in terms of family income, the sample is substantially below the median income of $52,500 for Wisconsin households in 2007 (reference year for the 2008 FAFSA).[20] Adjusted gross income averaged from $17,290 for households with less than a high school degree, to $31,160 for households with a college degree. Thus, the WSLS sample is a sample of students from low-income families among which there is a substantial degree of variation in parental educational attainment.[21]

Parental Education and Work Participation

We begin by assessing the relation between parental education, work hours, work participation, and selected work characteristics. Table 1 presents the mean total hours of work, mean off-campus hours, and specific types of work during the first term of college (fall 2008), according to parental education.[22] The results clearly indicate that within this sample of low-income students, the incidence, intensity and location of work varies according to parental education. For example, students with at least one college-educated parent (bachelor's or above) worked on average 7.5 hours per week during fall 2008, nearly 30 percent fewer hours than worked by students with high school-educated parents and those whose parents had some college (10.6 - 10.7 hours per week). The differences in hours worked is driven entirely by off-campus (rather than on-campus) work.[23]

During the second year of college (fall 2009) the variation in work behaviors by parental education diminished. Students with college-educated parents no longer held a statistically significant advantage over other students in terms of labor force participation, with the exception of the location of work. However, the year 2 averages (Table 1) are based on the full sample and therefore may be influenced by the grant distributed to approximately two-fifths of study participants—e.g. if it effectively diminished work activity for one group, then it may have had the effect of also leveling inequalities. Therefore, we next restrict the analysis to students not chosen to receive the grant, and examined the within-group variation in work behaviors in the second year of college. The results are consistent with the freshman year findings—absent additional resources from the grant, parental education offers an advantage to low-income students, effectively reducing the extent to which they work while in college.

Multivariate models controlling for socio-demographic characteristics[24] confirm the descriptive picture. An OLS regression model predicting work hours during freshman year indicates that students from a college-educated household worked 3.3 fewer hours (t=-4.4) per week more than students from other educational backgrounds. Logistic regression models confirm that these students were more likely to avoid work altogether, and were less likely to work extensively or off-campus.

The Mediating Role of Financial Resources

Students from families with higher levels of education may have greater financial resources, which could contribute to their decreased likelihood of working while enrolled. Thus, in the next stage

of the analysis we examine whether family financial resources mediate the relationship between parental education and work participation in the first year of college (importantly, in our study this was before the new grant was introduced to alleviate financial constraints). The resources we consider at this stage are those of the family—family income, net worth, and expected family contribution. In the next step of the analysis we examine the effects of a measure that could be thought of as short-term financial resources (e.g. the WSG).

As indicated in Table 2, accounting for greater family financial resources only modestly diminishes the advantages of having a college-educated parent. Of the three financial resources measures we deployed, expected family contribution matters most (this is not surprising since EFC is design to be a robust measure of a family's financial strength, encompassing assets, family size, and income). The results indicate a reduction of approximately 24 minutes of work per week for every thousand dollar increase in the computed EFC (-0.391 x 60). While students' work earnings can affect EFC (Goldrick-Rab and Sorensen, 2010), in this case the EFC was computed prior to when work occurred; thus it seems that students with greater family financial strength tended to work a bit less. However, that relationship is not as strong as the relationship between parental education and work—having a college-educated parent reduces weekly work by two hours, irrespective of family EFC.

The Effect of Alleviating Short-Term Financial Constraints

To this point the analysis appears to indicate that parental educational advantage has a powerful effect on the work behavior of low-income undergraduates and that this effect is largely independent of family income. This leads to two additional questions. First, how does the contribution of social capital—operationalized as parental education—compare to the contribution of short-term financial constraints, when considering the decision to work? And second, how do the two interact?

These questions are usually very difficult to answer because the decision to work may stem from financial constraints and at the same time financial constraints may result from work decisions. Moreover, financial constraints and parental education can be difficult to parse. However, in this study partial relief from financial constraints is assigned to undergraduates with a grant distributed by lottery—allocation is thus exogenous to both the work decision and to parental education. This affords a unique opportunity. By comparing work participation in the second year of college across

those assigned to receive the grant and those who were not, we can arrive at unbiased estimates of both the effects of financial constraints and the moderating effects of parental education. This is also a way of assessing the extent to which financial constraints shape the work patterns of college students in the absence of external resources.

During the term in which the grant was distributed, grant recipients and non-recipients did not differ in their work behavior. Variation on covariates, including EFC and parental education, was comparable in both groups as well (see Table 3). In experimental language, this implies that the random assignment of the grant "worked" to create balanced groups.

But one year later, in their second year of college, students assigned to receive the grant worked on average 1.8 fewer hours than students not assigned to receive the grant (this is an unconditional average not limited to working students). In other words, alleviating students' financial constraints (by $3,500 for 4-year students, and $1,800 for 2-year students), caused a reduction in work hours comparable to the advantages accrued by students with college-educated parents (relative to high school-educated parents). This operated largely through a reduction in off-campus work hours. Students receiving the grant were less likely to work at all, less likely to work full time, and less likely to work undesirable shifts (e.g. late at night or during popular class times).

Moreover, the effects of reduced financial constraints were greatest among students from less-educated families. For those with high school-educated parents, students assigned to receive the grant worked 2.7 fewer hours per week, compared to students not receiving the grant. Those students also disproportionately benefitted in terms of work intensity and shifts worked. We further examine the evidence of heterogeneous effects according to parental education with a "high school by grant" interaction term in the Table 2 regression model. This model—which compares students with a high school background to all others—lends some support to the notion of an interaction between the grant and high school background. Combining coefficients in this model (not shown) indicates that students from high school backgrounds who received the grant worked four fewer hours per week than equal students who did not receive the grant. For other students, the grant provided a work hour reduction of one hour per week. The addition of covariates does not alter the results.

Discussion

Inequality in college attainment has continued unabated for more than fifty years. Higher education has become more unaffordable, and the route to completion more complex (Goldrick-Rab, 2006; Goldrick-Rab and Pfeffer, 2009). Many students are turning to employment while still attempting to navigate college courses, possibly reducing their chances of ever earning a degree. Our analysis indicates that this decision is not a straightforward one. Certainly, it is affected by financial need—working is more common among low-income students, and low-income students who receive more aid appear to work less. But the propensity to work also varies by parental education. The advantages afforded by parental education—in particular social capital—may help to shield some low-income students from work by transmitting important information about the academic and financial costs of working while in school. This may be a mechanism through which socioeconomic advantage is transmitted at this crucial educational transition. The WSLS offers measures of students' social capital (including knowledge of aid and the relation to work decisions) that will allow us to elaborate these mechanisms in future iterations of this paper.

Our results illustrate a shielding pattern in which the children of low-income, college-educated parents work at least three hours per week less than comparable undergraduates with less-educated parents, while being more likely to avoid work entirely, and to avoid extensive and off-campus work. Like Roksa and Velez (2010) we find that parental education and family financial resources act independently to reduce work hours. In addition, the results of our experimental analysis indicate that enhancing financial capital (via additional financial aid) substantially reduces the hours worked by low-income students with high school-educated parents to the point that it nearly fully offsets the advantage (fewer hours worked) enjoyed by children of college-educated parents. Financial assistance, it appears, may be an equalizer that promises to reduce labor force participation and enhance college attainment for first generation students.

Table 1: Work Hours, Intensity, and Location by Parental Education (Years 1 and 2); T-test Comparisons of Some College/High School, College Degree/High School.

	HS or less (n=696)	Some college (n=796)	BA or above (n=389)
Work participation during year 1			
Total hours worked (during the last week)	10.726	10.597	7.453***
Off-campus hours worked	10.003	9.664	6.435***
Not working at all	0.417	0.393	0.526**
Working extensively (more than 20 hours)	0.264	0.243	0.177**
Working off-campus	0.505	0.511	0.359***
Work participation during year 2			
	HS or less (n=449)	Some college (n=519)	BA or above (n=270)
Hours worked (during the last week)	11.139	11.467	9.644
Off-campus hours worked	9.727	9.711	7.377
Not working at all	0.419	0.342*	0.398
Working extensively (more than 20 hours)	0.280	0.275	0.228
Working off-campus	0.471	0.518	0.400†
Working between 8am and 12pm	0.319	0.326	0.344
Working between 12pm and 6pm	0.458	0.493	0.465
Working between 6pm and 10pm	0.394	0.421	0.348
Working between 10pm and 2am	0.083	0.118	0.115
Working between 2am and 8 am	0.069	0.072	0.070

***: sig at p<0.001; **: sig at p<0.01; *: sig at p<0.05; †: sig at p<0.1

Table 2: OLS Regression Coefficients (standard errors) for 4 models of Family Educational Background and Financial Resources (n=1315)

	Baseline	AGI	Wealth	EFC
Independent Variables				
Intercept	8.562 (1.434)	9.406 (1.496)	8.558 (1.421)	8.952 (1.444)
Parent(s) with some college	-0.181 (0.778)	0.064 (0.773)	-0.128 (0.776)	-0.104 (0.776)
Parent(s) with BA degree	-2.376* (0.915)	-2.019* (0.918)	-2.181* (0.921)	-2.124* (0.920)
Gender (female=1)	1.446* (0.707)	1.385† (0.707)	1.470* (0.706)	1.511* (0.706)
Minority status (protected=1)	-0.616 (0.858)	-0.949 (0.858)	-0.948 (0.858)	-0.972 (0.860)
Biological 2-parent family	-1.068 (0.692)	-0.392 (0.730)	-0.888 (0.697)	-0.827 (0.694)
Number of siblings	0.074 (0.169)	0.101 (0.170)	0.071 (0.170)	0.040 (0.170)
Family income (AGI)		-0.050** (0.019)		
Family net worth			-0.029* (0.013)	
Effective family contribution (EFC)				-0.391** (0.134)
R-squared	0.012	0.019	0.016	0.017

Table 3: Covariates and Work by Grant at Baseline (Year 1); Treatment versus Control (two-tailed *t*-test) within Each Educational Category.

	All Levels (N=2079)		High School (n=848)		Some College (n=743)		BA or above (n=360)	
	WSG	Control	WSG	Control	WSG	Control	WSG	Control
Parent with a BA degree	0.191	0.167	na	na	na	na	na	na
Effective family contribution (EFC)	1.617	1.402	1.360	1.246	1.422	1.374	2.630	1.891
Gender (female=1)	0.599	0.604	0.614	0.548	0.627	0.622	0.523	0.523
Total hours worked (during the last week)	9.80	10.361	10.586	10.949	10.400	10.821	7.247	7.748
Off-campus hours worked	9.137	9.352	9.793	10.286	9.677	9.648	6.547	6.276
Not working at all	0.445	0.406	0.425	0.409	**0.429***	0.352	0.523	0.530
Working extensively (more than 20 hours)	0.234	0.239	0.252	0.280	0.248	0.237	0.162	0.198
Working off-campus	0.471	0.494	0.486	0.526	0.504	0.518	0.363	0.353

***: sig at p<0.001; **: sig at p<0.01; *: sig at p<0.05; †: sig at p<0.1 (Table 3 and Table 4)

Table 4: Impacts of Grant on Work (Year 2); Treatment versus Control (two-tailed *t*-test) within Each Educational Category.

	All Levels (N=1405)		High School (n=560)		Some College (n=513)		BA or above (n=267)	
	WSG	Control	WSG	Control	WSG	Control	WSG	Control
Total hours worked (during the last week)	**10.206***	11.996	**10.138***	12.799	10.872	12.143	9.604	9.702
(standard error)	**(0.486)**	(0.505)	**(0.804)**	(0.876)	(0.804)	(0.785)	(1.081)	(0.994)
Off-campus hours worked	**8.624***	10.159	**8.794***	11.469	9.269	10.210	7.625	7.017
(standard error)	**(0.487)**	(0.515)	**(0.793)**	(0.877)	(0.820)	(0.802)	(1.085)	(1.033)
Not working at all	0.413*	0.353	0.450	0.395	0.369	0.312	0.418	0.370
(standard error)	(0.020)	(0.018)	(0.031)	(0.030)	(0.033)	(0.029)	(0.046)	(0.043)
Working extensively (more than 20 hours)	**0.244***	0.300	**0.253***	0.343	0.255	0.298	0.240	0.210
(standard error)	**(0.017)**	(0.017)	**(0.027)**	(0.029)	(0.029)	(0.028)	(0.039)	(0.036)
Working off-campus	0.458	0.497	**0.442†**	0.519	0.509	0.528	0.417	0.377
(standard error)	(0.020)	(0.019)	**(0.031)**	(0.031)	(0.034)	(0.031)	(0.045)	(0.043)
Working between 8am and 12pm	**0.292****	0.370	**0.289***	0.383	**0.286***	0.372	0.321	0.378
(standard error)	**(0.018)**	(0.018)	**(0.028)**	(0.030)	**(0.031)**	(0.030)	(0.043)	(0.043)
Working between 12pm and 6pm	0.461	0.487	0.465	0.466	0.489	0.498	0.425	0.524
(standard error)	(0.020)	(0.019)	(0.031)	(0.031)	(0.034)	(0.031)	(0.045)	(0.044)
Working between 6pm and 10pm	0.391	0.401	0.377	0.403	0.419	0.424	0.365	0.323
(standard error)	(0.019)	(0.019)	(0.030)	(0.030)	(0.034)	(0.031)	(0.044)	(0.041)
Working between 10pm and 2am	0.097	0.108	0.081	0.097	0.103	0.134	0.136	0.084
(standard error)	(0.011)	(0.012)	(0.017)	(0.018)	(0.021)	(0.021)	(0.031)	(0.026)
Working between 2am and 8 am	**0.052****	0.095	**0.043***	0.092	0.060	0.085	**0.042***	0.110
(standard error)	**(0.008)**	(0.011)	**(0.012)**	(0.018)	(0.016)	(0.017)	**(0.018)**	(0.029)

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[1] Even economists who believe that borrowing constraints do not have much impact on the decision to attend college seem to agree that they likely effect the decision to work while enrolled (Keane & Wolpin, 2001).
[2] Colleges and universities do not typically have data on family income; in this case our proxy is receipt of the federal Pell Grant. All students in the sample receive this need-based grant (a federal entitlement) as part of their aid package—in addition, as we describe, some students were randomly selected to receive an additional grant.
[3] These figures come from Bureau of Labor Statistics data which track employment during the years in which students are enrolled; such employment may include summer work. The 40 percent figure comes directly from Figure 1; the 24 figure comes from our computations using Figures 5 and 6 in Stern and Nakata (1991).

[4] This study uses data from the National Longitudinal Study of the High School Class of 1972 (NLS:72).
[5] This study uses data from the National Postsecondary Student Aid Study of 1996 (NPSAS:96).
[6] This study uses data from the Beginning Postsecondary Study of 1996 (BPS:96).
[7] Yet their analysis also reveals that students who worked extensively (more than 20 hours per week) reenrolled at a rate of about six percentage points less than students who did not work, and less than students who worked fewer than 20 hours per week (See figure 7 on page 15). The authors rely on administrative data from the state of Washington.
[8] Specifically, Belley and Lochner (2007) find that "the estimated effects of income on post-secondary attendance for the NLSY97 [sample] are weakest for the most able. Smart but low-income youth appear to alleviate the effects of borrowing constraints by working part-time while enrolled in school, as evidenced by our finding that family income significantly reduces hours of work during the school year among the most able."
[9] http://www.irp.wisc.edu/newsevents/seminars/Presentations/2010-2011/Mullainathan_Sept_2010.pdf.
[10] A the notable exception is Stinebrickner and Stinebrickner (2003).
[11] In this iteration of the paper we do not address a fourth question we do intend to ask and answer before the conference, namely: what is the relationship between student work and college persistence within this sample?
[12] (excluding, for purposes of clarity, loans obtained to pay all or a portion of the expected family contribution)
[13] Sampling weights were computed to adjust for the larger control group and oversampling within the control group. The treatment group weights reflect that selection to receive an offer of the treatment was stratified by sector: two-year colleges (including technical colleges) and four-year colleges. Weights for the control group also reflect stratification by sector, as well as the over-sampling of students enrolled in colleges with higher percentages of minority students, and the uneven probability of selection across colleges due to differences in enrollment size. The weight for each student is the inverse of the probability of his or her selection for participation in the study. Sampling weights accounting for the sampling design are applied to all computations.
[14] The equivalence of groups at baseline is demonstrated in Goldrick-Rab et al. (2010).
[15] In the future we plan to also examine measures of work using employment records.
[16] Several students reported in excess of 60 hours per week of work, with the maximum being 160 hours.
[17] Unlike social science surveys, falsification of income data within the FAFSA can lead to a $20,000 fine or imprisonment (see page 8, step 7 of the FAFSA form at http://federalstudentaid.ed.gov).
[18] There are 4 "protected" racial/ethnic groups in Wisconsin: Native American (including Alaskan Native), Southeast Asian (including Hmong), African American, and Latino.
[19] We limited consideration here to adults ages 35-64, those most likely to have children attending college.
[20] See (http://www.census.gov/prod/2009pubs/acsbr08-2.pdf).
[21] Families with less than a high school degree had an average annual income of $17,290, compared to $25,412 for those with a high school degree, $26,770 with some college attainment, and $31,160 with a bachelor's or advanced degree.
[22] Inter-group differences are evaluated using two-tailed t-tests, with high school or less being the reference category for all comparisons.
[23] On-campus work is often related to financial aid packages, whereas off-campus work is not. All students in this study were recipients of Pell grants; thus heterogeneity in work study participation is limited.
[24] This model includes the same set of predictors employed in the Baseline model of Table 2.