ABSTRACT

DeSANTIS, ANDREA L. The Role of Work on High School and College Outcomes. (Under the direction of Dr. Paul Umbach).

This study explores the relationship between paid work and unpaid household labor that youth engage in and the impact on high school graduation and college access. Using two types of matching models: inverse propensity weighting and a dose-response function, I find that neither household work or paid work are associated with changes in high school graduation or college enrollment. I do see positive effects on high school graduation when looking at whether or not students ever participated in either type of work, importantly these positive outcomes hold for important subgroups of youth including Black youth and girls.

The Impact of Work on College Access

by
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DEDICATION

This dissertation is dedicated to my parents, Vince and Lisa DeSantis. They pushed me to explore my interests and made me believe that there were no limitations to what I would accomplish.

BIOGRAPHY

Andrea L. DeSantis grew up in Ocean City, NJ. She then attended the Honors College at the College of Charleston in Charleston, SC where she majored in chemistry and political science and graduated with her Bachelor's degree in 2011. Her interest in college access and higher education started during her two-year service as an AmeriCorps VISTA at the College of Charleston in the Honors College. During this time, she coordinated college access programming for local elementary school students to promote literacy and college-knowledge. She then moved to Cincinnati, OH to work in admissions and student affairs for medical school students at the University of Cincinnati College of Medicine. While working, she earned her master's degree in Educational Studies with a concentration in Applied Research Methods from the University of Cincinnati in 2016. In July 2016, she moved to Raleigh, NC to enroll in the Educational Leadership, Human Development, and Policy doctoral program with a concentration in Higher Education at NC State University. While at NC State, she spent several years working at the Belk Center for Community College Leadership & Research. This time was formative in her development as a scholar building her interests in community colleges, workforce development, and program evaluation. She now serves as a Senior Workforce Development Analyst for the North Carolina Department of Commerce.

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CHAPTER ONE: INTRODUCTION

The onset of a global pandemic due to the novel coronavirus, Covid-19, drastically altered our lives in the United States starting in early March of 2020. As upwards of 20 million Americans lost their jobs ("Employment Situation," 2020) and as education across P-20 moved to virtual platforms the nature of families and their routines were altered and in many cases were upended. Roles and responsibilities within families were shifted based on availability of work, the type of work, sickness, and educational requirements.

Youth have not been excluded from these changes; rather high school students especially have been recognized as playing a vital role for sustaining families during this time. Recent news suggests that teenagers are taking on new responsibilities including supporting online learning for younger siblings and family members, caring for elderly family members, and working in essential jobs like in grocery stores in order to help support their family (Bryan, 2020; Reilly, 2020; Stewart, 2020). Stanford University even recommended to its employees that they consider, "leveraging teenagers that might not be engaged in their regular extracurricular activities to tutor or simply entertain younger children," in the instances where childcare is not available (Drell & Zacharias, 2020). While it is not new that teenagers have these responsibilities, the Covid-19 pandemic is highlighting the ways in which teens are taking on these responsibilities given the new demands. While the short-term educational outcomes for high school students due to pandemic remains largely unknown, this period of drastic upheaval and potential new responsibilities is likely to change the experiences and outcomes for high school students, especially those from historically marginalized communities who have faced greater challenges throughout the pandemic (Karpman et al., 2020). Importantly even prior to the onset of the pandemic, students from historically marginalized communities of color, students

from low-income backgrounds, and other minoritized groups experience disparate student success outcomes across P-20 and in the labor market due to systemic barriers.

A Focus on Historically Excluded and Underserved Students

In the United States, an estimated 41% of children grow-up in low-income families living below 200% of the Federal Poverty Threshold (Koball & Jiang, 2018). These low-income families face challenges to meet basic needs, find secure employment, and access postsecondary education. Experiencing poverty is a complex experience that is compounded with issues of safety, access to quality schools, hunger, housing, transportation, and job security (Goldrick-Rab, 2016). Education is often described as a way to address issues of inequality and poverty by developing individuals' human capital to promote social mobility (Baum, 2016; Baum & Payea, 2013).

Existing disparities in employment and economic outcomes based on socioeconomic status and race/ethnicity continue to persist as families and students do not have equitable outcomes in terms of high school completion, postsecondary access, and postsecondary attainment (McFarland et al., 2018a; Musu-Gillette et al., 2017). In 2016, based on data collected from the National Center for Education Statistics (NCES), the high school cohort graduation rate for Black students was 76% compared to 88% for White students. Hispanic students and Native American students also have lower graduation rates than White students at 79% and 72% respectively (McFarland et al., 2018a). According to NCES, the high school dropout rate for students from low-income backgrounds is 9.4%, compared with 5.4% for middle-income students and 2.6% for high-income students (McFarland et al., 2018).

The rates for college enrollments follow a similar pattern with an estimated 42% of White adults between the ages of 18-24 enrolling in college, while Black, Hispanic, Pacific Islander,

and Native American students fall well below this with rates of 35%, 37%, 24%, and 23% respectively (Musu-Gillette et al., 2017). These disparate outcomes at the beginning of adulthood lead to even wider financial gaps in mid and late adulthood (Baum, 2016; Baum & Payea, 2013). The aforementioned disparities are the result of a further increasing debt owed to students and families of color, in particular Black, Latin*[1] and American Indian students (Ladson-Billings, 2006).

The Center on Education and the Workforce at the Georgetown Public Policy Institute predicted that by 2020 over 65 percent of jobs will require training beyond a high school diploma (Carnevale et al., 2013). Students who do not earn college credentials severely limit their future job prospects and long-term earning potential. The decision to attend or not attend college begins early in a child's life and is dependent on a multi-layered context that includes individual, familial, school and community experiences (Perna, 2006).

The benefits of college, while numerous and well documented, are delayed. When a student attends college there are financial implications for both the student and their family. Students must weigh the current costs of attendance (tuition, fees, supplies, and housing) with potential losses such as lost wages from a job in lieu of attending college. While opportunity costs are typically discussed at the individual student level, there are likely to be costs to families where resources are flowing from the student to the parent(s) (Goldrick-Rab, 2016; Goldrick-Rab et al., 2011; Kinsley, 2014). Families with financial concerns must consider the current costs with the delayed benefits, suggesting inefficiencies in the current financial aid system. Meaning that even if a student has an interest in attending college, the immediate costs to attend as well as

[1] Use Latin* based on Salinas (2020).

the opportunity cost of missing out on available wages through work may preclude students from attending.

In the cases where students are contributing to their household either financially through paid work or by doing household tasks that would need to be performed by someone else otherwise, the family also needs to assess the potential losses they will face if the student leaves for college and can no longer contribute at the same level (Goldrick-Rab et al., 2011; Kinsley, 2014; Stack & Burton, 1993; Wikle et al., 2018). Potential financial losses include loss of current income from part-time jobs, loss of student availability to contribute to household responsibilities, and changes in government benefits. Additionally, depending on the student's federal aid application, families may be expected to contribute to college costs based on their Expected Family Contribution (EFC) (Goldrick-Rab, 2016; Goldrick-Rab & Kendall, 2014; Monks, 2018).

Research Problem: The Impact of Work

The high school experience is intimately connected to college access and completion in terms of academic preparation, skill development, college readiness, and engagement. High school is a crucial time period for youth to hone their interests, build academic knowledge, and develop college readiness skills (Tierney & Duncheon, 2015). Academic coursework, homework, projects, and studying are essential to developing the academic acumen to attend college or enter the workforce after college. Extracurriculars including clubs, sports, hobbies, and volunteering are those additional activities that may contribute to skill development and allow students to engage in activities outside of academics. Other activities outside of school include paid work and unpaid household work experiences.

Engagement in the aforementioned areas of academics, extracurricular, and work all allow the development of human capital (Crispin & Kofoed, 2018) and can help students further skills that may benefit them in postsecondary education and the workforce. Given time constraints, students and families must make decisions about the proportion of time spent on academics, extracurriculars, paid work, and household work in the hours that students are not attending school. The decision to participate in any of these activities requires a tradeoff and students and their families evaluate the potential costs and benefits to those decisions. Furthermore, they must also recognize the constraints to decision-making including the limited amount of time available in the day and that decision to participate in one activity may take away time from other activities (Crispin & Kofoed, 2018).

The decision to work provides immediate benefits in terms of access to an income, where the decision to participate in extracurriculars provides delayed benefits. This requires students to weigh the current benefits against the delayed potential benefits, this may be particularly challenging for low-income students who have current financial needs. Interestingly, Crispin & Kofoed (2018) point out that because of familial financial constraints and limited financial aid, "low income students may feel that they need to work and participate in extracurricular activities to gain access to college"(p.6). The decision to participate (or not to) comes at a cost to students and their families as their choices are constrained by the availability of financial resources and time.

Time spent on academics, extracurriculars, paid work, and household work is likely to vary between individual students because of their interests, goals, and future plans (Bartko & Eccles, 2003; Kalenkoski et al., 2007). It is also moderated by race/ethnicity, gender, and family demographics (e.g., socioeconomic status, number of siblings). Students from low-income

families spend more time on household work and less time studying than their more affluent peers, while middle income students spend more time in paid work than their peers at lower and higher income levels (Wight, et al., 2009). The types of activities students engage in and the ways they spend their time leads to differences in their college readiness, interest in attending college, and strength of college application for selective institutions (Kalenkoski et al., 2007; Tierney & Duncheon; 2015; Wight et al., 2009). Different outcomes are problematic when students do not have equitable access to choosing which activities to participate in. For instance, students from low-income backgrounds are systemically prevented from participating in extracurricular activities because of costs to participate and thus do not benefit to the same extent as their high-income peers (Snellman et al., 2015).

Paid work comes by way of part-time jobs with local businesses or jobs like lawn care or babysitting. These jobs are seen as a means to increase human capital, earn income, and offer students an activity to indicate on future college applications (Bozick & DeLuca, 2011; Painter II, 2010). The large body of literature on the effects of paid work is mixed, with some studies highlighting benefits to paid work including increased academic performance and college access (Staff et al., 2018). Other studies highlight potential issues with high school dropouts and risky behaviors (e.g., drug use) (Staff et al., 2018). There is consensus that working more than 20 hours per week is associated with negative outcomes (Staff et al., 2018).

Outside of paid work, students may also be expected to engage in unpaid household work such as childcare, chores, and other household tasks (Kofman & Bianchi, 2012; Stack & Burton, 1993; Wikle et al., 2018). This type of work does not bring students any financial gain and, while students may be building skills, these skills may not easily transfer to college applications as a pertinent after-school activity or experience.

Few studies explore the relationship of unpaid work that high school students perform and the extent to which work is related to college readiness and access. Unpaid work is defined as any household work that students perform, including chores, caregiving responsibilities for siblings or other family members, and other tasks (Goldrick-Rab et al., 2011; Kinsley, 2014; Stack & Burton, 1993; Wikle et al., 2018). It is important to note that this is different from unpaid volunteer work that is performed outside of the home. There are differences in the amount of unpaid work performed based on gender, income and immigration status; with those who are female, low-income, and children of recent immigrants likely to perform more household work than their counterparts (Kofman & Bianci, 2012; Wikle et al., 2018; Yu et al., 2015).

Gaps in the Existing Literature

While the topic of paid part-time work in high school has consistently been published on since the late 1980's, however the impact of work on postsecondary outcomes is inconclusive and rarely disaggregated by relevant student characteristics. Furthermore, the literature on household labor and its relationship to college outcomes is limited. There are three main gaps in the current literature in this field: few studies focused on household work, lack of studies that explore the heterogeneous effects of work.

First, existing research typically only includes paid work, such as traditional part-time jobs in retail and food services and other paid jobs like lawn care or babysitting. While paid work is important, it does not capture all of the work high school students may perform. This is especially important for low-income students because they have less access to paid work and differences in family structure and expectations may obligate them to perform household work for their families. Low-income students, who live in areas with less economic opportunities, are

in competition for part-time paid work with adults for part-time paid jobs. Whereas students from middle income have access to part-time paid work because of the higher levels of education of adults in their area (Hirschman & Voloshin, 2007; Staff et al., 2009). Additionally, there is some evidence that students from low-income backgrounds have familial structures and expectations that may lead them to perform more household work than their peers from middle and high-income families (Coltrane, 2000; Kinsley, 2014; Stack & Burton, 1993; Wikle et al., 2018). In communities of color, cultural norms lead to higher sense of obligation to support one's family, however this is not as prevalent in white communities (Wikle, 2014).

Second, there is little effort to consider the heterogeneous impacts of work with few studies providing disaggregated estimates across important demographics like socioeconomic status, race/ethnicity, gender, and immigrant status. Heterogeneous effects of work on college access needs to be explored to gain a better understanding of outcomes across groups (Brand & Xie, 2010). Existing literature assumes that the impact of work changes behavior in the same way across socioeconomic status (Staff et al., 2009). By not disaggregating findings, researchers are unable to capture the varied effects of work across different groups, such as gender and race/ethnicity. The assumption that work impacts all students in the same way does not allow researchers, policymakers, and practitioners to accurately understand which subgroups need to be the focus of intervention or policies.

Additionally, it perpetuates the assumption that all students work for the same reasons, even though we know that students from low-income backgrounds are working to help contribute to their families as opposed to earning money for personal items, such as a car (Bachman et al., 2014; Coltrane, 2000; Goldrick-Rab et al., 2011; Kinsley, 2014; Stack &

Burton, 1993; Wikle et al., 2018). This is an important difference that needs to be considered in understanding how work influences high school graduation and college attendance.

Purpose Statement and Research Questions

The purpose of this study is to understand the effect of work (paid and unpaid) on high school graduation and college enrollment. Using data from the Panel Study for Income Dynamics (PSID), I employ two different estimation strategies to model the influence of work on high school and college outcomes, IPW and a DRF to answer the following research questions:

1. How does participation in paid and unpaid household work during high school impact high school graduation and college enrollment?
2. To what extent do differences exist based on student demographics (gender and race/ethnicity)?

The first research question focuses on two proximal outcomes: high school graduation and college enrollment. These outcomes are a focus of this work because these are both outcomes where low-income students and students of color continue to lag behind their higher-income and White counterparts (McFarland et al., 2018a; McFarland et al., 2018b; Musu-Gillette et al., 2017). The second research question explores whether or not there are heterogeneous impacts across key individual level demographic characteristics.

Overview Theoretical Framework

Human Capital Theory (Becker, 1964; 1994) and the Kinscripts framework (Stack & Burton, 1993) create the theoretical framework for this study. Human Capital Theory provides the underpinning understanding of why individuals make the decision to participate in different educational experiences (Becker, 1964; 1994). Kinscripts provides an understanding of the cultural differences regarding work and childhood roles within family units (Stack & Burton,

1993). Recognizing the cultural differences in the distribution of work is essential, as these differences may lead to heterogeneous impacts of the work experience, based on SES, race, or other demographic characteristics (Stack & Burton, 1993).

These two frameworks work in tandem to create a theoretical underpinning that helps to explain the effects of work for students. While Human Capital Theory alone may be sufficient to discuss work and outcomes related to education, I believe the Kinscripts framework provides an important role by adding a cultural lens that helps create a better understanding of the experiences of students from low-income background and students of color. Given that educational disparities across socioeconomic status are considered a primary problem within this study, Kinscripts adds the necessary context to explain the ways in which work may be related to familial experiences both in assignment to work and effects of work.

Overview of Methods

Using the PSID, this study explores the effects of work on high school graduation and outcomes related to college access. The PSID is a long-running federal survey that provides insights into families' economic experiences since 1968. Along with the main survey, there are several supplemental surveys that explore various aspects of the family including childhood and early adulthood. This study uses two supplemental surveys: The Childhood Supplement (CDS) and the Transition to Adulthood Supplement (TAS). In 1997, 3,563 children participated in the initial wave of the CDS. Children were surveyed every 5 years under the CDS until they turned 18. At the point the participants turned 18, they had the opportunity to participate in the TAS.

I use two different estimation strategies inverse probability weighting (IPW) and a dose-response function (DRF) to explore the effects of paid and unpaid work on high school graduation and college enrollment for students who worked compared to similar students who

did not work. The treatment variables of interest are the average weekly time spent in paid and unpaid work, which is calculated in hours using information, collected through daily time diaries in CDS-II and CDS-III. Using inverse probability weighting, I first estimate the effects of ever participating in either type of work. Then to further understand if the amount of work (in hours) influences the outcomes I use a dose-response function. This second strategy allows me to exploit the continuous nature of the treatment variables (paid and unpaid work) used in the model rather than using a binary outcome of work (any hours) versus no work (0 hours) as with inverse probability weighting. This is an important distinction as previous correlational research suggests that there are differential effects of work at different intensity levels of work (Bachman et al., 2011; Hwang & Domina, 2017; Monahan et al., 2011). This study tests whether or not those differences hold when using matching techniques to ameliorate the effects of selection bias and to improve on estimates for differential outcomes.

Significance

This study provides a new understanding of the role of work, both paid and unpaid, on high school graduation and various outcomes related to college access by using IPW and a DRF with time diary data from the PSID. The decision to work and the outcomes that stem from this work are necessary to understand how we promote college access, especially those from low-income backgrounds. Low-income students and their families face unique challenges when it comes to accessing higher education, and this study seeks to better understand how low-income students' experiences with work impact their access to higher education.

Underlying this study is the assumption that students from low-income background's decision to work is a) different than their higher income peers and b) is influenced by their need to support their family through paid work or maintain their households through paid and unpaid

work (Goldrick-Rab et al., 2011; Kinsley, 2014; Stack & Burton, 1993; Wikle et al., 2018). Familial circumstances influence both the initial decision to work and subsequent decision to attend college. When students and their families engage in informal cost-benefit analyses regarding the decision to attend college and which college, they consider the opportunity costs. These opportunity costs include both foregone wages and the ability for the students to continue providing household labor. This is an important distinction as typically opportunity costs are only discussed in the context of losses for the individual student rather than the family (Toutkoushian & Paulsen, 2016).

Additionally, this challenges the higher education finance structures that assume resources only flow from parents to the students, such as the Free Application for Federal Student Aid (Goldrick-Rab, 2016; Toutkoushian & Paulsen, 2016). After families complete the FAFSA, their Expected Family Contribution (EFC) is determined based on the family's income and other financial characteristics. This study provides a new understanding of the bi-directional nature of resource sharing between parents and students, as evidenced by students sharing financial resources with family members or providing unpaid household labor. This study has important implications for both practitioners and policymakers. As far as the college application process is concerned, admissions and advising staff must continue thinking about the best ways for students to share their work (paid and unpaid) activities during the application process. Given the current need to continue promoting college access to a more diverse group of students, focusing on paid work and household work can provide an alternate approach to understanding what prevents low-income students from attending college.

Limitations

There are a few key limitations of this study. First, the focus of the study is on proximal outcomes of high school graduation and college enrollment, both of which occur within a short time period of work performed. While these are important measures, the literature also suggests a need to understand the impacts of work on college readiness. This is a challenging measure to construct based on the available dataset and the multitude of definitions across states (Mishkind, 2014). Additionally, while this study fills a gap in the existing literature, the study is limited as it does not estimate the effect on both intermediate outcomes like high school GPA or more distal outcomes like college graduation or labor market outcomes.

Second, a main challenge or limitation with both estimation strategies is the extent to which the models can account for unobserved variable bias. This bias occurs when the unobserved variables act as confounding variables and relate to uptake of treatment, the outcome, or both. Through careful selection of a rich set of observed variables helps make the argument that any unobserved characteristics are accounted for. Without a way to measure matching on unobserved variables, estimates may be biased and suggest a relationship between the treatment and outcome when in fact it may be due to issues of selection.

The time period of the available PSID dataset spans 1999 to 2015. During this time period the United States experienced a recession. The recession impacted the jobs available to young people as the number of jobs in typical high school part-time job areas like retail and food service (Sum et al., 2014; Staff et al., 2014). The recession also changed families' access to capital to pay for college and changed the way students and families made important decisions about work and college attendance (Heinz, 2014; Morisi, 2008; Staff et al., 2017). The findings from this study need to be discussed in the context of the recession.

Third, the calculated amount of time youth spent in various activities used in this study comes from time diary in PSID Child Development Study. There are limitations in how these data are collected from youth in the survey process that introduce potential measurement error. Youth are surveyed at a single time point during the traditional school year and are asked about their activities for a 24-hour period from a random weekday (Monday – Friday) and a random weekend day (Saturday – Sunday) in the previous week. This presents limitations as youth may engage in different activities during different days of the week which may not be reflected in the day that was selected at random by the survey program. In order to calculate weekly amounts, I then multiple the weekday amount by five and the weekend day by two, subsequently creating a potentially noisy variable that may not be fully representative if we were to ask the youth to produce a time diary for each day of the week.

Finally, due to potential issues with power, I am not able to explore all of the heterogeneous effects rather am limited to gender and race/ethnicity for all white students and Black students. While these are included in the analysis, they may be considered exploratory rather than causal depending on the cell sizes for the various groups of interest. A further discussion of my sample and power are discussed in Chapter 3.

Summary & Organization

In Chapter 2, I provide an overview of Human Capital Theory and Kinscripts; time-use of high school students; the current literature related to paid work and unpaid household work; an overview of the benefits and tradeoffs of work as they relate to college; and a detailed explanation of my theory of action. In Chapter 3, I discuss the history and use of the PSID data set and the survey supplements that are used in this study. I then discuss my estimation strategies and their limitations.

CHAPTER 2: LITERATURE REVIEW

High school is a time of exploration where students learn about themselves, their interests, and talents in preparation for their next stage in life. While in high school, parents, teachers, and counselors encourage students to consider their future plans, including enrolling in college, entering the workforce, or joining the military. Students' families, academic experiences, and activities outside of school shape their post high school plans. The activities that students choose to engage in are influenced by familial circumstances, their interests, and future plans.

In this section, I provide an overview of my theoretical framework: Human Capital Theory and Kinscripts. These theories undergird my research study to provide an understanding of the reasons for engaging in work (Human Capital Theory) and why the influence of work is predicted to differ across groups of students based on cultural and demographic characteristics, such as income (Kinscripts). From there, I give an overview of the ways in which high school students spend their time and discuss the ways in which time use studies related to work are conducted. Next, I discuss the existing literature on paid work and unpaid work. I highlight research focused on educational outcomes. I then shift to a breakdown of the benefits and trade-offs of students participating in paid and unpaid work. I further connect the benefits and trade-offs with the literature as they relate to the college admissions process. Finally, I provide a detailed discussion of my theory of action (Figure 2.1) demonstrating the conceptual connection between the theoretical framework, the treatment of three distinct types of work: 1) paid work, 2) unpaid household labor and 3) the combined total work between paid and unpaid household with the tow outcomes of interest 1)high school graduation and 2) college enrollment).

Theoretical Framework

Human capital theory and the Kinscripts framework guide this study. These two theories are used in conjunction to explain how students develop skills that lead them to different adult outcomes and explain the familial context in which decisions about work experiences are made. Human capital theory explains variation in labor market outcomes, where the level of skills and knowledge are considered the reasons why people, in this instance students, attain different levels of education. The ways in which students accrue human capital occurs through both formal education and informal educational experiences such as work (Becker, 1964, 1993). Both of these types of activities are necessary for explaining how human capital relates to this study.

Human Capital Theory

Human capital theory introduced by Becker (1964, 1993) suggests that there is an economic benefit (wages) to an individual's investment in training and education. The role of human capital is widely popularized in the economics and social science literature around education and continues to grow (Becker, 1993). Becker finds that on average there are gains to average earnings by completion of both high school and college degrees, with the premium substantially higher for those earning a college degree (1994). While the investment produces gains in the long-run, students and families are subject to initial costs primarily by way of foregone wages (1994). Human capital is integral to the theoretical underpinning of this study for three main reasons. First, it helps us to understand why students, if given the choice, engage in work experiences. By doing so, they have the potential to increase their human capital by building knowledge and skills that can be used later on in the workforce. Secondly, the way in which that work then influences their future educational outcomes via skill development. These skills can also benefit them in the college application as a mediator between the work and the

outcome of college enrollment. The alignment of the type of work that students perform and the skills students develop with their future goals moderate these outcomes. Finally, students' decision to attend college is another decision about whether or not they believe that earning a college credential is the appropriate choice to increase their human capital. This is especially important in the context of evaluating the opportunity cost of foregone wages. For students with work experience, they may already possess the necessary human capital to earn a reasonable living. While the decision to develop human capital is based on the rationale of increasing future earnings, the decision for a student to invest in certain human capital happens in the context of their family.

Kinscripts

In their landmark study, Stack and Burton (1993) interviewed hundreds of participants across a multitude of families in the southeast region of the United States. The majority of these participants were Black and low-income. Throughout their study, Stack and Burton (1993) delve into the daily experiences and minutia of how family members spend their time, the ways in which family members interact with one another, and the interdependent nature of families lives, especially at the time of transitions for individuals. Through their analysis, they developed the Kinscripts framework. Kinscripts is built on three assumptions: a) the plans for individuals and families are dependent on one another, b) these plans and experiences are influenced by multiple contexts including social, cultural, and historical, and c) family is not limited to blood relatives but is made up of all of those individuals who engage and act as if they are family.

Building on this, there are three main areas in which interactions among family members can be divided and understood: kin-work, kin-time, and kinscription. Kin-work refers to the required work and distribution of that work within a family. Kin-work is assigned out of cultural

norm and necessity, with expectations for children dictated based on the needs of the family. Kinscription refers to how kin-work is assigned within the family based on the cultural norms and who assigns work based on their relative role and power within the family. For instance, young children may be expected to care for other family members, without the ability to choose to take on this role or concern about the compromises they make in their own lives (Stack & Burton, 1993). Kin-time refers to the typical progression of life experiences that a family member is expected to follow.

The Kinscripts framework (Stack & Burton, 1993) provides a structure for understanding the varying expectations of how students spend their time and highlights that their decisions are not independent and thus have consequences on the family. Kinscripts provide insight to the differing expectations of students based on cultural norms. This challenges the dominant expectation that support flows from parents to children and acknowledges that students are not always in the role of child, but take on different roles depending on their families' needs. Important to this study, Kinscripts explains why a student is expected to take on household responsibilities such as serving as a caregiver even if this is by the white cultural norms this is seen as an adult responsibility. Additionally, this framework suggests that the decision to attend college is not a decision that solely affects the student. This can help to explain why students may decide to attend different types of institutions, stay close to home or not attend at all, if college is not in the best interest of those whose livelihoods are interdependent on the student. This framework is also used in recent higher education literature that explores the bidirectional relationship of financial transfers between college students and their families (Kinsley 2014; Roksa, 2019).

Time Use

In this section I provide an overview of the theoretical frameworks undergirding time use from both an economic and sociological lens. The adage "time is money" is widely used to suggest that time is a scarce resource with economic value. This notion stems from Becker (1965) in which time is first described as a scarce resource and is considered an input in the production of goods and services within the household (Duncheon & Tierney, 2013). This theory along with Coleman's (1961) zero-sum time model often undergirds the existing body of literature related to high school to time-use stems from estimates from national surveys on time use including The American Time Use Survey, Monitoring the Future, The Panel Study for Income Dynamics, and the Youth Development Survey, This approach acknowledges that students have limited time in a day and therefore, when a student participates in one activity they are taking away from time spent in another activity. This is of particular interest in the case of work, as this would suggest that because students are working they are taking away that time from other activities that could be contributing to their development (Coleman, 1961; Marsh & Kleitman, 2005). This perspective of time is commonly referred to as clock-time. Clock time and the assignment of time with a monetary value are inherent when trying to understand the relationship between time spent in certain activities and outcomes (e.g., academic, work force) to which an economic value can be assigned (Duncheon & Tierney, 2013).

The limitation of this approach is that it fails to account for the ways in which time is socially constructed and is a biased measure that does not appreciate the multiple other cultural and racialized perspectives of time. The societal expectations around time and time use are such that they perpetuate white supremacy (Jones & Okun, 2001). It is necessary to acknowledge the inherent whiteness of time and the extent to which "time use" is a function of white time (Mills,

2014). Simply asking the questions of how you spend your time, is built on the very assumption that those being asked had control of how their time was spent (Stack & Burton, 1993). While in the case of this proposed study, one may be easy to argue that for participants under the age of 18 the answer lies between the individual and their parent/guardian, that is to assume the freedom of the parent/guardian in their decision-making.

High school students have approximately 17 hours (NCES, 2007) outside of the school day that are dedicated to activities including sleep, studying, homework, extracurriculars, and self-care. On average, teenagers (ages 15 -17) spend a daily average of 300 minutes in school or studying, 46 - 58 minutes on paid work, 29 - 43 minutes on household work and caregiving , and 448 - 488 minutes on leisure activities including clubs/organizations, sports/exercise and volunteering (Wight et al., 2009). When these averages are disaggregated across race/ethnicity, parental immigration status and gender, we see clear differences in time use (Wight et al., 2009, Kofman & Bianchi, 2012; Obach et al., 2018; Wikle et al., 2018). Students of color, students of immigrants, and women spend more time on household related activities (Wight, 2009; Kofman & Bianchi, 2012; Wikle et al., 2018). Female high school students are the most likely to be employed, likely because of access to informal child care jobs such as babysitting (Hirschman & Voloshin, 2007; McLoyd & Hallman, 2018). The extent to which work experiences crowd-out or restrict participation in other activities is discussed in the section entitled “Benefits, Trade-offs, & College.” The studies discussed in the following sections, provide both descriptive overviews of how time is spent and then estimate correlational or causal relationships of time use to a multitude of outcomes. The topics of paid work and unpaid work are typically explored separately in the literature.

There is a single study that estimates the effects of both paid and unpaid work on college access. Using logistic regression to estimate college enrollment, researchers find that both paid and unpaid labor were associated with negative likelihood of college attendance (Obach et al., 2018). Importantly, there are different effects for men and women, with men suffering greater consequences of participating in unpaid work (Obach et al., 2018). Studying both types of work together is important given the gendered nature of work and clear gender differences in wage outcomes later on in life (Obach et al., 2018). There are clear limitations with this study including the use of data on high school students from 1988. The landscape of work changed over the past 30 years and the types of jobs, the number of hours students work, and the number of students who work is likely to have shifted (Staff et al., 2018). Furthermore, the design of this study is correlational and thus is limited in the ability to explain causal relationships between work and the outcomes of interest. Despite the limitations, this framing helps to underscore the importance of looking at the effects of paid and unpaid work in tandem for other groups with discrepant outcomes in adulthood such as those from low-income backgrounds or different ethnic/racial backgrounds.

Paid Work

Paid work is one activity that students may be engaged in outside of attending schools and engaging in school related activities. This section focuses primarily on the literature related to work while in high school and the impact on both high school outcomes as well as college enrollment. Additionally, I provide a brief discussion related to the empirical evidence of the effects of working while enrolled in college.

The decision to work is dictated by the existing laws, availability of jobs, interest, and necessity or desire to earn money. The type of student who works and the type and amount of

paid work they perform varies across demographics including race/ethnicity, socioeconomic status and gender. White high school students are more likely to be employed than their non-White peers, with estimates as much as 2.5 more times likely (Hirschman & Voloshin, 2007). White, middle-income students are more likely to work in part-time paid positions than their low-income, non-White peers (Greene & Staff, 2012; Staff et al., 2009). At first this may seem counterintuitive, as we expect low-income students to need the funds to support themselves or their family. While low-income students have more of a need to work (Entwisle et al., 2005; Staff et al., 2009), middle and high-income students have greater access to part-time jobs (Greene & Staff, 2012; Staff et al., 2009). In more affluent areas, high school students largely fill part-time positions in fields, such as retail and food service. White students are also more likely to have jobs outside of typical teen jobs in food service, retail, or blue-collar work, like stocking shelves in grocery stores (Hirschman & Voloshin, 2007). Rather, these students participate in less stressful and less physically demanding white and pink-collar work, such as office work, tutoring, and coaching (Hirschman & Voloshin, 2007). Access to jobs and those jobs that require less manual labor like white- and pink-collar jobs are a function or benefit of increased social capital from students' families (Hirschman & Voloshin, 2007; Mahadeo, 2018).

In contrast, part-time positions in higher poverty areas are likely to be filled by adults with lower levels of education (Hirschman & Voloshin, 2007). High school students compete with adult-age workers for these same positions that middle and high-income students readily attain (Hirschman & Voloshin, 2007; Staff et al., 2009). When students from historically marginalized racial and ethnic backgrounds and students from low-income backgrounds are employed, they typically work longer hours in retail and food service jobs (Greene & Staff, 2012; Hirschman & Voloshin, 2007; McLoyd & Hallman, 2018; Staff et al., 2009). It is

important to note that Black and Latin* students typically start working at younger ages and low-income students are twice as likely to use their earnings to help support their families (Bachman et al., 2014). The notion that low-income students work to help provide for their family is evidenced by decreased likelihood in food insecurity for younger children of high school-aged siblings who work (Hamersma & Kim, 2015).

Initially, the focus of work related studies was to understand if work during high school was increasing the likelihood of negative outcomes such as high school drop-out, alcohol use, and drug use. Using regression, several studies identify that high school work is related to a decrease in academic achievement and an increase in high school drop-out (D'Amico, 1984; Greenberger & Steinberg, 1986; Staff et al., 2009; Staff et al., 2020). Using instrumental variables, two studies exploit the exogenous nature of implementation of state level child labor laws and find that, in some instances with the passage of these laws, students worked additional hours and had higher rates of dropout (Apel et al., 2008; Tyler, 2003). The main limitation of these papers is their use of child labor laws as an IV will not account for the endogeneity of selecting to work in informal work such as babysitting or lawn care, which often happen outside of formal work environments.

Work is also identified as having positive benefits including, increased self-efficacy (Lee & Mortimer, 2009), academic achievement (Bachman et al., 2011; Monahan, et al., 2011), and college achievement (Hwang & Domina, 2017; Painter II, 2010). Using a similar identification strategy as Apel et al. (2008) and Tyler (2003), Lee & Orazem (2010) find that increases in the number of hours students work increases the likelihood of high school graduation but decreases the likelihood of college enrollment. Decreased likelihood of dropout is also identified using propensity score matching (Bachman et al., 2012; Lee & Staff, 2007; Monahan et al., 2011).

Working low-intensity hours are typically associated with increases in attending college and college completion (Hwang & Domina, 2017; Painter II, 2010); however, for students working in higher intensity positions, typically defined as above 20 hours per week, negative effects in these outcomes begin to show (Bachman et al., 2011; Hwang & Domina, 2017; Monahan et al., 2011). The strategy for measuring work using bands of hours is a limitation of the existing research on paid work experiences. It is important to note that the decision to use bands is often due to the nature of the survey data.

By grouping work into bands such as 0 – 10, 11 -19, and greater than 20 hours, this limits the variation of work hours in the models creating an ordinal treatment rather than a continuous. Work beyond 20 hours is described as intensive and the point at which work begins to negatively impact students' outcomes. Research Council (1998) identified 20 hours as the level of intensive work over two decades ago. However, since that time the nature of work changed dramatically with both a decrease in the number of hours students work and the number of students who work beyond 20 hours (Staff et al., 2018).

As previously discussed, work is relatively challenging to assign randomly, thus making correlational and quasi-experimental designs more likely to evaluate the effects of work. There are two examples of studies using random assignment to examine the impact of work on high school achievement. The first program randomly assigned youth who were previously involved with the juvenile justice system and whose parents had expressed an interest in their child learning a trade (Schaeffer, et al., 2015). Those in the experimental condition received intensive apprenticeship training (at least 100 hours over a 6 month time period) in the building arts. They also received academic support, employee skill training, and job placement services. Those in the control group had access to normal academic and vocational services through their public school.

Participants in the experimental group were more likely to attend GED coursework, but were not significantly more likely to graduate from high school (Schaeffer, et al., 2015). While these findings suggest positive results of work, this is a program that is targeted to a specific subset of teenage workers, who also received additional support services to promote educational outcomes, limiting the generalizability of the results beyond this specific population of youth.

The second experiment looks at a summer youth employment program in New York City in which youth are assigned to paid employment. In 2007, over 93,000 students ages 14 - 21 applied and 41,650 youth were randomly selected via a lottery to participate (Leos-Urbel, 2014). Participants in the program were more likely to be low-income and black compared to those served by the public school system. Participation in the program for one summer increased high school attendance the following year and increased the likelihood of passing state achievement exams by 11th grade (Leos-Urbel, 2014). Working during the summer is a markedly different experience than working during the school year, as students are likely not to face the same time constraints and requirements to balance school, homework, and work. This study suggests that work can positively impact students, however the design of the study does not lend itself to understanding how work functions during the school year. During the school year, teenagers face greater limitations on the hours they have available to work, whereas during the summer the teens in this study were not working. They did not experience the same decision-making process in terms of tradeoffs around required school activities and other extracurricular activities made available through school.

Paid Work in College. There are some important similarities of participation and the effects of working in high school and college, including negotiating how to spend time outside of course hours, the types of jobs students have access to, and who participates. There are also

important distinctions regarding the nature of work. First, class schedules are generally more flexible for college students than high school student, the vast majority college students are over the age of 18 and therefore not subject to any child labor laws, and being a college students opens up a new set of jobs through student employment at an institution, including Federal Work Study.

There are mixed findings on the connection between work in college and on outcomes like GPA, retention, and completion, importantly these findings vary depending on the type of work that students participate in. When looking broadly at work the effects of work in college using the National Longitudinal Survey of Youth 1997, work is shown to have an overall negative impact on completion, however the degree to which students are impacted depends on their propensity to work with those who have the lowest propensity to work experience the most detrimental effects (Choi, 2017). Using the same dataset Darolia (2014) finds that work negatively influences credits earned for students at 4-year institutions, but not students at 2-year institutions. The limited impacts on 2-year students may be related to their higher propensity to work (Darolia, 2014).

Some work experiences of college students are funded through the Federal Work Study (FWS) program. Through FWS, approximately 612,000 (FWS, 2019) received funding in the 2018- 2019 academic year. It is noteworthy that the formula for awarding FWS dollars to institutions is based on historic allocations not fully accounting for the changing institutional composition of students (Kenefick, 2015; Reimagining Aid," 2015). Furthermore, for a student to be awarded FWS they must be identified as having institutional need rather than based on family income or Pell eligibility thus biasing awards to colleges with higher tuition ("Reimagining Aid," 2015). These two aspects of the funding model has resulted in a higher

concentration of FWS recipients in the Northeast at private institutions than low-income (defined by Pell) students attending public 2-year and 4-year institutions in other areas of the country (Kenefick, 2015; Reimagining Aid," 2015). In studies estimating the impact of FWS, they that work study has limited to no impact on GPA (Scott-Clayton & Minaya, 2016; Scott-Clayton & Zhou, 2017) , but does benefit long-term outcomes around persistence, completion and employment (Scott-Clayton & Minaya, 2016; Scott-Clayton & Zhou, 2017). There are noteworthy differences across student demographics including negative academic impacts for women (Scott-Clayton, 2011) and those students who had a lower propensity to work (Scott-Clayton & Minaya, 2016; Scott-Clayton & Zhou, 2017).

There is a relatively unexplored tension between access to college and the Federal Work Study Program. Students who gain work experience while in high school are already less likely to attend college (Lee & Orazem,2010), for low-income students (likely those who would qualify for FWS) they are likely to work more hours and be Black or Latin* (Greene & Staff, 2012; Hirschman & Voloshin, 2007; McLoyd & Hallman, 2018; Staff et al., 2009). The tension comes from their likelihood to be admitted to the institutions with the most opportunities for FWS. These are concentrated at institutions of higher wealth, 4-year institutions, the places where students from low-income families and historically excluded racial and ethnic backgrounds are less likely to attend. And while having worked is not a precondition of receiving FWS, students are required to apply for these positions, suggesting that previous work experience may be a factor in them receiving the position and having the skills to balance work and school. So, working high school students who may be crowded out of high impact experience making them less competitive to 4-year institutions where they would in fact have the greatest likelihood of accessing a federal work study position.

Unpaid Work

Work performed by students within their family without pay is challenging to conceptualize. Does this work include daily chores, like cleaning the dishes or taking out the garbage, watching younger siblings, or providing care for adults? Kofman & Bianchi (2012) include each of these types of responsibilities as unpaid household work. While expectations may differ among families, it is important to understand the ways in which both high school and college students contribute to the maintenance of their family unit and the effects these contributions have on student outcomes (Changing the Tide, 2016; Goldrick-Rab, 2016; Kofman & Bianchi, 2012; Stack & Burton, 1993).

The idea of children growing up with household chores like yard work, taking out the trash, cleaning their rooms, and pet care is common place. This type of work is a way to promote independence and prepare youth for adulthood (Lee et al., 2003; Wikle, 2014). Using the American Time Use study of 15 - 17 years old youth, Wight et al., (2009) find young men typically perform 29 minutes of household work and caregiving a day and young women perform 43 minutes. The only significant predictors of time spent in housework are the education level of the mother and gender, with the number of minutes spent working is predicted to decrease by 9 minutes for students with mother's who hold at least a high school degree (Wight e al., 2009).

It is noteworthy that household work is already gendered by the time students enter their teenage years, with girls taking on more household work than their male siblings and peers (Coltrane, 2000; Kofman & Bianchi, 2012; Wikle et al., 2014). The differences across gender are apparent both across race and income level. For black students, 60% of girls perform household work where only 8% of black male youth. The difference in participation rates by gender for

Latin* and White youth are 36% and 2%, with female students performing more work. For students from families making less than $30,000, 31% of young men perform household work, whereas 79% of young women work in the home. For families making above $30,000, surprisingly the percentage of young men performing housework increases to 41% and women's participation decreases to 45%.

Students whose parents are recent immigrants to the United States also spend more time on household work. Female high school students of recent immigrant parents spend the most time on household work (Kofman & Bianchi, 2012) relative to both male students of immigrant parents and students of non-immigrant parents. The reasons why these differences exist by gender, race/ethnicity, and income are discussed in numerous qualitative studies across sociology and education. These studies demonstrate the importance that families and culture play in distribution of work, expectations of familial contribution, and college aspirations (Burton, 2007; Desmond & López Turley, 2009; Fuligni et al., 2007; Gilford & Reynolds; 2011; Goldrick-Rab; 2016; Hooper et al., 2012; Stack & Burton, 1993).

Youth Caregivers. Caregiving typically refers to providing unpaid, necessary care to help support someone in your family and may include responsibilities for younger, healthy siblings, and it importantly includes providing care for those with medical issues who are children or adults. It is estimated there are between 1.3 and 1.4 million youth caregivers (ages 10 - 18) in the United States (Hunt et al., 2005).

Of those providing care, it is estimated that 34% of youth caregivers are providing care for a parent, 38% for a grandparent, 11% for a sibling, 9% other relatives, and 8% non-relatives (Hunt et al., 2005). The duties provided by youth caregivers range from traditional household work like cooking and cleaning, to feeding and dressing, to medically related tasks like giving

medicine and attending doctor's visits (Hunt et al., 2005). Of those who are providing care, it is estimated that 60% of these youth live in households making less than $50,000 a year and that young women and men perform care at similar rates (Hunt et al., 2005).

The consequences of caregiving are relatively understudied in the United States, especially compared with places like the United Kingdom and Australia where extensive research in this field led to a wide array of social and legal support for youth caregivers (Kavanaugh et al., 2016). Few studies in the United States look at the impact of caregiving on school-related outcomes like attendance and performance (Diaz et al., 2007; Siskowski, 2006). In a national survey, 20% of caregivers self-reported that caregiving responsibilities kept them from attending school and 15% reported that it prevented them from doing schoolwork. In a survey of 11,029 students in Palm Beach County Florida, 49% of students reported assisting with health needs of a family member. Of those helping with care, 38.5% reported that it negatively impacted their schoolwork (Siskowski, 2006). Interestingly, students in 9th grade were more likely to help with care than those in 12th grade, suggesting that responsibilities change over time (Siskowski, 2006). Responses were similar across race/ethnicity (Diaz et al., 2007; Siskowski, 2006).

Benefits, Trade-offs & College Enrollment

In order to understand how work experiences impact college-going behaviors it is necessary to discuss the ways in which participating in work benefits and/or hinders students in the college application and admissions process. Through work, students have the opportunity to develop skills, including self-efficacy and time management. However, if students are spending their time working, the zero-sum model (Coleman, 1961) suggests that trade-offs must be made in order to accommodate those experiences. If students are participating in work, this means their

time to participate in extracurriculars and academics is reduced (Crispin & Kofoed, 2018). If students who work reduce their time in other extracurricular activities, to what extent does that harm or benefit them in the college application process?

Skill Development. In the previous sections on paid and unpaid work I focused on specific outcomes such as high school achievement, high school graduation, and college enrollment. While students' experiences in paid and unpaid work may contribute directly to these outcomes, these experiences could also contribute to skill building that may lead to such behaviors. If we were to ask a parent or job supervisor why a student should work, they might tell us so that students can develop skills like time management, soft skills like the ability to interact with people, or technical skills (Fuchs, 2015). These skills can be important mediators that help lead to positive outcomes in areas such as academic success, specifically in the context of this study, high school graduation and college enrollment.

The literature on the development of soft skills through high school work is mostly positive. Participation in paid positively affects autonomy (Barling et al., 1995; Finch et al., 1991; Fuchs, 2015); self-efficacy (Cunnien et al., 2009), self-esteem (Mortimer et al., 1992); time management (Briggs & Stern, 2001), and work ethic (Stone & Josiam, 2000). Paid work may also negatively affects a student's psychosocial development, if students experience stress at work. Workplace stress can lead to decreases in self-esteem and self-efficacy in students (Mortimer & Staff, 2004: Rauscher et al., 2013). Similar negative impacts occur when work creates a conflict with school roles and responsibilities leading to decreases in self-esteem (Barling et al., 1995). There is some evidence to suggest that unpaid work can also positively benefit students' self-efficacy (Riggio et al., 2010).

It is plausible that students could gain soft skills from their work experience, which would in turn increase students' human capital. Increases in human capital are suggested to benefit students in their ability to achieve desired educational outcomes (Becker, 1965). While this serves as the ideal process, it is unclear what types of jobs are able to produce these desired skills, as all jobs vary in quality and alignment with students' future education or career plans. There are concerns about the quality of jobs that are available to youth and the extent to which quality and relatedness to future career goals influences development of soft skills and academic outcomes (Lee et al., 2018; Rauscher et al., 2013).

Substitutions & Tradeoffs. The likely substitutes to work include homework, studying and participation in extracurricular activities. Students who work are predicted to spend less time on homework (DeLoach et al., 2014; Kalenkoski & Pabilonia, 2009; 2012). It is estimated that work crowds out studying and that every additional hour of work leads to a reduction of between 7 minutes and 39 minutes per day spent on homework. The three studies referenced use varying statistical methods (IV, Tobit, and conditional mixed process) with time diary data from the American Time Use Study Various statistical methods. DeLoach et al., (2014) suggest that the previous research underestimates work and that using state unemployment rates as an IV for paid work provides the most accurate estimates that for every hour of work, study time is reduced by 39 minutes. Given that work leads to a reduction in time spent on homework and that time spent in homework is predictive of college enrollment (Kalenkoski & Pabilonia, 2017), working students could be negatively impacted. This notion that work crowds out time studying, similarly applies to participation in extracurricular activities.

Students who participate in paid work experience a reduction in their likelihood to participate in extracurricular activities and on average spend 40 less minutes per day on

extracurricular activities (Crispin & Kofoed, 2018). This raises concerns as extracurricular activities are correlated with positive high school outcomes such as high school achievement, GPA, and college enrollment (Abruzzo et al., 2016; Feldman & Matjasko, 2007; Gibbs et al., 2015; Ransom & Ransom, 2018). Additionally, students who participate in extracurriculars are at a lower risk of dropping out of high school (Crispin, 2017). The tradeoffs that students experience need to be discussed in the context of the college application and admissions process.

College Admissions. College applications serve as a culmination of students' high school experience and demonstrate their overall development and preparedness to enter college. Institutions use a variety of criteria to determine if a student is prepared to attend their institution. It is important to understand the extent to which paid work, unpaid work, and the benefits of work are valued in the application process. Knowing that paid work reduces time spent in homework, studying, and extracurriculars, it is also necessary to understand how these substitutes are valued in the application process. If these substitutes hold greater value in the application process, then students who work will be disadvantaged in the admissions process.

During the college application process students are typically asked to list the activities (e.g., clubs, volunteer, sports, and paid work) with descriptions, the years participated, and the average time commitment per week (Approaching the Activities, n.d.) signifying to admissions counselors the significance of their involvement. When it comes to including measures of paid and unpaid work on the application, students do not always have the opportunity to do so (Weissbourd, 2016). Paid work is typically considered an extracurricular activity; however, it is considered of low importance when evaluating applications according to NACAC's most recent survey of college admissions officers (Clinedinst & Patel, 2018). As for unpaid household work,

this is rarely included as an extracurricular activity (Weissbourd, 2016) and is not even listed on NACAC's survey (Clinedinst & Patel, 2018).

Household labor and family contributions are rarely asked for or in a standardized way on college applications (Weissbourd, 2016). To date, there is no empirical evidence on how colleges use this data in their admissions process. In the annual survey of college admissions counselors and the importance of different criteria in the admissions process, household work or family contributions are not mentioned (Clinedinst & Patel, 2018). There is a national push for this information to be both asked and valued in the admissions process. The Making Caring Common Project out of Harvard Graduate School of Education recommends changing the application process to provide students with better opportunities to share their experiences related to family contributions and make it a more prominent part of the admissions process. They encourage institutions to both give students the space to share the extent to which they contribute to their households and encourage admissions officers to place value on this experience (Weissbourd, 2016).

Grades, rigor of coursework, and SAT/ACT score continually are listed as the most important factors in the application process according to admissions counselors (Clinedinst & Patel, 2018). Grades are considered an equalizer allowing students attending high schools from various qualities to still be fairly measured against one another. The use of high stakes tests are questioned based on the cultural relevance of the tests, as students from certain racial/ethnic backgrounds (White and Asian) and socio-economic status (high income) consistently out-perform other students (Zwick, 2007). Unfortunately, due to issues such as question wording, costs of tests, and cost of test preparation courses and materials, these tests have served as another barrier for students who are already facing other barriers to college. This is problematic

for working students if they are substituting their time to invest in academics through work experiences.

Extracurricular activities are considered of moderate importance to college admissions officers (Clinedinst & Patel, 2018). The decision to participate is not without constraints especially for those from low-income backgrounds and for students who work. Crispin & Kofoed (2018) find that working low-income students are less likely to substitute work for extracurricular activities, but rather are spending on average 15 minutes more a day in extracurriculars compared with their higher income working peers. This paradoxical evidence suggests that low-income students may have to do more to show that they are qualified for college (Crispin & Kofoed, 2018).

It is important to note that while this research suggests a difference in substitution based on income status, low-income students also have less access to extracurricular activities due to financial constraints (Bouffard et al., 2006; Feldman & Matjasko, 2007; Snellman et al., 2015; Stearns & Glennie, 2010). Additionally, students from low-income backgrounds are predicted to participate in fewer activities with a greater likelihood of that activity being a sport (Bouffard et al., 2006; Eitle & Eitle, 2002; Feldman & Matjasko, 2007). There are potential negative implications for the college admissions process if students are unable to participate or have limited participation.

For working students, there are aspects within the application process that may help to support and highlight their experiences. There is a growing trend of institutions employing holistic review (Bastedo et al., 2018). While there is not a singular definition of holistic review, it generally refers to a process by which the whole student experience, including their background, their experience, and quantitative measures, is taken into consideration to decide if the student

qualifies for admission. Holistic review policies come after decades of reliance on quantitative measures, which as previously described have negative effects on students of color and students from low-income backgrounds. The goal of these new policies is to promote access and inclusion and find new ways to value the experiences of students recognizing various experiences and backgrounds.

There are few recent studies from a simulated randomized control trial regarding the evaluation of low-income applicants and the use of holistic admissions (Bastedo, et al, 2018; Bowman & Bastedo, 2018). These studies demonstrate that context matters when evaluating students from low-income backgrounds. When admissions counselors were given more context about the high school that a low-income applicant attended, they were more likely to recommend this student for admission compared with counselors who did not receive information about the high school (Bastedo, et al, 2018).

In a second study from the same simulation, the authors try to identify the different meanings of holistic admissions and the ways in which different interpretations affect admissions decisions (Bowman & Bastedo, 2018). Their results suggest that there are three interpretations of holistic admissions: whole file, whole person, and the whole context. The first two highlight the need to consider all of the applicants' materials, with the whole person putting roughly equal emphasis on quantitative measures as essays and extracurriculars. Whole contexts review moves beyond what is available in the applications to an interest and understanding of how a student's family background and access to resources (in the home and at school) impact their outcomes. Admissions counselors who saw used whole context admissions had a broader understanding of educational disparities in K-12 and the role that plays in college preparedness. Using holistic admissions processes could benefit students who participate in paid work and household work, if

it suggests that these types of activities are valued and explain why a student may be weaker in other areas that are traditionally valued in the process.

Overall students who participate in part-time paid work and household work may be disadvantaged at multiple stages of the application process. First, their participation in these activities may crowd out their opportunity to engage in activities with greater value to admissions counselors (Clinedinst & Patel, 2018). Applicants are likely being evaluated on both their role in the organization and their sustained time commitment, furthering the connection to the measurable number of hours that students have available to participate. Next, in some instances applicants may not even have the opportunity to share their working experiences in any parts of the application process (Weissbourd, 2016). Finally, the students participating in intensive work are more likely to be students, including Black, Latin*, American Indian, and low-income students who are already disadvantaged in the college application process deepening the challenge for students to access more selective institutions.

Theory of Action

The above literature review culminates in a theory of action (Figure 2.1), which describes the anticipated relationship between participation in paid and unpaid work and the educational outcomes of interest. Starting on the left-hand side of the model, the pre-treatment characteristics influence a students' decision to participate in work and ultimately lead to students self-selecting into the treatment. The factors that influence participation are as follows: student demographics (Fulgini et al., 1999; Hirschman & Voloshin, 2007; Lee & Staff, 2007; McLoyd & Hallman, 2018; Obach et al., 2018; Stack & Burton, 1993; Wikle, 2014); family structure and finances (Bachman et al., 2014; Kofman & Bianchi, 2012; Lee & Staff, 2007; McLoyd & Hallman, 2018; Siskowski, 2006; Wight, 2009; Wikle 2014); student achievement (Monahan et al., 2011);

student aspirations (Bachman et al., 2011; Lee & Staff, 2007; Obach et al., 2018); and geography (Hirschman & Voloshin, 2007).

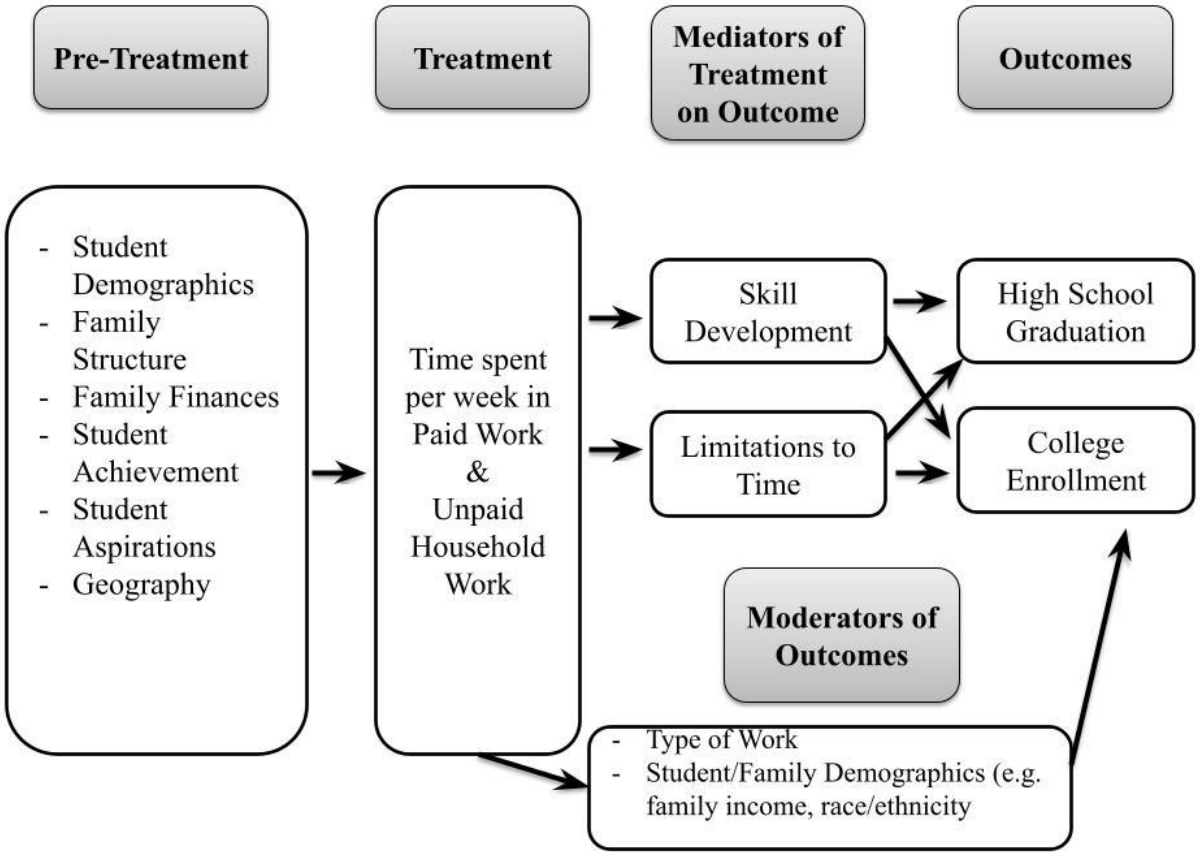


Figure 2.1. Theory of Action

After a student self-selects into work, the extent to which students experience the treatment is measured in weekly hours. For this study, I am interested in both the paid work that students perform and unpaid household work. Paid work includes participation in the formal labor market as well as participating in informal work such as babysitting and mowing lawns. Unpaid work includes household labor such as cleaning, cooking, grocery shopping, childcare and eldercare.

The way in which work then promotes (or hinders) college access is through two mediators: skill development and limitations to time. When students work they have the opportunity to develop and build skills. Participation in paid and unpaid work builds soft skills (Briggs & Stern, 2001; Cunnien et al., 2009; Fuchs, 2015; Rauscher et al., 2013; Riggio et al., 2010). The number of hours of work then leads to building skills and reducing students time in other activities. While students may be developing soft skills, participation in work also leads to limitations on students' time. Participation in work restricts time available to spend on other activities during the available hours in a day (DeLoach, 2014; Crispin & Kofoed, 2018). The limited experiences in these other activities can negatively affect behaviors that would benefit students in the college application process, such as time spent on homework (Kalenkoski & Pabilonia, 2014) and on extracurriculars is associated with higher rates of college attendance (Abruzzo et al., 2016; Feldman & Matjasko, 2007; Gibbs et al., 2015; Ransom & Ransom, 2018). The outcomes are also moderated by factors such as type of work and student family demographics. Student and family demographics are predicted to shift outcomes given that students perform work for different reasons, including out of necessity (Stack & Burton, 1993).

CHAPTER 3: METHODS

In order to determine how work is related to high school graduation and college-going behaviors, I employ two different estimation strategies: IPW and a DRF. While previous research highlights both positive and negative relationships between work and college enrollment, this research is often correlational and does not satisfy concerns of selection bias. The estimates from this study aim to provide a better understanding of how students' high school responsibilities and time use impact their educational outcomes. I propose to answer the following research questions:

1. How does participation in paid and unpaid household work during high school impact high school graduation and college enrollment?
2. To what extent do differences exist based on student demographics (e.g., gender & race/ethnicity)?

In this chapter, I first describe my research design and the rationale for using two different estimation strategies. Next, I provide an overview of the PSID and specify my sample and then discuss my models, including creation of my dependent variables (paid and unpaid work), my covariates, and my outcomes of interest. Then, I describe my plan for analysis and discuss potential limitations of the study. I end with a researcher subjectivity statement outlining my interest and position in studying this topic.

Data Source

The PSID is a federal survey used to capture information about the economic experiences of American families. Along with the base survey, there are several supplements to the base survey, which are implemented on a one-time or recurring basis depending on the supplement. This study uses data from the CDS and TAS supplements. The surveys are

administered via telephone and families receive an incentive of up to $60 in the years the survey is administered and $10 to update contact information in off years (McGonagle & Schoeni, 2006).

PSID History

The survey started in 1968 with the combination of two national surveys: the Survey Research Center survey (SRC) and Survey of Economic Opportunity survey (SEO). A sample for the existing SRC study was combined with the SEO survey which exclusively focused on low-income Americans to create a nationally representative survey based on the 1968 population. The survey was administered on an annual basis from 1968 through 1997. In 1997, the survey began being administered every other year.

National Representation

The PSID is considered to be a nationally representative survey with the adjustment of survey weights (McGonagle & Schoeni, 2006). The original 1968 sample was reviewed in 1997. Due to issues with cost, the number of families in the overall sample were reduced from 8,500 families to 6,168 families. At this time, an additional 511 families who immigrated after 1968 were added to the sample in order to reflect the changes in national demographics due to immigration (McGonagle, & Schoeni, 2006). While selective attrition is most common amongst low-income families, it is comparable to attrition in national cross-sectional surveys (McGonagle, Schoeni, Sastry, & Freedman, 2012; Shoeni, Bianchi, Hotz, Seltzer, & Wiemers, 2015). Additionally, the main survey switched from being collected every year to every other year to help reduce attrition. Most recently, the survey population was reviewed for its representation of children based on the 2007 sample and found to be representative of 97% of children in the United States (Duffy & Sastry, 2012).

In previous literature using data from the CDS and TAS the cohort is considered to be nationally representative when not adjusted using survey weights (Manzoni, 2018; McLoyd & Hallman, 2018), therefore no survey weights are used in this analysis.

CDS & TAS Supplements

Along with the biannual, main PSID survey, the survey includes periodic supplemental surveys on various topics. This study uses the Child Development Supplement (CDS) and the Transition to Adulthood Supplement (TAS). The CDS supplement started in 1997 with a cohort of 3,563 randomly selected children ages 0 - 13 from families who completed the 1997 main interview (Mainieri, 2006). The goal of this supplement was to better understand the experience of childhood across families. The initial survey wave, CDS-I, occurred in 1997, with two additional waves occurring every five years, in 2002 (CDS-II) and 2007 (CDS-III). By 2005, the oldest children in CDS- I (those ages 10 - 13) had aged out of the next survey as they reached the age of 18. Additionally, in 2014 a new wave of the CDS started that was opened to all children of parents interviewed in the main PSID survey. It is important to note that by 2014, no children from the original CDS-I cohort were included as they had all aged-out and were over the age of 18. All waves of the CDS include both parent and child interviews. All waves of the CDS include both parent and child interviews. Covariates are used from both child interviews and parent interviews.

Due to interest in adult outcomes, participants in the CDS (any wave) are invited to participate in the TAS biannually. To move from the CDS to the TAS a participant must have graduated high school or be over 18 and no longer in high school. For instance, a participant who is 19 and still in high school would remain in the CDS. The first TAS was conducted in 2005 and

then every two years since. I use TAS data from all waves between 2005 and 2017. In the section below, I will discuss how participants were identified for my sample.

Sample

The sample used for analysis consists of youth from two different cohorts of the CDS, the cohort that started in 1997 and the cohort who started in 2014. The initial sample of children in the CDS-I cohort started in 1997 with 3,563 children between the ages of 0 - 13. From the CDS-I cohort, I include any child in my sample who meets the following criteria:

- Participated in either CDS-II or CDS-III;
    - 597 never completed neither CDS-II nor CDS-III
- Participated in at least one TAS between 2005 and 2017
    - 329 never completed at TAS during this time period
- Were at least 13 years of age at the time of most recent CDS (CDS-II or CDS-III)
    - 575 were under 13

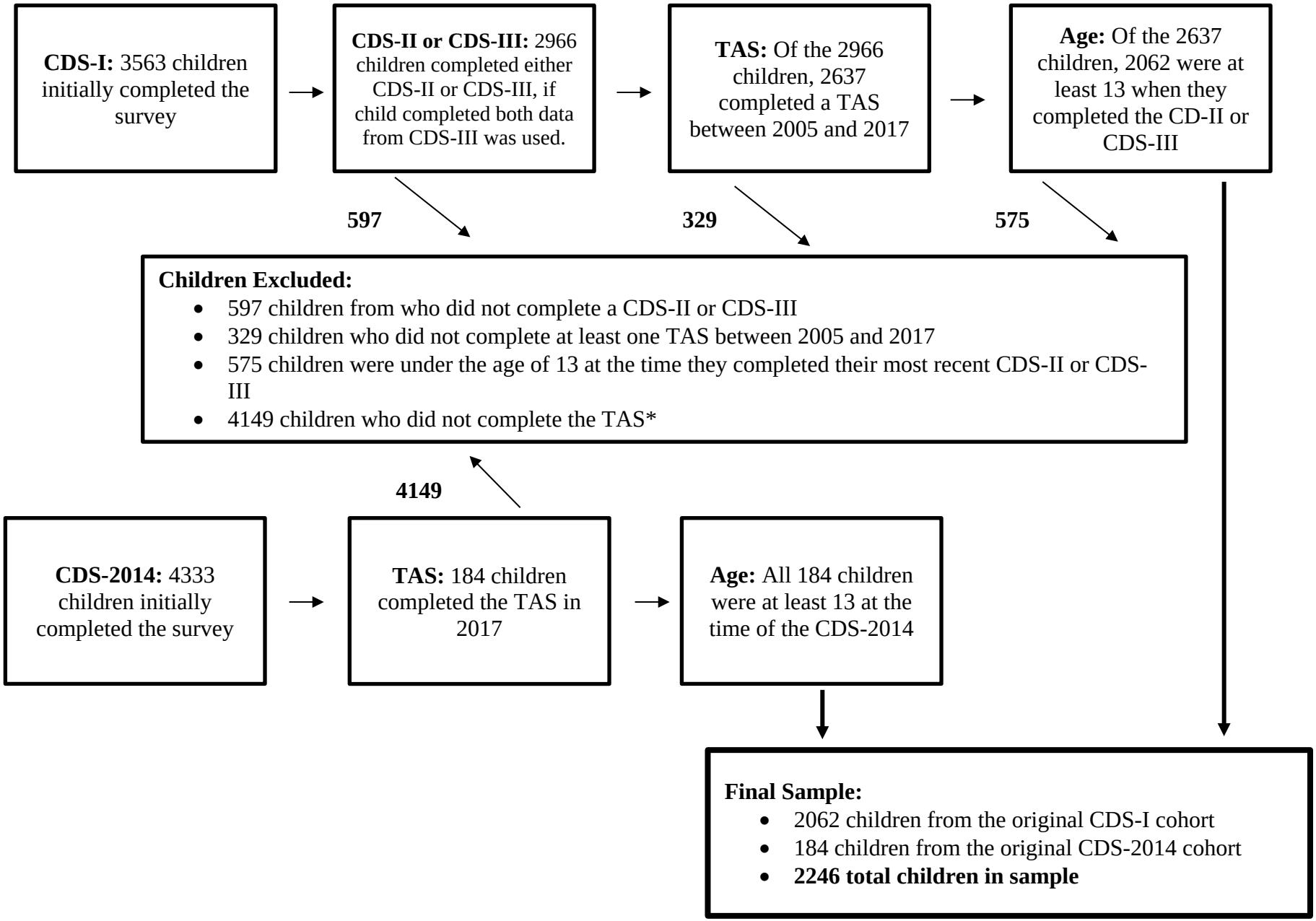
This resulted in a total of 2062 children included in the dataset, 57.9% of the original cohort from CDS-I.

Then in 2014 a new wave of the CDS started with a survey of 4333 of those only 184 met the following criteria to be included:

- Participated in TAS 2017
    - 4149 never completed the TAS
- Were at least 13 years of age at the time
    - All youth were of age

A visual overview of the sample is provided in Figure 3.

Figure 3.1. Study Sample



Treatment

From the time diary data in the CDS, I identify the type and amount of paid and unpaid work performed by students during the school year. In CDS-II, CDS-III, and CDS-2014 the survey participants are asked to complete time diaries about their daily activities. These surveys were conducted between September and March, so responses to time diaries questions were all based on days during the traditional school year and not summer months. Interviewers ask participants to list their activities by hour on one randomly selected weekday and one weekend day (Mainieri, 2006). For each wave of the survey a youth participates in they complete two diaries – one for the randomly selected weekday and one for the randomly selected weekend day. These time diaries provide insight into the lives of youth and how their time is used outside of the academic school day. The CDS currently codes all activities from the time diaries and created several categories. Time diary data provide an advantage above asking participants to estimate spent over a period of time such as a week or month (Fomby & Musick, 2018; Hofferth, 2006).

I calculate a weekly estimate of time spent in paid and unpaid labor. First, I re-code activities as either paid work or unpaid work based on existing coding themes in the data (Maineri, 2016). I plan to label Work and Other Income Producing Activities as paid work and Household Activities, Child Care, Obtaining Goods, and Help and Care to Others as unpaid work. I then calculated the total time spent per day in paid and unpaid work. In order to do this, I create a daily estimate for weekdays and then multiply this by five to estimate work totals for Monday through Friday and then I create a weekend estimate and multiply that amount by two to estimate weekend totals for Saturday and Sunday. I then add the weekday and weekend estimates to create a total time spent within each category per week. This procedure is consistent with previous literature using time diary data (Hofferth et al.,2018; Folbre et al., 2005; Fomby &

Musick, 2018). One limitation of using the time diary data is that compared with other time studies such as the American Time Use Study, time estimates may underreport actual time spent in activities (Wikle, 2014). I then create a measure of total hours worked that is the sum of the Paid hours work and the unpaid household work.

Binary Treatment. I also create binary variables indicating if a youth ever participated in the various forms of work. I create a variable for paid work in which a youth is identified with "1" if there hours of paid work was greater than "0". Using this same method, I also create an indicator for unpaid household work. I then create a measure of ever participating in either type of work, by indicating a youth whose hours for either paid work or unpaid household work were greater than "0". Those youth receive "1" and then youth who did not participate in either paid work or unpaid household work are assigned a "0".

Table 3.1. Treatment

	Mean	SD	Min	Max
Paid Work Ever	0.383	0.486	0	1.000
Paid Work (hrs.)	3.463	10.270	0	64.750
HH Work Ever	0.665	0.472	0	1.000
HH Work (hrs.)	3.344	5.545	0	49.250
Combined Work Ever	0.808	0.394	0	1.000
Total Work (hrs.)	6.806	11.421	0	79.083

Dependent Variables

This study estimates the effects of work on two outcomes: high school graduation and college enrollment. High school graduation is a binary variable indicating whether or not the student graduated from high school, those who earned a GED are not included in this measure. College enrollment is a binary variable indicating whether or not the student ever enrolled in a college. Enrollment during high school as a dual enrollment student is not considered as college

enrollment. I run separate models using three treatments (paid work, unpaid household labor, and total work) using two estimation strategies on two different outcomes (high school graduation and college enrollment).

Table 3.2. Dependent Variables

	Mean	SD	Min	Max
Graduate High School	0.789	0.408	0	1.000
Enroll in College	0.749	0.433	0	1.000

Covariates

In order to develop the matching model as described in the below GPS section, I use covariates from CDS-I and CDS-II . Matching covariates should both be predictive of the likelihood of working and my outcomes of interest (Caliendo & Kopeining, 2008). Below I outline variables I plan to use in the model including Demographics, Family Structure and Finances, Student Achievement and Aspirations, Psychological Measures, Geography, Time, Economic, and Household work only. Many of the demographics are time invariant and for those that are not they are measured in the earliest wave of the CDS. For example, if a student's high school work is measured in CDS-II, covariates are measured during the CDS-I. This prevents the covariates from being affected by the treatment. Table 3.1. Provides a list of the variables in each vector, along with the citations that support their inclusion in the model.

Table 3.3. Covariates by Vector

Vector	**Variable**	**Citations**
Demographics	Age (continuous)	McLoyd & Hallman, 2018; Siskowski, 2006
	Sex (binary); female (girls) is coded as "1"	Hirschman & Voloshin, 2007; Obach et al., 2018
	Race/Ethnicity (binary);Youth of Color are coded as "1." Youth of Color include all youth who do not identify as white.	Fulgini et al., 1999; Lee & Staff, 2007; McLoyd & Hallman, 2018; Stack & Burton, 1993; Wikle, 2014
Family Structure & Finances	Family Income (logged, continuous)	Lee & Staff, 2007; Wikle, 2014
	Primary Caregiver Employment (binary); coded "1" if the primary caregiver works	Wikle, 2014; Lee & Staff, 2007
	Primary Caregiver # of hours worked per week (continuous)	Bianchi, 2011
	Mom Married at Birth (binary); Coded "1" if the mother was married.	Lee & Staff, 2007; Wikle 2014
	Primary Caregiver Level Education Level (continuous); This is a measure of the years of schooling a parent received	Lee & Staff, 2007; Wikle 2014
	# of Children Living in Household (continuous)	
	Cultural Socialization – measure of the frequency families bring their youth to the museums and theatres	McLoyd & Hallman, 2018
	Youth Pays Bills for Family (binary); coded "1" if the youth contributes to the family's bills.	Bachman et al., 2014
	Savings for College (binary); coded "1" if the family or the youth indicated having any savings for college.	Hardy & Marcotte (2020).

Table 3.3. Covariates by Vector (continued)

Vector	Variable	Citations
Student Achievement, Motivation & Aspirations	Parent's Expectations of Child Education – scale of how far in education the parent believes the child will actually go. The scale starts with not graduating high school (1)l and goes through earning more than a 4-year degree (8).	Lee & Staff, 2007
	Student's Expectations of Their Future Education - scale of how far in education the child believes they will actually go. The scale starts with not graduating high school (1)l and goes through earning more than a 4-year degree (8).	Bachman et al., 2011; Lee & Staff, 2007; Obach et al., 2018
	Woodcock Johnson Tests of Cognitive Ability (continuous). This is a measure of the scaled scores adjusted for age.	Elliott II & Beverly, 2011; Kalenkoski& Pabilonia, 2017
	Self-Reliance – primary caregiver's measure of "how likely a child is to try things for himself/herself is self-reliant." Measured on a 5-point Likert scale.	McLoyd & Hallman, 2018
	Time Spent on Homework each week (continuous)	Crispin, 2017; Crispin & Kofoed, 2018
Geography	Rural Urban Continuum – measure of urbanicity based on the primary address of the child's family. Ranges for 1 being the most urban to 10 being the most rural.	Hirschman & Voloshin, 2007

Demographics. In the previous literature work, the amount of work students perform decreases between ages 16 and 18 (McLoyd & Hallman, 2018; Siskowski, 2006). Gender influences both the amount of paid and household work students perform and the type of work that is performed (Lee & Staff, 2007; Obach et al., 2018). Compared to young men, young women are more likely to work both in paid (Hirschman & Voloshin, 2007; Obach et al., 2018) and household work (Obach et al., 2018; Wikle, 2014, Wikle et al., 2018). When it comes to household work, women spend more time providing for their households than men. Race/ethnicity influences the likelihood of working with white students, working at a higher frequency in paid positions, and working in jobs outside of your typical retail, lower level jobs (Hirschman & Voloshin, 2007), however when students of color work in paid positions they are more likely to work longer hours and in more strenuous minimum wages positions (Hirschman & Voloshin, 2007; Staff et al., 2009).

Family Structure & Finances. I use several variables related to family structure and finances to control for differences in finances and access to capital based on responses in the 2002 CDS-II or 2007 CDS-III. Parental income is shown to be positively correlated with likelihood of working (Lee & Staff, 2007; Snyder & Dillow, 2015; Wikle, 2014), although if employed, low-income students are work a greater number of hours than their wealthier peers (Hirschman & Volshin, 2007). I am also including a binary indicator of whether or not the primary parent listed in the survey works and the number of hours the parent works each week. Furthermore, parental income and education level are associated with college enrollment (Hwang & Domina, 2017; Obach et al., 2018). Conversely, students from single parent households are less likely than those from two parent families to do paid work (Lee & Staff, 2007) but more likely to perform household work (Wikle, 2014). Cultural socialization, which is operationalized

in the PSID by the number of recent visits to museums and cultural events decreases the likelihood of working (McLoyd & Hallman, 2018). Finally, students from low-income backgrounds were more likely to contribute earnings to their families and those who contributed had lower college aspirations (Bachman et al., 2014).

Student Achievement & Aspirations. The student achievement and aspirations vector accounts for differences in educational achievement and ability, using several measures from the 1997 CDS-I and 2002 CDS-II. Parental and student aspirations for students' plans after college are important determinants of whether or not students work (Bachman et al., 2011; Lee & Staff, 2007; Obach et al., 2018). Interestingly, those students from low-income backgrounds who are interested in attending college are likely to work more than their higher income peers (Crispin & Kofoed, 2018). The CDS-I and CDS-II asks students educational aspirations, and there are parallel measures in the student survey. Academic achievement and engagement in school are both shown to decrease with intensive work (Monahan et al., 2011) or caregiving (Siskowski, 2006). Academic achievement is a key measure of college readiness and predictive of college enrollment. I use the Woodcock Johnson scores from three assessments (Letter-Word Identification, Applied Problems, and the Passage Comprehension) as a measure of academic performance which are shown to be predictive of high school achievement (Elliott II & Beverly, 2011; Kalenkoski& Pabilonia, 2017). I also include a measure of self-reliance, a predictor of work while in high school (McLoyd & Hallman, 2018). I will use McLoyd & Hallman (2018) definition of self-reliance, calculated based on the primary parent's response about the extent to which their child is able and interested in doing things for themselves. I include an estimate for the amount of time students spent on homework. The literature suggests that time activities

require trade-offs, so the decision to increase time spent in one area may lead to decreases in other areas (Crispin, 2017; Crispin & Kofoed, 2018).

Geography. The geography vector controls for differences across urbanicity (e.g., urban, suburban), an important predictor of the type of jobs available to students (Hirschman & Voloshin, 2007). Urbanicity is also associated with college access, with rural students less likely to attend college than their non-rural peers (Byun et al., 2012; Byun, et al., 2015). Additionally, rural students are less likely to attend selective institutions (Byun, Irvin, & Meece, 2015) and more likely to attend 2-year institutions (Byun, Meece & Aggar, 2017). I plan to use the Rural Urban Continuum Code, available in the restricted use data. The United State Department of Agriculture uses the Rural Urban Continuum Code to organize counties into either Metropolitan or Non-Metropolitan and then within each of those categories' counties are further identified based on size. This is a categorical variable with ten categories.

Sample Characteristics

In Table 3.4, I present the demographic characteristics for the covariates used in this study. The youth included in the sample is composed almost equally of females (50.2%) and males (49.8). In regards to race/ethnicity, youth who are Black and white compose over 90% of the sample with Black youth accounting for 44% of the sample and white youth 48% of the sample. While white youth are roughly representative of youth from the United States in the 2000 census at 50%, Black youth are over-represented in this sample as they only accounted for 15% of youth in the 2000 census (Child Trends, 2018). This overrepresentation is likely due to a concerted effort by the PSID to oversample for families from low-income backgrounds which resulted in a greater representation of Black families (PSID Interview Manual, 2021). Latin* families were highly underrepresented comprising only 3% of the sample compared with 17%

nationally. The average age in the sample was 15.4 years old. The average family income is $71,000. Importantly, when looking at income by race/ethnicity white families ($96,000) earn on average more than double that of Black families ($45,000). The average number of children in the family unit is 2.25. The average number of years of schooling for the primary caregiver is 12.84 (slightly more than a high school education), it is noteworthy that white youth's primary caregiver has on average one additional year of education than Black youth. Of the youth, 38% acknowledge that they or their families are saving for them to attend college, the percentage of white families (49%) saving for college is 20 percentage points higher than Black families (28%).

Table 3.4. Covariate Sample Characteristics

	Sample	Female	Male	Black	White	% missing
Demographics						
Age	15.39	15.40	15.38	15.43	15.39	0
Sex	--	--	--	--	--	0
Race/Ethnicity	--	--	--	--	--	1.2
Family Structure & Finances						
Parents Married	0.39	0.39	0.39	0.36	0.44	0.45
Kids in Family	2.15	2.18	2.13	2.24	2.05	0.71
Primary Care Giver Years of Education	12.84	12.76	12.92	12.45	13.43	16.7
Primary Care Giver Works	0.73	2.80	0.75	0.71	0.76	1.42
Hrs. worked by Primary Care Giver	28.56	27.63	29.54	27.94	29.70	43.46
Family Income (logged in model)	71245.01	71666.31	70826.34	45128.03	96976.27	0.58
Saving for College	0.38	0.40	0.36	0.28	0.49	6.99
Pay Bills for Family	0.18	0.18	0.17	0.24	0.13	15.63
Student Achievement & Aspirations						
Letter Word Score	103.14	103.82	*102.46*	*96.00*	*109.50*	11.22
Passage Comprehension Score	98.40	*99.55*	97.25	93.09	103.73	7.44
Broad Reading Score	99.44	100.92	*97.95*	*92.45*	*106.00*	7.21
Applied Problem Set Score	100.58	*99.58*	101.59	93.55	106.75	7.61
Hrs. Spent on Homework	12.58	13.44	*11.71*	*13.92*	*11.42*	15.05
Self-Reliant	4.45	4.49	*4.40*	4.53	*4.38*	8.46
Expectation of Future Education (Child)	5.31	*5.45*	5.18	*5.16*	5.46	6.5
Expectation of Future Education (Parent)	5.02	5.20	4.84	4.65	5.31	1.34
museum	1.56	1.85	1.59	1.57	1.88	8.46
theatre	1.72	1.60	1.53	1.50	1.63	8.73

Estimation Strategy

In this section I discuss my estimation strategy using two different approaches. First, I discuss the use of IPW and then the use of a dose-response function. In total, I run 36 of models that are outlined in Table 3.5.

Table 3.5. Study Models

Model #	**Estimation Strategy**	**Student Group**	**IV**	**DV**
#1	IPW	All	Paid work	Graduate HS
#2	IPW	All	Paid work	Enroll in College
#3	IPW	All	Household Labor	Graduate HS
#4	IPW	All	Household Labor	Enroll in College
#5	IPW	All	Total Work	Graduate HS
#6	IPW	All	Total Work	Enroll in College
#7	DRF	All	Paid work	Graduate HS
#8	DRF	Female	Paid work	Graduate HS
#9	DRF	Male	Paid work	Graduate HS
#10	DRF	Black Youth	Paid work	Graduate HS
#11	DRF	white Youth	Paid work	Graduate HS
#12	DRF	All	Paid work	Enroll in College
#13	DRF	Female	Paid work	Enroll in College
#14	DRF	Male	Paid work	Enroll in College
#15	DRF	Black Youth	Paid work	Enroll in College
#16	DRF	white Youth	Paid work	Enroll in College

Table 3.5 Study Models (continued)

Model #	**Estimation Strategy**	**Student Group**	**IV**	**DV**
#17	DRF	All	Household Labor	Graduate HS
#18	DRF	Female	Household Labor	Graduate HS
#19	DRF	Male	Household Labor	Graduate HS
#20	DRF	Black Youth	Household Labor	Graduate HS
#21	DRF	white Youth	Household Labor	Graduate HS
#22	DRF	All	Household Labor	Enroll in College
#23	DRF	Female	Household Labor	Enroll in College
#24	DRF	Male	Household Labor	Enroll in College
#25	DRF	Black Youth	Household Labor	Enroll in College
#26	DRF	white Youth	Household Labor	Enroll in College
#27	DRF	All	Total Work	Graduate HS
#28	DRF	Female	Total Work	Graduate HS
#29	DRF	Male	Total Work	Graduate HS
#30	DRF	Black Youth	Total Work	Graduate HS
#31	DRF	white Youth	Total Work	Graduate HS
#32	DRF	All	Total Work	Enroll in College
#33	DRF	Female	Total Work	Enroll in College
#34	DRF	Male	Total Work	Enroll in College
#35	DRF	Black Youth	Total Work	Enroll in College
#36	DRF	white Youth	Total Work	Enroll in College

Inverse Probability Weighting

The first strategy I use is IPW which is a type of propensity score modeling, allowing me to estimate how paid work, unpaid household labor, and a combined measure of both type's impact high school graduation and college enrollment. IPW allows me to match across a set of covariates creating similar groups who experienced the treatment compared with those who did not. The two main assumptions of using propensity score modeling approach are conditional independence and common support. Conditional independence means that, by controlling for a set of covariates, assignment to the treatment must be independent of the outcome and therefore assignment to the treatment is as good as random.

$$(Y) \perp T|X \quad (1)$$

Where the outcome, Y, is conditionally independent of assignment of treatment, T, where X is the vector of all observed variables (Hirano & Imbens, 2004). This set of covariates used in the model must meet the requirement of unconfoundedness. This notion of unconfoundedness refers to the concept that variables used to create the match sample cannot be directly affected by the treatment (Caliendo & Kopeinig, 2008). The second assumption of common support requires that the probability of being treated is positive (Hirano, Imbens, 2004).

$$0 < P(T = 1|X) < 1 \quad (2)$$

Where the P, the probability is between 0 and 1 when treatment, T, is equal to 1, where X is the vector of all observed variables. Without common support there may not be sufficient overlap in the propensity scores between those who received the treatment and those who did not. Without overlap, a matched sample cannot be created (Caliendo & Kopeinig, 2008). I closely follow the model put forth by Austin and Stuart (2015) to implement inverse propensity treatment weighting to establish causal estimate of the impact of ever having engaged in paid work, unpaid

work, and ever engaging in either. These models are designed to estimate the average treatment of effect of the treated individuals (ATT).

In the first step, I calculate the probability that each individual engaged in the treatment of interest (paid work, unpaid household work, and ever engaging in either) using the aforementioned covariates to predict the likelihood of treatment. Where *i* represents the individual youth included in the model.

$$\text{logit (Participation in Treatment=1)} = \beta_0 + \beta_1(\text{Demographics})_{(xi)} + \beta_2(\text{Family Structure})_{(xi)} + \beta_3(\text{Student Achievement})_{(xi)} + \beta_4(\text{Geography})_{(xi)}$$

I then check for balance to determine how well the balanced the treated group and untreated group is based on the covariates and the likelihood of experiencing the treatment. This balance check also demonstrates if there are covariates that the treated and untreated are statistically different. For each of the treatments, I see a reduction in the median bias of the covariates (Appendix A). After evaluating the balance, some observations were removed on the upper or lower end of the distribution to improve balance. For each of the models the following observations were removed:

- Models #1 and #2 - 15 observations were removed
- Models #3 and #4 – 2 observations were removed
- Model #5 and #6 – 14 observations were removed

In the second step, I create the weights based on the predicted likelihood of engaging in the treatment. I create ATT weights which allow me to estimate the average treatment effect on the treated individuals. I chose to estimate ATT weights as opposed to the Average Treatment Effect (ATE) this allows me to explore the treatment effect for those who were treated compared

to those in my sample who were not rather than estimating the effect of the treatment across the entire group. In my sample treated participants have a weight (*w)* of one (Austin & Stuart, 2015). To estimate the ATT weights, I use the following:

Treated individuals, $w=1$

Control individuals, $w=p/(1-p)$

In the final step, I then estimate the effect of the participating in the treatment on the outcome of interest using the weights developed in the second step. Using a linear probability model, I first estimate the naive models with the weights. I then add the covariates from the first step to estimate the impact of the treatment on the outcome of interest.

$$\text{Regression (outcome=1)} = \beta_0 + \beta_1(\text{Demographics})_{(xi)} + \beta_2(\text{Family Structure})_{(xi)} + \beta_3(\text{Student Achievement})_{(xi)} + \beta_4(\text{Geography})_{(xi)} \text{ [att weights]}$$

Dose Response Function

I use a DRF to estimate the association of paid and unpaid work on the outcomes of enrollment, distance, and graduation. This allows for estimation across a continuous treatment (e.g., hours worked) rather than a binary treatment. I use the *ctreatreg* developed by Cerulli (2012, 2015) which is ideal to use when 1) the treatment is continuous 2) there is an expectation that those within the sample will react differently to the treatment as various levels and 3) assignment to the treatment is endogenous. The assumptions of my model fit each of these criteria as 1) my treatment range for the amount of work (paid, unpaid, and combined) is between 0 and 100 2) previous literature explored above suggests that individuals will react differently to the treatment based on individual characteristics such as gender 3) selection into this treatment was not based on random assignment rather is self-selected based on cultural, familial, and individual characteristics of each individual, suggesting assignment to treatment is endogenous. Importantly this strategy accounts for instances where the treatment has a large

number of untreated cases at “0” (Cerulli, 2015) as is seen in the distribution of my treatments (Figure 3.2. -3.4.).

Figure 3.2. Distribution of Paid Work

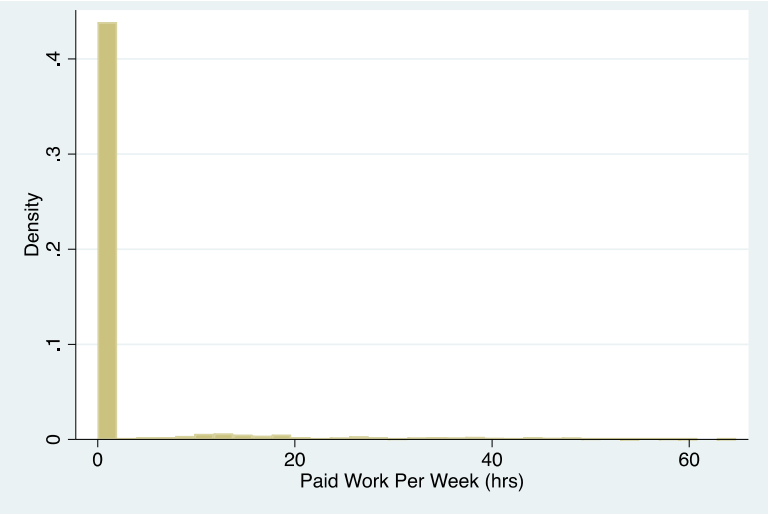


Figure 3.3. Distribution of Household Work

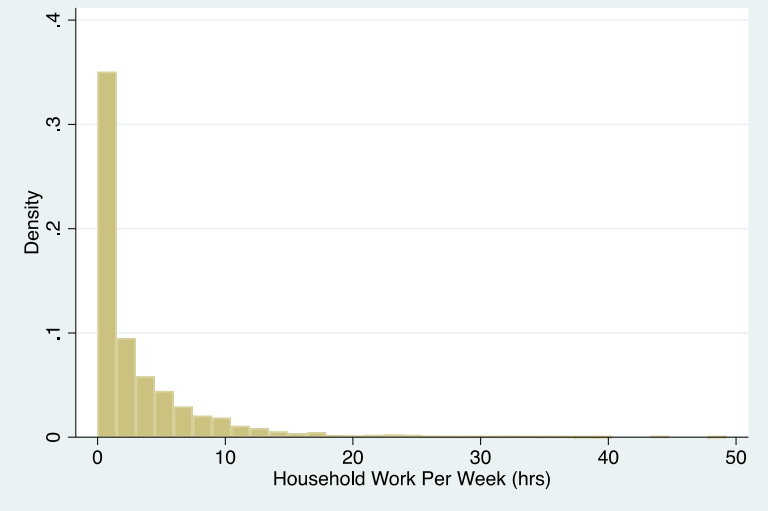
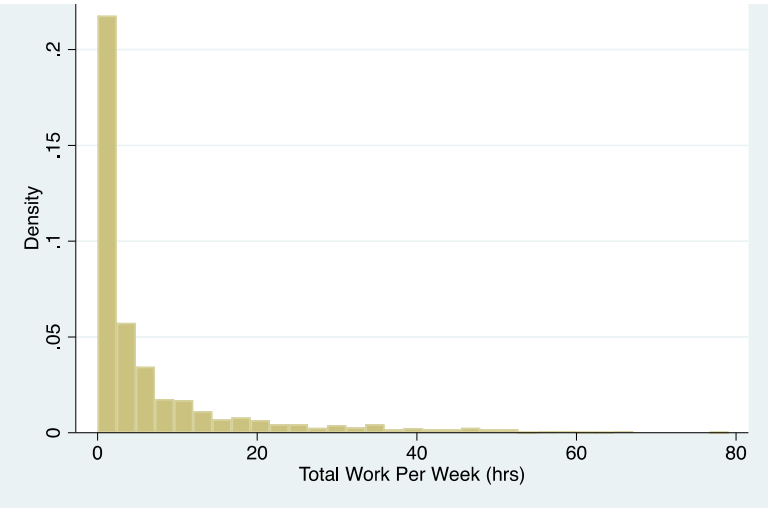


Figure 3.4. Distribution of Total Work



With this model, I am able to simultaneous estimate two functions one for the untreated using a binary measure of treatment and one for those treated using the continuous measure of the treatment. In this model *w* represents the whether the individual treated. The treated model includes the function h(t) of the response of the dosage of the treatment experienced by the individual, in this case the amount of time spent in the various measures of work.

$$w=1: \; y_1 = \mu_1 + g_1(x) + h(t) + e_1$$
$$w=0: \; y_1 = \mu_0 + g_0(x) + e_1$$

This results in a final model that estimates the average treatment effect using OLS where I include both an indicator of the binary treatment as well as the continuous variable of the treatment. I then estimate both whether or not the treatment has a significant association with the outcome and how the relationship varied across the dosage of the treatment individuals received or in this case the total number of hours they engaged in work. Importantly, I scale my treatment to be between 0 -100, so that maximum hours for each of the three treatments of work is scaled to 100 (i.e., 100% dosage). In each equation I include function to estimate the treatment given

previous research suggesting that the relationship between work and student success outcomes is not linear (Hwang & Domina, 2017). By adding a cubic function, this also allow for the model to be fit with a quadratic function.

In order to test for significance of the model, I first examine the significance of the linear (parameter a), quadratic (parameter b), and cubic (parameter c) functions in the model. I then do a joint hypothesis to examine if the parameters are different from zero using the *test* command in Stata.

test Parameter a=Paratmeter b=Parameter c=0

If the resulting p-value is less than 0.05 then the relationship of the treatment on the outcome will be considered significant across all levels of the treatment.

Examining Heterogeneous Effects. In order to answer the second research question, I use the DRF described above to also examine the heterogeneous effects of the treatment by gender and race/ethnicity. I run separate models for males, females, Black youth, and white youth. Allowing for comparison of how the continuous treatment influences youth of these various subgroups.

Sample. I use the same balanced sample of youth as used for the IPW models. While this does not lend itself to causally modelling the relationship, it does provide a sample in which there is greater balance on pre-work characteristics of those included (Cerulli, 2021).

Limitations

There are a few important limitations of this approach. First, a main challenge or limitation with PSM and the DRF is unobserved variable bias or weak measures of key confounding variables. This occurs when the unobserved variables act as confounding variables

and relate to uptake of treatment, the outcome, or both. I am limited to the variables collected in the dataset and therefore do to have measures for variables that are related to both the uptake of the treatment, work including important cultural measures related to family structure, as well as covariates related to the outcome including academic measures like high school grade point average (GPA) and standardized college entrance exam scores like ACT or SAT.

Specifically, for the DRF approach, while this strategy may be used to estimate the causal impact that only holds when using a suitable instrumental variable (IV) as issues with endogeneity of the treatment cannot be fully overcome with the OLS model (Cerulli, 2015) . Given that I do not have an appropriate IV, these estimates are considered to be associations rather than causal in nature (Darling-Aduana & Heinrich, 2018).

Finally, the time period of the available PSID dataset spans 1999 to 2015. During this time period the United States experienced a recession. The recession impacted the jobs available to young people, due to decreases in the availability of jobs typically filled by high schoolers, like retail and food service jobs (Sum et al., 2014; Staff et al., 2014). The recession also changed families' access to capital, reducing accessible funds to pay for college and changed the way students and families made important decisions about work and college attendance (Heinz, 2014; Morisi, 2008; Staff, et al., 2014).

Researcher Subjectivity Statement

I came to this topic after spending years engaged in college admission's applications review as part of an honors program, selective scholarships and fellowship programs, medical school, and graduate school admissions. During this time, I read the narratives and in interviews heard the stories of youth and early adults as they struggled to balance familial responsibilities (e.g., caring for disabled parents, watching you siblings or their own children) and the

requirements to work in minimum wage jobs while in school. The experiences of these individuals were often evaluated against high school and college students who had remarkable experiences including working in research labs while in high school, running non-profit organizations, or even the more common experiences of playing on athletic teams or engaged in student government. I saw more of these stories expressed in Goldrick-Rab's (2016) *Paying the Price* where she details the experiences of scholarship recipients many of whom have vital responsibilities to their family or financial need to work. In reflecting on my own experiences and that of my families, both my parents started working in their early teens - my mother for her father's small business and my father on local farms and in construction. College was always at the forefront of the expectation they had for me even though neither attended. Yet while in high school during the academic year, I spent my afternoons and evenings working in service jobs and babysitting and all of my summer the same way. I felt like I had agency in the choices I was making, although unaware that peers in the college application process were likely spending their time in different ways, including internships, research, and working at white -collar family-owned businesses. In exploring this topic, I think it is important to acknowledge the privileges that have and hold being a white cis-gendered woman, coming from a middle-class and my experiences have shaped my interest and understanding of this research.

Summary

In this chapter, I start by providing the history of the PSID and an overview of my sample from the CDS & TAS supplements. These supplements follow a cohort of children starting in 1997 through adulthood. Using the time diary data available in the CDS, I construct a continuous treatment variable of the number of hours students spent participating in paid work, unpaid

household work and combined total work. I use both IPW and a DRF to estimate the treatment effect of two educational outcomes: high school graduation and college enrollment.

CHAPTER 4: FINDINGS

In this chapter, I share the findings of the effects of paid work and unpaid household labor on student level outcomes. In the first research question, I examine how the three treatments influence high school graduation and college enrollment. For the IPW models, my treatments are binary as to whether an individual has ever engaged in paid work, ever engaged in unpaid household work, or ever engaging in either. For the DRF models, my treatments are the number of our hours engaged in paid, unpaid household work, and total combined hours in paid and unpaid household work.

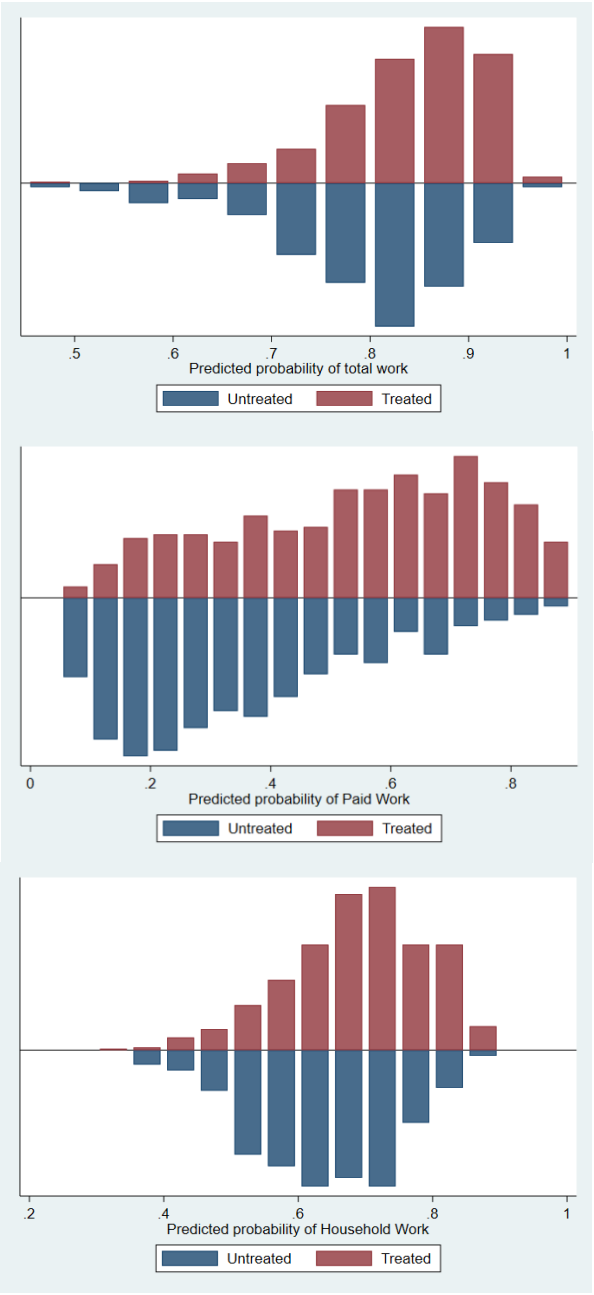
In the second question, I then explore whether or not different subgroups of youth experience heterogeneous effects from the three identified types of work on the outcomes of high school graduation and college enrollment. This chapter is structured as follows, I first discuss the results of the naïve model, next the IPW models, then the outcomes of the DRF models, and finally the results of the heterogeneous effects using the DRF models.

Inverse Probability Weighting

I ran six models (Model #1 - #6, see Table 3.4.)[2] using IPW in which I estimate each of the three treatments on the two outcomes of interest. For each of my models, the balance between treated and untreated individuals and the balance check on covariates are presented in Appendix A. I find that for each model, I have sufficient balance and the bias is reduced. I also fund that I have sufficient coverage between my treated and untreated units for each measure of work as shown below.

[2] Additionally, I ran these six Inverse Probability Weighting models in which I removed three covariates that had the potential to influence treatment – Youth Pays Bills for Family, Savings for College, and Self-Reliance. I also added quadratic and cubic terms for age. There were no changes in the statistical significance in these models as the ones presented in this chapter.

Figure 4.1. Coverage After Weighting



Naïve Models

I first estimate the naïve models without matching. I estimate two different sets of naïve models. For each set of models, I estimate six total models in which there are three different treatments (ever participating in paid work, ever participating in unpaid household labor, and ever participating in either paid or unpaid household labor) and two unique outcomes (high school graduation and college enrollment). The first set of models includes the full sample using a basic OLS regression with the full set of covariates. The second set of models include the matched sample and the ATT weights without the covariates. When looking at the relationship of ever participating in paid work on high school graduation and college enrollment, I do not see a significant relationship. This holds true when estimating the relationship between ever having participated in unpaid household labor and high school graduation and college enrollment. Finally, when looking to see if participating in either paid work or unpaid household labor has a statically significant relationship on high school graduation and college enrollment, the pattern is once again upheld.

IPW

I then run the IPW models on the matched sample that include all of the aforementioned covariates and the ATT weights. Results are provided in Table 4.1. with the coefficients followed by standard errors in parentheses. Similarly, to the naïve models, when looking at the relationship of ever participating in paid work on high school graduation and college enrollment, I do not see a significant relationship. This holds true when estimating the relationship between ever having participated in unpaid household labor and high school graduation and college enrollment. Finally, when looking to see if participating in either paid work or unpaid household labor has a statically significant relationship on high school graduation and college enrollment, I

do see a statistically significant effect on the likelihood of graduating from high school. I find that for those who engage in either paid or unpaid household work there is a 7 percentage point increase in the probability of graduating from high school. Within this model there are several significant covariates that are seen to influence the probability of graduating from high school. The likelihood of graduation is seen to increase with increases in family income, a primary caregiver who works, if the family is saving for the youth to attend college and the greater expectations a parent has for the amount of education their child will complete. Conversely, graduation is negatively influenced by the number of hours of the primary caregiver works, so while a working primary caregiver can support high school graduation for each additional hour they work in a week decreases that likelihood. Additionally, the number of children living in the household also decreases the likelihood of graduation. When estimating the impact of the same treatment of ever having participated in either paid work or unpaid household labor on college enrollment I do not find significant effects.

Covariate Significance

When looking across the models, there is clear pattern of covariates that are consistently significant. In all models increase in family income and the level of education a parent expects their youth will receive increase the probability of high school graduation and college enrollment. When looking specifically at the models predicting the likelihood of college graduation, I find that how far the youth believes they will go int their education also increases the likelihood of enrollment.

Table 4.1. Effects of Paid Work and Unpaid Work on High School Graduation & College Enrollment Using IPW

	Paid Work (std.)		Unpaid Household Work (std.)		Ever Participated in Paid or Unpaid Household Work (std.)	
	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment
Treatment	0.046	-0.005	0.042	0.011	0.070*	0.037
	(0.028)	(0.030)	(0.025)	(0.028)	(0.032)	(0.032)
Demographics						
Age	-0.011	0.005	0.001	0.010	-0.020	0.002
	(0.009)	(0.010)	(0.009)	(0.010)	(0.012)	(0.012)
Sex	-0.065*	0.019	-0.017	-0.048	-0.042	0.016
	(0.029)	(0.030)	(0.027)	(0.029)	(0.035)	(0.034)
Race/Ethnicity	-0.026	0.038	0.038	0.052	0.010	0.002
	(0.031)	(0.034)	(0.030)	(0.034)	(0.035)	(0.036)
Family Structure & Finances						
Parents Married	-0.017	-0.036	0.002	-0.003	-0.007	0.016
	(0.029)	(0.028)	(0.025)	(0.027)	(0.031)	(0.032)
Kids in Family	-0.007	-0.006	-0.037*	-0.023	-0.043*	-0.043*
	(0.017)	(0.017)	(0.015)	(0.015)	(0.021)	(0.020)
Primary Care Giver Years of Education	-0.002	-0.011	-0.001	-0.002	0.002	-0.001
	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.008)
Primary Care Giver Works	-0.001	0.149**	0.111*	0.077	0.119*	0.139*
	(0.009)	(0.056)	(0.044)	(0.055)	(0.047)	(0.054)
Hours worked by Primary Care Giver	-0.007	-0.001	-0.002	-0.001	-0.003*	-0.002
	(0.017)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Table 4.1. Effects of Paid Work and Unpaid Work on High School Graduation & College Enrollment Using IPW (continued)

	Paid Work (std.)		Unpaid Household Work (std.)		Ever Participated in Paid or Unpaid Household Work (std.)	
	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment
Family Income (logged in model)	0.046*	0.049*	0.050**	0.058**	0.063**	0.0713**
	(0.020)	(0.022)	(0.018)	(0.019)	(0.021)	(0.021)
Saving for College	0.031	0.020	0.077**	0.046	0.068*	0.0145
	(0.028)	(0.029)	(0.026)	(0.029)	(0.031)	(0.035)
Pay Bills for Family	0.042	0.008	-0.056	-0.004	-0.025	0.074
	(0.041)	(0.041)	(0.036)	(0.035)	(0.051)	(0.046)
Student Achievement & Aspirations						
Letter Word Score	0.000	0.003	-0.002	-0.001	-0.004	-0.008
	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)
Passage Comprehension Score	-0.001	0.004	-0.002	-0.007	-0.004	-0.009
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Broad Reading Score	0.002	-0.005	0.004	0.004	0.008	0.016
	(0.011)	(0.010)	(0.011)	(0.012)	(0.011)	(0.013)
Applied Problem Set Score	-0.002	-0.002	0.000	0.003*	-0.001	0.003*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hours Spent on Homework	0.000	0.002	0.002	0.002	0.001	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Self-Reliant	0.022	0.044*	0.023	0.007	0.001	0.006
	(0.022)	(0.022)	(0.017)	(0.017)	(0.020)	(0.020)

Table 4.1. Effects of Paid Work and Unpaid Work on High School Graduation & College Enrollment Using IPW (continued)

	Paid Work (std.)		Unpaid Household Work (std.)		Participated in Paid or Unpaid Household Work (std.)	
	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment
Expectation of Future Education (Youth)	0.018	0.056***	0.013	0.045***	0.014	0.041***
	(0.010)	(0.011)	(0.011)	(0.010)	(0.012)	(0.012)
Expectation of Future Education (Parent)	0.065*	0.051***	0.065***	0.052***	0.070***	0.054***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.014)	(0.013)
Cultural Socialization						
Museum	-0.044	-0.012	-0.013	-0.005	0.002	-0.002
	(0.020)	(0.020)	(0.017)	(0.018)	(0.020)	(0.022)
Theatre	0.014	0.003	0.008	-0.024	-0.020	-0.037
	(0.016)	(0.020)	(0.017)	(0.019)	(0.024)	(0.026)
Geography						
Beale Urban-Rural Continuum	0.010	0.010	0.010	-0.015	0.007	-0.018
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Constant	0.082	-0.834	-0.136	-0.864	0.163	-0.583
	(0.310)	(0.315)	(0.270)	(0.291)	(0.007)	(0.324)
R^2	0.263	0.314	0.268	0.313	0.312	0.342
Observations	844	844	858	858	846	846

Note. *p<0.05, **p<0.01, ***p<0.001

Dose Response Function

I use the DRF to explore whether or not there are non-linear associations between the number of hours students are engaged in different types of work on high school graduation and college enrollment. This models are considered exploratory and associative rather than causal in nature given the endogeneity of the treatment. As discussed in Chapter 3, these models simultaneously estimate the effect of the both the binary participation in one of the three types of work (paid work, unpaid household labor, and ever having participated in either) along with the continuous form of the variable in which paid work, unpaid household labor, and the combined time in paid work and unpaid household labor are measured in hours. Using the Stata function *ctreatreg,* I am able to estimate the relationship that utilizes a form of OLS. Importantly, each of the models also include a linear, quadratic, and cubic term allowing for the identification of whether or not the continuous variable is in fact significant. Each of the models includes the following terms that measure the various forms of the cubic function: parameter a (linear); parameter b (quadratic) and parameter c (cubic). I examine significance of the model in three part. First, I determine if the binary coefficient for working ever is significant. Then to determine if the continuous outcome is treatment of work (measured in hours) is significant, I examine if the parameters a – c are independently significant. Finally, I conduct a joint hypothesis to determine if parameters a -c are all different from zero. The results for these models are presented in Tables 4.2 and 4.3. Similar to the IPW findings, I run six models[3] on the full sample of individuals estimating the relationship between the three continuous treatments and the two outcomes of interest.

[3] Additionally, I ran these six Dose Response Function models in which I removed three covariates that had the potential to influence treatment – Youth Pays Bills for Family, Savings for College, and Self-Reliance. I also added quadratic and cubic terms for age. There were no changes in the statistical significance in these models as the ones presented in this chapter.

Effects on High School Graduation. When first examining the relationship between work paid work and unpaid household work on high school graduation, I do not find a statistically significant relationship for the binary treatment of ever having participated, nor the continuous measure of the number of hours a youth participates in paid work based on the results of the joint hypothesis test. When I combine the number of paid work hours with unpaid hours, I do find a significant relationship between the total hours of work and high school graduation on the binary treatment, suggesting that working in either paid work or unpaid household labor increases their likelihood of graduating from high school by 6.3 percentage points. However, when looking across parameters a – c, none of the functions measuring the non-linear relationship are considered significant, nor is the joint hypothesis test. So, while working ever does contribute to an increased likelihood of graduating high school, the number of hours does not change the likelihood of graduating.

Effects on College Enrollment. I then explored the relationship of the three types of work on college enrollment. My findings mirrored the findings for high school enrollment in that none of the types of work were identified as having a statistically significant relationship with college enrollment.

Table 4.2 Relationship between Work and High School Graduation using DRF

	Paid Work (std.)	Unpaid Household (std.)	Total Work (std.)
High School Graduation	0.033	0.025	0.063*
	(0.030)	(0.024)	(0.030)
Parameter a	0.001	0.009	0.008
	(0.005)	(0.005)	(0.004)
Parameter b	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Parameter c	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Constant	-0.052	-0.066	-0.110
	(0.256)	(0.242)	(0.252)
Adjusted R^2	0.207	0.208	0.223
Observations	733	786	774

Note. *p<0.05, **p<0.01, ***p<0.001

Table 4.3 Relationship between Work and College Enrollment using DRF

	Paid Work (std.)	Unpaid Household (std.)	Total Work (std.)
College Enrollment	0.000	0.017	0.057
	(0.029)	(0.027)	(0.034)
Parameter a	0.000	-0.003	0.000
	(0.005)	(0.005)	(0.005)
Parameter b	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Parameter c	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Constant	-0.852*	-0.693*	-0.831**
	(0.290)	(0.355)	(0.285)
Adjusted R^2	0.2512	0.254	0.2644
Observations	773	786	774

Note. *p<0.05, **p<0.01, ***p<0.001

Heterogenous

I explore the heterogeneous effects using DRF to explore whether or not the outcomes differ for various subgroups of youth including boys, girls, Black youth and white youth. Similar to the overall models shared above, I examine the relationship of the three work treatments (paid work, unpaid household labor, and ever having participated in either) on both the outcomes of graduating from high school and ever enrolling in college.

Paid Work. When examining the relationship between paid work and high school graduation and college enrollment for my four sub-populations (girls, boys, Black youth and white youth), I do not see any statistically significant effects for neither the binary term, nor the continuous variables for high school graduation. When looking at the relationship between paid work and college enrollment, I see that for white youth engagement in paid work ever decreases the likelihood of enrolling in college by 7.3 percentage points. When further examining if the amount of time spent in work is related to a change in the likelihood of college enrollment, I do not see a relationship. For girls, boys, and Black youth, I do not see a relationship between the binary term nor the continuous measure of paid work.

Unpaid Household Work. I then examine if there are any relationships between unpaid household work and high school graduation and college enrollment for the four subgroups. I do not see any significant relationships based on ever participating in unpaid household labor, nor based on the number of hours in which a youth participates for any of the subgroups.

Total Work. Finally, I explore the relationship between the total amount of work youth engage in and high school graduation and college enrollment. The binary term in this model identifies if a youth ever participated in either paid work or unpaid household labor. The continuous term, is the sum of paid work and unpaid household labor. When looking across the

four subgroups and their relationship with high school graduation, I first find that there is no relationship for neither the binary, nor the continuous term for girls. For both boys and white youth, I find that the binary term is not statistically significant, however all of the parameters for the continuous variable are independently considered significant. To test whether or across all three parameters they are jointly significant, I perform a joint hypothesis test. In both cases, I find that the joint hypothesis test is not significant, therefore suggesting that there is not a relationship between high school graduation and the total number of hours a youth works for boys and white youth. For Black youth, I do find that ever participating in paid work or unpaid household labor is associated with a 10.7 percentage point increase in the likelihood of graduating from high school, however the neither parameter a-c, nor the joint hypothesis are significant suggesting that the number of hours a student works does not change the likelihood that Black youth graduate from high school.

When looking at the relationship with of total work and college enrollment, I first find that for girls, participating in any type of work is associated with a 9.5 percentage point increase in enrolling in college, however the number of hours worked is not significantly associated with any change in the likelihood of enrolling. Similarly, for Black youth, participating in any type of work is associated with a 13.6 percentage point increase in the likelihood of enrolling, but the number of hours does not influence the likelihood. For both boys and white youth neither the binary indicator of ever working, nor the total number of hours worked are associated with any statistically significant change in the likelihood of graduating.

Table 4.4. Heterogenous Relationship Between Paid Work and Youth Outcomes Using DRF

	Girls		Boys		Black Youth		White Youth	
	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment
Paid Work	0.031	-0.013	0.048	0.015	0.052	0.089	0.010	-0.073*
	(0.036)	(0.041)	(0.037)	(0.043)	(0.042)	(0.050)	(0.031)	(0.037)
Parameter a	0.002	0.002	0.001	0.002	-0.005	-0.008	0.006	0.006
	(0.006)	(0.006)	(0.008)	(0.010)	(0.008)	(0.009)	(0.000)	(0.006)
Parameter b	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Parameter c	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.360	0.804 *	-0.487	-1.107*	-0.557	-1.192*	-0.182	-0.513
	(0.337)	(0.381)	(0.398)	(0.465)	(0.446)	(0.495)	(0.312)	(0.363)
Adjusted R^2	0.274	0.237	0.179	0.257	0.224	0.249	0.234	0.285
Observations	414	414	359	359	334	334	418	418

Note. *p<0.05, **p<0.01, ***p<0.001

Table 4.5. Heterogenous Relationship Between Unpaid Household Work and Youth Outcomes Using DRF

	Girls		Boys		Black Youth		White Youth	
	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment
Unpaid Household	0.008	0.041	0.029	-0.004	0.038	0.050	0.041	0.013
	(0.033)	(0.037)	(0.036)	(0.042)	(0.041)	(0.046)	(0.030)	(0.035)
Parameter a	0.003	-0.007	0.004	-0.001	-0.008	0.001	0.008	0.001
	(0.006)	(0.006)	(0.012)	(0.014)	(0.011)	(0.012)	(0.006)	(0.007)
Parameter b	0.000	0.000	0.000	0.000	0.001	0.001	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Parameter c	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.391	-0.580	-0.622	-1.039	-0.603	-0.899	-0.035	-0.384
	(0.316)	(0.355)	(0.381)	(0.444)	(0.420)	(0.470)	(0.304)	(0.357)
Adjusted R^2	0.263	0.242	0.193	0.265	0.235	0.235	0.229	0.271
Observations	422	422	364	364	339	339	424	424

Note. *p<0.05, **p<0.01, ***p<0.001

Table 4.6. Heterogenous Relationship Between Total Work and Youth Outcomes Using DRF

	Girls		Boys		Black Youth		White Youth	
	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment	High School Graduation	College Enrollment
Total Work	0.057	0.095*	0.045	0.017	0.107*	0.136*	0.018	-0.001
	(.041)	(0.047)	(0.042)	(0.050)	(0.048)	(0.053)	(0.039)	(0.045)
Parameter a	0.004	-0.001	0.020**	0.010	0.005	-0.001	0.013*	0.005
	(0.005)	(0.006)	(0.008)	(0.009)	(0.007)	(0.008)	(0.005)	(0.006)
Parameter b	0.000	0.000	-0.001**	-0.001	0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Parameter c	0.000	0.000	0.000**	0.000	0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.285	0.285	-0.546	-1.156	-0.640	-1.088	-0.123	-0.580
	(0.316)	(0.316)	(0.383)	(0.445)	(0.435)	(0.484)	(0.315)	(0.366)
Adjusted R^2	0.338	0.251	0.197	0.278	0.243	0.274	0.240	0.270
Observations	410	410	364	364	336	336	414	414

Note. *p<0.05, **p<0.01, ***p<0.001

Summary

I used two different strategies to estimate the relationship between three different types of work on high school graduation and college enrollment. Using the IPW models, I find that individually neither ever having participated in paid work or unpaid household labor has any effect on high school graduation or college enrollment. When I examine if a youth ever participated in either paid work or unpaid household labor, I do find that that those youth who participated are seven percentage points more likely to graduate from high school than those who did not participate. The relationship does not hold for college as there is no effect.

When exploring the relationships using the DRF model, I find a similar pattern when analyzing the full sample. Like the IPW models, the only model that I see a statistically significant relationship for is the when looking at youth who participated in either type of work on high school graduation. For these youth are 6.3 percentage points more likely to graduate from high school. In this model the binary term, similar to that of the IPW model is significant. However, the continuous term that accounts for the number of hours a student participates in both paid work and unpaid household labor is not, suggesting that the number of hours do not impact the likelihood of graduation rather only the act of participating influences likelihood of graduation.

Finally, when using the DRF to explore the heterogenous effects of work for girls, boys, Black youth, and white youth, I find some noteworthy trends. First, ever participating in paid work for white youth is associated with a 7.3 percentage point decrease in the likelihood of enrolling, while once again the number of hours do not influence likelihood. For unpaid household labor, I do not see statistically significant findings for ever having participated, not the number of hours. Once again when looking at the combined models for paid and unpaid work, I

find that for Black youth ever in engaging in either type of work is associated with increases in the likelihood of graduating high school (10.7 percentage points) and enrolling in college (13.6 percentage points). Additionally, girls see an increase in their likelihood of enrolling in college (9.5 percentage points). For none of the model are the number of hours associated with any changes in the likelihood of graduating or enrolling.

When looking across all of the models, we see that when combining paid work and unpaid work into a single model this is associated increases for the overall sample in the likelihood of graduating from high school. Importantly, when we break down by subgroup, we see that the effects are most pronounced for Black youth.

CHAPTER 5: DISCUSSION

Undergirded by Human Capital theory (Becker, 1994) and Kinscripts (Stack & Burton, 1993), the aim of this research was to answer to further our understanding of the influence of paid and unpaid work on student achievement outcomes. Using data from the CDS and TAS, supplements of the PSID, I explored the following research questions using two different estimations strategies (IPW and DRF):

- How does participation in paid and unpaid household work during high school impact high school graduation and college enrollment?
- To what extent do differences exist based on student demographics (e.g., gender & race/ethnicity)?

This study adds a new layer of understanding around the relationship between different types of work and key student level outcomes. This study adds to the existing literature that suggests that high school graduation is not influenced by engaging in paid work (Bachman et al., 2012; Lee & Orazem, 2010;; Lee & Staff, 2007; Monahan et al., 2011). Importantly, other studies have not investigated these outcomes by subgroups, so this study provides initial evidence that these non-effects do also hold across some gender and racial subgroups of youth.

Previous literature also estimates differences in the likelihood of enrolling in college based on ever having engaged in paid work (Lee & Orazem, 2010; Obach et al., 2018), as well as outcomes based on the intensity of work hours, with those working lower numbers of hours having higher likelihood of college attendance (Hwang & Domina, 2017; Painter II, 2010). The relationship between work intensity and these outcomes shifts to become negative for students participating in higher intensity levels of work typically, often defined in the literature as above 20 hours per week (Bachman et al., 2011; Hwang & Domina, 2017; Monahan et al., 2011).

Unlike some of the previous studies, I do not see any evidence of differences in enrollment by engagement, nor work intensity, with the exception of white students who are less likely to enroll in college after participating in paid work. This is an important difference given that previous studies rely on retrospective estimations of how often a student participated in work often bucketed in groups of 10 or more hours, where this study uses time diary data allowing for a different type of modeling which measure of the number of hours that a youth work and the ability to use the continuous measure in the model.

Unpaid Work

Descriptive studies in the area of paid work continue to suggest that there are important descriptive differences between female youth and those from historically marginalized racial and ethnic groups including Latin* and Black youth (East et al., 2009; Wight, 2009; Wikle, 2014; Wikle et a., 2018). Furthermore, survey data suggests that students are experiencing hardship in high school due to this work, however no inferential or causal data suggests that engagement impacts student-level outcomes (Diaz et al., 2007;; Siskowski, 2006) at the high school level.

This study add a new contribution suggesting that overall, both for all students and subgroups of girls, boys, Black youth and White youth ever engaging in unpaid household labor, nor the number of hours is related to changes in high school graduation. So, while descriptive differences and self-reported evidence may suggest students are performing different levels of work and that is contributing negatively to their perceptions or experiences at school, this study initially suggests that those difference do not lend themselves to negative outcomes around high school graduation. Importantly, when considering the role that unpaid labor on college enrollment, Obach et al. (2009), find that engaging in unpaid labor negatively influences the odds of enrolling in college for the overall sample as well individually for boys and girls. I do

not see these negative effects for youth in my sample, even while controlling for a like set of covariates. Rather similar to the results for high school graduation, ever engaging in unpaid labor, nor the number of hours do not relate to likelihood of college enrollment. I posit that some of this difference may be due to the nearly upwards of 30-year difference in the time that youth in each study were coming of age and enrolled in high school in the data used. The time period may help to explain different household norms of work as well as expectations around college going behavior, given that between 1988 and 2017 the number of youth across the country increased (Hussar et al., 2020).

Combined and Total Work

When examining combined work, through the IPW model, I found that for overall students who had participated in either paid work, unpaid work, or both had a significant increase in their probability of graduating from high school. When looking across individual subgroups, I see a similar pattern for Black Youth. For college enrollment, while I do not see changes for the overall sample, once again Black youth and now also girls too, seem to be positively influenced in their likelihood to attend college. Previous studies have not examined the combined effects of paid and unpaid work, so this presents an opportunity to further explore how multiple responsibilities and engagements of students influence their outcomes around the transition from high school to college. This finding may suggest paid and unpaid work may limit the time students have for other engagements does not relate to negative outcomes, and in some instances is associated with a positive impact on high school graduation and college enrollment.

I initially identified that the relationship between work and the outcomes of high school graduation and college enrollment are mediated by skill development and limitations on time. While the previous literature suggested that engagement in work was likely to have negative

outcomes, my non-significant, non-negative findings, may allude to other factors that are ameliorating negative outcomes or even contributing to positive outcomes for high school graduation and college enrollment. Skills that are gained through working particularly those related to time management (Briggs & Stern, 2001) and self-efficacy (Cunnien et al., 2009; Riggio et al., 2010) may be positively contributing to the youth's overall development and spilling over supporting completing high school and enrolling in college. While it may have been helpful to have measures of these variables pre-work to use as additional controls, I believe that these may be alternate outcomes that if measured post-engaging in work could shed light on the ways in which those skills developed through work then further exploring the ways in which those skills related to the ultimate outcomes of interest around high school graduation and college enrollment.

As previously stated, the findings for this study differ from previous research suggesting that time spent in work not only has a significant relationship or effect, but in many cases that it would negatively influence student achievement outcomes. Understanding why this study differs from previous work can help to guide future conversations around policy and practice both at the secondary and postsecondary level. In the following section, I explore both methodological and empirical reasons for the non-significant findings. First, I discuss potential challenges presented by the data source and then power. Then, I reflect on my Theory of Action first presented in Chapter 1 to discuss alternatives to the presented theory.

Data Source. In interpreting the results from this study there are considerations to make around the limitations of this study. First, is the discussion of the extent to which this study is underpowered given that even with a relatively large initial sample size the various modeling strategies subset on that larger sample especially for the dose response function models which to

estimate if the number of hours that a youth engages in work is statistically significant, those youth must have a non-zero value of hours spent in work. A large portion of my sample experienced zero house in both paid work and unpaid household work, suggesting that those models are insufficiently powered.

Second, given that the previous literature suggests heterogenous experiences and subsequent effects of both types of labor for sub groups including gender and race/ethnicity these outcomes are challenging to explore with the existing and relatively small sample size. Furthermore, there is a need to investigate this effect with other racial and ethnic groups, especially those from Latin* backgrounds who descriptively have been shown to participate in increased amounts of household labor compared to their peers of other racial/ethnic backgrounds (Bianchi, 2012). There is also a missed opportunity to explore the intersection of gender, race/ethnicity, and socioeconomic status to understand how subgroups are experiencing this type of work. The PSID is the largest survey of this kind in the country and one of the only ones to include such an extensive collection of time diary data for youth. While other surveys including the American Time Use Survey may provide an alternative source of data in the instances that a youth is selected as the single family respondent for the time-use study and they are surveyed in a future iteration of the Current Population study to identify educational outcomes. Unfortunately, given the nature of the PSID survey including costs and the relatively stable pool of families involved it is unlikely that this issue can be overcome in the existing survey environment. Taking an intersectional approach will need to move beyond the initial conversation around the number of youth within each category to a deeper understanding of the ways in which some of the above described variables can truly measure the culture within family structures. This study was likely underpowered to be able to fully explore those effects.

Importantly, while I account for variables highlighted in the literature around rurality, race, and sex there are importantly cultural factors of families that influence decision-making around time (Burton & Stack, 1993). The cultural norms and expectations about the role of youth is not captured in the dataset, however previous qualitative work would suggest that familial norms especially for those families who come from historically marginalized racial/ethnic backgrounds and immigrant families have expectations that are different from normative white culture, but importantly are not homogeneous. Along with differences in the negotiations of and distributions of work and responsibilities there are different cultural values and experience with time. In the United States, we are reliant on what is commonly referred to as "clock-time" (Mills, 2014). This orientation towards time places value on scheduling, hours spent, and punctuality. These are features that have also been referred to as tenets of white supremacy (Jones & Okun, 2001). As they prioritize the commodification of time and the expectation that this is how time works rather than a more nuanced cultural approach to time. Within the United States, there are less valued orientations towards time that are more flexible in their approach, less concerned with punctuality and have a greater emphasis, collaboration, and engaging in multiple activities at once with people. This puts these individuals and families at odds with white cultural norms in the United States and therefore the time diary design in itself may not align with how that youth and their family is oriented towards time.

Finally, given the nature of how time spent on the activities of interest in this study are collected by the PSID there is the potential for measurement error. When youth participated in each wave of the CDS they were surveyed during a single time point during the traditional academic school year and are asked about their activities for a 24-hour period from a random weekday (Monday – Friday) and a random weekend day (Saturday – Sunday) in the previous

week. Given that students may engage in different activities during different days, for example they only work their part time job on Tuesday and Thursday, but were surveyed on a Wednesday, the diary may not truly be reflective of their engagement in various activities. While this is a limitation that may introduce error into these measures, these time diary data are still quite robust especially compared to measures that ask youth (and individuals) to estimate the average time spent on activities are a certain period.

Implications

Implications for Theory

Human Capital Theory and Kinscripts guided this study, and the findings lend themselves to further implications of these theories. Human Capital theory has sustained itself as one of the dominant theories for understanding investment in educational opportunities. A common critique around this theory is that it assumes rational choice behavior and the ability for individuals to assess the marginal benefits around engagement in education and training related activities and the ultimate payoffs towards their future economic outcomes (Klees, 2016; Tan, 2014). Becker (1993) acknowledges there is a connection between family and investment in education, albeit his remarks in the third edition are discriminatory and racist as this approach fails to acknowledge the systemic reasons why families make (are forced) to invest differently in educational opportunities. He writes,

> *Differences among ethnic groups in the United States are fascinating. Groups with small families generally spend a lot on each child's education and training, while those with big families spend much less. The Japanese, Chinese, Jews, and Cubans have small families and the children become well educated, while Mexicans, Puerto Ricans, and blacks have big families and the education of children suffers. (I should add that the Mormons are an interesting exception, for they have both very large families and high levels of achievement). It should come as no surprise that children from the ethnic groups with small families and large investments in human capital typically rise faster and*

> *further in the United States' income-occupation hierarchy than do children from other groups.*

Based on racist and unsubstantiated evidence around family size, Becker (1994) struggles to elucidate the power of culture in decision-making around education. Importantly, he does not acknowledge that even if families across various ethnic backgrounds had the same size families they would not be able to invest the same amount towards an individual child. Due to a history of exclusion, systemic racism, and anti-blackness the wealth gap is steep between various racial and ethnic groups, with the median wealth for white families being $188,000 compared with $24,000 and $36,000 respectively for Black and Latin* families (Bhutta et al., 2020). When employing Human Capital theory in higher education research we need to account for the fact that historical and current inequities will change the marginal outcomes that one can anticipate from an investment (individual or family) in education and that the accessible resources (financial and time) that are available vary for these same reasons. Approaching Human Capital theory through a cultural or color-blind lens or similarly problematic in Becker's case (1994) without consideration for the systemic barriers and injustices imposed by white supremacy on Black, Latin* and other families of color.

The incorporation of kinscripts in this study served to provide the missing pieces around familial culture and nuance that is not captured through Human Capital Theory. Given that this study was only able to look at heterogeneous effects around Black and white students the theory provided the needed contextual understanding, however to further explore differences among other racial/ethnic groups it would be important to gain a similar understanding of those groups' orientation towards and allocation of familial responsibilities. While there may be overlap in the ways in which historically marginalized groups differ from normative white culture, it would be inappropriate to think of these groups as homogenous in terms of their cultural norms.

While Kinscripts has been applied in a handful of other studies coming from higher education (Kinsley 2014; Roksa, 2019), I see an opportunity to continue extending this theory and other like theories focused on family dynamics into our field. Families play an integral role in the decision-making and college access (Perna, 2006) along with student success (Roksa & Kinsley, 2018). Keeping the connection between students and their families at the forefront of theories that guide our understanding around student choice, time allocation, and aspirations allow for creator nuance amongst students of various backgrounds helping to support not only understanding, but policy and practice for success.

Implications for Policy and Practitioners

This study's limited findings are still pertinent to current work from policymakers and practitioners around career and college readiness. Particularly when thinking about the opportunities that are available to high school students in preparation of career and college and the decision-making around which types of activities are accessible and relevant to engage. The expectation that most career pathways would require an education beyond high school is not new or novel at this point in time, however there are still gaps in opportunity for some post-high school pathways for students for historically marginalized racial/ethnic groups, students from low-income families, and those from rural communities. These sets of students are also those who are more likely to work longer hours in minimum-wage roles (Greene & Staff, 2012; Hirschman & Voloshin, 2007; McLoyd & Hallman, 2018; Staff et al., 2009). Given that policymakers ought to consider the ways in which high school preparation can account for the motivators behind working both to develop skills and to earn an income. One opportunity may be around the recent (re)emphasis around apprenticeships, internships, and other work-based learning in high school where students are engaging with employers in work settings to develop

hands-on skills that are needed to fulfill jobs within that field. The structure of these programs vary in terms of industry, time commitment, and importantly opportunities to earn an income.

For students that already have a propensity towards paid work, out of either interest and/or necessity may be the ideal candidates to engage in these types of programs when paid opportunities are available as we do not see negative effects of participation. There are still important considerations around equity to make in terms of who will have access to these opportunities and if there will be pressure for students of the aforementioned systemically and historically underserved to be encouraged to pursue these over other activities which may be more in line with traditional application and enrollment at selective colleges.

Shifting to think about the responsibilities of college practitioners, particularly those in admissions and advising there are clear opportunities to adjust considerations and process in evaluation work and unpaid household labor, In order to earn a credential, students must demonstrate their ability to be successful in the collegiate environment. This is true of both 2-year and 4-year institutions. While students who attend 2-year institutions, which are traditionally considered open access, may not face the admissions hurdle, they still must demonstrate proficiency in gateway subjects like math and English in order to gain access to the institution's curriculum. If they do not demonstrate academic readiness they must spend time (and money) in developmental instruction before moving on to college level coursework. For students planning to attend a four-year institution, access varies based on selectiveness of the institution. The acceptance rates at 4-year institutions vary with some public institutions accepting upwards of 90% of students to elite private institutions accepting as low as 5% of applicants (US News and World Report). Students applying to four-year institutions must submit application materials typically consisting of transcripts with courses and grades, summary of

extracurricular activities, letters of recommendation, and an essay. It is through this process students demonstrate their abilities, experiences, and accomplishments and college admissions officers determine if students are qualified to attend. Admissions offices have the task of reviewing students based on the application materials within the context of the student's life experience and available opportunities. Student achievement is not simply a representation of their own merit, but based on their experience within a complex educational and political system that is full of inequities and privilege viewed and the expectations around these responsibilities after transitioning to college. The college application process for the past several decades has relied on high stakes test scores like the ACT and SAT, high school GPA, and other quantitative factors to evaluate applicants. Researchers have highlighted the challenges of using these metrics and the ways in which they perpetuate inequality in the application process as bias in the tests leads to disproportionately lower scores for students from low-income backgrounds and students of color (Zwick, 2007). With the recent push for colleges to recruit and admit more students from diverse backgrounds there is a trend for institutions to be test optional, which allows applicants the option of not submitting ACT/SAT scores. Organizations, like Making Caring Common of the Harvard Graduate School of Education, are thinking broader in terms of changes to the application process. This includes advocating for college counselors, institutions, and parents to add an ethos of caring to the application process. One of their key recommendations is to promote "assessing ethical engagement and contributions to others across, race, culture and class" (Weissbourd, 2016, p. 9) in which college applications would provide opportunities for students to discuss the ways in which they contribute to their family (Weissbourd, 2016). Furthermore, this highlights that students, especially those from low-income backgrounds may not be able to participate in traditional service and community engagement because they are

required to contribute to their family by working for pay, caring for siblings, or are expected to take on other household responsibilities (Weissbourd, 2016). The disparate opportunities that high school students have to participate in and the ways in which admissions counselors prioritize opportunities that students from low-income backgrounds are less likely to have access to further disenfranchise low-income students in the application process. It is noteworthy that due to the continued impact of Covid-19, there has been an increase in the number of colleges who are going test-optional which will not require students to submit ACT or SAT schools (Glass & Tough, 2021). These include some of the most selective colleges in the country, it is unknown if this is a temporary decision or will remain permanent in the coming years.

For those serving in advising and coaching capacity on campus, staff must be equipped to have conversations around work and familial responsibilities to provide thoughtful and accurate information around course enrollment and career planning. As we know a growing number of students are working during college, the competition for time in students' schedules will not go away and as students transition into adulthood they may experience added financial and familial responsibilities. Not only do these individuals need tools around how to ask and navigate these questions, they also need to make sure that training is reflective of cultural competencies in this area.

Finally, practitioners and policymakers alike need to be attentive to the racialized expectations and experiences may be limiting the ability for students to bring their authentic selves to the high school and collegiate experiences. The sometimes obsessively narrow focus on progress and the future is inherently to whiteness and thus the conception of white time. This is fully embodied in the college application process to selective institutions in which students are required to document their "time use" over the past four years: listing off the ways in which they

prepared themselves for the moment admissions officers would review their application. Listing off the activities, the number of hours and the skills learned through these experiences. The structure inherently prefers those that are familiar and live on "white time" with their schedules cleared to engage in the activities of their choosing, the timing of those activities.

Future Research

The findings of this study point to further opportunities for further and more fully explore the experiences of students around work especially around extensions of the dataset, the methodology, as well as the further exploration using qualitative inquiry.

PSID & Time Diary Data

As immediate extensions of this study, further exploration is needed to understand the differences this study suggests for Black youth and girls when combining measures of paid work and unpaid work. Given that in 2014, a new cohort of CDS started, this presents an opportunity to follow a new and increased number of youth who in the coming years will start to have measurable outcomes around high school graduation and college enrollment. Given the larger sample size this may allowed for a more highly powered study into the investigation of these subgroup effects.

Additionally, given that work did not impact college going behaviors overall, I think it is worthwhile if it changes where youth attend including measures of distance from home along with the sector of institution (2-year or 4-year) and the overall selectivity of institutions. Additionally, I while I looked at whether or not a student ever enrolled, it would also be interesting to explore attendance at various time points including immediately after high school.

While time diary data and in particular the PSID have been well utilized in other fields specifically sociology and economics, there is a more limited use in education and the field of

higher education. In particular, time diary through the CDS data of youth provide us with a wealth of information around the engagements of youth in the formative years before transitioning into postsecondary education and/or work.

Beyond the aspects of the dataset that I used for my study, there are measures around extracurricular activities, sports, and volunteering that may be useful when understanding proximal outcomes around high school success and longer-term outcomes around college completion and engagement in the labor market. There is also the opportunity to link individual students to the high school they attended and match those data with high school characteristics. This would be valuable in exploring how differential experiences in high school and high school type influences participation and outcomes. We know that high schools' experiences across the country are not the same with differences in areas such as high school structure, neighborhoods, teachers, course offerings. To be able to investigate this further would allow for a deeper nuance in the evaluation as the current study makes the assumption that the high school experience of those in the dataset is universal. Importantly, the expansion of the CDS in 2014 to include all children of families in the PSID allows for greater representation and the opportunity to investigate interactions and differential impacts around children living in the same household. Recent studies have suggested that sibling relationships have interesting implications for achievement (Goodman et al., 2019; Roksa et al., 2020).

Extensions of Dose-Response Functions

While the incorporation of econometric models and causal inference continues to strengthen in higher education there has been limited utilization of dose-response functions. The model used in this dissertation is one of several estimation strategies that approach treatments as continuous as opposed to binary. While my models did not identify differences, they illuminate

the non-linear relationship between treatments and outcomes which other models assume have a linear relationship as they do not account for differences in exposure of uptake. Closely related to this work, there is value in replicating this work in the postsecondary setting where we know a majority of students are working (HSBC Holdings, 2018), particularly those in community colleges (AACC, 2021). This would allow for us to find practices and policies that could support working students. Beyond the applications around work or the number of hours of activities there are opportunities to use DRF for other continuous treatments of interest in higher education, including number of courses (or credits), attendance or participation on particular services (e.g., advising sessions), or available financial resources (e.g., loans, scholarships). The use of DRF can point not only to significance differences, but identify points along the treatment where the predictive outcome changes direction or maybe no longer yields as strong of a return, pointing to opportunities to build and create efficiencies for students and postsecondary institutions.

Qualitative Inquiry

While considerations from the pandemic will likely be needed across research in most disciplines the findings in this study, pandemic aside, point to a need to greater understand the qualitative distribution of labor and decision-making amongst families regarding the responsibilities of youth and the opportunities for how they spend their time. The lack of variables in the dataset to fully account for cultural differences, could be explored in greater depth through qualitative research to further elaborate on family's orientation towards time, cultural expectations and the ways in which those intersect with gender and other demographics. Furthermore, given the critical importance of high school for future planning suggests that we could learn about the expectations as well as the barriers that may be preventing youth from engaging in formative experiences that support college and career readiness. In addition to

identifying barriers, the non-linear response to paid and household labor may suggest that at various points of time spent this type of participation is actually supporting student achievement outcomes. Qualitative inquiry would allow us to deepen our understanding of the types of skills students develop through these and importantly how those skills are applied both at the time of engagement and utilized later on in and in particular as they move into postsecondary education. It is possible that some students who have had substantial responsibilities in these types of work may have an advantage compared to their peers when it comes to managing the multiple demands of postsecondary education. Learning how students leverage their past experiences may also provide an alternative narrative to the value of work in these areas which has not traditionally been valued by postsecondary education,

Along a similar line of inquiry, a more robust understanding into the admissions process, particular at selective institutions may help us to uncover the perceptions, biases, and barriers to valuing this form of labor. Continuing the work of those studying the holistic admissions process (Bastedo et al., 2018), we could begin to understand how paid and household labor are considered in this process. It would be essential that this work attend to a varied groups including those from marginalized racial/ethnic groups, such as Black, Latin*, and American Indian, as well as families of various immigrant communities, and finally those from families of lower incomes and living in economically distressed areas. Each of these experiences is likely to shape perceptions around education, work and overall opportunity.

Covid-19

The need for investing in research in this area comes at a time in which we are still in the midst of the Covid-19 pandemic. During the past year the expectations and experiences around school and work have changed drastically, forcing families to redistribute labor and household

responsibilities given severe job loss, closing of childcare facilities, and shift to virtual schooling across K-12 and postsecondary.

Local and national news stories have highlighted stories of high schoolers taking on new or additional paid work opportunities when parents or family members have lost jobs, been unable to work due to contracting Covid-19 or because of childcare responsibilities suggesting this will have an impact on their decision to enroll (Glass & Tough, 2021). Additionally, we have heard of the high schoolers who are attending school virtually while also caring for younger siblings who are also in virtual school or home due to daycare closures while family members continue to work. The extent to which these shifts in responsibility is largely unknown outside of the anecdotal stories that have been covered. The experiences of these students and their families are important to understand as the country moves into recovery. How the pandemic shifted work responsibilities is likely to have implications for youth's future educational outcomes, opportunities, and ultimately earnings. This work is likely to be explored qualitatively allowing for students and families to share and express their individual experiences. Beyond this, the PSID was also in the midst of data collection during the onset of the pandemic. There is the potential that some data collected through this work could illuminate the shifts in responsibility through time diary and survey data.

Conclusion

The Covid-19 pandemic drastically shifted the lives of those living in the United States and in particular youth who are transitioning into adulthood. Their familial responsibilities, learning environments, and opportunities for extracurricular engagement created a new reality around secondary and postsecondary expectations and preparedness along with the financial outlook for youth and their families. The experiences and preparation that students receive

during high school are paramount in the ways in which they will approach and succeed in postsecondary opportunities and careers. Findings from this studies and other similar studies around paid work continue to demonstrate that paid work participation in high school has fluctuated over the past few decades and is still a part of the lives of many students and will likely continue to be.

This study utilized two unique modeling strategies: Inverse Probability Weighting and a Dose Response Function to estimate the relationship between time spent and the probability of graduating from high school and enrolling in college. Unlike previous studies that have heavily required on regression techniques, this study attempts to identify causal relationships.

I identified findings that are in contrast to much of the existing literature suggesting that paid work and unpaid work are related to student level outcomes. These non-significant, however importantly non-negative findings suggest that something about the work experience may be mitigating previously identified negative effects of work.

Future research to understand the ways in which work contributes to skill building, especially in the areas of time management and self-efficacy is needed to better understand that ways in which during work can influence the postsecondary career pathways of youth. Furthermore, while this study attempts to investigate heterogenous effects of work by gender and race, the limited sample size both created potential issues of power and the inability to look at other salient identity groups include additional racial/ethnic groups, immigrants, and the intersections of gender and race/ethnicity. Previous research as well as the Kinscripts framework suggest that identity and culture are important in determining expectations and familial norms around work. Any additional research in this area must be conscious of these social identities and

their intersections especially as there is a need to address systemic barriers contributing to inequities in student outcomes, especially around race.

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APPENDICES

APPENDIX A.
Reduction of Standardized Bias

Table 1. Treatment: Paid Work -Median Standardized Bias Prior to and After Weighting

	Unmatched Sample			Matched Sample		
Demographics	T Mean	C Mean	% Bias	T Mean	C Mean	% Bias
Age	16.247	14.964	90.4%	16.247	16.279	-2.2%
Sex	0.497	0.497	0.00%	0.497	0.467	6.00%
Race/Ethnicity	0.448	0.540	-18.5%	0.448	0.467	-3.9%
Family Structure & Finances						
Parents Married	0.379	0.384	-1.0%	0.379	0.381	0.5%
Kids in Family	2.088	2.188	-9.3%	2.088	2.025	5.9%
Primary Care Giver Years of Education	13.077	12.748	13.1%	13.077	13.110	-1.3%
Primary Care Giver Works	0.747	0.694	11.9%	0.747	0.723	5.4%
Hrs. worked by Primary Care Giver	28.997	27.471	7.4%	28.997	27.915	5.2%
Family Income (logged in model)	10.879	10.731	16.7%	10.879	10.868	1.2%
Saving for College	0.426	0.340	17.6%	0.426	0.396	6.3%
Pay Bills for Family	0.253	0.131	31.3%	0.253	0.263	-2.7%
Student Achievement & Aspirations						
Letter Word Score	102.600	103.140	-2.7%	102.600	100.220	11.8%
Passage Comprehension Score	100.410	98.487	11.8%	100.410	98.689	10.6%
Broad Reading Score	101.500	99.494	10.7%	101.500	99.214	12.1%
Applied Problem Set Score	100.610	100.490	0.7%	100.610	99.745	5.4%
Hrs. Spent on Homework	12.519	12.754	-1.6%	12.519	12.144	2.6%
Self-Reliant	4.511	4.434	9.4%	4.511	4.490	2.6%
Expectation of Future Education (Child)	5.217	5.314	-5.4%	5.217	5.088	7.2%
Expectation of Future Education (Parent)	5.008	4.968	2.2%	5.008	4.899	5.9%
Cultural Socialization						
Museum	1.459	1.574	-14.6%	1.459	1.471	-1.5%

Table 1. Treatment: Paid Work -Median Standardized Bias Prior to and After Weighting (continued)

Theatre	1.695	1.716	-2.3%	1.695	1.703	0.8%
Geography						
Beale Urban-Rural Continuum	3.283	3.339	-2.3%	3.283	3.365	-3.4%
		Mean	12.8		**Mean**	4.8
		Median	9.4		**Median**	4.6

Table 2. Treatment: Unpaid Household Labor -Median Standardized Bias Prior to and After Weighting

	Unmatched Sample			Matched Sample		
Demographics	T Mean	C Mean	% Bias	T Mean	C Mean	% Bias
Age	16.075	14.937	79.0%	16.075	14.878	83.1%
Sex	0.505	0.525	3.9%	0.505	0.543	7.7%
Race/Ethnicity	0.463	0.532	-13.9%	0.463	0.516	-10.7%
Family Structure & Finances						
Parents Married	0.404	0.383	4.4%	0.404	0.398	1.4%
Kids in Family	2.093	2.245	-13.8%	2.093	2.274	-16.4%
Primary Care Giver Years of Education	13.065	12.748	12.4%	13.065	12.759	12.0%
Primary Care Giver Works	0.786	0.693	21.2%	0.786	0.695	20.8%
Hrs. worked by Primary Care Giver	30.715	27.698	14.5%	30.715	27.433	15.8%
Family Income (logged in model)	10.923	10.718	23.5%	10.923	10.727	22.4%
Saving for College	0.438	0.349	18.4%	0.438	0.348	18.6%
Pay Bills for Family	0.249	0.136	28.9%	0.249	0.136	29.0%
Student Achievement & Aspirations						
Letter Word Score	102.620	102.930	-1.6%	102.620	103.170	-2.8%
Passage Comprehension Score	98.865	98.679	1.2%	98.865	99.269	-2.6%
Broad Reading Score	99.604	99.596	0.0%	99.604	100.220	-3.4%
Applied Problem Set Score	100.610	100.460	0.9%	100.610	100.740	-0.8%
Hrs. Spent on Homework	12.141	12.586	-3.4%	12.141	12.586	-2.1%
Self-Reliant	4.511	4.451	7.1%	4.511	4.454	6.7%
Expectation of Future Education (Child)	5.279	5.312	-1.9%	5.279	5.281	-0.1%
Expectation of Future Education (Parent)	5.079	4.947	7.3%	5.079	4.921	8.7%
Cultural Socialization						
Museum	1.740	1.593	-7.0%	1.740	1.554	-2.5%
Theatre	1.534	1.743	-0.3%	1.534	1.723	1.7%
Geography						

Table 2. Treatment: Unpaid Household Labor -Median Standardized Bias Prior to and After Weighting (continued)

Beale Urban-Rural Continuum	3.406	3.376	1.2%	3.406	3.295	-0.1%
		Mean	12.1		**Mean**	12.3
		Median	7.1		**Median**	7.2

Table 3. Treatment: Combined Paid Work and Unpaid Household Labor –Median Standardized Bias Prior to and After Weighting

	Unmatched Sample			Matched Sample		
Demographics	T Mean	C Mean	% Bias	T Mean	C Mean	% Bias
Age	16.249	14.973	90.5%	16.249	15.259	70.2%
Sex	0.479	0.498	3.8%	0.479	0.572	-18.6%
Race/Ethnicity	0.452	0.525	-14.8%	0.452	0.471	-4.0%
Family Structure & Finances						
Parents Married	0.385	0.387	-0.3%	0.385	0.403	-3.6%
Kids in Family	2.072	2.245	-13.8%	2.072	2.274	-16.4%
Primary Care Giver Years of Education	13.066	12.855	8.6%	13.066	13.101	-1.4%
Primary Care Giver Works	0.745	0.698	10.5%	0.745	0.728	-15.1%
Hrs. worked by Primary Care Giver	28.886	27.141	8.5%	28.886	28.639	120.0%
Family Income (logged in model)	10.867	10.751	13.2%	10.867	10.868	-0.1%
Saving for College	0.418	0.338	16.6%	0.418	0.390	5.9%
Pay Bills for Family	0.266	0.135	33.0%	0.266	0.152	28.8%
Student Achievement & Aspirations						
Letter Word Score	102.570	103.470	-4.5%	102.570	103.690	-5.5%
Passage Comprehension Score	99.994	99.425	3.6%	99.994	101.530	-9.6%
Broad Reading Score	101.300	100.850	2.4%	101.300	102.730	-7.7%
Applied Problem Set Score	100.420	100.490	-0.4%	100.420	101.580	-7.3%
Hrs Spent on Homework	12.439	12.570	-1.0%	12.439	12.324	-0.9%
Self-Reliant	4.518	4.388	15.6%	4.518	4.441	9.2%
Expectation of Future Education (Child)	5.222	5.259	-2.1%	5.222	5.260	-2.1%
Expectation of Future Education (Parent)	5.079	4.947	4.8%	5.079	4.919	6.3%
Cultural Socialization						
Museum	1.463	1.521	-7.6%	1.463	1.483	-2.7%
Theatre	1.690	1.663	3.1%	1.690	1.736	-5.2%
Geography						
Beale Urban-Rural Continuum	3.283	3.358	-3.2%	3.283	3.442	-1.4%

Table 3. Treatment: Combined Paid Work and Unpaid Household Labor –Median Standardized Bias Prior to and After Weighting (continued)

	Mean	11.6	**Mean**	9.5
	Median	5.5	**Median**	5.4

APPENDIX B.
Dose Response Function Figures

Figure 1. Relationship Between Work Type and Youth Outcomes Using DRF

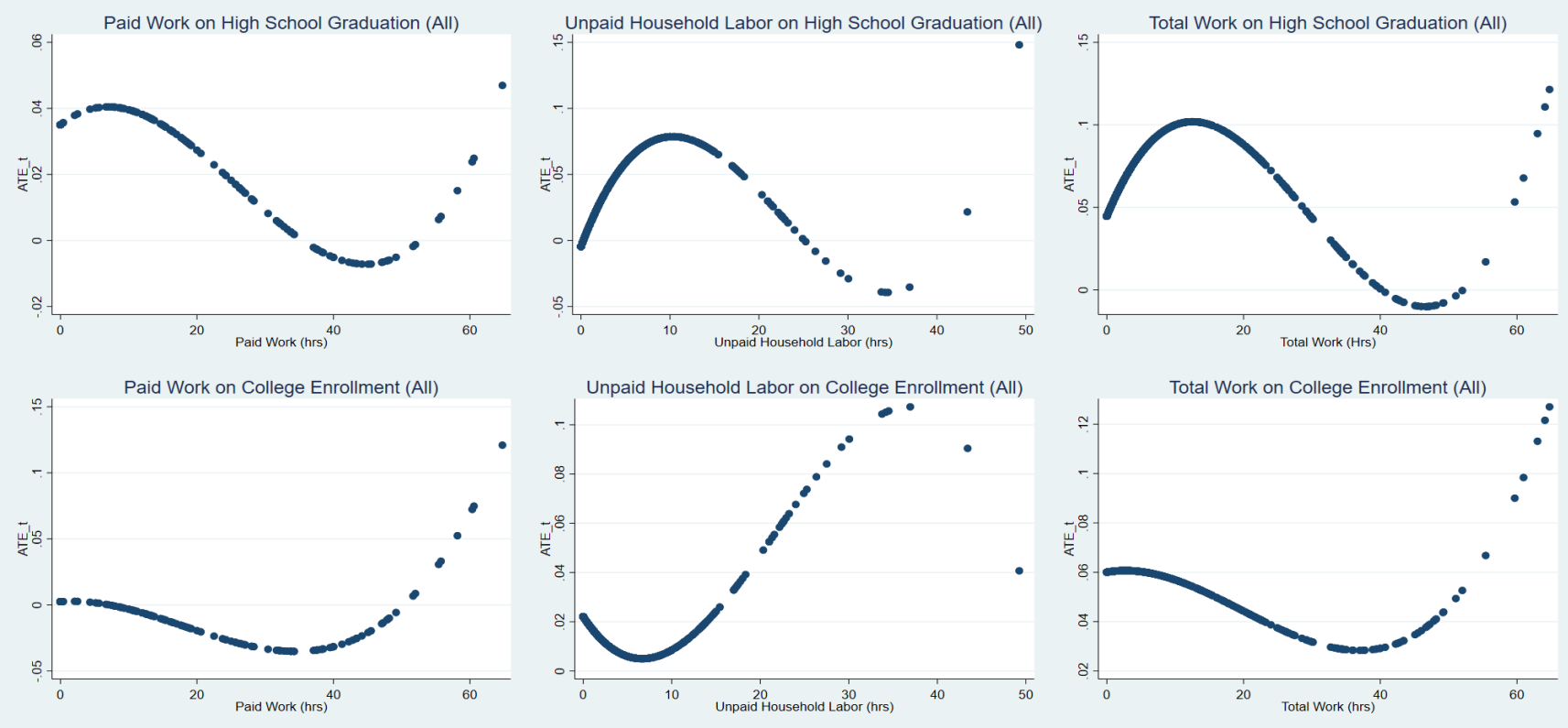

Figure 2. Heterogenous Effects on High School Graduation

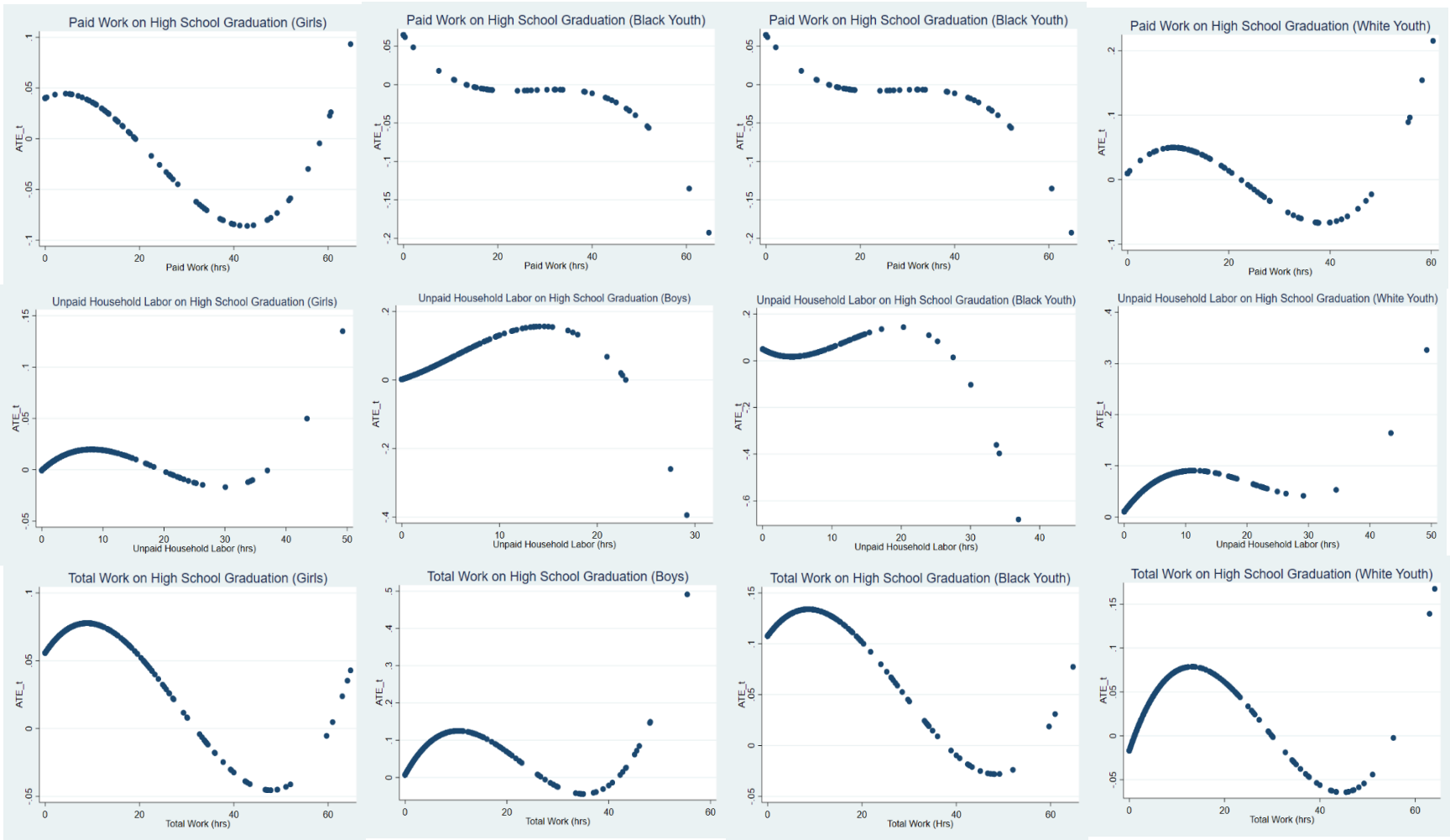

Figure 3. Heterogenous Effects on College Enrollment