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EXPLORING THE SCHOOL- AND STUDENT-LEVEL PREDICTORS OF DECENT WORK ATTAINMENT IN THE UNITED STATES

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EXPLORING THE SCHOOL- AND STUDENT-LEVEL PREDICTORS OF DECENT WORK ATTAINMENT IN THE UNITED STATES

by

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ABSTRACT

As the nature of work continues to evolve and diversify in the 21st century, issues related to the attainment of high-quality work are paramount. Initially defined by the International Labour Organisation [ILO], Decent Work exists as a standard for the expected quality of work to which all should have access in modern society. Central to the definition of Decent Work is the guarantee that "women and men enjoy working experiences that are safe, allow adequate free time and rest, take into account family and social values, provide for adequate compensation in case of lost or reduced income, and permit access to adequate healthcare" (ILO, n.d.).

While issues of work quality are relevant to all members of the workforce, young adults are at heightened risk of not securing work that is Decent, if they are able to secure work at all. Using nationally representative data from the Educational Longitudinal Study of 2002 [ELS:02], this study investigates Decent Work attainment among young adults through

the lens of their experiences as high school students ten years prior. The Psychology of Working Theory (Duffy et al., 2016) guides this investigation, explicitly accounting for both individual (student-level) and contextual (school-level) characteristics in the prediction of future Decent Work attainment and overall employment status.

Results from a series of multilevel analyses indicate that most of the variability in Decent Work attainment and employment status exists at the individual level, as opposed to the high school level. Structurally, this suggests that schools are not the primary drivers of students' contextual influences when it comes to their work outcomes. Furthermore, the collection of school- and student-level predictors found to be significantly associated with the various facets of Decent Work and employment status varies widely from model to model. This suggests that the Psychology of Working Theory is far from a one-size-fits-all theory, and that the predictors of work attainment are highly complex. Implications for education policy and future research are discussed in Chapter 5.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1. INTRODUCTION

As the workplace continues to evolve rapidly in response to globalization, technological displacement, and a host of political and corporate forces, workers across the United States are at risk. Workers have been experiencing stagnating real wages and increased earnings inequality for years (Bernstein, 2016). Although unemployment rates have dropped consistently since 2010, full-time employment with benefits has remained elusive for many, while part-time and temporary employment have been on the rise (Jacobe, 2013; Murray & Gillibrand, 2015). Moreover, certain subgroups, such as racial minorities, women, young adults, and those earning low hourly wages are more likely to be employed in part-time work, both voluntarily and involuntarily (Bureau of Labor Statistics, 2015; Golden, 2016). Those in nonstandard work arrangements, such as temporary and part-time work, are also more likely than full-time employees to be assigned more dangerous work (Boden, Spieler, & Wagner, 2016), lack safety training and appropriate protections, and lack access to social capital at work to help protect them from workplace harassment, dangers, and uncertainty (Howard, 2017).

These trends threaten the fairness, dignity, stability, and security that comprise fundamental characteristics of Decent Work, as defined by the International Labour Organisation [ILO] (Blustein, Olle, Connors-Kellgren, & Diamonti, 2016). As it pertains to individual working experiences, Decent Work refers to the guarantee that "women and men enjoy working conditions that are safe, allow adequate free time and rest, take into account family and social values, provide for adequate compensation in case of lost or reduced income, and permit access to adequate healthcare" (International Labour Organisation, n.d.). The definition of Decent Work serves as a standard for the expected quality of work to which

all should have access in modern society. While in this sense Decent Work reflects an "aspirational statement" about the nature of work for all people (Blustein et al., 2016, p. 1), it nonetheless provides at once a concise and comprehensive baseline definition of adequate quality work.

However, securing Decent Work is unrealistic for many across the United States, particularly for those just entering the workforce. The United Nations reports that youth across the nation and around the world face higher unemployment rates, lower quality jobs for those who do find work, and "longer and more insecure" transitions from school to work (United Nations, n.d.). While these findings do not relate to Decent Work explicitly, they reflect a troubling trend in terms of a perceived disconnect between educational preparation and work-related outcomes.

Accordingly, these findings beg the question as to whether students' schooling is predictive of future work attainment. If there exists a predictive relationship, then the need emerges to consider the specific characteristics of schools as they relate to students' later workforce experiences and outcomes. There is ample evidence suggesting that social supports, learning experiences, and other features of one's secondary schooling frame the way individuals approach their working lives in important ways (Lent, Brown, & Hackett, 2000; Super, 1980, 1990; Tang, Pan, & Newmeyer, 2008). As such, a thorough evaluation of Decent Work attainment necessitates a consideration of students' high school experiences in addition to – and as they relate to – these individual approaches to the world of work. Schools are critical in facilitating transitions to individuals' working futures and much of the available research suggests that educational experiences relate directly to the eventual attainment of high quality work. Additional research is needed to clarify the nature of these

educational barriers and affordances, and to identify policies that might bridge educational training, workforce demands, and the ability of youth across the United States to secure Decent Work.

Given the personal, societal, and economic significance of Decent Work, this dissertation uses data from the 2002 and 2012 waves of the National Center for Education Statistics' [NCES] Educational Longitudinal Study [ELS:02] to explore national patterns in the school-level and student-level characteristics of high school sophomores across the United States that predict an individual's attainment of Decent Work a decade later. Incorporating an explicit focus on students' educational experiences as they relate to workforce outcomes provides both an opportunity for new scholarship while also acknowledging key structural features at the high school level that may impact future career attainment and inform public policy pertaining to the school-to-work transition. By focusing on school-level factors putatively involved in students' attainment of Decent Work, this research has the potential to help policymakers and school leaders better understand systematic patterns in the school-to-work transition and identify opportunities for action. Schools are neither a silver bullet nor a panacea for addressing the inequalities involved in Decent Work attainment, but they do have a role in preparing students for their futures. Accordingly, any characteristics identified at the school level that predict Decent Work attainment among students may be useful in terms of finding ways to help our nation's students secure a meaningful and dignified working future.

Significance

A 2015 Georgetown report (Carnevale, Jayasundera, & Gulish, 2015) identified a job as "good" if it paid in the upper third of wages across the country, though the authors

explicitly note that a so-called "good job" almost always incorporates a variety of additional factors and benefits, such as full-time status, access to health insurance, job security, good working conditions, and others. As the ILO notes in its definition of Decent Work, a living wage is a consideration in evaluating Decent Work, but it remains an incomplete indicator of work quality on its own. In recent years, data have indicated that earned income has steadily decreased as a proportion of the Gross Domestic Product [GDP] (Smith, 2015). When earned income constitutes a consistently shrinking portion of the overall economy, this leads to household income value depletion over time, regardless of the health and growth of the economy as a whole. Indeed, according to Smith (2015), between 2000 and 2015, household income declined 8.5 percent after adjusting for inflation. Furthermore, in 2010, 20 percent of workers aged 25 to 64 held jobs that paid less than what is needed to keep a family of four above the U.S. poverty line (Osterman & Shulman, 2011), and the Bureau of Labor Statistics noted that as of 2014, about one fifth of all employed adults in the United States – 4 percent of full-time workers and 14 percent of part-time workers – earned wages below the poverty line (Bureau of Labor Statistics, 2016a).

While these findings are significant in that they indicate discouraging patterns in income attainment across the United States, wages and salary alone paint an incomplete picture of the health of the United States workforce overall. The numbers suggest that the power of the dollar is down overall due to the relative stagnation of income relative to inflation and increased cost-of-living, and for those who do not have access to benefits at their jobs – which generally amounts to upwards of 30 percent of the value of one's total compensation (Bureau of Labor Statistics, 2016b) – the power of their dollar is further diminished as they may need to draw upon their base wage in order to cover the cost of

health care, leave, and other benefits to which others are already provided access. Measuring work attainment in a way that reflects the complexity inherent to the combination of wages, benefits, and other attributes of work is fundamental to adequately capturing the multidimensionality of what it means to secure high-quality work.

Research has demonstrated that individuals with certain demographic and socioeconomic characteristics are systematically underrepresented in high-wage and otherwise "good" jobs according to some of the features identified by Carnevale, Jayasundera, and Gulish (2015). A 2015 study led by Demos and the National Association for the Advancement of Colored People [NAACP] found that 17 percent of Black and 13 percent of Latino retail workers live below the poverty line, compared to 9 percent overall (Ruetschlin & Asante-Muhammad, 2015). Additionally, Black and Latino workers were disproportionately likely to hold involuntary part-time work (e.g., working part-time when full-time work is desired) and face unpredictable and unstable scheduling issues (Ruetschlin & Asante-Muhammad, 2015). Other research has found that immigrants are disproportionately employed in jobs that are physically demanding and dangerous, pose high risk for injury, and provide low wages (Mora, Arcury, & Quandt, 2016). Those whose parents come from lower socioeconomic brackets or who did not attain much formal education have been shown to have lower job security and a higher likelihood of attaining nonstandard work (Lam, 2014). With regard to healthcare, racial and ethnic minorities are more likely to be enrolled in Medicaid and other types of public insurance, indicating a lack of employer-provided health care (Convention on the Elimination of all forms of Racial Discrimination [CERD] Working Group, 2008).

Because each of these inequalities implies an absence of Decent Work, these findings indicate that the world of work overall, and Decent Work in particular, presents a key social justice issue in modern America in terms of race, ethnicity, immigration and citizenship status, and socioeconomic status. While these realities are significant insofar as they highlight areas of profound systematic inequality in the workforce, it is worth noting that various of these demographic and socioeconomic characteristics have also been shown to be negatively correlated with academic performance (Reardon, 2011, 2013), school attendance (Morrissey, Hutchison, & Winsler, 2014), and enrollment at high-performing schools (Rhodes & DeLuca, 2014).

The available evidence indicates that some of the student-level structural inequities that exist during students' educational experiences persist into their future working lives and relate to their attainment of Decent Work. Importantly, scholars widely agree that these inequities are not the *causes* of educational outcomes, but rather symptoms of greater systematic and societal injustices (see e.g., O'Connor, Horvat, & Lewis, 2006; Valencia, 2015). As such, additional research is needed to clarify the role these inequities, among individuals and among the high schools they attend, play in the context of work attainment. To this end, decades of research suggest that school characteristics affect student outcomes, even after accounting for individual student characteristics (see e.g., Teddlie & Reynolds, 2000). Some examples of these characteristics include school policies, poverty concentration, student body size, course offerings, student-teacher relationships, teacher turnover, and high school drop-out rates (Bryk & Thum, 1989; Lee & Burkam, 2003; Ronfeldt, Loeb, & Wyckoff, 2013; Rumberger, 2011; Rumberger & Thomas, 2000). This dissertation research is dedicated to exploring these and other high school characteristics as

they relate to individual student characteristics as well as larger patterns in the attainment of Decent Work.

Current Landscape of Decent Work Attainment

Decent Work attainment among individuals involves working conditions that are safe, allow for free time and rest, reflect family and social values, provide adequate compensation, and offer access to medical care (International Labour Organisation, n.d.). Before more deeply exploring the characteristics of one's high school education that predict the different facets of Decent Work, it is important to understand the extent to which individuals across the country are attaining Decent Work.

Safety. In 2015, fatal workplace injuries were most common among men, Black workers, and Hispanic workers, the latter of whom had the highest fatality rate among all races (Bureau of Labor Statistics, 2017). The rate of foreign-born worker fatalities rose 22 percent between 2014 and 2015, and self-employed workers were four times more likely to sustain a fatal workplace injury than wage and salary workers (Bureau of Labor Statistics, 2017), illustrating an additional concern for this segment of the workforce. Overall, in 2015 the incidence rates for nonfatal occupational injuries and illnesses was down from previous years, but ranged from 3 incidents per 100 full-time workers in private industry to 5.6 incidents in local government jobs (Bureau of Labor Statistics, 2016c). Significantly, data on part-time injury and illness rates were not collected.

As of 2015, 40.4 percent of the workforce in the United States consists of "contingent workers," which is a broad category comprising temporary, contract, on-call, self-employed, and part-time workers (Murray & Gillibrand, 2015). These workers often lack some of the protections afforded by full-time work, such as paid or medical leave and protections

surrounding working conditions and a climate of safety. As such, contingent workers may be at heightened risk for negative outcomes beyond lacking basic safety itself.

Free time and adequate rest. Free time and adequate rest is stipulated in the definition of Decent Work in an effort to avoid these and other negative consequences, although as of 2014, 50 percent of full-time employees were found to be working more than the standard 40-hour work week, with 18 percent exceeding 60 hours (Saad, 2014). Furthermore, those who are salaried tend to work longer hours than those who are paid hourly (Saad, 2014), suggesting that the benefits and often greater pay associated with a salary may come at a cost of less free time.

Among employees, long working hours have been associated with increased risk for cardiovascular health problems, chronic infections, relationship problems, alcohol and tobacco consumption, weight gain, diabetes, depression, and workplace injury (Dembe, Erickson, Delbos, & Banks, 2005). In their analysis of more than 100,000 job records over the course of 13 years, Dembe and colleagues (2005) additionally found that even after accounting for hazardous industries and occupations, those working long hours remain at heightened risk for injury and illness. In other words, long hours are inherently harmful in that they induce fatigue and stress, which in turn increases employees' risks for negative health and social outcomes regardless of a person's industry or specific job. Long hours are additionally detrimental to employers, though in different ways than they are to employees. In particular, employee productivity drops sharply after the 50-hour-per-week mark, and plateaus at the 70-hour-per-week mark to the point that employees working 55 hours offer the same productivity with little to show for those additional 15 hours (Pencavel, 2015).

Alignment with family and social values. Although paid leave and parental leave are not legally mandated in the United States as they are in many other countries, several full-time employers offer these benefits which provide an economic safety net while additionally enabling employees to focus on their individual and family well-being without doing so at the expense of their work. While there is no available research on the extent to which American workers as a whole are working in jobs that they perceive to be complementary to their family and social values, various researchers have explored the consequences of misalignment between personal values and workplace values and characteristics. Voydanoff (2014, p. xv) presents collected research linking work characteristics and "the organization and quality of family life." These work factors include work hours, job demands, control, workplace support, and work policies related to family and home life. Better coherence between these workplace factors and employees' home life in turn promotes greater individual well-being (Voydanoff, 2014), lower levels of stress, depression, and poor physical health (Jones, Burke, & Westman, 2013), and in certain sectors, improved teamwork and safety climates (Sexton et al., 2017). Voydanoff (2014) additionally writes that work, family, and community values often differ among racial and ethnic populations, suggesting that the attainment of this dimension of Decent Work may not look the same across different groups of workers. To this end, Wayne and Casper (2016) found that when job searching, women were particularly attracted to a family-supportive workplace and a working culture that embodies family values at notably higher rates than men. This finding is consistent with previous research on the "second shift" wherein women have traditionally taken leadership on responsibilities for the family and home once they return from their jobs (e.g., Hochsfield, 1989).

Adequate compensation. The Bureau of Labor Statistics found that 6.3 percent of those working at least 27 weeks in 2014 lived below the federal poverty level, with that rate nearly doubled for Black and Hispanic workers (Bureau of Labor Statistics, 2016a). Among families with one member in the labor force, 9.3 percent of married households, 26.1 percent of single-mother households, and 15.2 percent of single-father households lived below the poverty line (Bureau of Labor Statistics, 2016a). Others have expanded the definition of the "working poor" to encompass those living at up to 200 percent of the poverty line (e.g., Cheng, 2010; Schwarz & Volgy, 1992). Using this definition, in 2013 the Working Poor Families Project found that about one third of all working families constituted the working poor (Povich, Roberts, & Mather, 2015). Furthermore, racial and ethnic minorities were much more likely than non-Hispanic White families to be classified as working poor: 40 percent of all working families are minority-led, but 58 percent of all low-income working families are minority-led (Povich, Roberts, & Mather, 2015).

With respect to Decent Work, the important element is not that employees earn a wage, but that they earn compensation *sufficient to ensure stability* in the event of lost or reduced income. Stated differently, this facet of Decent Work requires enough compensation to ensure financial security or a "safety net" in the event of termination or an emergency. In order to appropriately account for a person's ability to secure financial stability, consideration of one's earnings adjusted for regional variation in cost of living is essential. Additional variables, such as number of dependents, childcare, lifestyle, and mobility, necessarily impact financial stability, but in order to limit the consideration of compensation to a manageable scope for this dissertation research, the relationship between earned wages and local cost of living is the primary element by which financial stability is evaluated.

Living wage is an oft-cited indicator that accounts for regional differences in cost of living and approximates the required income to satisfy basic needs. According to Glasmeier (2016), a living wage "enables the working poor to achieve financial independence while maintaining housing and food security." Key to this definition are the words *independence* and *security*, which align with the ILO's definition of compensation sufficient to ensure stability. Glasmeier's work has revealed that in different areas around the country, the living wage differs substantially. For example, in South Dakota the minimum wage is about two-thirds (64.8 percent) of a true living wage for a family of four with two working adults, but in Hawaii the minimum wage is just 40.8 percent of what is required to meet a true living wage (Glasmeier, 2016). For those not earning a living wage, workers and their families may not be able to gain true financial independence and security despite the fact that they are working – and these concerns exist in tandem with those faced by the working poor.

Access to healthcare. The Bureau of Labor Statistics found in 2016 that between 68 and 88 percent of all workers (comprising civilian, private, and state and local government workers) had access to health care, including between 86 and 99 percent of all full-time employees and 20 to 25 percent of all part-time employees (Bureau of Labor Statistics, 2016d). Differences in healthcare access between full- and part-time employees and between the employed and the unemployed are significant insofar as they relate directly to individual well-being. Differential access is not just rooted in employment; disparities in health and health care access persist across several dimensions, including geographic region (Hayanga, Zeliadt, & Backhus, 2013), race and ethnicity, gender, and low-income status (Barr, 2014).

Those without health insurance have been shown to have trouble paying their medical bills at more than twice the rate of those with health insurance (53 percent versus 20 percent),

and 44 percent of those with trouble paying medical bills report a "major impact" on themselves and their family (Hamel et al., 2016). Furthermore, these debts can have adverse consequences on workers' credit scores and budgets, hindering their financial flexibility and preventing the accrual of wealth through opportunities such as home ownership, saving for retirement, and investing.

Paid sick leave is an important consideration in workplace healthcare, as employees who are unable to take unpaid time to tend to their health may suffer from a host of adverse consequences in the short- and long-term, both with regard to their employment status and their personal health. A 2013 study conducted by the Centers for Disease Control and Prevention found that out of 500 surveyed food service workers, 60 percent had recalled working while sick at least once, with 51 percent citing a fear of losing income and 41 percent citing fear of losing their job as reasons for not taking time off work to heal (Carpenter et al., 2013). Nearly half - 43 percent - of the restaurants staffed by employees who had worked while sick did not have a sick leave policy or offer paid sick leave. Workplace environments like these exemplify incentive systems that can make certain employees feel "trapped" between wanting to heal and not wanting to infect their coworkers or customers, and potentially losing shifts or pay at best, and their job at worst.

A comparative study of countries and their workforce sick leave policies found that the United States was alone out of 22 countries topping the United Nations Human Development Index to not require employers to offer paid sick days or paid sick leave, including for a long-term illness such as cancer and its treatment (Heymann, Rho, Schmitt, & Earle, 2010). More recent research has confirmed the absence of these and similar policies (Hawkins, 2018; Klein, 2016). Furthermore, 40 percent of the private sector workforce does

not have paid sick days or sick leave, and it is estimated that 49 million private sector employees, agricultural workers, household employees, the self-employed, and a handful of public-sector employees lack access to paid sick leave benefits (Heymann et al., 2010). In 2012 the Kaiser Family Foundation and the Health Research & Educational Trust (Claxton et al., 2012) reported that 56 percent of workers in the United States were covered by work-based health plans overall, but Heymann et al. (2010) pointed out the differential access for full-time and part-time workers: 71 percent of full-time employees had access to these policies through their employer, whereas just 27 percent of part-time employees did. This lack of access also disproportionately impacts low-wage workers and women (Heymann et al., 2010).

The Role of Education and the School-to-Work Transition

For generations, scholars and educators have articulated the important role that schools play in later life outcomes for their students, key among which is workforce participation. Citing the Urban Institute (2013), Torraco (2016, p. 61) reasoned that "without adequate education, more people end up at the low end of the education-income continuum." Johnson and Mortimer (2002, p. 65) hinted at the critically important role that schools play in preparing students for their futures, writing, "youths' difficulties in making the school-to-work transition have been increasingly recognized and linked to the absence of institutional bridges." More than a century and a half earlier, education pioneer Horace Mann (1848) wrote that schools

> are the grand machinery by which the 'raw material' of human nature can be worked up into inventors and discoverers, into skilled artisans and scientific

> farmers, into scholars and jurists, into the founders of benevolent institutions, and the great expounders of ethical and theological science. (Mann, 1848)

Each of these scholars suggests that, regardless of the specific profession pursued, a key purpose of schooling is to prepare and cultivate individuals for their vocational futures. The quality of these futures is at risk if individuals are unable to attain work that meets fundamental preconditions of safety, security, and satisfaction while offering a living wage.

At its core, the definition of Decent Work acknowledges and features these preconditions. Furthermore, and as previously articulated, Decent Work is an important concept in the realms of social justice, economic health, and individual experiences with the world of work. Because educational experiences relate directly to issues of social justice, workforce participation, and influencing students' orientation to their working futures, incorporating various dimensions of one's schooling experience is essential in a comprehensive consideration of Decent Work attainment.

Importantly, the focus on "Decent Work," rather than success in a specific career path, deemphasizes the influence of the nearly infinite individual job sector nuances in favor of a broader conceptualization of career development and attainment. This distinction is particularly important in terms of studying predictors of Decent Work across the United States and generating policy recommendations at the high school level.

Theoretical Orientation

In an attempt to promote a comprehensive model of career development, vocational theorists have advanced a new framework that comprises both the contextual and individual dimensions of working. Notably, the Psychology of Working Theory [PWT] (Blustein, 2001, 2006, 2008, 2013; Duffy, Blustein, Diemer, & Autin, 2016) serves to highlight the role

that sociocultural factors play in the realm of vocational development and career decision-making. By placing sociological and economic influences alongside psychological influences at the theoretical center of career development in the PWT, the securing of Decent Work is comprehensively theorized to operate at the nexus of individual and contextual factors (Duffy et al., 2016).

The PWT explicitly unites an individual, psychological approach to career development with a contextual, sociological approach in an effort to directly account for important social, demographic, cultural, and economic characteristics that may impact and intersect with a person's individual characteristics throughout the career development process. It provides a comprehensive approach to career development with a specific focus on the attainment of Decent Work, deliberately inclusive of marginalized individuals and with particular attention given to contextual factors. Specifically, the PWT provides a theoretical lens through which it is possible to examine Decent Work as a function of opportunity at the nexus of individual and contextual levels. Particularly where marginalized individuals are concerned, it is essential to examine the myriad contextual factors impacting their access to opportunity in order to more fully account for the achievement and power dimensions that inherently impact their educational success and persistence, and later, their occupational journeys.

Research Questions

This dissertation seeks to identify the extent to which employees throughout the United States are attaining the different components of Decent Work and to explore the predictive power of students' educational experiences and environments during high school on the attainment of these components of Decent Work. As the workforce continues its rapid

transition in the wake of technological growth and globalization, it is essential that American society ensures workers have access to key workforce protections and high-quality employment. Though traditional full-time employment is becoming less and less common across sectors and across the country overall, the tenets of Decent Work remain vital to the health of the workforce, and to the health of individual workers, across the nation.

Using data from the Education Longitudinal Study of 2002, this dissertation investigates the extent to which the Psychology of Working Theory may be applied in exploring what relationship, if any, may exist between high school students' characteristics and their attainment of Decent Work ten years later, and if this relationship is moderated by the high schools they attend. Duffy et al. (2016, p. 129) articulated a series of propositions in their article, each corresponding with a numbered pathway in Figure 1. These propositions describe hypothesized associations among the variables of interest, specifically stating how work volition and career adaptability interrelate and help to explain the supposed relationship between the predictors (economic constraints and marginalization) and Decent Work. This full theoretical model includes the presumed predictors of Decent Work as well as a series of hypothesized outcomes, so a simplified and better targeted illustration of the theory under investigation in this dissertation appears in Figure 2 for clarity.

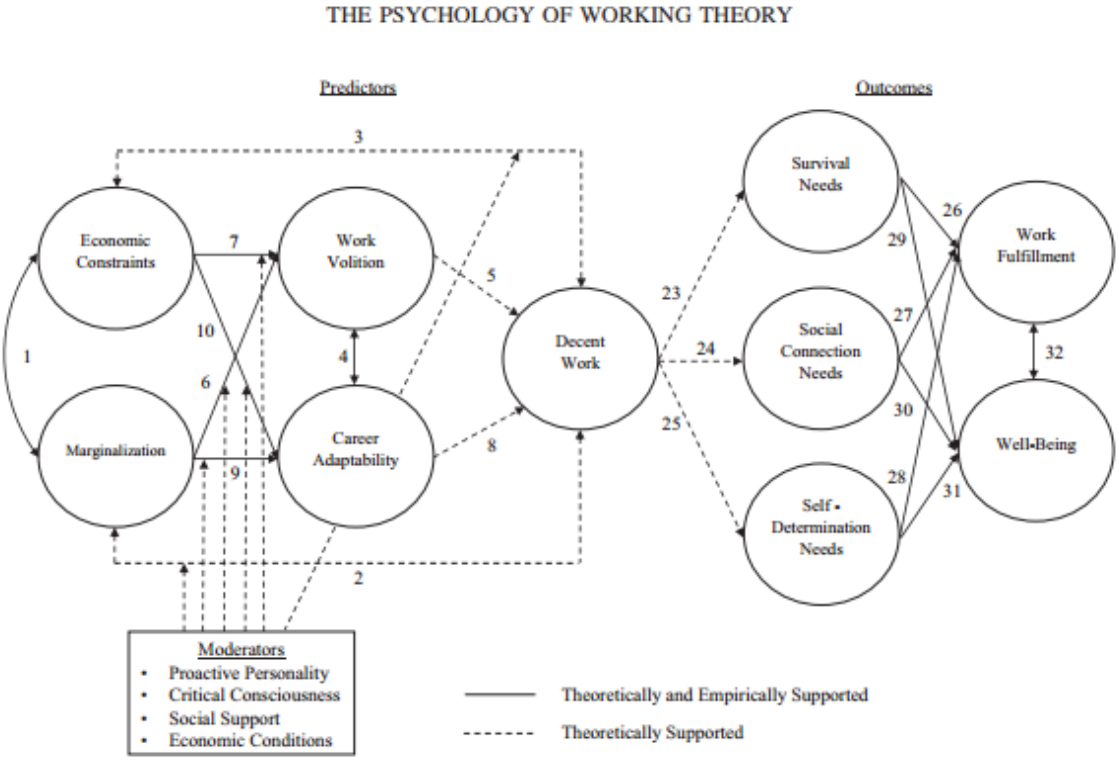

Figure 1. Theoretical Model. Proactive personality, critical consciousness, social support, and economic conditions are proposed to moderate the paths from economic constraints and marginalization to work volition, career adaptability, and decent work, respectively: proactive personality (*Propositions 11–13*), critical consciousness (*Propositions 14–16*), social support (*Propositions 17–19*), and economic conditions (*Propositions 20–22*).

Figure 1. Full theoretical model (Duffy et al, 2016).

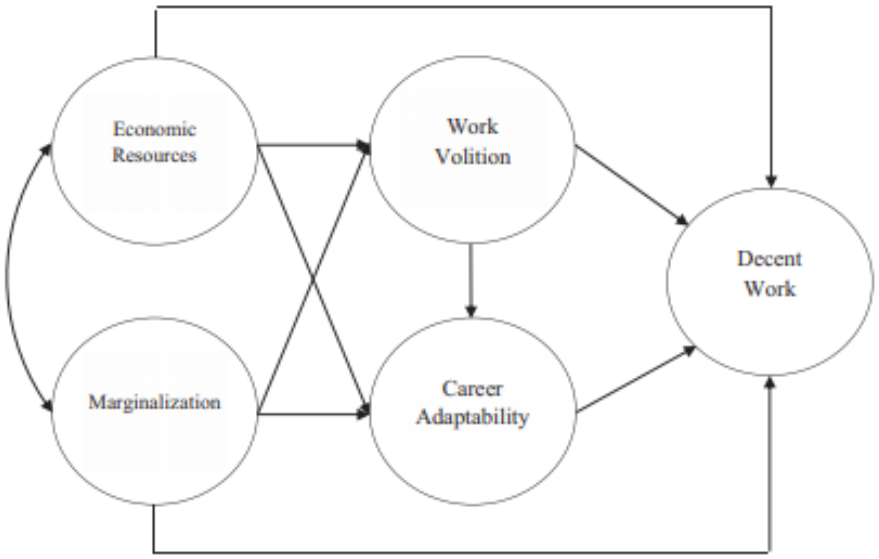

Figure 2. Targeted theoretical model (Duffy et al, 2018).

As is explained in detail later in this dissertation, the limited availability of specific indicators related to career adaptability and work volition necessitates that the original variables be replaced by a broader conceptualization of the degree to which students understand and internalize the connection between their schooling and their future career. Work volition encapsulates barriers whereas career adaptability represents control, curiosity, confidence, and concern regarding work. The available variables in ELS:02 allude more fully to concepts of career adaptability, but because they were not developed with this particular construct in mind, the generalized "internalization of the school-to-work transition" concept is preferred.

The model presented in Figure 3 represents a modified confirmatory model, testing the major tenets of the Psychology of Working Theory while also accounting for data constraints, situating the theory specifically within an educational context, and enabling the exploration of the model in a multilevel (e.g., school- and individual student-level) context.

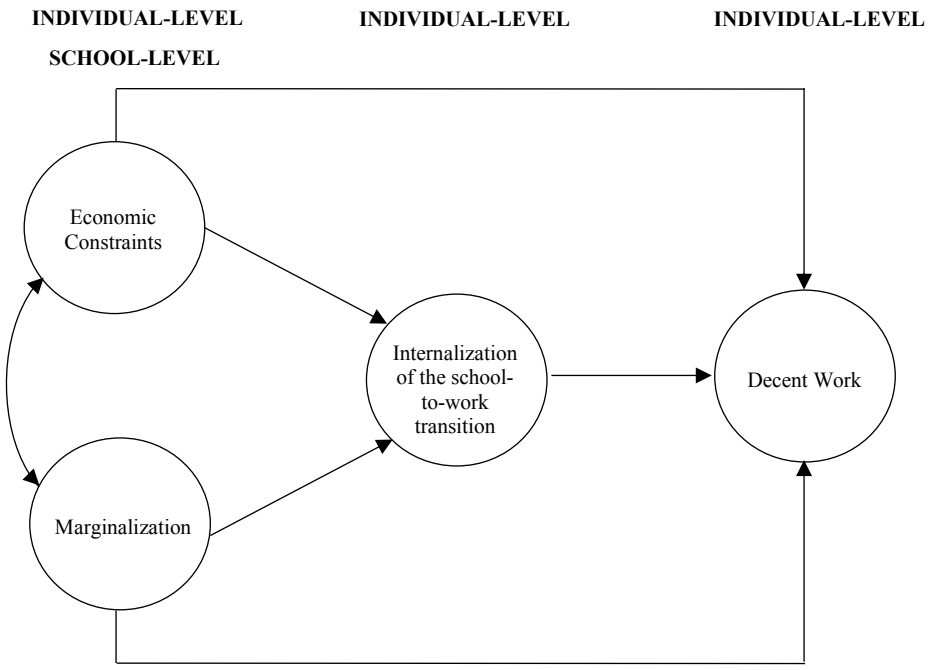

Figure 3. Modified theoretical model (Author's creation).

This modified theoretical model examines economic constraints, marginalization, and the internalization of the school-to-work transition at the baseline year (2002) when students are enrolled in their sophomore years of high school, and Decent Work attainment is measured ten years later in the third follow-up study in 2012. Furthermore, while each of the four characteristics in the theoretical model is measured at the individual student level, economic constraints and marginalization are additionally measured at the school level to more comprehensively account for potential contextual effects in examining the hypothesized predictors of future Decent Work attainment.

Because both school- and student-level variables are considered, this study requires a multilevel research design featuring Decent Work attainment as the outcome. Using multilevel regression modeling enables researchers to explicitly model variables at the school level (e.g., marginalization in terms of the racial or socioeconomic makeup of the school) and

at the individual level (e.g., marginalization in terms of individual race or socioeconomic background) as a part of exploring the relative roles of these individual and contextual predictors in securing Decent Work.

The following set of research questions target the hypothesized relationships in Figure 2, adding detail from the PWT according to the level (e.g., school or student) under investigation within each question. Stemming in part from the ten original propositions set forth in Duffy et al. (2016), these questions aim to explore key relationships outlined in the modified theoretical model, exploring the relationships among students, the high schools they attend, and their future Decent Work attainment:

1. After controlling for covariates, to what extent are economic constraints and marginalization, measured among both students and high schools in 2002, associated with individuals' attainment of Decent Work ten years later?
2. After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with their attainment of Decent Work ten years later?
3. After controlling for covariates, economic constraints, and marginalization at both the school and student levels, to what extent is students' internalization of the school-to-work transition associated with their attainment of Decent Work ten years later?

While not of primary interest in the context of this dissertation, the consideration of overall employment status in addition to the Decent Work outcomes addresses the broader implications of the predictors identified above. Addressing these questions extends the analysis by investigating how these factors are predictive of employment versus unemployment in addition to the extent to which they are predictive of Decent Work

attainment only among those who are employed. Although the attainment of high quality work is the central focus of this dissertation research, this approach necessarily excludes those who are unable to secure employment in the first place but who desire it nonetheless (i.e., those who are unemployed, but not out of the labor force). A slight wording adjustment to the aforementioned research questions expands the PWT to include these individuals:

1. After controlling for covariates, to what extent are economic constraints and marginalization, measured among both students and high schools in 2002, associated with whether individuals are employed or unemployed ten years later?
2. After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with whether they are employed or unemployed ten years later?
3. After controlling for covariates, economic constraints, and marginalization at both the school and student levels, to what extent is students' internalization of the school-to-work transition associated with whether they are employed or unemployed ten years later?

Methodology

Data sources. This research comprises a secondary data analysis using a large-scale, longitudinal, and nationally representative dataset. Commissioned by the U.S. Department of Education, the Educational Longitudinal Study of 2002 tracked over 15,000 high school sophomores in 752 schools between the years of 2002 and 2012, concluding when most of the original sample members were aged approximately 26. For the third (final) follow-up study in 2012, 13,250 sample members participated out of all who remained eligible after excluding participants who were deceased, incarcerated, institutionalized, out of the country,

or otherwise ineligible or out of scope (Ingels et al., 2014). The population and the timing of this study are both of particular interest for this dissertation research; ELS:02 captures the modern generation most afflicted by youth unemployment and underemployment, who largely began their working lives at the height of the 2008 economic recession. The collection of variables measured in the ELS:02 data is vast and includes information relating to individual and familial background; schooling experiences and academic performance in high school and postsecondary education; high school and teacher characteristics; and a series of educational, vocational, and lifestyle measures in the final follow-up. ELS:02 explicitly explores "student trajectories from the beginning of high school into postsecondary education, the workforce, and beyond" (National Center for Education Statistics, n.d.).

In addition to ELS:02 baseline and 2012 follow-up data, the analyses presented in this study incorporates data from the Occupational Information Network [O*NET], the Opportunity Index, and the Cost of Living Index [COLI]. O*NET is a national database of nearly 1,000 occupations with information on worker characteristics, worker requirements, experience requirements, occupational requirements, workforce characteristics, and other occupation-specific information. Defining "Decent Work" requires operationalizing key job-related characteristics such as interpersonal and physical safety. While some Decent Work indicators, such as hours worked, are collected using self-report measures in the 2012 ELS:02 follow-up, the safety characteristics are not reported in ELS:02 and must therefore be obtained from external data sources. For each person in the third follow-up sample who is working, a unique six-digit O*NET job code is specified in the restricted-use dataset; therefore, the data can be directly merged from O*NET into the main ELS:02 dataset. This

allows for O*NET data on working conditions to be linked to individuals' specific occupations as indicated in the ELS:02 third follow-up questionnaire from 2012.

Additional data sources corresponding with the ELS:02 third follow-up data include the Council for Community and Economic Research's 2012 Cost of Living Index (https://www.c2er.org) and Opportunity Nation's 2012 Opportunity Index (https://opportunityindex.org). The COLI is used to adjust respondent-reported earnings for regional variation in cost-of-living such that they are normalized for effective national comparison. COLI data are available by metropolitan statistical area [MSA], which can be generated from the ZIP codes available in the restricted ELS:02 dataset and merged into ELS:02 as individual-level data. The Opportunity Index includes a series of ratings and scores corresponding to various dimension of community health: Jobs and Local Economy; Education; and Community Health and Civic Life. Included within the index is a composite score for all of these dimensions, which is reported for states as well as counties across the nation. As is the case with merging COLI data, the ZIP codes affiliated with respondents' third follow-up data may be used to identify the county of residence and the corresponding opportunity score. In the context of this dissertation research, the overall opportunity score functions as a student-level covariate to account for local opportunity prior to introducing the PWT-related variables to help explain patterns of Decent Work attainment and employment.

Analytic approach. According to Duffy et al. (2016) and the International Labour Organisation (n.d.), the following five indicators are used to measure Decent Work attainment within a PWT framework:

- Physical and interpersonally safe working conditions (e.g., absent of physical, mental, or emotional abuse);

- Hours that allow for free time and adequate rest;
- Organizational values that complement family and social values;
- Adequate compensation; and
- Access to adequate healthcare.

Each of these five facets comprise the outcome variable in a series of separate multilevel regression models. Both linear and logistic multilevel models are used depending on how the outcome is measured using the available ELS:02 and O*NET variables. Predictor variables relating to economic constraints, marginalization, and the internalization of the school-to-work transition are entered into these models, with each of these indicators measured at the student level and economic constraints and marginalization additionally considered at the school level. This same modeling process is additionally performed on a larger analytic sample, featuring employment status as the outcome.

Prior to modeling the PWT predictors (e.g., economic constraints, marginalization, and the internalization of the school-to-work transition), a series of covariates are introduced at both the student and school levels to help explain variability in individual Decent Work attainment and employment status. Covariates at both levels are determined according to the literature on potential correlates of labor market outcomes and data availability within the ELS:02 dataset. By beginning the analytic process with covariates in each of the models, it is possible to determine if the PWT variables do indeed predict Decent Work attainment even after accounting for other background characteristics. Statistically significant covariates are retained in the model prior to and as a part of addressing the research questions.

Additional and more detailed information concerning the analytic approach appears in Chapter 3.

Outline of Dissertation

Chapter 1 introduced Decent Work, explored the degree to which employees across the country are attaining different elements of Decent Work, contextualized Decent Work attainment with respect to the school-to-work transition in the United States, and presented the theoretical approach and research questions to be investigated in this dissertation research.

Chapter 2 presents a review of the literature surrounding work in the United States, Decent Work, the Psychology of Working Theory, the school-to-work transition, and opportunities for research involving secondary data analysis.

Chapter 3 outlines the methodological approaches to be considered in addressing the research questions, including the unique considerations for large-scale data, secondary analysis, and multilevel modeling.

Chapter 4 presents the research results and discusses the key findings.

Chapter 5 highlights the expected and unexpected outcomes, evaluates them in terms of the Psychology of Working Theory, and concludes the dissertation by outlining major takeaways, limitations, policy implications, and future directions for related research.

CHAPTER 2. LITERATURE REVIEW

Introduction

The following literature review is organized into several sections, each corresponding with the various research opportunities afforded by this dissertation.

First, this research offers an opportunity for expanding how career outcomes are measured. While single indicators, such as earnings, are an essential component of most working experiences, the International Labour Organisation's definition of Decent Work offers a more comprehensive and pertinent conceptualization of work attainment consistent with the work of other scholars of vocational development, work, and economics. This portion of the chapter also explores the role of work in the United States, with a discussion of unemployment and underemployment as they relate to Decent Work.

Second, this research offers an opportunity to richly explore the school-based predictors of workforce outcomes and, in so doing, bridge the gap between education and vocation in terms of what about students' educational experiences may share a meaningful relationship with Decent Work attainment.

Third, previous scholarship on career development has typically existed within one of two silos: research focused on individual, psychological aspects of work or research focused on a broad, sociological view of work. The dissertation research presented here unites these two approaches using the Psychology of Working Theory (Blustein, 2001; 2006; 2008; 2013; Duffy et al., 2016) to highlight the interactive contributions of individual (student-level) and contextual (school-level) factors predicting Decent Work attainment.

Finally, previous career development scholars have voiced explicit demand for multilevel modeling at the school and student levels, longitudinal studies, and secondary data analysis. In response, this dissertation addresses the call for empirical research on the school-to-work transition in consideration of the research guidelines previously articulated by scholars. This chapter seeks to highlight the individual and societal benefits of Decent Work, examine patterns in Decent Work attainment, and explore potential associations between individuals' high school experiences and their attainment of high-quality work according to a specific and internationally important definition.

Quality of Work in the United States

Discussing and evaluating the quality of work to which people have access is a challenging but fundamentally important endeavor. Issues have historically arisen with respect to defining the quality of, access to, and adequacy of work; in this light, recent economic and technological changes have presented additional threats to modern workers' access to high-quality work in the United States. Though access to high-quality work is intrinsically important, the significance of high-quality work experiences additionally extends to broader economic and psychosocial contexts.

Workers' access to quality work and well-being in the workplace has been linked to improved behavioral, cognitive, and physical health, reduced risk of mortality, happier and more engaged workers, and higher rates of overall life satisfaction (Brand, Warren, Carayon, & Hoonakker, 2007; Burgard & Lin, 2013; Campbell, Converse, & Rodgers, 1976; Findlay, Kalleberg, & Warhurst, 2013; Rogers, Hummer, & Nam, 2000). Other benefits include positive business outcomes for organizations and employers, such as increased productivity, profitability, and reduced turnover (Harter, Schmidt, & Keyes, 2003). Conversely,

dangerous, erratic, insecure, or otherwise low-quality work bears negative consequences for individuals as workers and as human beings. Kalleberg (2009) and Sennett (1998) discuss these detriments in detail, including the risks of job insecurity, inequality, and economic challenges alongside a variety of individual-, family-, community-, and society-related costs.

Duffy et al. (2016, p. 128) examine work quality through a more humanistic lens, asserting that work fulfills three fundamental but diverse human needs: survival and power, social connection, and self-determination. Together, attaining these needs represents individual well-being and access to opportunity – benefits that extend far beyond a worker's relationship with his or her job on a day-to-day basis.

While previous research is rife with evidence suggesting a link between work quality and a series of individual and societal benefits, inconsistent definitions of workplace well-being and the quality of work prevent consistent and clear inferences related to the significance of the quality of work in modern society. Decent Work has emerged as an internationally recognized definition of work quality (see e.g., the International Labour Organisation, the United Nations Economic and Social Council, the World Trade Organization), but its presence in the study of labor market outcomes and key issues in the school-to-work transition is necessarily limited by the wide array of quality-of-work measures featured in the available literature.

Contemporary considerations of work quality. Kalleberg (2011, p. 1) boldly contends that modern changes in work quality and employment relations represent the "dark side" of how the United States has reacted to the strong and changing economy of the 1980s and 1990s. There exists substantial evidence of polarization between those who have access to high-quality work and those who do not. In particular, these changes in the world of work

have exacerbated the already noteworthy problems of poverty, work-family conflicts, stratification by demographic characteristics such as race, ethnicity, and gender, and even in political divisions throughout the country (Kalleberg, 2011). Differential access to high-quality work, therefore, is associated with increased polarization in key noneconomic domains in addition to the more recognizable economic domains.

The recent growth in automation and other forms of technological development have simultaneously encouraged labor force productivity and threatened the job stability and quality of certain groups of workers – particularly the historically disenfranchised (Autor, 2011; Kirsch & Braun, 2016). The available evidence suggests that advances in technology have enabled many workers to have greater flexibility and control over their work, promoted greater availability of service-sector and managerial jobs at the expense of manufacturing jobs, and led to increases in work intensity (Correll, Kelly, O'Connor, & Williams, 2014; Green, 2006; Kalleberg, 2011; Osterman, 1999). While some of these developments have helped to usher in new opportunities for high-quality work, many workers continue to face challenges related to the reduction or disappearance of certain sectors, the technology-driven obsolescence of certain positions, and the corresponding decreases in benefits and full-time status to which many used to have access.

The growing immigrant population has also changed the nature of work. In the United States, the immigrant labor force increased from 5.3 in 1970 percent to 12.5 percent in 2000, representing a 218 percent jump that towers over the 38 percent growth found among the citizen labor force during this time frame (Lowell, 2007). More recent estimates suggest that immigrants continue to constitute a growing part of the labor force, comprising 16.9 percent of workers in the United States as of 2017 (Bureau of Labor Statistics, 2017).

Despite this growth, limited English language proficiency and undocumented immigrant status limit the employment options of many immigrants to the United States, and the low-skilled among this population are more likely than other members of the workforce to fill positions offering low wages, difficult or dangerous conditions, and earn few, if any, fringe benefits (Creticos, Schultz, Beeler, & Ball, 2006; Moran & Petsod, 2004; Orrenius & Zavodny, 2013).

Scholars have characterized the 21st century labor market as one that features increasingly threatened job quality and security (Kalleberg, 2011). Citing Hacker (2006) and Mishel, Bernstein, and Allegretto (2007), Kalleberg (2009) describes how declining work quality has impacted inequality, insecurity, and instability, even among the middle class. Despite consistently decreasing unemployment rates in the United States from 2010 through 2017 (Bureau of Labor Statistics, 2018a), the characteristics of the available jobs are constantly changing and the preservation of quality amid these changes is of paramount importance for the sake of a healthy and productive workforce.

Precarious, nonstandard, and informal work. Work quality has assumed many different definitions over the years and in various economies around the world, but three terms emerge consistently in the literature: precarious work, nonstandard work, and informal work.

Precarious work. Publishing via the International Labour Organisation in the 1980s, Rodgers and Rodgers (1989) brought the phrase "precarious work" into the academic and policy mainstream (Hewison, 2015). They define precarious forms of work as those that are insecure, unpredictable, unstable, temporary, lacking protections for the employee, and low-wage (Rodgers & Rodgers, 1989). Arne Kalleberg (2009, p. 2; 2011) has written about the

degradation of job quality in the United States over the past several decades, specifically identifying a growing proportion of precarious jobs that are temporary, part-time, seasonal, or otherwise "uncertain, unpredictable, and risky" for the worker. He notes that precarious work tends to be associated with a lack of benefits in addition to a lack of job security and lower wages when compared to more permanent or full-time work (Kalleberg, 2011; Torraco, 2016). Precarious work, therefore, pertains not only to the relatively poor or insecure characteristics of the job itself, but also to the lack of access to additional benefits that are not intrinsic to the nature of the job.

Union Solidarity International (n.d.) notes on its website that "precarious work is growing globally: zero hours contracts, unpaid internships and fixed term, insecure work is becoming the norm." Job insecurity is "ubiquitous" according to a 2011 ILO report (International Labour Organisation, 2011, p. 7), which specifically examined trends in OECD countries, including a 115 percent increase in temporary employment throughout Western Europe. These trends are likewise emerging within the United States and across work sectors; Kalleberg (2011, p. 10, 15) boldly claims that "all jobs have become increasingly precarious in the past four decades," and that "bad jobs are no longer vestigial but, rather, are a central—and in some cases growing—portion of employment in the United States."

In writing about precarious employment and the "precariat" class more broadly, Guy Standing (2011) makes the critical point that discussions of precarious work are not limited to jobs that pay low wages. Income inequality is certainly related to other aspects of employment inequality, but these aspects must be considered as a group in order to accurately and meaningfully portray the true extent of differences in access to high-quality work. Citing Kerbo (2003), Standing (2011) argues that these other societal inequalities

actually *intensify* the already evident disparities in earnings that so clearly divide workers already – a point echoed strongly by Braun (2016). A complete and accurate analysis of work quality thus requires evaluating characteristics of precarious work alongside more prevalent or popular indicators such as income (Standing, 2011).

Nonstandard work. Rodgers and Rodgers (1989, p. 1) define "standard employment" as that which "[incorporates] a degree of regularity and durability in employment relationships, [protects] workers from socially unacceptable practices and working conditions, [establishes] rights and obligations, and [provides] a core of social stability to underpin economic growth." Stated differently, these jobs are often temporary, part-time, under-the-table, or related to self-employment in some capacity. Discussing the quality of nonstandard work is particularly relevant today, considering that as of 2017, over one third of the U.S. workforce – comprising 57 million people – are freelancers (Upwork & Freelancers Union, 2017). As a group, freelance workers are growing at three times the rate of the overall workforce, with much of this growth driven by the 47 percent of Millennials who freelance (Upwork & Freelancers Union, 2017). Additionally, as of 2015, 29 percent (44 million people) performed some type of "gig" or contingent work as a part of the closely related gig economy (Staffing Industry Analysts, 2016).

It is important to acknowledge in the larger discussion of job quality that many employees prefer nonstandard or gig-based work arrangements due to the flexibility and other beneficial opportunities they provide. Results from the two most recent iterations of a study conducted by Upwork and the Freelancers Union (2016, 2017) suggested that approximately 63 percent of freelance workers were involved with that type of work by choice, whereas 37 percent worked these jobs out of necessity. Though not a majority

population, the 37 percent of workers in nonstandard work out of necessity remains quite high, and any significant associations found between a person's high school education and future work attainment in young adulthood may be meaningful for this group of people who are not working these types of nonstandard or informal jobs by choice. Furthermore, even among the workers who are or who have been satisfied with their freelance or gig-based arrangements, a primary concern shared by many nonstandard workers rests in access to healthcare and other benefits (Upwork & Freelancers Union, 2016). It is this access to benefits that defines key ways in which nonstandard work may additionally not be Decent Work.

Informal work. Another oft-cited element of the modern economy is the informal sector, defined broadly as any work that is not recognized under tax laws or formal regulatory policies and more casually as under-the-table work. Many workers in the informal economy are ineligible for financial credits, unemployment insurance should they lose their job, tax credits, retirement plans, and other worker protections such as safe working conditions and antidiscrimination laws (Nightingale & Wandner, 2011; Vanek, Chen, Carré, Heintz, & Hussmanns, 2014). Informal work is additionally characterized by low or volatile earnings and poor employment conditions relative to formal work settings. While the increased flexibility and lower barriers to entry remain among the key advantages of informal work, the lack of protections mar many of the opportunities available in the informal economy.

The precarious and often insecure and undignified nature of much of the work taking place in the informal economy tends to disproportionately impact women, migrant workers, ethnic minorities, youth, and the impoverished (Gunter, 2016; Lambert & Herod, 2016; Liu,

Fleming, & Burns, 2014). As such, these subgroups are systematically at a heightened risk of not attaining high-quality employment. In response to these and other concerns, a report conducted by Young Invincibles (2017) identified the major areas where informal work lacks a social safety net, principally in that 1099 workers are not protected under minimum wage laws, workplace discrimination laws, and similar policies to which full-time W-2 workers are generally entitled.

Shortcomings of popular definitions of work quality. Hewison (2015) has voiced specific criticism of the use of "precarious" to describe working arrangements, citing its lack of precision and the methodological challenges that are inherent to a poorly- or vaguely-defined term. Rodgers and Rodgers (1989, p. 3) likewise note that the "boundaries around the concept [of precarious work] are inevitably to some extent arbitrary." A variety of low-quality work arrangements have dominated the literature over the years, and Hewison (2015, p. 6) adds that this "conceptual baggage of bygone eras" clouds accurate definition and measurement of precarious work as well as quality of work considered more broadly. Kalleberg (2000) laments inconsistent definitions of nonstandard employment as well as insufficient or poor measures that preclude high-quality research on issues of work attainment. Measurement challenges persist in informal work as well, as Arnold and Bongiovi (2013, p. 292) note that informal work is, "by definition," difficult to measure.

In his more recent work, Kalleberg (2011) keeps his nomenclature relatively simple, devoting his 2011 book to outlining the various dimensions and indicators of what constitutes a "good" job. He specifically highlights economic compensation (in terms of both current earnings and potential for increased earnings), fringe benefits, and opportunities for flexibility and control over work activities, scheduling, and termination. Earlier in his book

he additionally mentions employee perceptions of interest and meaning and availability of personal time, stressing how complex and multidimensional the definition of "good" work often is. Kalleberg (2011) also discusses some of the major measurement challenges that emerge when attempting to capture something as complex as what makes a job high-quality or "good." In particular, some indicators (e.g., earnings) are relatively easy to measure and the associated data are readily available. Conversely, other indicators (e.g., job security and probability of advancement) are some combination of difficult to quantify and rarely or unreliably measured. Adding an additional layer of complexity is the reality that not all "good" jobs exhibit all of the aforementioned characteristics and the absence of one or more of these characteristics does not necessarily render a job "bad" (Kalleberg, 2011).

Another aspect of the challenges involved in measuring work quality concerns the state of research on the school-to-work transition and career outcomes in the United States. Generally, this research has focused on a limited group of quantitative measures such as income attainment and hours worked (e.g., Altonji, Kahn, & Speer, 2016; Ashby & Schoon, 2010; Tebaldi, Beaudin, & Hunter, 2017). While these indicators allow for comparability over time and across people, industries, and regions, they represent an incomplete measurement of a person's working experiences. The ILO asserts that while work does indeed provide income, it also serves as a central opportunity for "social and economic advancement, [and] strengthening individuals, their families, and communities" (International Labour Organisation, 2007). Precarious, nonstandard, and informal work are helpful in highlighting where work may lack these opportunities, but again, key definitional and methodological challenges remain. It is from these challenges and shortcomings that the research impetus to embrace Decent Work emerges.

Decent Work: a comprehensive definition of quality. According to the ILO (n.d.), Decent Work refers to opportunities for work that consist of job creation activities on behalf of governments and policy leaders, workers' rights, social dialogue, and the guarantee that "women and men enjoy working conditions that are safe, allow adequate free time and rest, take into account family and social values, provide for adequate compensation in case of lost or reduced income, and permit access to adequate healthcare." Decent Work exists as an important measure at the country level pertaining to workforce health as well as a central indicator concerning individuals' participation in the workforce. While the presence of all five elements effectively guarantees that a person's employment can be classified as Decent Work, it is possible to still attain Decent Work when one or more of these elements are missing (Duffy et al., 2017; Egger & Sengenberger, 2001) – much like Kalleberg's (2011) non-absolutist approach to defining a "good" job. As an example, a lead surgeon in a supportive and well-resourced institution may find that her working conditions are not always physically safe and that her hours do not allow for adequate rest, but her pay, benefits, and satisfaction with organizational values may be higher than those of most other working adults in the country. Decent Work is, therefore, a comprehensive, multifaceted gauge of work quality that offers an opportunity to measure attributes of a person's work with rich detail and with special attention paid to each of the defining elements considered individually and collectively.

By focusing on Decent Work, this dissertation presents an opportunity to richly explore an international standard for job quality within the context of individuals' work experiences in the United States. Previous scholarship has paved the way by identifying various means by which poor-quality work, in the form of precarious, nonstandard, or

informal employment, has systematically impacted certain subgroups of employees and disproportionately affected those with particular demographic characteristics. Additionally, for those whose work is low-quality or otherwise rooted in the informal economy, health insurance and other benefits may be elusive (Lipscomb, Loomis, McDonald, Argue, & Wing, 2006). These individuals typically face lower wages, higher rates of income insecurity, poorer working conditions, and less training (Bergström & Storrie, 2003). Those with less training are more likely to be less efficient workers, which has direct negative economic consequences. Furthermore, those facing income insecurity and difficulty in obtaining health coverage are more likely to rely on financial or social support from the government (Lemelin, 2016). Similar findings have been corroborated throughout recent decades in the United States, though little of the available research has targeted the dimensions of Decent Work specifically.

Statistical indicators and data sources used for measuring high-quality work. This section outlines some of the major measurement approaches and shortcomings with respect to evaluating high-quality work in general and Decent Work in particular. The discussion begins with how previous scholars have incorporated various data sources and variables in an effort to capture key characteristics of employment over time.

Handel (2005) uses General Social Survey [GSS] data to explore changes in job quality between the years of 1989 and 1998. Included in his multidimensional definition of job quality are material rewards (e.g., pay, job security, opportunities for promotion), intrinsic rewards (e.g., job interest, job autonomy), working conditions (e.g., stress, workload, physical effort, and danger), interpersonal relationship quality at work, and a general satisfaction measure. Clark (2005) and Warr (1999) likewise identify several

outcomes that have been used in international research of work quality. These outcomes include pay; hours of work; future prospects: promotion and job security; how hard, stressful, or dangerous the job is; job content: interest, prestige, and independence; and interpersonal relationships. The inclusion of both danger and interpersonal relationships indicates cohesion with the definition of Decent Work and its explicit focus on interpersonal and physical safety.

Using data spanning the years 1989 through 2005, Olsen, Kalleberg, and Nesheim (2010) explore international trends in job quality as defined along five dimensions comparable to Handel's (2005): extrinsic rewards (e.g., job security, pay, opportunities for advancement), intrinsic rewards (e.g., job is interesting, able to work independently, ability to help others, job is useful to society), work intensity (e.g., exhaustion, stress), working conditions (e.g., hard physical work, dangerous work), and interpersonal relationships (e.g., relations between leadership and employees, relationships among employees). Additionally, the authors include an overall work quality measure in the form of job satisfaction, scored on a scale from (1) completely dissatisfied to (7) completely satisfied. Importantly, and in contrast to this dissertation research, Olsen, Kalleberg, and Nesheim's (2010) work focuses on comparing national trends overall, rather than individual workers' experiences. However, the data initially came from self-reported measures in the International Social Survey Programme prior to their aggregation at the national level.

Taken together, each of these outcome variables reflects a different dimension of perceived job quality in addition to offering an outlet for self-reported occupational data. As Handel (2005) discusses in his article, few studies prior to his incorporated individual survey responses, instead relying upon larger-scale measures and occupation-wide indicators for the

measurement of job quality. In this way, his work marked a turning point in the vocational literature, both in terms of measuring several dimensions of job quality and in terms of accounting for individual perceptions of work experiences.

Self-report data. Clark (2005) bases his findings upon a combination of self-report data from individual workers and objective measures related to income and hours of work. Using a similar approach, Warr (1999, p. 398) discusses the relative merits and shortcomings of the data sources used to estimate the "reality" of a job's attributes. Self-report data, which relies upon individual employees' idiosyncratic perceptions, are reliable insofar as they capture what people are feeling or experiencing; seeing as feelings and experiences undoubtedly influence well-being, self-report data can be very useful in accurately capturing individuals' work experiences and perceptions of job quality. Alternatively, individual self-report measures may misrepresent characteristics of the job itself even if it effectively and truthfully captures individuals' relationships with that type of job. The implication here is that a combination of individual-level self-report data and job-level data furnished by expert ratings or industry averages will offer the benefits of the individual perspective while avoiding some of the risk of bias that inevitably emerges when discussing qualitative topics like safety and satisfaction.

Self-report probes are frequently presented to respondents in the form of a survey including user-friendly Likert-style item types. In Handel's (2005) work, he pairs phrases with a 5-point response scale ranging from "strongly disagree" to "strongly agree," from "never" to "always," and from "very bad" to "very good," depending on the phrasing of a particular item. For an overall satisfaction measure, he switches to a 7-point scale ranging from "completely dissatisfied" to "completely satisfied." While these item types are

common in survey research, the issues of response bias inherent to subjective, individual responses remain. To this end, Olsen, Kalleberg, and Nesheim (2010), among others, explicitly call for additional research using more objective measures of work quality, particularly those concerning opportunities for advancement, earnings, stress, and working conditions. This dissertation research acknowledges this call and incorporates a variety of data sources ranging from individual survey responses to larger-scale job-level characteristics that are less likely to be influenced by idiosyncratic variation.

Job satisfaction. One key self-report variable that emerged in reviewing the literature on measuring the quality of work concerns job satisfaction. Job satisfaction is frequently incorporated in vocational research as a single item, serving as the most general measure of perceived overall job quality (Handel, 2005). Its presence is ubiquitous in the literature, serving as a singular weighted sum of the various specific criteria individuals use to evaluate the quality of their jobs (Clark, 2005; Eyupoglu, Jabbarova, & Saner, 2017; Kalleberg, 2011).

After reviewing a variety of potential job characteristics that address various dimensions of a person's quality of work, Handel (2005) ultimately concludes that an overall job satisfaction measure is comprehensive in its incorporation of individuals' evaluations of both the material *and* nonmaterial features of their jobs, noting as evidence the stability of both the job satisfaction measures over the time period of his study and the other measures under study in the GSS data. Yet he also concludes that job satisfaction, though perhaps legitimate as a "catch-all" measure for myriad aspects of job quality, shares distinct relationships (and strengths of relationships) with various of the specific work characteristics in his study (Handel, 2005). As such, job satisfaction, though broad in scope, remains an

important indicator of work quality to the degree that it is considered in conjunction with other characteristics or facets of a person's work.

Measuring and documenting Decent Work attainment. Several indicators have been developed in an attempt to measure Decent Work prevalence and attainment but many of these approaches have evaluated Decent Work as a global indicator of labor force health rather than as a construct that can be interpreted at the individual level of attainment. The following paragraphs present a variety of approaches to measuring Decent Work, including both the individual and global dimensions thereof and some issues that have emerged with regard to measurement consistency and data availability.

Citing Anker, Chernyshev, Egger, Mehran, and Ritter (2003), Gil (2009) proposed four groups of indicators for measuring Decent Work: employment, social security, workers' rights, and social dialogue. Anker et al. (2003) had identified eleven groups of thirty indicators, comprising macro-level economic and social contexts: employment opportunities, unacceptable work, adequate earnings and productive work, decent hours, stability and security of work, balancing work and family life, fair treatment in employment, safe work, social protection, social dialogue and workplace relation, and the broader socioeconomic context. Anker et al. (2003, p. 164) include occupational safety as a significant component of their Decent Work measurement approach, noting that safety and health at work are issues of interest with respect to promoting "the physical and psychological integrity of workers."

More recently, in 2013 the ILO (2013) published a report in which it outlined each substantive element of the Decent Work Agenda and proposed a series of statistical indicators for each. Many of these elements referred to macro-level, internationally comparative indicators; as such, only the elements that can be reasonably measured with

respect to the individual working experience are included here. These indicators, identified as the "main indicators" of each element, are as follows: adequate earnings and productive work (working poverty rate, pay rate below 2/3 of median hourly earnings); decent working time (excessive working time: more than 48 hours per week); combining work, family, and personal life (asocial/unusual hours, maternity protection[1]); and safe work environment (occupational injury rate - fatal). It is important to note that these indicators are not exhaustive and do not include the collection of "additional indicators" or other "candidate [indicators] for future inclusion" (International Labour Organisation, 2013, p. 43).

Bescond, Chataignier, and Mehran (2003) considered seven indicators referring to conditions lacking Decent Work: low hourly pay, excessive working hours (involuntary), national unemployment, school truancy (as a substitute for child labor), youth unemployment, the gender gap in labor market participation, and rates of those in old age without a pension. Aggregated into a composite index, these seven indicators were proposed to represent Decent Work at the national level. Specifically, the authors suggested that because of their reliance on percentages, the seven indicators are "essentially additive" and may be summed into a single value representing the average Decent Work score for a given country (Bescond, Chataignier, & Mehran, 2003, p. 206). After trimming the highest and lowest percentages within the seven categories for each country, the authors suggested that this single figure could be useful for international comparison. While the ease of international comparability is undoubtedly valuable, their approach begs the question of whether an aggregate approach is the most appropriate for a measure that consistently

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[1] Measuring asocial/unusual hours and maternity protection is classified as a "future indicator" – these aspects of work are not yet measured but have been identified for developmental research by the ILO.

appears in the literature in conjunction with words like "multidimensional" and "complex." Indeed, as Ghai (2015) notes, rarely is there just one indicator of Decent Work or its components.

In addition to the concerns raised with Bescond, Chataignier, and Mehran's (2003) approach to measuring and comparing Decent Work, Howell and Okatenko (2010) raise an important measurement question regarding how to best construct a Decent Work measure that simultaneously captures its many components and that allows for a simple and meaningful use as an indicator to the extent that it can be used to compare reliably across different contexts. As Howell and Okatenko (2010) point out, such a measure has an indefinite meaning in part because the seven components do not share a denominator and, therefore, do not coexist on a standardized scale. Additionally, taking an average necessarily leads to each of the seven components being weighted equally, whereas they may in fact contribute differentially to the true meaning of what makes work "Decent."

The immediate takeaway from these challenges is that one single indicator, while arguably preferred for ease of comparison in Decent Work attainment across units, cannot feasibly capture the multifaceted, complex nature of Decent Work and the extent to which each component contributes to what makes work Decent. As such, this dissertation research heeds the concerns presented in Howell and Okatenko (2010) and evaluates Decent Work attainment in terms of its five individual components as defined in Duffy et al. (2016). Additionally, this research includes a job satisfaction measure in order to align with previous approaches to measuring individuals' perceptions of their quality of work.

Macroeconomic Components of Work Quality

In addition to considering the measurement of the various aspects of work quality overall and Decent Work specifically, it is important to consider the larger, societal patterns associated with Decent Work attainment in the United States. The data source selected for analysis in this dissertation research, ELS:02, spans the years 2002 through 2012. These data, therefore, capture a time during which the country experienced a significant economic recession that dealt a particularly hard hit to the youth unemployment and underemployment rates and that encapsulated the weakest years of job creation in the United States since World War II (Khatiwada & Sum, 2016). As the following section illustrates, while patterns in unemployment, underemployment, and issues of work quality have a stronghold on the American workforce in general, these issues come into particularly sharp focus during times of economic difficulty.

Unemployment and underemployment in the United States. Evaluating the literature on unemployment and underemployment in the United States helps to contextualize key issues in the workforce and in Decent Work attainment. Beyond the various indicators of work quality, metrics such as the unemployment rate are frequently cited at the federal, state, and local levels as a gauge of the overall health or robustness of the workforce in a particular area. The phrase "full employment" refers to the condition where all adults who want to work are able to work. Full employment is generally declared at an unemployment rate around 5 percent, though this estimate has ranged from about 4.6 to 5.1 percent in the 2011-2019 time frame (U.S. Congressional Budget Office, n.d.). As James Livingston (2016, p. 2) writes, emphasizing full employment and treating this statistic as a valid barometer of workforce strength assumes that having a job is "self-evidently a good thing, no

matter how dangerous, demanding, or demeaning it is." Kalleberg (2011) and others take issue with this notion, declining to reduce the designation of quality work to whether one is employed or not.

In addition to the overall unemployment rate, the International Organization for Standardization [ISO] calls for specific attention to be paid to the *youth* unemployment rate, which is the unemployment rate for all who are seeking work and who are between the minimum legal working age and 24 years old (International Organization for Standardization, 2013). According to their report, youth unemployment has "damaging effects on individuals, communities, economies, and society at large" because unemployed and underemployed young people have less to spend, less to save, less to invest, and fewer opportunities to engage in their communities (International Organization for Standardization, 2013, p. 8). Furthermore, youth unemployment and underemployment are detrimental to businesses and regions in terms of innovation and human capital (International Organization for Standardization, 2013).

Previous scholarship indicates that unemployment and underemployment tend to operate in tandem (Sum & Khatiwada, 2010). Additionally, many individuals who have struggled with unemployment have shifted between no work at all and work that is not congruent with their interests, qualifications, or goals (e.g., underemployment); this trend was particularly pronounced in the aftermath of the 2008 economic recession (Blustein, Kozan, & Connors-Kellgren, 2013). Because early career income is a driver of future income (Carnevale, Jayasundera, & Gulish, 2015, p. 17), unemployment and underemployment among younger generations suggests dire prospects for future financial and job security, both among individuals and communities at large. Indeed, a 2017 report

comparing a cohort (25-34 year olds) in 1989 with their counterparts in 2013 found that the 2013 cohort earned 20 percent less, accrued more student loan debt, was less likely to own a home at the same point in life, and had half the overall assets as the older cohort (Young Invincibles, 2017). With underemployment frequently characterized as precarious, low-wage, and a function of "constricted access to dignified work," (Blustein, Kozan, & Connors-Kellgren, 2013, p. 263), it is clear that the defining characteristics of Decent Work are systematically threatened by periods of unemployment and underemployment – and these threats have only increased in recent years.

The Great Recession. In their 2017 article, Kalleberg and von Wachter (2017) outline the prevailing theory that job quality falls during economic recessions in general. Citing Okun (1973) and Reynolds (1951), the authors discuss a "cyclical downgrading" of employment in which job seekers in recessions enter lower-quality jobs than they otherwise would have if the economy were flourishing (Kalleberg & von Wachter, 2017, p. 9). As the quality of the work drops, so too do employees' earnings; lower paying jobs have been shown to encompass a larger relative share of new jobs created during economic recessions (Kahn & McEntarfer, 2014). Similar research by Vuolo, Staff, and Mortimer (2012) suggests that in response to economic recession, employers often turn to reducing their employees' hours, which negatively influences earnings and living standards.

Beginning in 2007 and reaching a fever pitch in 2008 into 2009, the Great Recession represented a global economic downturn with the worst economic and job-related impact since the Great Depression (Eichengreen, 2014; Grusky, Western, & Wimer, 2011). Hewison (2015, p. 3) notes, "throughout this period, those who could get jobs found them short-term, poorly paid and uncertain." Bernhardt (2012) conducted research on the net

change in employment since 2008, and found that while most middle-income jobs lost during this period of economic downturn were gone for good in the United States, the number of low-wage jobs made available following the Great Recession was double the number of those that had disappeared. Standing (2011), citing 2009 figures from the Bureau of Labor Statistics, noted that over 30 million people reported employment in part-time positions "of necessity," which was about double the reported unemployment rate at the time and puts into perspective the condition of the unemployment-underemployment dynamics during and after the Great Recession. Presciently, and in agreement with Bernhardt's later findings, Standing (2011) predicted that most of these "necessity" jobs would remain low-paying and part-time even after the economy recovered.

Globally, firms reacted to the Great Recession by reducing full-time opportunities in exchange for additional temporary positions (Standing, 2011). Within the United States specifically, various employers retained their employees but shifted them from full-time to temporary contracts, eliminating those employees' access to medical insurance and paid leave, among other benefits (Standing, 2011). From this reduction of full-time work additionally emerged an increased prevalence of part-time work, and specifically involuntary part-time work (Board of Governors of the Federal Reserve System, 2014; Kalleberg, 2012; Valletta & van der List, 2015).

The recovery period following the Great Recession was widely characterized as a "wageless recovery" due to increased rates of those classified as the working poor and the depression of median real wages for those working low- and mid-wage jobs (Sum, Khatiwada, McLaughlin, & Palma, 2011, p. 23). However, the pervasive low wages disproportionately affected those already of lower socioeconomic status, thus exacerbating

economic inequality throughout the country; fully 97 percent all of the high-wage "good" jobs that were created in the post-recession recovery went to college graduates (Carnevale, Jayasundera, & Gulish, 2015). In addition to these instances of wage-related inequality, fewer U.S. workers were reporting that they were saving for retirement when compared to previous generations (Béland, Rocco, & Waddan, 2016). This practice, in turn, places a future burden on Social Security coverage and threatens the long-term economic health of the nation. These patterns of reduced earnings, savings, and employment all relate to the ability of U.S. workers to attain a living wage, which is a central component of Decent Work. Taken together, these findings illustrate that it was not just job *loss* that negatively impacted U.S. workers during the Great Recession, but rather the loss of job *quality* that shaped employment instability and engendered "much personal suffering" (Standing, 2011, p. 35).

In the wake of the Great Recession, the youth unemployment rate was three times that of the adult unemployment rate, affecting 74 million people globally (International Labour Organisation, 2012). Indeed, Owens and Stewart (2016, p. 7) identified the Great Recession as "multiplying" employment challenges for youth seeking employment. The youth unemployment rate carries implications for young people's current and future employability, the type and quality of job they will eventually accept in order to escape unemployment, and the nature of their local economy and workforce - currently and in the future - as the youth age. In addition to these economic concerns, Rathmann et al. (2016) found that high youth unemployment rates following the Great Recession were positively related to poor psychological health.

Other scholars have found that the Great Recession disproportionately impacted the job security and availability of young people in the midst of transitioning from school to

work (Hossain & Bloom, 2015; Sum, Khatiwada, & Palma, 2010; Sum, Trubs'Kyy, & Palma, 2012). In a 2014 paper, Sum et al. (2014) describe the pervasive patterns across the United States in which teens and young adults aged 16-24 encountered substantially higher rates of unemployment and underemployment, made worse by stagnant labor market growth overall from 2008 until 2011. This issue was further exacerbated by the strong path dependencies in young adult employment; more work experience generally predicts future likelihood of working, the availability of training opportunities, and future wages (Sum, Trubs'Kyy, & Palma, 2012).

Overall, the Great Recession and its aftermath highlighted the myriad ways in which job quality suffers in response to economic pressures. Job loss and salary volatility are among the most obvious indicators of recession, but as several scholars have noted during and since the economic downturn, increasing underemployment, reduced savings, reduced hours, and reduced benefits were some of the additional job-related losses and changes that Americans – and particularly young Americans – have weathered. The Great Recession changed modern work fundamentally by demonstrating how salary and employment status are not the only attributes of a person's work that are at risk with respect to affecting individuals' senses of job quality and security. It is in this vein that the relevance and centrality of Decent Work emerges; given the range of threats to work quality that have emerged in the midst and in the aftermath of the Great Recession, Decent Work represents an adequately complex indicator that both describes multiple dimensions of one's job experiences and acknowledges the different variables that may define that person's quality of work.

Decent Work and the School-to-Work Transition

The following section introduces the relationship between education and work alongside key issues and opportunities in the school-to-work transition. Research on Decent Work typically exists for those already in the workforce but the historically close relationship between educational and work experiences necessitates that schooling experiences be considered as a part of a comprehensive discussion of Decent Work attainment in the United States.

The relationships between schooling and work outcomes are multifaceted and central to key social justice questions in the modern United States. In particular, previous research suggests that an educated workforce is both more productive (Berger & Fisher, 2013; Haltiwanger, Lane, & Spletzer, 1999) and enjoys more positive life outcomes and greater life satisfaction than those with little or poor quality education (Cheung & Chan, 2009; Lleras-Muney, 2005; Muller, 2002; Oreopoulos & Salvanes, 2011). Examining the communal characteristics of schools with respect to future work outcomes, the following section articulates an inclusive and context-rooted model of high-quality work attainment.

The relationship between education and work. Education is one of the structural mechanisms through which people gain skills and experiences that inform their work prospects. Previous scholars have found that those facing dangerous working conditions, low wages, and a lack of benefits such as paid leave and health care are substantially more likely to have not completed their high school education and to have not pursued higher education (Goh, Pfeffer, & Zenios, 2015; Janicki, 2013; Olshansky et al., 2012; Pew Research Center, 2014). These individuals are also not, by definition, attaining Decent Work.

Though he does not discuss Decent Work explicitly, in Torraco's (2016) paper on the working poor in the United States, the author uses a theoretical model to illustrate the influential effect of educational "barriers" on declining job quality among individual workers. He explains that a lack of education implies a lack of foundational skills, which may in turn threaten a person's ability to earn a living wage and thus preclude economic self-sufficiency in a broader sense. Also at stake are intangibles such as workers' self-esteem, self-worth, and personal fulfillment (Torraco, 2016).

Torraco (2016, p. 5) explicitly notes that while the relationships among education, skills, and income are often complex, it is clear that "lack of education contributes to the persistence of working poor families in the United States." Significantly, the types of jobs this group occupies tend to be low-wage as well as temporary, part-time, or seasonal. Furthermore, low-wage work often entails demanding manual labor (Torraco, 2016), and those employed in these types of occupations are disproportionately likely to be women and to not have access to adequate benefits to meet their own or their families' needs (Oxfam America, 2013).

Education also plays a major role in the divergence between those perceiving that they work too many hours and those believing that they work too few. As Cappelli et al. (1997, p. 194) note, work is "increasingly divided between demanding but potentially enriching jobs held by educated workers—especially at the very top—and short-time, low-paid, low-skill, and often contingent work held by less-educated workers." While low-wage work is not a hard-and-fast determinant of other aspects of job quality, Torraco's (2016) research demonstrates that these conditions are often interrelated. The research approach for

this dissertation explicitly captures these interconnected but distinct aspects of low-quality work.

Fouad and Bynner (2008) contend that students are ill-prepared for their transitions from school to work with respect to both their initial transition and later progression. They point out that schools, historically, have not devoted resources to developing transitional skills, but the state of the current (as of 2008) labor market demands that schools must join individual students and their families in addressing skills development for successful school-to-work transitions.

Taken together, the available research suggests that educational barriers systematically preclude the working poor from securing high-quality employment similar to and inclusive of Decent Work. The research presented here indicates that there is a relationship between the *quantity* of schooling and Decent Work attainment, but the characteristics of schooling beyond just years of education, access to schooling, or degrees attained remains largely unexamined. Indeed, with some notable exceptions, the collection of career-related research involving prior educational experiences largely centers on indicators such as degrees earned and years of schooling completed, with less attention paid to specific schooling experiences. Some scholars have found that isolated quantitative indicators, such as "years of schooling," do not necessarily reflect educational quality and thus overlook the richness of one's educational experience (Chiappero-Martinetti & Sabadash, 2014). Two key methodological issues persist: first, measures such as years of schooling or degrees earned reflect educational attainment rather than educational inputs. Second, measuring years of schooling fails to account for whether students' have earned a credential, certificate, or degree that is explicitly connected to their career, such as a

vocational associate's degree. While measuring years may hold some utility in terms of framing a student's sociological circumstances, it fails to unpack the specific mechanisms at play in a person's educational experiences with respect to future work attainment.

School characteristics predictive of students' occupational futures. As briefly discussed in Chapter 1, some of the educational mechanisms predictive of various dimensions of student achievement include school policies, poverty concentration, student body size, course offerings, teacher relationships, teacher turnover, and drop-out rates (Bryk & Thum, 1989; Lee & Burkam, 2003; Ronfeldt, Loeb, & Wyckoff, 2013; Rumberger, 2011; Rumberger & Thomas, 2000). Overall, the literature on relationships between school characteristics and student achievement is quite rich and has been for decades. What remains less certain is the nature of the relationships between school characteristics and post-schooling outcomes among students. The remainder of this section is dedicated to outlining the research that has been conducted in this area, with an emphasis on that which remains inconclusive.

Studies supporting a relationship between school inputs and student labor market outcomes. The classic paper connecting school characteristics to future student outcomes is that of Card and Krueger (1992). The researchers assert a "causal interpretation" of the relationship between school quality and future earnings, noting that lower student-teacher ratios, higher teacher wages (relative to average wages in the state), and higher levels of education among teachers are all associated with higher rates of return to schooling among students (Card & Krueger, 1992). Furthermore, these effects persist after controlling for parental education and income. The authors note that labor market outcomes are at least as important a benchmark for assessing school quality as metrics such as standardized test

scores (which, paradoxically, did not seem to be related to school quality according to their study results) (Card & Krueger, 1992). While this assumption may hold some truth today, the publication date, the use of data from men born between 1920 and 1949, and the inclusion of segregated states and school districts in the data challenge whether or not these findings might extend to more recent populations and to women.

Methodologically, Card and Kruger (1992) did not account for clustering at the school or classroom level, opting instead to incorporate state-level effects into their study. For example, in testing the predictive power of both high school graduation rate and college graduation rate on future student earnings, the researchers found no significant relationships. However, these rates were measured at the level of the state instead of for the specific schools that students had attended. This measurement approach may be problematic considering that graduation rates vary considerably across schools and districts, particularly when examining urban school districts relative to other districts within a state (Green, 2001; Montecel, Cortez, & Cortez, 2004). The inherently higher degree of influence that one's own school has on his or her educational experiences over and above one's state of residence suggest that examining state effects fails to account for this important and demonstrable variability. Accordingly, future research on completion rates should be considered at the level of one's own school when considering individual outcomes such as those explored in Card and Krueger (1992) and those which are presented in this dissertation study with respect to Decent Work.

In a study from the 1990s, authors Crawford, Johnson, and Summers (1995) used High School and Beyond data to investigate the relationship between high school characteristics and wage outcomes for students who move directly into the labor force. They

found that the school that a student attends does make a difference in his or her predicted earnings, but a deeper dive into identifying the specific characteristics of schools that predicted student outcomes proved inconclusive. The authors included school-level variables in three categories: staff characteristics, student body characteristics, and institutional characteristics. Although this study is more than two decades old, the list of school characteristics included in their models capture useful and relevant characteristics based upon the authors' review of 311 findings across 17 prior studies: the percentage of students in academics, percentage of 10^{th} grade dropouts, school size, percentage of black students, average class size, local job listings, range of activities offered at the school, off-campus work, school type (e.g., private religious, private non-religious, public); staff salaries, teacher absenteeism, teacher resignations and retirements, and years of teaching experience among staff.

More recently, Rose and Betts (2004) used High School and Beyond data to investigate whether the difficulty level of selected courses was related to future labor market outcomes among public high school students. After accounting for demographic characteristics, family and school characteristics, and the highest degree the student ultimately earned, they found that the provision of more advanced math courses in high school led to higher log annual earnings among students. Even after controlling for additional subjects, the effect of math courses on earnings remained significant. Additionally, the researchers found that the provision of these advanced courses helped to narrow the earnings gap found among low-income and middle-income students. For the purposes of this study, the key takeaway of this paper is that high school curricula inclusive of algebra and geometry courses reliably predicts higher student earnings in the future.

Undoubtedly, part of this effect rests in individual students enrolling in and completing these courses, but another component stems from the schools themselves offering these types of courses. Throughout their paper, Rose and Betts (2004) continually reference the "human capital-signaling debate," through which they posit whether a student's education functions to increase that student's human capital (e.g., skills and potential contributions to society) or if education instead merely "signals" the presence of inherent or otherwise pre-existing student skills and abilities (Rose & Betts, 2004). In other words, the human capital stance suggests that the school itself is the agent of change, imparting knowledge to students; conversely, the signaling stance suggests that the individual students are responsible for the effects of coursework on future earnings, and the courses they select are merely reflections of those individual students' competencies. This debate reflects some of the issues this dissertation research seeks to address, namely the degree to which characteristics of schools versus characteristics of students bear more explanatory power for those students' outcomes.

Related to the provision of advanced coursework, French, Homer, Popovici, and Robins (2015) conducted a study on the relationship between high school GPA and future education and labor market outcomes. After incorporating a large collection of student- and school-level covariates in predicting future student outcomes, they noted a statistically significant relationship between a high school's provision of a designated gifted program and students' annual earnings later in life. Because their research was principally focused on student GPA, the provision of advanced coursework and other school characteristics were incorporated into the model as fixed effects to be partialled out of the GPA-earnings relationship rather than as factors meriting explicit attention in their own right. As such, beyond reporting this relationship no additional analysis or discussion was provided.

Jackson, Johnson, and Persico (2016) used the U.S. Panel Study of Income Dynamics to explore whether per-pupil expenditure was associated with student educational attainment and future labor market outcomes. They found evidence of positive relationships, including higher earnings and a reduction in the risk of being in poverty as an adult. Whether these predicted changes are due to spending or to the related decreases in student-teacher ratios, increases in teacher salaries, or other benefits that may be supported by the prospect of increased funding is not clear. Regardless of the specific mechanisms at play, these results suggest that school-based factors may play a meaningful role in reducing adult achievement gaps in labor market contexts. Similar work by Olson and Ackerman (2016) found that within the state of Wisconsin, years of teacher experience, teacher tenure within the district, teacher education levels, and teacher salary significantly predicted future labor market earnings among students.

Chetty, Friedman, and Rockoff (2014a, 2014b) expand their discussion to include teacher turnover and teacher quality as predictors of student outcomes in adulthood, concluding that high-quality teachers are associated with increased lifetime earnings. Other school-based resources include academic and career supports; access to counseling and mentorship programs in schools has had a demonstrable effect on smoothing school-to-work transitions in addition to increasing occupational status and skill levels (Bangser, 2008; Kim & Passmore, 2016; Lerner & Brand, 2006).

Although the literature appears to be rife with evidence linking school characteristics and future labor market outcomes in a way that transcends time periods and data sources, Burtless' (1996) review of studies concerning school spending reveals a surprising irony. Increased funds appear to have a negligible effect on students' achievement while still in

school, but they share a noteworthy association with greater job market success later in those students' lives. Within this volume, Card and Krueger (1996) add that students attending schools with lower student-teacher ratios and learning from teachers who have higher education levels reap greater labor market success than students lacking comparable access to these resources. Stated differently, even if school resources have no bearing on academic achievement among students, these resources may nonetheless have an effect on those students' future outcomes even when they are no longer attending school. This point provides a crucial justification for this study: studying high school characteristics and the impact of resources only in the context of current student outcomes may represent an incomplete interpretation of the role of these characteristics as those students grow into young adults and begin participating in the workforce.

At the outset of their paper, Crawford, Johnson, and Summers articulated the following approach:

> If there are identifiable characteristics [of high schools that predict student labor market outcomes], we would want to have policies that direct resources to them. If they are not identifiable, but schools do produce different labor market outcomes, we would want to focus policy on directing resources to provide incentives for teachers and schools to motivate students for labor market performance--leaving it to the teachers and principals to figure out how to do so. Such a result would provide strong support for increased schooling autonomy. If the home environment were the only significant factor determining the outcome, however, then schools would not be the arena to focus on to improve job performance. (Crawford, Johnson, and Summers (1995, p. 7)

This study follows similar logic; should the results help to identify characteristics of schools that significantly predict Decent Work attainment among students, these characteristics may be used to define policy levers in public high school education that are meaningful with respect to the school-to-work transition in the 21st century economy. Alternatively, should the results suggest that schools explain minimal variance in students' future attainment of Decent Work, with much of the explanatory power instead resting with demographic and background characteristics of individual students, then this may indicate that schools are perhaps not the most direct or appropriate conduits of labor market preparation.

Studies revealing no relationship between school inputs and student labor market outcomes. Several of the studies exploring links between educational inputs and future labor market successes and patterns among students have been conducted using large-scale, nationally representative data similar to ELS:02. Betts (1995) used the National Longitudinal Study of Youth and concluded that class size, teacher education levels, and relative teacher wages shared no relationship with students' future earnings. Similarly, Grogger (1996a) used the National Longitudinal Survey of 1972 [NLS:72] and High School and Beyond [HS&B] to conduct a study that used district-level, rather than state-level data to investigate the relationship between per-pupil spending and future labor market outcomes among students. After accounting for state-level effects as well as family background characteristics, he found that a ten percent increase in per-pupil spending was associated with an increase of about .68 percent in students' future earnings, representing an internal rate of return under one percent (Grogger, 1996a). While this finding was statistically significant, the size of the effect suggests that school spending "matters too little" for meaningful

consideration (Grogger, 1996a, p. 636). This is consistent with another of his studies, in which he found that student-teacher ratios were not related to students' labor market outcomes (Grogger, 1996b).

In a 1996 review of research exploring links between school resources and student achievement in school and in their later working lives, author Julian Betts (1996) summarized the conclusions of these studies in three statements. First, most of the studies finding a significant relationship between school inputs and student labor market outcomes consider school characteristics and resources measured at the *state* level; studies finding minimal or no evidence of a relationship study the actual *school* that students attended. Second, studies finding evidence of a relationship between school inputs and student labor market outcomes tend to come from data collected in the first half of the 20th century; studies drawing from more recent data generally reveal no evidence of a relationship. Finally, studies involving younger adult populations (e.g., in their twenties or thirties) are more likely to find no evidence of a relationship between school inputs and labor market outcomes.

While Betts' review was published over two decades ago, the distinction between exploring contextual effects at the state level versus the school level remains methodologically significant. In an attempt to acknowledge the substantial variability in school resources available within states, this study examines characteristics and resources of individual schools that students attend. Although Betts' review would suggest that this research is, therefore, less likely to find significant contextual effects, it seems methodologically unsound to ascribe statewide averages when discussing the educational and contextual "effects" on students' educational upbringings; the community of the school students actually attend is inherently much more relevant as a meaningful context in their

growth, development, and preparation for their futures. Additionally, the nesting structure differs greatly with respect to students clustered within a school and students clustered within a state. Arguably, a collection of students within a state are more likely to constitute a random sample, whereas students sampled by school reflect a clustered sample. To ensure the validity of research findings, these differences in nesting structure must be accounted for appropriately in analysis.

Ecological theory dictates that students have several layers of more relevant and meaningful "clusters" to which they belong before any clustering or aggregation at the state level is functionally meaningful (see e.g., Bronfenbrenner's (1977, 1979) Ecological Systems Theory, in which successive concentric circles represent the relative degree of influence of various communities, from the most impactful innermost communities in the microsystem to increasingly macro-level and abstract systems). With this in mind and with the desire to focus the results of this research on potential policy levers within schools, the methodological discussion that follows in Chapter 3 and the analysis that follows in Chapter 4 centers on specific school characteristics instead of averaged school attributes across a state or region, in a departure from Betts' approach.

Key takeaways surrounding the relationship between schools and student outcomes. Considered as a group, the available prior research on school characteristics predictive of students' work-related futures provides mixed conclusions. Many of the studies outline the importance of studying the school-to-work transition, presenting findings revealing some degree of association between school characteristics and future labor market outcomes among students. Other scholars – including those that have used large-scale longitudinal datasets comparable to ELS:02 – have found no relationships of note. Many of

these studies have used competing methodologies and different clustering considerations that merit additional clarification through research. Furthermore, the school-based "inputs" that are measured vary, the student-based "outcomes" that are measured vary, and few studies dealing with nested data have statistically accounted for the nonrandom clustering of students within schools. It is also worth acknowledging that many of the oft-cited studies presented here are decades old or use data from as far back as the first half of the 20th century.

As Cullen, Levitt, Robertson, and Sadoff (2013, p. 149) write, "More research is needed to sort successful school models and components from those that do little to improve graduation rates and subsequent labor market outcomes." The connection between education and labor market outcomes is a critical one, and while many of the scholars cited herein have generated promising insights, the nature of the relationships is not always clear and additional research is warranted to study the key associations between educational experiences and work (and particularly Decent Work) attainment. Beyond the uncertainty in the relationship between the schools students attend and those students' future work outcomes, the body of studies cited in this section highlight some key differences in methodological approaches and raise some important questions regarding how to best measure the contextual effects of schools in conjunction with the individual educational experiences of students.

Altonji and Mansfield (2018) explore in what ways schools and communities are associated with students' future educational and work outcomes. They explicitly address the glaring selection bias issue that may confound the results, asking whether students' outcomes differ primarily because of the school's actual influence or because the schools serve students who are already predisposed toward certain labor market outcomes. The difficulty in

extracting the true effects relates to the issue of determining correlation versus causality: is a relationship between students' schools and those students' future career outcomes due more in part to the school's characteristics, or is the relationship more reflective of students' individual characteristics that, in part, influence the school they attend (and therefore get "masked" by school characteristics)? Alternatively, effects could be rooted in other factors entirely.

"Ability bias" is pervasive in research concerning the relationship between school effects and individual educational attainment. Relating to the human capital-signaling debate referenced in Rose and Betts (2004), ability bias dictates that those with greater educational attainment are more able at the outset, so their labor market outcomes are more positive regardless of whether they completed those additional years of education. Conversely, the signaling argument stipulates that it is not one's innate ability that predetermines labor market outcomes, but rather his or her securement of an educational credential. In other words, when investigating the relationship between schooling and work outcomes, the ability bias argument suggests that any relationship is a spurious correlation that can be explained away by other factors. The signaling argument suggests the opposite: that the outcomes of interest are causally rooted in educational factors.

The "true" relationship between schooling and work outcomes likely falls somewhere between these two extremes, but additional research is necessary to help clarify the nature and prominence of high school characteristics with respect to individual occupational outcomes. This dissertation research expands the discussion of schooling characteristics beyond individuals' years of education and explicitly models the interplay between educational characteristics and background and family characteristics. As such, this research

features a more holistic interpretation of students' educational experiences than what previous research has offered, while additionally acknowledging the interplay of individual background variables and schooling characteristics in terms of Decent Work attainment.

Public schools and the school-to-work transition. While characteristics such as poverty concentration are fixed features of a community that educational systems may not be able to directly impact, many of these variables present an opportunity for intervention and change in schools. With respect to public schools in particular, the characteristics of the student body are generally reflective of those of the community at large; therefore, any opportunities for intervention in schools carry significant consequences for the surrounding community.

Public schools as community institutions. Recent Census data indicate that fully 45 percent of public school funding came from local revenue in 2015 (U.S. Census Bureau, 2017). This figure has been largely consistent over the past few decades; in 2002, during the baseline year of data collection for ELS:02, 43 percent of school funding was generated locally (U.S. Census Bureau, 2004). A related consideration particularly salient to public education is that average spending per pupil has grown dramatically in public schools around the country, and the communities housing those schools are entitled to know whether schools are reaping "returns" to this investment with respect to students' participation in the economy. This characteristic of public accountability is unique to public schools and has direct community implications for local, state, and federal education policy.

Indeed, public schools are uniquely beholden to federal education policies such as the No Child Left Behind Act [NCLB] and the more recent Every Student Succeeds Act [ESSA], including in terms of testing requirements by grade and accountability reporting requirements

to states and communities. States and local communities must make these data available such that they are accountable both to extant federal policies as well as to their citizens and neighbors.

Public schools as conduits of neighborhood effects. In addition to the considerations related to local funding and public school-specific education policy, a series of scholars have approached the contextual influences of schools in terms of how they convey resources to students. Much of this research is rooted in the study of neighborhood effects, which are theorized to transmit resources to young community members, both directly and indirectly, in the form of public schools. In a 2016 chapter, O'Day and Smith (2016) detail the multifaceted ways in which neighborhood and school effects intersect, noting that unequal opportunities within schools compound the unequal opportunities present outside school. Although the authors note that schools are an important and unique contributor to student outcomes, they ultimately conclude that "changes in both the out-of-school opportunities and the within-school opportunities are necessary if we wish to dramatically reduce student achievement and attainment gaps" (O'Day & Smith, 2016, p. 312).

Leventhal and Brooks-Gunn (2000) use the example of a housing and schooling program in Yonkers, New York to illustrate how neighborhood effects may be conveyed through schools in addition to parents and peers. The authors found that associations between high socioeconomic status neighborhoods and student achievement indicated small to moderate neighborhood effects, with neighborhood characteristics accounting for about five percent of the variance in child outcomes after accounting for a collection of family

characteristics related to family structure, income, education, maternal age, and race (Leventhal & Brooks-Gunn, 2000).

Leventhal and Brooks-Gunn (2000, p. 330) additionally note that affluent neighborhoods confer key "institutional resources conducive to child and adolescent well-being" via the quality of their schools. Jargowsky and El Komi (2011) discuss the educational "inputs" that constitute these institutional resources, distinguishing between those that are direct (e.g., teacher quality, financial resources, and family support) and those that are indirect (e.g., neighborhood characteristics and values; peer abilities, attitudes, and performance).

Other research suggests that the inferior schools within these neighborhoods lower the human capital of students with respect to future access to opportunity in the labor market (Smeeding, 2016; Vartanian, 1999; Wilson, 2012). Wilson (2012, p. 103) discusses how the "radically different" internal structures and environments of wealthy, suburban, and white schools compared to poor, urban, and non-white schools manifest in students developing different skills and orientations toward work. Bowles and Gintis (2011) note that these differences may appear in terms of demeanor, class identification, self-image, and the cultivation of communication styles. In their view, these and other attributes that employers believe to signal ability in the world of work are generally reflective of those cultivated in wealthier neighborhoods and schools. The wealthier schools enable greater student participation, freedom, and control in a way that poor and non-white schools do not; these environmental characteristics tacitly but directly prepare students in wealthier areas to attain more success and opportunity in the world of work (Bowles & Gintis, 2011). In a provocative statement, Wilson (2012, p. 103) summarizes this argument as follows:

"consignment to inner-city schools helps guarantee the future economic subordinacy of minority students."

Vartanian (1999) extends his discussion of human capital to include the theory of relative deprivation, which hypothesizes that disadvantaged children living in wealthy, well-resourced neighborhoods will have limited economic success when they enter the labor market. Two school-related mechanisms are thought to be at play: first, these students may perceive a barrier or inability to compete with the more advantaged students (and perform poorly as a result of this mindset); and second, these students may struggle with some of the social norms embodied by their peers who belong to a different socioeconomic class. Together, these factors lead to reduced human capital development and, ultimately, to poorer labor market outcomes.

The theory of relative deprivation illustrates a crucial discrepancy: for children who grow up in disadvantaged households, the relationship between neighborhood quality and future labor market outcomes is *negative*, whereas for more advantaged students it is positive. As such, Vartanian's perspective has important implications for exploring the interaction between individual characteristics and contextual characteristics; depending on their own socioeconomic background, students' future labor market outcomes may be differentially mediated by the type of school they attend. The importance of exploring these types of interactions between individual and contextual circumstances is echoed by Ellen and Turner (1997).

Other scholars have identified specific individual characteristics that appear to interact differentially with neighborhood effects in predicting future academic and labor market success. Leventhal and Brooks-Gunn (2000) found that adolescent boys may be more

sensitive to neighborhood effects than adolescent girls, noting larger achievement gains in boys when living in an advantaged community. The authors additionally discuss how parents may act as brokers with respect to their children's experiences with neighborhood resources. More recent work by Chetty, Hendren, and Katz (2016) introduces the additional consideration of time, noting substantial treatment effects in the individual-neighborhood interaction. Children from disadvantaged families who moved to an advantaged neighborhood before they turned 13 ended up with higher earnings as adults, whereas for children over 13 the supposed disruption effects were associated with even lower earnings than had they remained in their original neighborhood. Overall, this body of research indicates that person-neighborhood considerations are complex and merit additional research specifically with respect to individual labor market outcomes.

Limiting this research to public schools enables the consideration of two key issues as described in the preceding paragraphs: first, unlike other types of schools, public schools are reflective of their surrounding neighborhoods and communities by definition. As such, public schools serve as a meaningful and direct proxy for studying the neighborhood effects that have historically shared strong associations with student achievement and key labor market outcomes. Accounting for public school characteristics is thus an essential component of acknowledging contextual influences as they are defined in the PWT. Second, neighborhood effects, in the form of public schools, appear to be differentially associated with key achievement and labor market outcomes based upon individual and family characteristics. Leventhal and Brooks-Gunn (2000) describe how neighborhood effects operate directly through schools and peers and indirectly through one's home environment,

and it is the combination of these direct and indirect effects that inform the two-level design outlined in this dissertation.

Public high schools and the school-to-work transition. In a report published in 2000, just prior to the collection of ELS:02 baseline survey data, author Richard Lynch (2000) emphasized the importance of career exposure, preparation, and planning during the high school years in particular. While his work was mostly concerned with specific approaches in career and technical education, he noted that what he calls "effective public high schools," in a general sense, are "highly responsive to the community and highly responsible to the students' individual development" (Lynch, 2000, p. 12). Specifically, public schools are uniquely suited to serve their surrounding communities and the developing workforce therein, and high schools serve students at a point in their life at which they can use their education to improve their income and other work- and life-related outcomes (Lynch, 2000).

Although specific career development programs are not the focus of this dissertation research, the determination of "effective" school characteristics is of interest, with respect to students' future attainment of Decent Work. The decision to limit this research to a high school context reflects a commitment to studying a key developmental stage in students' lives as they complete their education and transition into their careers.

Interpreting Decent Work in terms of the school-to-work transition. The primary goal of this dissertation research is to identify the degree to which characteristics of schools predict future Decent Work attainment among students when considered alongside students' individual characteristics. Should the analyses reveal that variability in Decent Work attainment is largely attributable to individual student characteristics with little left for school

characteristics to explain, a necessary conclusion is that schools overall are minimally relevant to Decent Work outcomes among their students. However, even if schools are minimally predictive of Decent Work attainment, there remains the possibility that relationships among school characteristics and student characteristics (in terms of predicting future Decent Work attainment) vary by school, which is of interest in both research and policy arenas.

Decent Work and Individual Attainment

Research concerning the individual characteristics predictive of high-quality work attainment is more consistent overall than the research on school-level predictors of student outcomes, though the universe of individual variables included in this research encompasses a broad array of demographic, sociological, psychological, and behavioral characteristics. The following discussion is divided according to these broad categories, exploring major trends and findings in the research on individual predictors of future career attainment and other labor market outcomes.

Context in action: demographic and sociological predictors of occupational outcomes. Certain contextual variables not directly connected to a student's schooling environment may exhibit a demonstrable association with educational experiences and, ultimately, the attainment of high quality work. In particular, family socioeconomic status often exhibits strong correlations with educational and occupational expectations for students (Lareau, 2003, 2011; Reardon, 2011). Referencing literature relating to the interplay between family background variables and school performance, Duffy et al. (2016) recognized the implication that students' socioeconomic backgrounds contribute to their

career development in educational settings as well as their propensity to secure Decent Work in future years.

Concerning individual characteristics, female, non-white, and non-native students may face unique challenges during their transitions from school to work. With respect to gender, around the time of the ELS:02 base year survey, Johnson, Oesterle, and Mortimer (2001) found widespread acceptance of the belief that men remain the primary breadwinners in society. Vuolo, Mortimer, and Staff (2014) argued that men may thus be more likely than women to pursue "career-like" jobs after concluding their education, in contrast with women's more tentative, temporary, conditional, or otherwise precarious work situations. This line of argument has direct implications for Decent Work attainment, given that precarious employment, by definition, rarely meets the standards for Decent Work.

Immigrant status among families and individuals shares complex associations with work, in that while immigrants overall are underrepresented in professional and managerial work contexts (Grzywacz, Gopalan, & Carlos Chavez, 2018), immigrants of varying races, ethnicities, and legal statuses have disparate work outcomes. Notably, in a study conducted among recent legal immigrants, Rosenblum, Darity, Harris, and Hamilton (2016) found that those with darker skin faced a "skin shade penalty" in earnings, though the effects of colorism vary by country of origin. Additionally, there is evidence of a skills gap between legal and illegal migrants (Steigleder & Sparber, 2015) and illegal immigrants are more likely than legal immigrants to work in low-quality settings and for substantially lower wages (Hall & Greenman, 2015; Riviera-Batiz, 1999). While some of these differences can be explained in terms of human capital (e.g., illegal immigrants are less educated, less proficient

in English, and have been in the United States for fewer years on average when compared to legal immigrants), the legal status effect persists.

Vuolo, Mortimer, and Staff (2014) used data from the Youth Development Study to explore how the combination of individual social backgrounds, educational and economic circumstances, and educational and working experiences in adolescence predict future educational and work-related pursuits. Citing Corcoran and Matsudaira (2009) and Edelman, Holzer, and Offner (2006), the authors explain that economically disadvantaged youth are disproportionally likely to end up in "erratic" employment contexts during their first few years in the workforce (Vuolo, Mortimer, & Staff, 2014).

Social support has likewise exhibited strong relationships with educational attainment as well as the nature of the work that students are eventually prone to attain (Ahmed, Minnaert, van der Werf, & Kuyper, 2010; Bowen, Hopson, Rose, & Glennie, 2012). Among economically disadvantaged and racial and ethnic minority student populations especially, research conducted throughout the past two decades suggests that perceived barriers in students' occupational futures play a key role in shaping their eventual career attainment (Brown & Lent, 2016; Gibbons & Borders, 2010; Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003; Ladany, Melincoff, Constantine, & Love, 1997; Perry & Calhoun-Butts, 2012).

Related to social supports, social and cultural capital appear to play a significant role in the educational lives of students and in shaping their future work outcomes. Social capital broadly refers to a social network-based resource that enables the use of connections to perpetuate social inequality through a combination of material and financial assets (Bourdieu, 1986). Cultural capital, according to Bourdieu (1986), is also a social property but

specifically references one's collected cultural knowledge that can be "exchanged" for status, power, and money. These concepts are distinct but not dissimilar; they both represent a socially-rooted means of acquiring power in some form, although social capital is more directly rooted in one's social connections and cultural capital is based upon the resources to which one has access. In terms of individuals' career development, social and cultural capital refer to one's home life and the various social and material resources made available therein.

The importance of social capital is readily apparent in discussions surrounding parental aspirations. As Schoon, Parsons, and Sacker (2004) found, among socioeconomically underprivileged families, high parental aspirations are associated with educational resilience and future adult adjustment in the form of educational and work outcomes. A 2014 study on rural youth in the United States found that parental aspirations were related to students' educational aspirations. The students' aspirations, in turn, are important indicators of healthy development, future educational and occupational attainment, and a smooth transition into adulthood more generally (Meece, Askew, Agger, Hutchins, & Byun, 2014).

In a 2018 paper using data from the Programme for the International Assessment of Adult Competencies [PIAAC], Braun (2018, p. 1) evaluates and "quantifies the length of the shadow cast by family background and personal characteristics on an individual's prospects in the labor market." He found that parental education predicts individuals' educational attainment and cognitive skills, with the cognitive skills effect persisting even after accounting for individual educational attainment. Furthermore, family background, which includes an indicator for parental education as well as for the number of books in the home,

was found to predict individuals' future labor market outcomes, with the effects mediated by educational attainment and cognitive skills. The home environment is situated here as the primary contextual force through which indicators of socioeconomic status and cultural capital are transmitted – both directly and indirectly – to ultimately predict students' eventual labor market outcomes. The extent to which the schooling environment operates as a contextual force, however, remains largely unexplored in this capacity. To this end, the author acknowledges the considerable global interest in exploring the degree to which education and other sociological factors may help address some of the major generational sources of inequality.

Perry, Martinez, Morris, Link, and Leukefeld (2016, p. 2-3) discuss how cultural capital is "required" to create and realize career plans, particularly for high-status occupations that may have an implicit barrier to entry. The author also discusses how racial and ethnic minorities, those of low socioeconomic status, and those growing up in a household (or other context) without a college-educated role model are less likely to have access to the cultural capital that informs their career plans.

Dumais (2002) writes specifically about the relationship between cultural capital and gender, noting that women may take their cue from society at large and embrace a worldview that involves more obstacles to their educational and occupational success than what men may experience. Female students who have access to cultural capital and who are able to leverage it in their education and career development are thus better positioned to overcome these obstacles. Stated differently, among those who are employed in some capacity, access to cultural capital may mediate the relationship between gender and one's ability to secure high-quality employment along the lines of Decent Work.

The research on social and cultural capital in the context of educational and occupational attainment suggests that these forms of capital play a significant role while additionally sharing associations with other sociodemographic indicators. A thorough analysis of the relationship between these forms of capital and future work attainment must incorporate these indicators in an attempt to acknowledge and account for variability.

Overall, the literature presented here suggests that there is a vast and complex web of individual demographic and family effects that impact different dimensions of labor market outcomes and work quality. The following section adds to this body of research with a focus on psychological and behavioral characteristics predictive of future work outcomes.

Effects from within: psychological and behavioral predictors of occupational outcomes. Although many of the factors associated with educational and occupational attainment are rooted in sociodemographic characteristics, there is a large body of literature in the vocational development sphere focused on the psychological and developmental predictors of future work attainment.

On the psychological dimension, research in the United Kingdom conducted on 17,000 individuals across two generations revealed that a combination of teenage educational and occupational aspirations as well as individual educational attainment predicted future work in professional and managerial occupations, even after accounting for demographic factors (Schoon & Parsons, 2002). Combined with some of the research highlighted above, there is evidence that aspirations among both students and parents affects the future educational and occupational experiences of those students.

Among these individual students, achievement scores and GPA data appear to share a positive relationship with employment outcomes considered overall. Hanushek, Schwerdt,

Woessmann, and Zhang (2017) found that test scores were positively related to one's probability of employment. Similarly, French et al. (2015) outlined the importance of GPA in predicting both educational attainment and future earnings. Others have examined other types of cognitive assessment data; one study by Dubow, Huesmann, Boxer, Pulkkinen, and Kokko (2006) found that childhood IQ had positive direct and indirect effects on future educational and occupational attainment even after accounting for parental occupational data.

Factors relating to the broader schooling experience appear to share associations with future outcomes. Key among these factors is work experience while in high school. Vuolo, Mortimer, and Staff (2014) highlight the role of steady paid work, suggesting that some experience is predictive of postsecondary educational attainment and positive work outcomes including higher wages, but that too many hours spent working while still a student may have negative consequences for students' educational and occupational futures. Other factors related to the high school experience that appear to have an association with future labor market outcomes are featured in French et al. (2015). In their study, student variables predictive of future educational attainment included the number of days the student skipped school and whether the student had been suspended or expelled. When extending their model to explore outcomes related to future earnings, the number of days the student skipped school was once again a statistically significant predictor, and whether the student had been suspended or expelled was a significant predictor among women but not among men (French et al., 2015).

Caspi, Wright, Moffitt, and Silva (1998) found that among the 15-year-olds in their New Zealand-based study, school involvement was negatively associated with unemployment in the subsequent seven years. Barron, Ewing, and Waddell (2000) found

similar results but focused on the positive relationship between student athletic participation and future educational and labor market outcomes. Individual characteristics positively related to unemployment include delinquency and poor physical health (Caspi et al., 1998). A 2015 meta-analysis confirmed in 61 out of 70 reviewed studies this negative relationship between adolescent health and educational and employment outcomes (Hale, Bevilacqua, & Viner, 2015). Similar associations were found with mental health in particular.

Research on psychological traits conducted in the early 1970s revealed that students who were tough-minded, independent, and non-neurotic were more likely to specify their career goals, embody self-actualized behavior, and ultimately have success in job attainment (Stevens, 1973). A decade later, Savickas (1984) wrote of the role that career maturity plays in securing work, which he followed up with a series of articles relating to the relationships among career construction, career adaptability, vocational development, and career attainment (Savickas, 1997, 2001, 2002, 2005, 2013).

Savickas (2002) further noted that an individual's career attainment is determined by a combination of parental socioeconomic status and the individual's education, abilities, personality, self-concepts, and career adaptability. It is this combination of factors that then interacts with the available opportunities to guide a person's career pattern. In presenting this facet of his career construction theory, Savickas (2002) acknowledges the complex interrelationships among (and equally significant contributions of) one's context, experiences, and psychological traits. In other words, it is not context alone, nor is it idiosyncratic psychological traits alone that influence career development, but rather the complex combinations among these factors that ultimately inform vocational development and work attainment.

Other psychological factors found to predict future work outcomes include educational and occupational aspirations, vocational interests, independence, knowledge about career options and career decision making, self-knowledge, orientation toward future vocational development tasks, willingness to compromise, decisiveness, and planfulness (Crites, 1978; Savickas, 1999; Stoll et al., 2017; Super, & Overstreet, 1960). Within their Social Cognitive Career Theory, Lent, Brown, and Hackett (2000; see also Lent, Brown, & Hackett, 1994) note the interplay of self-efficacy beliefs, outcome expectations, and goals with respect to career development and attainment. More specifically, six interrelated processes are proposed to emerge at key developmental points within the school-to-work transition: acquiring positive and realistic self-efficacy beliefs and outcome expectations; developing academic and career interests; forming linkages between interests and career goals; translating goals into actions; developing and honing academic and work skills; and negotiating social supports and barriers impacting development and the pursuit of preferred academic and career opportunities (Lent, Brown, & Hackett, 2000). Importantly, the theorists acknowledge the moderating influence that external factors and opportunity structures may exert on students' development of beliefs and interests as they navigate the school-to-work transition.

The School-to-Work Transition: Considering School and Student Effects

The body of research presented thus far in the literature review is instrumental in informing approaches to addressing predictive relationships in the school-to-work transition. Although there is a lack of clarity with respect to which school characteristics, if any, are predictive of key labor market outcomes among students, the collection of studies presented helps in identifying the characteristics of schools that may be worth considering as main

effects versus statistical covariates that can be "controlled for" but may not be not of primary research interest. The school characteristics and effects presented across the literature cited here help to identify and define the final list of school-level variables to be entered as potential predictors within the analyses presented in this dissertation.

Significantly, previous research has demonstrated evidence of both contextual and individual characteristics predictive of high-quality work attainment, though the interplay between these two levels remains largely unexamined. The next section of this chapter discusses Decent Work in the context of career development, giving consideration to individual, psychologically-rooted career development theories as well as contextual, sociologically-rooted theories. After outlining and discussing major career development theories in these two camps, the chapter introduces the Psychology of Working Theory (Blustein, 2001, 2006, 2008, 2013; Duffy et al., 2016) as a part of a larger discussion on studying the predictors of Decent Work attainment in both individual and contextual characteristics. Though this section introduced a wide array of school and student level predictors that have been studied in the context of work attainment in previous research, the Psychology of Working Theory serves to focus this research on those predictors that are most central to key issues in Decent Work attainment.

Career Development Theories and Decent Work Attainment

Several theoretical strands have dominated the career development literature in the past century, with the primary focus alternating between psychologically- and sociologically-focused lenses over time as the two developed "in virtual isolation" from one another (Moore, Gunz, & Hall, 2007, p. 16). Psychological frameworks generally emphasize the personality characteristics that theoretically predispose an individual to seek particular

careers. Often distinct from psychological career development theories, sociological frameworks incorporate a structural focus, centering on the interplay between work opportunities and the constraints on these opportunities at the societal level.

Within the psychological domain, Parsons (1909) was among the first major theorists to highlight the importance of person-environment fit. His theory was rooted in the interplay of three factors: knowledge of self, knowledge of career opportunities, and the understanding of the relation between them. Parsons was additionally a fierce advocate of vocational training in educational contexts. Indeed, he noted that there is "no time in life when wise counsel and expert assistance are more needful than in the transition from school to the new life of labor" (Parsons, 1909, p. 101). Holland (1997) expanded upon Parsons' ideas in his work on the centrality of person-environment fit in vocational development. Expanding beyond the measurement of fit, Lent, Brown, and Hackett (1994, 2000, 2002; Lent, 2013) developed their Social Cognitive Career Theory [SCCT] to articulate the role an individual's self-efficacy beliefs, career motivation, and outcome expectations play with respect to career attainment.

Sociological theories take a different approach, explicitly situating career development and attainment in contextual and structural forces (Hotchkiss & Borow, 1996). Much of this research follows from Hodkinson and Sparkes' (1997, p. 29) paradox within vocational research, which states that policies surrounding the school-to-work transition and career decision-making tend to overwhelmingly emphasize individual agency despite the "dominance of socially-structured pathways." Some scholars have rooted their research in specific predictors, including examining the role of childhood poverty in predicting workforce and other life outcomes (Diemer & Ali, 2009; Duncan, Ziol-Guest, & Kalil, 2010).

Ali, McWhirter, and Chronister (2005, p. 41) highlight a series of studies suggesting that socioeconomic status and family, peer, and teacher support "[influence] the way individuals perceive their opportunities and [affect] their access to educational and vocational resources." Others consider more broadly the factors that "define, direct, and restrain" opportunities (Moore, Gunz, & Hall, 2007, p. 16). For Blau and Duncan (1967), status attainment and transmission comprise their model of career development.

Overall, psychological frameworks are incomplete in their failure to account for structural factors that inhibit a person's ability to generate career preferences and to attain work that is aligned with these preferences. Correspondingly, sociological frameworks are incomplete in their overreliance on the prestige dimension of occupational choice and one's eventual placement within the socioeconomic hierarchy. To this end, a third group of career development theories might be classified as hybrid theories for their dual consideration of individual psychological factors and contextual sociological factors. Key theorists within this domain include Super (1980), who centers on the interaction of environmental, situational, and personal determinants and how the relative importance of these factors (and the extent to which they intersect) may change over the life span. Similar to Super's approach is Krumboltz, Mitchell, and Jones' (1976) Social Learning Theory of Career Selection, which dictates that a person's career choice is the culmination of a series of recursive, interactive experiences shaped predominantly by four domains: genetic influences, environmental conditions and events, learning experiences, and task approach skills. In SCCT (Lent, Brown, & Hackett, 1994, 2000, 2002; Lent & Brown, 1996), self-efficacy, outcome expectations, and goals interact with personal characteristics and environmental factors in "complex, reciprocal linkages" to influence the progression of career development

(Lent, Brown, & Hackett, 2000, p. 36). Similarly, Anderson and Vandehey (2012, p. 87) theorize that "the internal self responds to external cues with specific behaviors."

These hybrid theories provide a comprehensive view into the interplay between contextual and individual characteristics with respect to career development and attainment. A theory appropriate for use in this study must combine this emphasis on the interplay between psychological and sociological factors with empirical utility and the ability to use it with school-aged populations with respect to the school-to-work transition. The contemporary Psychology of Working Theory meets these requirements while also explicitly highlighting the attainment of Decent Work as the outcome.

The Psychology of Working Theory

One of the more recent career development theories is the Psychology of Working Theory [PWT], initially developed by David Blustein (2001, 2006, 2008, 2013). The PWT takes an inclusive approach to career development, accounting for social and other contextual forces in addition to individual factors. As such, it builds on the tradition of the hybrid models to career development outlined above, but additionally dedicates attention to barriers and opportunities in the attainment of work as well as the career development of marginalized populations. In its most recent iteration, and unlike previous career development models, the PWT places these contextual, socioeconomic factors "at the forefront," with the explicit goal to "add unique new knowledge about the challenges that exist for all those who are seeking out dignified and decent work" (Duffy et al., 2016, p. 129-130). Stated differently, while the scholars cited earlier in this chapter outline what is theorized to be important contextually with respect to labor market outcomes in general, the

Psychology of Working Theory framework helps to limit and clarify what ought to be considered with regard to predicting Decent Work attainment specifically.

The PWT presents a series of predictors and outcomes that are assumed to interrelate and covary, with some of these relationships supported theoretically and others supported both theoretically and empirically. Economic constraints and marginalization are proposed to serve as predictors of Decent Work, with these relationships mediated by the individual traits of work volition and career adaptability (which are replaced in the present study by a single factor called internalization of the school-to-work transition). The model additionally includes a collection of moderators and outcomes of Decent Work. These factors highlight the consequences of Decent Work attainment and help to contextualize this study.

School as context in the Psychology of Working Theory. Incorporating educational experiences within research concerning the PWT provides a specific area of focus for the aforementioned contextual, sociological influences on a person's attainment of Decent Work. Nearly all children and young adults in the United States experience school as one of their primary social and developmental contexts.

Several scholars have undertaken research related to how schools function as central social contexts for youth in the United States. Ecological theorists, such as Bronfenbrenner (1979), discuss schools as operating in the environment immediately adjacent to one's self. The "microsystem," as Bronfenbrenner (1994) defines it, comprises activities, social roles, and interpersonal relationships that support and sustain the developing person and that feature and enable complex person-environment interactions. In this chapter he explicitly identifies classrooms and schools as a "key developmental setting" (Bronfenbrenner, 1994, p. 40) of the microsystem, and suggests that these settings are of major research interest.

Considering both the prevalence of the school setting as a key social context among youth as well as its proximity to individual development, students' educational experiences comprise the contextual dimension of the PWT in this study.

Predictor variables in the Psychology of Working Theory. Within this dissertation research, the predictor variables include economic constraints, marginalization, and the internalization of the school-to-work transition. The interactions between and among these predictors merit additional consideration in the model, with intersectionality theory (Cole, 2009) guiding the comprehensive consideration of the web of contextual factors that comprise economic constraints and marginalization specifically. The internalization of the school-to-work transition is measured among individual students and is proposed to help explain the relationship between the predictors (economic constraints and marginalization) and the outcome, Decent Work attainment. Each of the predictors is briefly introduced below, followed by a larger discussion of how these indicators and their component pieces have been shown to relate to key career-related outcomes in previous research.

Economic constraints. Although the measurement of predictors in the PWT is not prescriptive, the available literature indicates that the various indicators of economic constraints identified by Duffy et al. (2016) share strong and meaningful relationships with key academic and labor market outcomes. "Economic constraints" can take a number of different forms, but fundamental to its definition within the PWT are indicators of social class, social capital, and cultural capital. Specifically, social class determines access to economic resources and to social and cultural capital (Duffy et al., 2016). In turn, each of these three factors influences access to career development and the attainment of Decent Work.

Social capital. Broadly, social capital represents the means through which individuals can access information or resources through their social connections. Social capital might also include shared obligations and expectations among these connections, information channels within a social group, and social norms (Coleman, 1988). Bourdieu (1986) discusses how social capital, though intangible, can be exchanged for economic capital in certain conditions.

At the contextual level, the resources conveyed through teachers, administrators, and fellow students help to define the access to social capital within a given school. In this way, mentorship and related types of student support may be considered as a type of social capital. In his review of various definitions and theories of social capital, Portes (1998) clarifies that a key component of social capital is privileged access to resources, information, and opportunities, which counselors and mentors can provide to students by virtue of their experience and training.

Among individual students, social capital may refer to these resources as they are made available and accessible through their home environment. Kim and Schneider (2005, p. 1182) define social capital as "parent-child relational ties," implying that students gain social capital through interactions with family. Importantly, though social capital may be correlated with family socioeconomic status, social capital influences student outcomes in ways beyond what socioeconomic factors may explain on their own (Kim & Schneider, 2005).

Scholars have incorporated parental educational aspirations as indicators of social capital, with some focusing on parental aspirations alone (e.g., Khattab, 2015; Scott, 2007) and some focusing on the alignment between student aspirations and parental aspirations

(e.g., Kim & Schneider, 2005). Archer, DeWitt, and Wong (2014, p. 77) write that aspirations function as a proxy for other, more network-based forms of social capital in that they "form part of the ongoing social reproduction of privilege/disadvantage." As a part of this discussion, the authors additionally note that education policy must acknowledge these aspirations not by encouraging all to achieve the highest "prizes," but by better supporting disadvantaged students such that these aspirations may be developed and fortified. Examining social capital indicators among student families and in those students' schools, therefore, provides an opportunity to evaluate whether different forms of social capital interact and intersect in important ways.

Cultural capital. Cultural capital refers to a set of knowledge, skills, and experiences that enhance social mobility (Bourdieu, 1986). In traditional views, cultural capital implies a certain familiarity with "highbrow" aesthetic culture (e.g., theatre, museums, and concerts), but more recently, Lareau and Weininger (2003) have eschewed parts of this traditional definition in favor of one that focuses more centrally on the ways in which culture is used to provide access to scarce resources.

Cultural capital may additionally incorporate the knowledge of how to "negotiate environments" (Fouad & Bynner, 2008, p. 244). Within schools, cultivating cultural capital in this way involves providing tools related to training students how to negotiate their occupational journeys and think broadly about their careers. Fouad and Bynner (2008, p. 244) contend that fluctuations in the labor market and in occupations more precisely require a series of "metacompetencies" as individuals evaluate and reevaluate their proficiencies and approaches toward their working futures. Citing Bourdieu and Passeron (1977), the authors note cultural capital as one of these metacompetencies, defining it as individuals' knowledge

of how to negotiate and behave with respect to work-related contexts (Fouad & Bynner, 2008). Broadly, this may include exploring occupations and familiarizing oneself with labor market changes and demands. Formulating a career plan prior to joining the workforce in earnest is, consequently, a way in which students can develop cultural capital. By encouraging or requiring that all students develop a career plan, schools provide structured opportunities for students to consider their occupational futures and establish goals and expectations related to these futures. In this way, cultural capital works not through the provision of options but rather through the active process of exploring, planning, or *using* the information as a tool.

With regard to individual students, and as Lareau (1987) pointed out in one of her sociological studies, parents' participation in their children's educational activities is a form of cultural capital. She specifically noted how these behaviors foster orientations toward learning, and some parents may specifically align this orientation with the school's lessons or expectations. One way parents do this is by providing books and other learning materials in the home.

Those who are free from economic necessity have the opportunity to amass cultural resources, such as books, in a way that those whose lives and economic realities are restricted to addressing basic needs do not (Madigan, 2013). As such, several scholars have incorporated the number of books in the home or the number of home literacy resources as an indicator of cultural capital (see e.g., Archer, DeWitt, & Wong, 2014; Merolla & Jackson, 2014; Sullivan, 2001; Zimdars, Sullivan, & Heath, 2009). In line with Lareau and Weininger's (2003) definition of cultural capital to come, Sullivan (2001) wrote of the preeminence of reading as a form of cultural capital, noting that it accounts for a significant

proportion of the variance in both linguistic ability and cultural knowledge in a way that participating in more highbrow or "formal" culture does not.

The culture of career planning in schools combined with the presence of home literacy resources in students' homes reflects intersecting spheres of cultural capital. In their 2003 article, Lareau and Weininger (2003) explain the importance of these intersections, unpacking the distinct but connected roles of cultural capital at the individual level and at the school level. In their words,

> Students and their parents enter the educational system with dispositional skills and knowledge that differentially facilitate or impede their ability to conform to institutionalized expectations. Studies must document variations among students and parents in their ability to meet the standards held by educators." (Lareau & Weininger, 2003, p. 588)

This excerpt speaks to the importance of evaluating the ways that different contexts of cultural capital interrelate with regard to student development. By exploring evidence of cultural capital among students' families as well as in those students' high schools, this dissertation research addresses and attempts to clarify these interrelations.

Social class. Together with social and cultural capital, social class is integrally linked to issues of access to opportunity in the world of work (Blustein et al., 2002; Duffy et al., 2016). Limited economic resources are a primary determinant of socioeconomic status and social class, but these measures often include education and occupation information in addition to economic data (Duncan, Featherman, & Duncan, 1972). Social class may additionally include indicators of cultural and social resources, but because these resources are addressed here within the social and cultural capital dimensions of economic constraints,

the proposed operationalization of social class is limited to economic, occupational, and educational indicators.

The proportion of students enrolled in free or reduced-price lunch has been used widely in education research as an indicator of school-level socioeconomic status (see e.g., Griffith, 1996; Griffith, 2002; Kingsley et al., 2014; Merry, 2015; Skiba, Michael, Nardo, & Peterson, 2002; Vasan, Alcántara, Nefertari, Ruan, & Baker, 2015). The National Center for Education Statistics (2010) adds that this statistic is commonly used to measure school poverty for a few reasons: it appears consistently across survey collections; it correlates strongly with district poverty; and it correlates with student-level measures of student socioeconomic status. Sirin's (2005) meta-analysis of socioeconomic status measures confirms its prevalence in measuring school socioeconomic status, but the author cautions against aggregation biases and ecological fallacies that emerge when attempting to ascribe school indicators to individual students attending those schools. Accordingly, the proportion of students eligible for free or reduced-price lunch programs is considered only at the school level, with separate indicators measured explicitly among individual students used at the student level of analysis. Additionally, because this research is limited to public schools, this variable functions as a proxy for neighborhood or community poverty and thus bears considerable contextual significance.

At the student level, comprehensive indicators of social class include income, occupation, and education information, as described above. There is some disagreement as to whether a single indicator is appropriate, with some suggesting that the complexity and multidimensionality of the construct necessitates including multiple variables and others noting that a singular index is a valid, more efficient, and statistically powerful measure of

socioeconomic status (Entwisle & Astone, 1994; Rekker et al., 2015; White, 1982; Winkleby, Jatulis, Frank, & Fortmann, 1992).

Marginalization. Within the PWT, marginalization is broadly defined as a collection of social and demographic indicators associated with limited power and inclusion (Duffy et al., 2016). Specifically, the authors identify sexual and gender minorities, people with disabilities, immigrants and refugees, and racial and ethnic minorities, but they concede that this collection of subgroups is not exhaustive. In their view, these and other marginalized groups often face discrimination and oppression at increased rates relative to non-marginalized groups. Importantly, it is "difficult, if not impossible" to consider marginalization as distinct from economic constraints and other issues related to social class (Duffy et al., 2016, p. 132). Nonetheless, marginalization is considered as a distinct predictor within the PWT because of the structural ways in which it controls and restricts access to resources in a broad sense, and to Decent Work more specifically.

Within American educational and vocational scholarship, other researchers include religion as a marginalizing variable (Bowman & Smedley, 2013), mental health status (Calabrese, Meyer, Overstreet, Haile, & Hansen, 2015; Harnois & Gabriel, 2000), special education status (Powell, 2016), and English proficiency (Walker, Shafer, & Liams, 2004). Notably, and with reference to the PWT, mental health and special education status may fall under the umbrella of disabling conditions and English proficiency is a proxy variable of sorts for immigrant status. Overall, this collection of studies related to educational and workforce outcomes illustrates the breadth of marginalized identities and demonstrates the inherent measurement challenges that emerge when attempting to account for all potential sources of marginalization.

To address these challenges, this study includes several indicators of marginalization at the school and student levels, as they are available within the base year ELS:02 data. This allows for a multidimensional consideration of marginalized identity at both levels, while additionally enabling the examination of potential interactions between the individual and contextual levels.

Internalization of the school-to-work transition. Within the PWT, career adaptability and work volition are classified as individual psychological orientations toward work that are predictive of Decent Work attainment and that help explain the relationship between both economic constraints and marginalization and the outcome, Decent Work attainment. In this dissertation research, these variables are replaced by a singular indicator relating to the internalization of the school-to-work transition.

Career adaptability. Career adaptability is a psychological approach to work comprising four dimensions: concern, control, curiosity, and confidence, with respect to one's vocational opportunities, challenges, and development (Savickas & Porfeli, 2012). Though career adaptability is not limited to study within schools and youth populations, the "concern" dimension has been measured using a series of items that implicitly or explicitly reference educational experiences with reference to individuals' vocational futures: Thinking about what my future will be like; Realizing that today's choices shape my future; Preparing for the future; Becoming aware of the educational and career choices that I must make; and Planning how to achieve my goals (Savickas & Porfeli, 2012). For each of these items, students self-report the strength of their development in these abilities using a number from 1 to 5 along the continuum from 1: Not strong to 5: Strongest.

More recently, Savickas, Porfeli, Hilton, and Savickas (2018) developed the Student Career Construction Inventory, comprising 18 items relating to career adapting thoughts and behaviors and validated for use with high school, college, and graduate student populations. As a part of measuring their multidimensional construct, the authors included a "two-item transitioning from school to work scale" that, in addition to other training-related items, constituted the "Preparing" factor (Savickas et al., 2018, p. 143). These two items were "Making plans for my job search" and "Getting a job once I complete my education or training," only the latter of which was retained in the final inventory. For this and other items, students indicated their responses along a continuum ranging from 1: I have not yet thought much about it to 5: I have already done this (Savickas et al., 2018). The inclusion of the item relating to the transition from school-to-work as well as the inclusion of high school-aged respondents speaks to the importance of career preparation among youth. Indeed, Rudolph, Lavigne, and Zacher (2017) found that years of education and school satisfaction were both positively related to career adaptive traits.

Work volition. Duffy, Diemer, and Jadidian (2012, p. 292) define work volition as "the perceived capacity to make occupational choices despite constraints." Work volition is thus theorized to transcend contextual barriers and exist in spite of them. Including two latent factors, volition and constraints, Duffy, Diemer, and Jadidian's (2012) 16-item work volition scale includes items related to being able to choose the job one wants, having control over future job choices, pursuing job opportunities despite external barriers, and being stuck or limited to certain career options. Central to these items and to work volition overall is the role of agency. As it pertains to education, this dissertation research considers the extent to

which students overcome barriers to agency and control in their careers via their schooling contexts.

Measuring the internalization of the school-to-work transition more broadly. Recent research has revealed the strong interrelationships between career adaptability and work volition, lending empirical support to a combined treatment of these variables. In separate studies spanning different analytic populations, Buyukgoze-Kavas, Duffy, and Douglass (2015); Douglass, Velez, Conlin, Duffy, and England (2017); Duffy, Douglass, and Autin (2015); and Duffy et al. (2018) found these indicators to be significantly and positively related.

Vuolo, Mortimer, and Staff (2014) reference orientations toward work beyond the specific constructs of career adaptability and work volition. Citing others, they state that "occupational aspirations in adolescence, intrinsic and extrinsic value judgments about future work, and the sense of economic self-efficacy are associated with more positive work outcomes above and beyond educational attainment" (Vuolo, Mortimer, & Staff, 2014, p. 4). As such, while the inclusion of career adaptability and work volition as unique constructs may help to illustrate the interplay among contextual factors, career-related psychological attributes, and the attainment of Decent Work, these traits might also be considered in more general terms as an internalization of the school-to-work transition. Items identified to measure this construct are presented in Chapter 3.

Covariates and additional measurement considerations. Previous research has outlined some of the major individual and school-based characteristics predictive of high quality work attainment and other labor market outcomes. This research limits the scope of these outcomes to Decent Work attainment while including predictors that align with those

advanced in the Psychology of Working Theory. That said, research presented earlier concerning school- and student-level predictors of work-related outcomes suggests that additional variables may merit inclusion in a comprehensive model evaluating Decent Work attainment. These potential covariates are introduced here, followed by a discussion of measurement and sample size considerations in Chapter 3.

School-level covariates. Potential covariates for inclusion at the school level follow from the literature discussed earlier in this chapter. Factors beyond what is included in the PWT that have had an empirically demonstrated effect on work-related outcomes among students include the size of the student body, activity and course offerings, and school-wide dropout/completion rates. Teacher characteristics considered across schools may include low student-teacher ratios, turnover rates, high relative teacher wages, teacher longevity at the school, and education levels among teachers. Variable availability in the ELS:02 base year school file determines which of these school-level characteristics may be included in the analysis.

Student-level covariates. With respect to students and their home and family lives, factors predictive of labor market outcomes outside what is specified in the PWT include family structure, the perception of barriers and supports, dropout status, absenteeism, expulsion or suspension rates, test and GPA information, work experience, school and activity involvement (including athletics), educational attainment, and psychological traits such as tough-mindedness, independence, neuroticism, planfulness, decisiveness, willingness to compromise, and knowledge about one's self and one's options.

Regarding individual educational attainment, this study is specifically concerned with the relationship between students' high school experiences and their future attainment of

Decent Work, without direct consideration of their future educational involvement or lack thereof. Higher education features prominently in the school-to-work transition literature, but because the PWT centers on marginalized and disenfranchised populations, the goal of this research is to focus on school-based career development prior to most students dropping out or otherwise concluding their education. Indeed, as of 2002, the baseline study year for ELS:02, just 29 percent of adults in the United States had completed a bachelor's degree (Stoops, 2004), which suggests that examining the school-to-work transition through the lens of conventional higher education attainment inherently limits the interpretation of patterns in Decent Work attainment. Additionally, if this research successfully elucidates high school characteristics that predict the future Decent Work attainment of its students, then these findings may help to identify opportunities within the public school system to address systemic issues of differential access to high quality work *before* and irrespective of whether those students decide to attend college. In this dissertation, individual educational attainment as of the third-follow up study in 2012 (including higher education attainment) is treated as a covariate rather than as a central predictor of interest.

Answering the call for empirical and quantitative research. Scholars in disciplines spanning career development and educational research and policy have voiced explicit demand for interdisciplinary career research, multilevel modeling featuring individual and contextual factors, longitudinal studies, and secondary data analysis (e.g., Braun, 2018; Chudzikowski & Mayrhofer, 2010; Diemer, 2008). This dissertation embraces each of these opportunities, incorporating educational data in addition to career data, testing multilevel effects among students and the schools they attend at age 16, and including baseline and ten-year follow-up data within the ELS:02 universe.

Transitioning to one's career is not an isolated event, but rather an ongoing "process that unfolds gradually throughout the school years and beyond" (Lent, Hackett, & Brown, 1999, p. 299). Using a similar assumption, Vuolo, Mortimer, and Staff (2014) highlight the role of adolescent experiences in terms of predicting career development, using the word "pathways" to highlight the ongoing nature of this process. Duffy et al. (2016) specifically call for empirical research to evaluate key dimensions of the Psychology of Working Theory, and in particular recommend approaching the theory using longitudinal data. Such an approach may help reveal which variables are predictive of securing Decent Work over time.

Broadly speaking, a multilevel approach is appropriate for working with the PWT, as the theory explicitly seeks to integrate individual and contextual variables in its comprehensive take on career development. To this point, Matt Diemer (2008, p. 56) has specifically claimed that with respect to large-scale and publicly available datasets, "[Hierarchical Linear Modeling] is an underutilized analysis method in career development scholarship, with promise to illuminate growth trajectories and the delineation of school effects in the processes of career development." He also calls for additional research using longitudinal designs, particularly in career development scholarship (Diemer, 2008, p. 47).

There exists abundant opportunity for richer exploration of the school-to-work transition writ large, as well as exploration of Decent Work more specifically. In response, this dissertation research incorporates a comprehensive collection of career outcomes, the dual influences of psychological and sociological career development, and school-level characteristics that may relate to an individual's vocational goals, experiences, and attainment. By explicitly incorporating individuals' background characteristics and educational experiences as predictors of Decent Work, it is possible to examine the relative

influence of these factors on an important individual and societal outcome. Furthermore, interactions among these predictive factors can be evaluated for the purpose of studying intersectionality and how school-level and person-level characteristics interact in terms of predicting Decent Work outcomes. Finally, results from this research may be used to inform policymakers and community leaders as to the systemic factors that may be most helpful or most harmful to students as they prepare to enter the workforce in a capacity that promotes access to opportunities to attain Decent Work.

Education Longitudinal Study of 2002 [ELS:02]. Several prior studies have investigated different facets of education and the school-to-work transition using the Educational Longitudinal Study of 2002. Griffith and Rask (2016) used ELS:02 to explore the relationship between institutional (e.g., college) spending and graduate salaries among other employment outcomes. They found evidence of a relationship that was strongest for marginalized populations but persisted across the sample after accounting for selection and graduation. These scholars additionally considered full-time employment and for how many weeks in the prior year each respondent was employed, which may serve as a proxy for precarious work without benefits or security. However, the authors state explicitly that studies examining the relationship between schooling and "nonsalary labor market outcomes" is not as prevalent as salary-based research (Griffith & Rask, 2016, p. 4).

A study by Rumberger and Rotermund (2008) took advantage of the longitudinal structure of ELS:02 to examine the work statuses of high school dropouts who otherwise would have been a part of the 2004 graduating class. Reporting trends for the state of California and for the United States as a whole, the researchers found that about 30 percent of those who dropped out were neither in school nor working as of 2006. This study did not

evaluate the type of work that these students were doing, nor did it examine the nature of this work.

While these studies collectively illustrate that the ELS:02 data set can be meaningfully utilized to evaluate national patterns in the relationships among various aspects of schooling and work outcomes, many of the work outcomes studied have been limited to indicators that do not fully capture the complexity and multidimensionality of Decent Work.

Conclusion

Considered together, the body of literature presented here demonstrates the need for research that incorporates Decent Work as an indicator of work quality, acknowledges the distinct but related sociological and psychological factors associated with work attainment, and features the developmentally and contextually significant transition from high school to early career. While a series of studies have been conducted exploring the tenets of the PWT and Decent Work attainment across a series of analytic populations (see e.g., Autin et al., 2018; Douglass et al., 2017; Duffy et al., 2018; Tokar & Kaut, 2018), as of this writing no large-scale empirical study has been conducted to explore the predictors of Decent Work attainment using nationally representative secondary data. Furthermore, despite the significance of a multidimensional concept such as Decent Work in the 21st century workplace and the fundamental transitional period of America's youth from school to work, no study has been conducted evaluating Decent Work attainment with respect to school-based predictors or with student populations. This effort represents an original treatment of the PWT and Decent Work featuring a national scope, an emphasis on individuals' educational contexts, and an explicit accounting for the relative contributions of both

individual- and group-level effects. Key methodological and measurement considerations related to this goal are considered in Chapter 3.

CHAPTER 3. RESEARCH METHODS

Introduction

This chapter outlines the methodological considerations relevant to this dissertation. First, the research questions and theoretical model are presented. The outcome variable, Decent Work, and each of its five facets is defined, in addition to the indicator for employment status. Data sources are presented and described, followed by a detailed description of the school and student samples. After introducing the samples, variables are presented as they represent individual Decent Work attainment, employment status, potential covariates at both the school and individual levels, and school- and individual-level characteristics reflective of the various components of the Psychology of Working Theory. The remainder of the chapter is dedicated to technical details and considerations, including missing data, the analytic approach (including statistical models and a discussion of covariates), and various methodological features pertaining to the model building process.

Data Sources

This research involves a secondary data analysis with two sources: the Education Longitudinal Study of 2002 and the O*NET database.

Education Longitudinal Study of 2002 [ELS:02]. The Education Longitudinal Study of 2002 and its subsequent follow-up studies constitute a nationally representative longitudinal examination of students in the United States as they progressed from 10th grade through their secondary and postsecondary education and their adult lives as captured ten years after the first round of data collection. The study explicitly centers on the following question: “What are students’ trajectories from the beginning of high school into

postsecondary education, the workforce, and beyond?" (https://nces.ed.gov/surveys/els2002/). The battery of survey respondents includes students in addition to their parents or guardians, math and English teachers, and school administrators. As such, ELS:02 offers comprehensive data about individual students (per the students themselves, their parents, and their teachers) and the schools that they attend more broadly (per the administrators).

ELS:02 and its follow-up surveys in 2004, 2006, and 2012 together comprise the fourth series of longitudinal studies commissioned by the National Center for Education Statistics that follow the transition from school to work in the United States. Other survey programs in this collection include the National Longitudinal Study of 1972, the High School & Beyond Study of 1980, the National Education Longitudinal Study of 1988, and more recently, the High School Longitudinal Study of 2009 with a final follow-up scheduled for 2025. Though this research is limited to ELS:02, the selection of an NCES dataset presents an opportunity for comparison with the other longitudinal NCES studies in future research. Many items and scales presented in ELS:02 "build" from the aforementioned studies and explicitly afford the possibility to compare across cohorts and indeed generations (https://nces.ed.gov/surveys/els2002/overview2.asp). The selection of an NCES longitudinal study for the focus of this dissertation research explicitly opens opportunities for future research on Decent Work attainment and related indicators in the school-to-work transition as measured across different cohorts, time periods, economic conditions, and student subgroups.

ELS:02 offers a unique opportunity due to its timing; it is the most recent study with all follow-up data available for use, and importantly, most of the respondents were in the early stages of their careers at the height of economic upheaval in the United States. In the

wake of the 2008 recession, unemployment levels rose dramatically (Bureau of Labor Statistics, 2012). Additionally, diverse industries and communities across the country experienced a rise in part-time and seasonal employment opportunities, while full-time employment became elusive and uncertain (Bureau of Labor Statistics, 2018b; Murray & Gillibrand, 2015; Pedulla, 2012). Using the ELS:02 dataset, therefore, provides a unique research opportunity for studying patterns in the school-to-work transition in the context of economic crisis, in particular with regard to the presence of unemployment, underemployment, and the attainment of Decent Work.

Regression estimation frequently requires that all observations are independent of one another, and that the sample selected is representative of the larger population from which it draws. Large-scale studies such as ELS:02 often employ a complex sampling technique in an effort to ensure representativeness of the sample to the larger population, which for ELS:02 is all high school sophomores in the United States, enrolled in approximately 27,000 schools. Due to its national scope, ELS:02 employed a stratified two-stage sample to maximize sampling efficiency and to account for the clustering of students within schools (Ingels et al., 2014).

In the first stage, schools were selected based upon probability proportional to the size of the student body. In the second stage, a stratified systematic sample of students was chosen from within this sample of schools. At the school level, private schools were oversampled. At the student level, the sample was stratified by race with Asian and Hispanic students intentionally oversampled relative to their representation in the population at large. Oversampling certain strata ensures more comprehensive representation of these subgroups and is conducted in an effort to ensure adequate measurement precision for groups that may

otherwise be characterized by estimates with a higher degree of uncertainty due to their smaller numbers relative to the population at large (Ingels et al., 2014).

Appropriate treatment of the sample necessitates that the stratifying and clustering effects for students who share a school context be taken into account through the use of sample weights at both the school level and the student level. The application of weights at each level adjusts the sample such that it is possible to draw unbiased estimates and generalize effectively to the target population. For this study, students are weighted using a weight designed to account for all student participants in both the base year and third follow-up surveys (F3BYPNLWT). Additionally, this weighting variable is normalized for the analytic sample size. To do this, the average of F3BYPNLWT is calculated for the included student sample members, and each person's original weight value is divided by this average. All schools are weighted using the SCHWT variable, which is normalized in a similar fashion.

Occupational Information Network [O*NET] database. The Occupational Information Network is a national database with detailed, standardized job-related data for nearly one thousand occupations across the United States in the realms of abilities, interests, knowledge, skills, work activities, work contexts, work styles, and work values. O*NET is a project under the purview of the Employment and Training Administration at the U.S. Department of Labor, with data provided or updated annually by a mixture of occupation analysts, occupation experts, and surveys administered to various occupations' workforces. Specifically, the data included in the O*NET database are collected in one of two ways: either a series of occupational experts collects and provides information; or the data are collected as a part of a two-stage process in which first a random sample of businesses

employing workers in particular occupations is drawn, followed by a random sampling of employees within each of these occupations and businesses who then provide data through a series of standardized questionnaires (see: https://www.onetcenter.org/dataCollection.html for additional information). From these data, O*NET collects and maintains various indicators of work experiences, values, and other characteristics of work for 974 occupations as of March 2019.

While some of the Decent Work indicators identified for inclusion in this study were obtained from self-report measures in the 2012 ELS:02 follow-up, safety characteristics of respondents' workplaces were not evaluated in ELS:02 and must therefore be extracted from an external source with comprehensive reach, such as O*NET. ELS:02 includes as restricted-use data a 6-digit O*NET occupational code for all respondents who reported they were employed at the time of the 2012 follow-up study. This 6-digit code is a Standard Occupational Classification (SOC) code, with the first two digits representing the major occupational group, the third digit representing the minor occupational group, the fourth and fifth digits representing the broad occupation, and the final digit representing the specific occupation (https://www.bls.gov/soc/socguide.htm). This code allows for occupation-specific information available through O*NET to be imported into ELS:02 directly, and the level of specificity provides information at the individual level that is neither available in the public-use dataset nor in the self-report survey data presented in ELS:02.

With respect to Decent Work, the O*NET database includes indicators for physical and interpersonal safety as a part of the data available for "work context." Namely, physical safety is captured in a variable noting how frequently an employee in a particular occupation

is "exposed to hazardous conditions" and interpersonal safety is measured as the frequency of "dealing with unpleasant or angry people" while working in a particular occupation.

The O*NET database provides a useful resource in this study, as the data provided reflect structural characteristics of each person's job, rather than that individual's perception of his or her unique working environment. Using the O*NET data to measure the extent to which a person encounters physical demands or angry and unpleasant individuals is not an ideal measure in this research context because a person at a job with an otherwise very low risk of angry or unpleasant individuals (e.g., music composers and arrangers) may happen to have a boss or a colleague who is verbally abusive. This type of individual variation and experience is not captured in this study for the simple reason that this type of question was not explicitly asked of ELS:02 respondents in the 2012 follow-up. Herein lies a challenge inherent to secondary data analysis: in the absence of the desired variable, the researcher is limited to "proxy" measures from the dataset or, in this case, comparable measures that can be mapped to the dataset using individual link variables.

With that said, the incorporation of O*NET data provides a unique extension to what is available in ELS:02 in that it provides information about work contexts that, generally speaking, transcend individual experiences. Stated differently, the physical and interpersonal safety measures provided through O*NET reflect systematic characteristics of work environments that may not be captured by individual survey responses, particularly when individual responses are not to be aggregated. As a result, any analytic conclusions drawn from models using O*NET data help to answer questions about the extent to which respondents have attained the *type* of work that provides interpersonal and physical safety;

not just whether or not those respondents happen to enjoy physical and interpersonal safety based upon idiosyncratic job experiences.

Cost of Living Index [COLI]. The Cost of Living Index is a quarterly publication from the Council for Community and Economic Research [C2ER]. In existence since 1968, the COLI collects pricing information at the metropolitan statistical area [MSA] level across six categories: food, housing, utilities, transportation, health care, and miscellaneous goods and services (http://www.coli.org/about). These categories are evaluated separately but the COLI is presented additionally as a composite index. This index is used to adjust ELS:02 respondents' reported salaries in the 2012 dataset to render them meaningfully comparable on a national scale. A ZIP code-MSA crosswalk is available through the U.S. Department of Labor, allowing the COLI to be mapped to individual respondents' ZIP codes in the restricted-use dataset through this intermediating variable.

Opportunity Index. The Opportunity Index (https://opportunityindex.org/) is included in this research as a composite indicator of local opportunity for each of the ELS:02 respondents at the time of the third follow-up. "Local opportunity" is treated as a covariate in order to explore the extent to which the Psychology of Working theory and its associated indicators persist in predicting Decent Work attainment, after accounting for a collection of indicators spanning three broad categories: jobs and local economy, education, and community health and civic life. The 2012 Opportunity Index is captured at both the state and county levels, including all 50 states and 2,900 counties (representing 99.7 percent of the U.S. population). The data may be mapped to the ELS:02 dataset using a ZIP code-county crosswalk available through the U.S. Department of Housing and Urban Development, accessible at: https://www.huduser.gov/portal/datasets/usps_crosswalk.html.

Digest of Education Statistics. Finally, the Digest of Education Statistics contains information about average teacher earnings by state in the 2001-2002 academic year (Snyder & Hoffman, 2003). The Digest of Education Statistics is produced by the National Center for Education Statistics, which is the entity also responsible for ELS:02. The primary purpose of the Digest is "to provide a compilation of statistical information covering the broad field of American education from prekindergarten through graduate school," and is national in scope by design (https://nces.ed.gov/programs/digest/). Information concerning state-wide teacher earnings, considered in conjunction with school-level teacher earnings data from ELS:02, is included as a covariate measuring the salary differential between a school's highest paid teachers and the average teacher pay in the state in which that school is located. As described in Chapter 2, higher relative teacher wages have been found to both be positively related to future student earnings and to share no relationship, so the inclusion of this data in the present study allows for this relationship to be evaluated in a contemporary context.

Population and Sample

ELS:02 is generalizable to the population of high school sophomores in the Spring term of 2002 who were enrolled in a regular public or private high school in the United States that contained a 10th grade. Compared to the complete ELS:02 study, the target population for this study is more limited: Spring term 2002 high school sophomores who were enrolled in a regular *public* high school and who were working for pay at the time of the follow-up questionnaire in 2012. Additional details about the target population and sample selection are provided below.

School sample and exclusions. Seven hundred fifty-two schools comprise the sample in the ELS:02 base year dataset, within which over 16,000 students and their parents and teachers were sampled. From this group of schools, the analytic sample was limited to public schools. Public schools, by definition, reflect the communities in which they exist and therefore serve as a proxy for community context in a way that is not as likely with private or parochial schools. By limiting the sample, any findings and opportunities for school-based policy analysis are targeted specifically to public school contexts that share guidelines at the state and federal levels in a way that other types of schools do not (e.g., standardized reporting to the Common Core of Data [CCD]). While not all subgroups sampled as a part of ELS:02 are generalizable to their larger populations, ELS:02 documentation explicitly identifies "Spring 2002 public school 10th-grade students" as an important analytic subpopulation within the larger ELS:02 dataset (Ingels et al., 2014).

This dissertation is primarily concerned with the ways in which school characteristics can predict future Decent Work attainment among students. As such, school-level independent variables relating to economic constraints and marginalization are of central research interest and were not imputed for that reason (see e.g., Kelly & Zhang, 2016). From the total sample of 580 public schools with NCES identification numbers, nonzero sampling weights, and at least three students within the school (Snijders & Bosker, 2012), 460 were selected for this research because they had complete data on the available school-level economic constraints and marginalization indicators as well as at least three students with available data on the Decent Work outcome variables.

Student sample and exclusions. Within the 460 schools, students were selected for inclusion in this study if they had a) completed both the base year (2002) and third follow-up

(2012) questionnaires; b) indicated they were working (e.g., not unemployed, out of the labor force, or a non-respondent); and c) provided a response for at least one of the outcome variables proposed to measure Decent Work attainment. These restrictions led to a final sample of 6,620 students within the 460 schools, for an average of 14.4 students per school. Restricting the sample to only those respondents who indicated they were working (at least one part-time or full-time job) ensures that the study centers on work attainment and quality of work issues.

Employment sample. While the examination of Decent Work attainment is the central focus of this dissertation research, an additional research opportunity concerns how the PWT model operates in the larger context of employment versus unemployment. This expanded sample is drawn from 460 schools that had available data on the economic constraints and marginalization indicators and that contained at least three students with employment data. The total number of students within these 460 schools is 7,629, for an average of 16.6 students per school.

Outcome Variables: Defining Decent Work Attainment

Decent Work is a complex and multifaceted concept. Attainment defined at the individual level considers the following five elements (Duffy et al., 2016): physical and interpersonally safe working conditions (e.g., absent of physical, mental, or emotional abuse); hours that allow for free time and adequate rest; organizational values that complement family and social values; adequate compensation; and access to adequate healthcare. Each of these elements is analyzed in separate models in an attempt to explore the predictors of each facet of Decent Work.

Variable selection. Since the publication of their paper on the Psychology of Working Theory (Duffy et al., 2016), Duffy et al. (2017) have developed and validated a new scale intended to measure Decent Work attainment. As a part of ensuring validity in this dissertation study, the items in this scale were cross-referenced with all available ELS:02 and O*NET variables at the time of the third follow-up study from 2012 in an effort to secure alignment between the constructs outlined in the theory and the available data from the secondary sources. After additionally consulting with one of the scale's authors to review the proposed outcome variables from ELS:02 and O*NET, the variables described here and presented in Table 1 were confirmed as appropriate for measuring the various facets of Duffy et al.'s Decent Work attainment framework (D. Blustein, personal communication, June 8, 2017).

Physical and interpersonally safe working conditions. Variables related to workplace safety were drawn from the O*NET database. O*NET surveyed job incumbents to generate the physical safety indicator, "exposure to hazardous conditions." Respondents were asked about the frequency of exposure to hazardous conditions in their work, ranging from Never (0) to Every Day (100). The interpersonal safety indicator in the O*NET database asked respondents about their frequency of exposure to dangerous or angry individuals and was likewise measured from Never (0) to Every Day (100).

Responses for both O*NET variables are available for download in a flat file in which one data value corresponds to each six-digit O*NET code. Because six-digit O*NET codes are also included in the ELS:02 third-follow up data set for those currently working, it was possible to directly import the hazardous conditions and frequency of exposure variables into the ELS:02 dataset. These two variables were averaged into a single safety indicator.

Hours that allow for free time and adequate rest. The ELS:02 third follow-up questionnaire asked several questions about aspects of respondents' current or most recent job. Because the sample is limited to those currently employed as of the 2012 follow-up survey, only information about each respondent's current job is considered. Respondents were asked about job security, opportunity to learn new things, high earnings, new challenges, enough time for leisure activities, chance of doing something useful for society, and chance to balance work and family responsibilities. Each item had a response scale from (1) Definitely not an aspect of the job to (5) Very much an aspect of the job. Principal components analysis was used with these seven items to investigate whether the items relating to having enough time for leisure activities and having the chance to balance work and family responsibilities could be combined into a single index variable.

Organizational values that complement family and social values. This facet of Decent Work is perhaps the most difficult to capture using the available ELS:02 data from the 2012 follow-up. None of the items presented to survey respondents who were working at the time of the third follow-up survey in 2012 referenced values or community explicitly, and nothing available in the O*NET data was useful for the focus on individual perception of family and community value alignment. After consulting with one of the authors of the Psychology of Working theory and reviewing relevant literature on work outcomes, it was determined that a useful substitute would be the addition of a work satisfaction indicator (D. Blustein, personal communication, June 8, 2017). Decent Work, conceptually, is a contextual affordance, so the measurement of work fulfillment or well-being is appropriate and potentially meaningful for the purposes of this study. Furthermore, as discussed in Chapter 2, the measurement of job satisfaction is prevalent in research on job quality writ

large. ELS:02 includes a job satisfaction scale score (3 items, α=.90) pertaining to respondents' current or most recent job. This scale score was used to represent organizational values that complement family and social values.

Adequate compensation. In the career development literature, compensation is often represented by a respondent's annual salary or average hourly wage. Due to the national scope of this study, wage information must be adjusted by regional cost of living to be meaningfully comparable throughout the United States. Annual earnings data and individual ZIP code are both available in the third follow-up study of the ELS:02 restricted-use dataset. Using ZIP code as a matching variable, 2012 cost of living data from the COLI were imported into the ELS:02 dataset and used to normalize each respondent's earnings according to where they lived at the time of the third follow-up study.

Access to adequate healthcare. Access to adequate health care is operationalized in this study as whether or not a respondent's employer offers medical insurance. ELS:02 collected this self-report data in the 2012 follow-up, where respondents could select "Yes" or "No" with respect to whether or not their employer offered medical insurance such as health, vision, or dental.

Employment status. Following the analysis of each of the five facets of Decent Work attainment, a larger student sample including those who were employed versus unemployed was used to explore whether the same set of variables outlined in the Psychology of Working Theory was predictive of employment status overall. Employment status is operationalized here using information from three variables in the ELS:02 2012 follow-up data. The first item asked respondents whether they were employed. Those who indicated they were not had the opportunity to answer two follow-up questions: whether they desired work for pay

and whether they were available and looking for work. Respondents who had previously indicated that they were currently employed in a part-time capacity were asked specifically about their interest in full-time work, but only those respondents who were not employed at all were considered here. These additional questions were included to help categorize respondents who were unemployed as opposed to out of the workforce by choice. For the purposes of this analysis, only those who were unemployed (e.g., not working, but desiring or actively looking for work) were included alongside those who were employed.

Table 1
Outcome Variables

Variable Description	*Source*	*Variable Name*	*Variable Type*	*Variable Coding (Range)*
Decent Work: Safety	O*NET	Work context (physical): Exposed to hazardous conditions Work context (interpersonal): Deal with unpleasant or angry people	Continuous	0: Never 100: Every day
Decent Work: Hours	ELS:02 (2012)	F3B25E: Enough time for leisure activities F3B25G: Chance to balance work and family responsibilities	Continuous	1: Definitely not an aspect of the job 5: Very much an aspect of the job
Decent Work: Values	ELS:02 (2012)	F3JOBSATIS: calculated job satisfaction index/scale score (factor score)	Continuous	Range: -2.66 to 1.25
Decent Work: Compensation	ELS:02 (2012) COLI (2012)	F3ERN2011: 2011 employment income (last complete year of data) COLI composite index	Continuous	Range: $0 to $585,480
Decent Work: Health Care	ELS:02 (2012)	F3B24: Does/did your employer for your job as a [job name] offer medical insurance such as health, dental, or vision?	Dichotomous	0: No 1: Yes
Employment Status	ELS:02 (2012)	F3EMPSTAT: Employment status as of the third follow-up interview F3B10: Do you want a [full-time] job for pay at this time? F3B11: Are you currently available and looking for [full-time] work?	Dichotomous	0: Unemployed, but wants a job and is available and looking for work 1: Employed

Explanatory Variables

Student-level variables. Variables selected for inclusion in this study follow from descriptions in Duffy et al. (2016) and a paper by Potochnick and Mooney (2015) featuring analysis of the ELS:02 dataset with an explicit focus on school context and school quality. Indicators at the student level draw from both the restricted and public variables in the ELS base year survey in 2002 as well as from O*NET. Each construct discussed here follows from definitions outlined in Duffy et al. (2016). The selection of variables identified to best represent these constructs is presented in Table 2.

Economic constraints. Economic constraints among students are represented by a collection of variables including a social capital indicator, a cultural capital indicator, and a standardized measure of socioeconomic status. Per the discussion in Chapter 2, social capital is measured as student perceptions of their parents' aspirations for how far they will go in school. Students selected one of seven options for this response, and while the options are distinct categories (e.g., "attend or complete 2-year college/school"), an underlying continuum is proposed, representing years of education more generally. As such, this variable was treated as a metric variable in all analyses. Cultural capital is represented by a dichotomous indicator regarding the presence or absence of reading materials in the home. Finally, socioeconomic status was incorporated using a standardized measure in ELS:02.

Marginalization. Among students, marginalization is represented by four variables: student gender, student race, whether English is the student's native language, and whether the student and the student's mother were born in the United States. Duffy et al. (2016) expand the definition of "marginalization" to additionally include those with disabilities, but no data were available to effectively capture disability status in the ELS:02 base year survey.

Some information about learning assistance was collected (e.g., Individualized Education Plans (IEPs)) but there was substantial missing data and no clear information on physical disability status. Rather than include some types of disability but not others (and risk biases introduced by missing data), disability status is not included among the marginalization indicators in this analysis.

Internalization of the school-to-work transition. Duffy et al.'s (2016) theoretical model originally included career adaptability and work volition as separate constructs. The available ELS:02 data do not include any measures targeting these concepts specifically, but several of the items asked of student respondents in the baseline year do target, in a more general sense, the degree to which students contemplated the relationship between their current schooling experiences and their occupational futures. The following paragraphs include a discussion of this broader school-to-work internalization and the available variables in ELS:02 that reflect this internalization.

A person's internalization of the school-to-work transition implies an orientation toward the future, explicitly linking schooling experiences with future work-based outcomes. This concept does not address the *quality* of work to which students aspire but rather captures, in a general sense, their orientation toward their working futures and the extent to which they are considering the purpose of their education and the value of their learning experiences in the long-term. While "work volition" and "career adaptability" are not explicitly targeted in this broader concept, the inclusion of the following items aims to take advantage of the flexibility of the Psychology of Working model and the specific ways in which these constructs are operationalized in a more general manner. These ELS:02 items include: "I go to school because education is important for getting a job later on" and "I go to

school because I'm learning skills that I will need for a job." These items were drawn from a set of statements presented in response to the prompt: How much do you agree or disagree with the following statements about why you go to school? Students could respond with one of four answers: strongly agree, agree, disagree, or strongly disagree. Together, these items address each respondent's conceptualization of the extent to which they perceived that their academic activities (as of 2002) related to their future occupational outcomes. The degree to which these items constitute a single measure is explored in the following section under *Variable transformations*. Additional detail, including the source variables from which these measures are drawn, is presented later in this chapter.

Table 2
Predictor Variables - Student

Variable Description	*Source*	*Variable Name*	*Variable Type*	*Variable Coding (Range)*
Economic constraints				
Cultural capital	ELS:02 (2002)	BYHOMLIT: Home literacy resources (>50 books, daily newspaper, regular magazine)	Dichotomous	0: Family does not have all home literacy resources 1: Family has all home literacy resources
Social capital	ELS:02 (2002)	BYPARASP: How far in school parent wants 10th grader to go	Continuous	1: Less than high school graduation 7: Obtain Ph.D., M.D., or other advanced degree
Socioeconomic status	ELS:02 (2002)	BYSES2: Socio-economic status composite (standardized)	Continuous	Range: -2.11 to 1.98
Marginalization				
Race	ELS:02 (2002)	BYRACE2: Student's race/ethnicity	Categorical	64 possible values: all combinations of 5 races (White, Black, Asian, Native Hawaiian/Other Pacific Islander, American Indian/Alaska Native) and 1 ethnicity (Hispanic)
Generational status	ELS:02 (2002)	BYGNSTAT: Generational status	Dichotomous	0: Student and/or mother born outside U.S. 1: Student and mother born in U.S.
Gender	ELS:02 (2002)	BYSEX: Sex composite	Dichotomous	0: Student is female 1: Student is male
English as first language	ELS:02 (2002)	BYSTLANG: Whether English is student's native language composite	Dichotomous	0: Student is non-native English speaker 1: Student is native English speaker
Internalization of the school-to-work transition	ELS:02 (2002)	BYS27D: Education is important to get a job later on BYS27G: I go to school because I'm learning skills that I will need for a job	Continuous	1: Strongly agree 4: Strongly disagree

School-level variables. School-level variables come from the ELS:02 base year study. The portion of the Psychology of Working Theory (Duffy et al., 2016) to be investigated in this study outlines relationships among economic constraints, marginalization, and Decent Work attainment, and how the internalization of the school-to-work transition may or may not persist over and above these other effects. Economic constraints and marginalization are measured among both students and the schools they attend in order to investigate potential contextual effects in Decent Work attainment and in an effort to clarify the role of schools and their characteristics that may play a role in the degree to which the students at those schools attain Decent Work later in life. In other words, the inclusion of school-level variables, while not proposed in the original Psychology of Working Theory, allows for the exploration of the degree to which economic constraints and marginalization at the school level interact with economic constraints and marginalization at the individual level with respect to students' attainment of key Decent Work outcomes in their vocational futures.

Economic constraints. Duffy and colleagues (2016) discuss economic constraints as a comprehensive concept comprising both a subjective and an objective sense of one's economic position. Additionally, the authors reference social capital and cultural capital, which are common terms in sociological literature that define socioeconomic constraints that are related to, but not directly rooted in finances. The collection of ELS:02 variables that best adhere to and validly measure Duffy et al.'s (2016) definition of economic constraints are presented in Table 3.

Marginalization. Duffy et al. (2016, p. 132) outline different aspects of marginalization in their paper on the Psychology of Working theory, including "sexual and gender minorities, people with disabling conditions, immigrants, and racial or ethnic

minorities." Each of these aspects of marginalization was considered with respect to the ELS:02 data available at the school level, with a few limitations.

Notably, the gender balance of schools is not included because all schools in the sample are public and therefore assumed to reflect the overall population with a 50-50 gender balance, on average. Additionally, some schools collected data related to their migrant student populations but schools within certain states were systematically missing these data for the year 2002, ensuring complete data would have led to either a drastic drop in the sample size or the necessity of imputing a large amount of missing data, which is particularly challenging to do validly when data are not missing at random (Gelman & Hill, 2006). Furthermore, this variable is difficult to measure reliably due to difficulties and variation in defining "migrant," fluctuations in graduation rates, a higher likelihood of attending a series of different schools, and various administrative and record-keeping challenges (Lundy-Ponce, 2010; Shah & Cavanagh, 2012). Instead, as a proxy measure, this study includes a variable indicating the proportion of the student body classified as Limited English Proficient [LEP]. Ultimately, the variables selected for inclusion in measuring marginalization are the proportion of the student body that is non-white and the proportion of the student body that is classified as LEP (see Table 3).

Table 3
Predictor Variables - School

Variable Description	*Source*	*Variable Name*	*Variable Type*	*Variable Coding (Range)*
Economic constraints				
Cultural capital	ELS:02 (2002)	BYA15A: Students develop career plan	Dichotomous	0: Not all students develop a career plan 1: All students develop a career plan
Social capital	ELS:02 (2002)	BYA18D: Mentoring offered to 10th graders	Dichotomous	0: Mentoring not offered 1: Mentoring offered
Marginalization				
Proportion free or reduced-price lunch	ELS:02 (2002)	BYA21: Proportion 10th graders receive free/reduced-price lunch	Continuous	Range: 0.0 to 0.61
Proportion limited English proficient	ELS:02 (2002)	BYA20: Proportion 10th graders are LEP or non-English proficient	Continuous	Range: 0.0 to 1.00
Proportion non-white	ELS:02 (2002)	CP02PMIN: Proportion minority 2001/02 – Common Core of Data	Continuous	Range: 0.0 to 1.00

Covariates. Covariates are included as predictors in addition to the Psychology of Working Theory indicators. Entered prior to the PWT variables, the covariates were used to establish an analytic "baseline" upon which the PWT was evaluated for its ability to explain work outcomes above and beyond these background characteristics. The covariates selected for inclusion in this study were chosen for a combination of their presence in the relevant literature as well as their availability in the ELS:02 data.

Student-level covariates. As discussed in Chapter 2, potential student-level covariates include family structure, the perception of barriers and supports, dropout status, absenteeism, expulsion or suspension rates, test and GPA information, work experience during the high school years, school and activity involvement, educational attainment, and assorted psychological traits such as planfulness and self-knowledge. While many of the identified psychological traits were not incorporated in the survey batteries comprising ELS:02, a class preparation scale is available as a proxy for planfulness within the context of school, and students' reported educational expectations were also evaluated.

Capturing educational attainment required looking beyond the base year student data file to the third follow-up; although this information was captured ten years after many of the other covariates and student-level PWT predictors, it nonetheless reflects a student-level trait that might predict work status. Much of the extant literature on the school-to-work transition specifically concerns the transition from college to the workforce, and postsecondary educational attainment has been historically positively correlated with higher earnings and other measures of work quality. While postsecondary educational experiences are not the central focus of this research, it is nonetheless important to consider the potential

intermediary effects of postsecondary education in the context of the period of transition between high school and work.

Other covariates introduced at this later time point include respondents' local unemployment rate as well as local opportunity as measured using the Opportunity Index. While not precisely respondent-centric characteristics, these indicators reflect the relative job health and level of opportunity available to each respondent as he or she navigates the world of work. The inclusion of these covariates at the outset of the model building process allowed for their consideration as contextual predictors of individual Decent Work attainment and employment status prior to exploring the Psychology of Working Theory in more detail. A full list of the available student-level covariates is presented in Table 4.

School-level covariates. School-level covariates collected during the base year of ELS:02 were added to help explain variance in student-level Decent Work attainment and to help explain variability in the level-1 slopes across schools. The array of eligible school-level covariates was informed by relevant school-to-work literature in addition to what is available in the ELS:02 database. Factors, such as school facility quality, exit examination requirements, school policies, and structural components of the school day and semester represent key covariates due to their ability to be manipulated (in contrast to, say, school location) and thus their greater policy amenability. The full list of school-level covariates considered in the various analytic models appears in Table 5.

Table 4
Covariates - Student

Variable Description	*Source*	*Variable Name*	*Variable Type*	*Variable Coding*
Student aspirations	ELS:02 (2002)	BYSTEXP: Student's expected achievement in school	Continuous	1: Less than high school graduation 7: Obtain Ph.D., M.D., or other advanced degree
ELS:02 test score	ELS:02 (2002)	BYTXCSTD: Standardized test composite score – math/reading	Continuous	Range: 22.40 to 79.02
Class preparation	ELS:02 (2002)	BYSTPREP: Class preparation scale (standardized)	Continuous	Range: -2.65 to 1.03
# of school activities	ELS:02 (2002)	BYXTRACU: Number of school sponsored activities participated in 2001-2002	Continuous	Range: 0 to 8
Work status	ELS:02 (2002)	BYWORKSY: Student help job for pay during 2001-2002 school year	Dichotomous	0: Did not work during 2001-02 school year 1: Worked during 2001-02 school year
		BYWRKHRS: Hours worked per week during 2001-2002 school year	Continuous	1: 1-5 hours a week 9: Over 40 hours a week
Student-rated school safety	ELS:02 (2002)	BYSCSAF2: School safety index: student's perceptions (standardized)	Continuous	Range: -3.04 to 1.56
Educational attainment	ELS:02 (2012)	F3ATTAINMENT: Highest level of education earned as of F3	Continuous	1: No HS credential, no PS attendance 10: Doctoral degree
Whether student ever cut class	ELS:02 (2002)	BYS24B: How many times cut/skip classes	Dichotomous	0: Never 1: At least once
Whether student was ever suspended	ELS:02 (2002)	BYS24E: How many times suspended/put on probation	Dichotomous	0: Never 1: At least once
Whether student was ever expelled	ELS:02 (2002)	BYS24G: How many times transferred for disciplinary reasons	Dichotomous	0: Never 1: At least once
Family composition: two-parent household	ELS:02 (2002)	BYFCOMP: Family composition	Dichotomous	0: Arrangement other than two-parent household 1: Two-parent household
Local unemployment rate at time of third follow-up	2012 Opportunity Index	Unemployment Rate (normalized; values represent % higher or lower than national average of 100)	Continuous	Range: 11.50 to 360.80
Local opportunity grade at the time of third follow-up	2012 Opportunity Index	Opportunity Grade: composite index (standardized)	Continuous	Range: -3.19 to 2.41

Table 5
Covariates - School

Variable Description	*Source*	*Variable Name*	*Variable Type*	*Variable Coding*
Student-teacher ratio	ELS:02 (2002)	CP02STRO: Student/teacher ratio 2001/02 – Common Core of Data	Continuous	Range: 6.40 to 40.00
Whether school differentiates instruction for students with different abilities	ELS:02 (2002)	BYA04: Way of teaching students with different abilities	Dichotomous	0: No differentiation 1: Differentiation
School urbanicity	ELS:02 (2002)	BYURBAN: School urbanicity	Categorical	1: Urban Location 2: Suburban Location 3: Rural Location
# of days in school year	ELS:02 (2002)	BYA07: # of days in school year for 10th graders	Continuous	Range: 160 to 190
# of class periods in day	ELS:02 (2002)	BYA08: # of class periods in day for 10th graders	Continuous	Range: 3 to 9
# of minutes of average class period	ELS:02 (2002)	BYA09: # of minutes of average 10th grade class period	Continuous	Range: 39 to 120
Typical semester class load	ELS:02 (2002)	BYA10: Typical semester class load for 10th graders	Continuous	Range: 2 to 9
Whether parents notified of absences	ELS:02 (2002)	BYA13: When parents notified of absences	Dichotomous	0: Parents are never notified 1: Parents are notified at some point
Whether internships are offered	ELS:02 (2002)	BYA18B: Internships offered to 10th graders	Dichotomous	0: Internships are not offered 1: Internships are offered
Whether job shadowing is offered	ELS:02 (2002)	BYA18C: Job shadowing offered to 10th graders	Dichotomous	0: Job shadowing is not offered 1: Job shadowing is offered
% of full-time teachers who are certified	ELS:02 (2002)	BYA24A: % full-time teachers who are certified	Continuous	Range: 2.00 to 100.00
Whether good teachers are recognized	ELS:02 (2002)	BYA28G: Good teachers are not recognized in these ways (e.g., awards, better students, lighter teaching load, disciplinary duties, priority, higher pay))	Dichotomous	0: Good teachers are not recognized in any of these ways 1: Good teachers are recognized in at least one of these ways
Whether students have an exit examination requirement	ELS:02 (2002)	BYA32: Students must pass a test for high school diploma	Dichotomous	0: No exit exam requirement 1: Exit exam requirement

Covariates – school, cont'd.

Variable Description	*Source*	*Variable Name*	*Variable Type*	*Variable Coding*
Whether absenteeism is a daily problem	ELS:02 (2002)	BYA49B: How often absenteeism a problem at school	Dichotomous	0: Absenteeism is not a daily occurrence 1: Absenteeism is a daily occurrence
Scale: Teachers press students to achieve	ELS:02 (2002)	BYA51B: Teachers press students to achieve	Continuous	1: Not accurate at all 5: Very accurate
Scale: Teacher morale is high	ELS:02 (2002)	BYA51C: Teacher morale is high	Continuous	1: Not accurate at all 5: Very accurate
Whether college/career databases are available to students	ELS:02 (2002)	BYL12G: College/career databases available [library questionnaire]	Dichotomous	0: Databases are not available 1: Databases are available
Teacher salary differential (highest teacher salary at school minus state average teacher salary)	ELS:02 (2002) Digest of Education Statistics	BYA26B: Highest salary paid to full-time teachers 2001-2002 state teacher salary average	Continuous	Range: -$18,330 to $46,918
School conditions (composite)	ELS:02 (2002)	BYA50: Learning hindered by [poor condition of buildings, poor heating/air/light, poor science labs, poor fine arts facilities, lack of space, poor library, lack of texts/supplies, too few computers, lack of multi-media, lack of discipline/safety, poor voc/tech equipment/facilities]	Continuous	0: Not at all 3: A lot

Analytic Approach

The purpose of this dissertation is to explore the following overarching question using a nationally representative large-scale dataset and quantitative methodology: *After accounting for individual and school covariates, to what extent do characteristics of students' educational experiences as high school sophomores predict workforce outcomes pertaining to securing Decent Work ten years later?* Because this question is conditional on employment, an additional question expands the first to explore whether these same attributes predict employment status overall. Three additional and more specific research questions incorporate the PWT to target various aspects of these overarching guiding questions. Subsequent to describing the statistical methods and model building process, the analytic methods that are used to address each question are described below.

Despite its five-facet definition, Decent Work is not an "all-or-nothing" measure; certain individuals may have, for example, four out of five characteristics in their work, with wages that functionally "compensate" for long hours spent on the job. A single indicator for the attainment of all five Decent Work characteristics is reductionist and potentially invalid in terms of measuring whether or not a person has indeed attained Decent Work.

For each of these outcome variables (i.e., each of the five facets of Decent Work), multilevel regression models were constructed with the purpose of identifying characteristics of each person's high school and individual background characteristics predictive of the components of Decent Work attainment. To this end, a collection of school-level and student-level predictors and covariates were added, with guidance from the Psychology of Working Theory, to the linear and logistic multilevel models generated for each component of Decent Work. This type of analysis provides an opportunity for policy studies or

intervention at the school level should a particular educational characteristic predict, for example, whether a student earns adequate compensation. This process was then repeated with employment status as the outcome variable. To more clearly operationalize these approaches, specific data and variables are identified below. These analytic methods, their feasibility, and their potential for informing school policy are discussed in detail in the following section.

Multilevel modeling. Multilevel modeling (also identified throughout as hierarchical linear modeling [HLM]) is appropriate when studying the association between schooling and individual career outcomes because it allows the researcher to account for dependencies in the data. Ordinary least squares regression models assume that student-level observations are independent, but when students are clustered within schools, they share a context. This shared context may foster statistical dependencies among students within schools that render them, by definition, not independent from one another (Raudenbush & Bryk, 2002). Correctly accounting for these contextual effects ensures that the standard errors are accurate and that the test statistics are not biased or inflated (Park & Lake, 2006). Multilevel modeling additionally allows the researcher to explicitly model variability in regression slopes among schools; that is, it can be used to examine school-to-school differences in the relationship between student socioeconomic status and Decent Work attainment ten years later (Raudenbush & Bryk, 2002). Should school-to-school differences in Decent Work attainment exist, multilevel analysis allows for the exploration and identification of the specific observed characteristics of schools that are associated with differences in these relationships. Importantly, multilevel modeling techniques can be used to predict both continuous and dichotomous outcomes – both of which are used in this dissertation.

Multilevel analysis is not always required for valid and unbiased exploration of the relationships among variables within clustered data, most notably in cases where variance in the outcome is almost exclusively due to student-level variability (e.g., when the intraclass correlation coefficient [ICC] is close to zero) (Snijders & Bosker, 2012, p. 23). However, other scholars suggest that the intraclass correlation coefficient is less important than the study design itself, and therefore multilevel regression should be used even when analyses reveal a low ICC (Gelman & Hill, 2006). Following Gelman and Hill (2006), and in order to ensure fidelity to the clustered sample design in ELS:02, a combination of linear and logistic multilevel analyses are used to address each of the research questions regardless of the value of the ICC, as the analyses all involve students clustered within schools at the base year of the study.

Much of the previous quantitative research concerning the Psychology of Working Theory uses Structural Equation Modeling [SEM], which is a confirmatory analytic approach (see e.g., Autin, Douglass, Duffy, England, & Allan, 2017; Douglass et al., 2017; Duffy, Autin, & Bott, 2015; Duffy et al., 2017; Duffy et al., 2018; Tokar & Kaut, 2018). Because the research presented here follows from a modified version of the Psychology of Working theory and is the first to situate the research questions in an educational context specifically, a more flexible and exploratory methodology in the form of multilevel modeling was selected over SEM for this particular study.

Procedures

Multilevel modeling is a specific application of regression analysis that requires certain data preparations. As an initial step in the analytic process, a series of data cleaning and preparation procedures were conducted for the variables, including running factor

analyses, transforming variables, reverse-coding responses, and imputing missing data. Following a comprehensive discussion of these processes and procedures, the multilevel model building process is introduced in more detail and model construction procedures are presented for each research question.

Missing data. Within the sample of 460 schools, no data were missing among the PWT indicators, but there were missing data among some of the selected high school-level covariates. At the student level, several responses on the PWT indicators as well as the covariates were missing, which risked introducing bias in interpreting and reporting results. There is no consensus regarding the "acceptable" amount of missing data, nor is there agreement on whether the potential problems arise from the proportion of missing data, the mechanisms by which those data are missing, or some combination of the two (see e.g., Dong & Peng, 2013). Regardless, for those school and student variables with a higher proportion of missing data, it is prudent to address these data gaps to reduce the risk of drawing potentially inaccurate generalizations from the present analysis. Additionally, multilevel modeling requires that no data are missing among school-level variables, so in order to be considered in the analysis, all school-level covariates intended for consideration in the final models had to be imputed.

Missing Data Imputation. The National Center for Education Statistics procedures for addressing missing data in the ELS:02 dataset involve using a weighted sequential hot-deck method (Cox, 1980). The NCES imputed some of the missing survey data prior to releasing the public- and restricted-use datasets. The limited set of variables for which the NCES imputed missing data, in conjunction with the weighted sequential hot-deck methodology used to estimate the data, serve as useful guidelines for imputing additional

missing data throughout the dataset pertaining to variables of interest in the present study. ELS:02 documentation chronicles the procedures used for weighted sequential hot-deck imputation, which served as a guideline for imputing the base year and third follow-up data where necessary for this study.

Hot deck imputation replaces missing data values with data from "donor cases" with similar profiles. Sequential hot deck imputation adds an extra step, requiring the researcher to define imputation classes using other variables in the dataset. These classes are composed of a selection of covariates relevant to the variable being imputed, and missing values are sequentially imputed within imputation classes following a single pass through the data (U.S. Department of Education, 2004). This approach falls within the category of deterministic hot deck methods, which imputes data following a nonrandom donor selection process (Andridge & Little, 2011).

Weighted sequential hot deck [WSHD] methods add the additional component of survey weights as a part of the imputation process; all respondents have a chance to be a donor, but the sample weights restrict how often a particular case can serve as a donor (U.S. Department of Education, 2004). In this case, school-level variables were weighted by the normalized high school weight (BYSCHWT), and student-level variables were weighted by the product of students' normalized school weight and normalized individual weight (BYSCHWT and F3BYPNLWT). A further advantage of the WSHD method is that it may be used effectively even when variables are missing more than 10 percent of cases (Ellis, 2007). This procedure may be used at both the school and student levels.

In both the school-level and student-level data files, imputation classes were defined according to results from a chi-squared automatic interaction detection [CHAID] analysis in

SPSS (see e.g., U.S. Department of Education, 2004). CHAID is a non-parametric technique that is used to identify a collection of variables that are closely associated with the variable to be imputed based upon comparable response patterns. The CHAID algorithm is available as a subcommand of the SPSS TREE command and helps in identifying predictors that share the strongest association with the variable to be imputed.

In addition to imputation classes, WSHD employs sorting variables to help structure the data. Entered prior to imputation, these variables were used to identify and sort cases within each of the imputation classes. School urbanicity (BYURBAN) was selected as a sorting variable for the WSHD procedure, and was used to sort and impute both student-level and school-level variables. This variable had served as a sorting variable for all imputed student-level data in ELS:02 prior to its release to the public, and was likewise employed here for consistency (Ingels, Pratt, Rogers, Siegel, & Stutts, 2004). Following the CHAID procedure and the final selection of imputation classes and the BYURBAN sorting variable, weighted sequential hot deck imputation was conducted using PROC SURVEYIMPUTE in the SAS software package.

Because multilevel regression methodology requires complete data at level-2, all school-level covariates identified in the literature and available in the ELS:02 base-year dataset were eligible for imputation. Eighteen variables were imputed overall, including those missing for a single school. Information concerning variable missingness and the CHAID-determined imputation classes is presented in Appendix A, Tables 1 and 3; means and standard deviations are presented in Appendix A, Tables 2 and 4 in order to illustrate differences before and after the WSHD procedure was run. Additional detail concerning variable coding is presented in Tables 1-5 earlier in this chapter; the means and standard

deviations in Appendix A are presented only to illustrate the stability in the dataset before and after imputation.

At the student level, five variables were imputed. None of the outcome variables (e.g., employment status; the five facets of Decent Work) were imputed by design; because these variables are fundamental to the research questions and exist in the model as variables that are to be predicted, only the existing data was used. Additionally, work status while in high school was not imputed just as third follow-up work status was not imputed; although the former is treated as a predictor rather than as an outcome, the explicit focus of this dissertation is nonetheless centered on work status. Among the variables used to represent the PWT indicators, the number of literary resources in the home (representing the cultural capital component of economic constraints) and student generational status (representing marginalization) were imputed because while more than 10 percent of the data was missing, WSHD procedures are appropriate for this amount of missing data (Ellis, 2007). Similarly, three student-level covariates were imputed due to having missing data for more than 10 percent of students in the analytic sample.

The sample sizes reflect that the imputation was performed across the larger employment status-related dataset, involving 7,629 students clustered within 460 high schools, in addition to including a more diverse sample in terms of employment outcomes. At the student level, some cases still had missing data post-imputation due to missing data on the imputation variables selected for the CHAID procedure. No data were missing at the school level post-imputation. Because the dataset used for the analysis of the Decent Work indicators was limited to only those who were working and who had data available for at

least one of the five DW facets, the full imputed dataset was trimmed ahead of the Decent Work analyses, rather than running WSHD a second time on the trimmed dataset

Data preparation and transformations. Once the sample selection was finalized and data were imputed as needed, a series of data transformations and reexpressions were conducted to prepare the data for analysis. Key among these procedures are recoding and data reduction, both of which assist in eventual model interpretation and contribute to model efficiency.

Recoding and reverse coding. The variables used to represent the facet of Decent Work concerning safety were reverse-coded to aid in interpretation. After averaging the physical safety indicator and the interpersonal safety indicator to create a composite variable relating to overall safety exposure, the original scale ranging from Never (0) to Every Day (100) was reverse-coded such that higher values would indicate more safety as opposed to more hazard exposure. This transformation was done in an effort to maintain measurement consistency across all of the Decent Work facets; with this transformation, the safety indicator joins the other four facets in that an increase in the numeric value corresponds with work that is considered to be Decent.

The four original response options for the two variables used to represent the internalization of the school-to-work transition ranged from Strongly Agree (1) to Strongly Disagree (4), with higher values representing higher rates of disagreement with each statement. Reverse coding allowed for higher values of the variable to represent greater levels of endorsement for each of these two items: “Education is important to get a job later on” and “I go to school because I’m learning skills that I will need for a job.” As it concerns coefficient interpretation in the final models in Chapter 4, positive coefficients suggest that

the outcome is positively associated with internalization, and negative coefficients suggest that the outcome inversely related to internalization.

The county-level Opportunity Index composite scores originally appeared as 13 possible letter grades ranging from A+ to F. These grades were converted to ordered numeric ratings and then to z-scores centered on a mean of zero such that positive values indicate that a particular county has higher opportunity than the national average, and negative values indicate lower than average opportunity. This conversion also assists with coefficient interpretation; rather than exploring the relative effect of a somewhat arbitrary one grade or one point increase in opportunity, the standardized scores enable the interpretation to center on a change in the outcome predicted by a standard deviation increase in opportunity above the national average.

The unemployment rate indicator was initially a county-level percentage, but was normalized to a national average score of 100 much like the COLI. By centering the variable, this conversion assists with relative interpretation as opposed to absolute, which is important within multilevel modeling for reasons discussed below under *Centering decisions.* This instance of recoding allowed the coefficients to be interpreted in reference to a percentage point increase in unemployment relative to the national average.

Variable transformations. When examining the distributional characteristics of the outcome variables, the indicator for cost-of-living-adjusted compensation was highly positively skewed. Accordingly, this variable was log-transformed. Although this transformation promotes a better approximation by a normal distribution for the final analysis, an interpretation challenge emerges wherein the coefficients in the statistical models cannot be directly explained in terms of the original unit of analysis (e.g., dollars earned).

Instead, the models must be discussed in more general terms such as positive and negative associations, or coefficients must be back transformed to be meaningfully interpretable in conjunction with predictors that have not been similarly transformed. In the case of a natural log-transformation, the coefficients may be exponentiated using the formula e^x.

Principal components analysis. Where multiple items were available to capture a single variable in the model, principal components analyses were used to explore whether and how these items could be combined and to determine whether a single component would be appropriate to enter into the model instead. Principal components analysis involves the creation of a summary variable generated from a linear combination of the items in question. In this way, each component constitutes a weighted average of the collection of variables composing it, with the component loadings reflecting the degree to which each individual item contributes to the overall summary variable.

In all cases, a weighted principal components analysis was used to explore dimensionality of the items proposed to measure each of the target variables. Due to the clustered sample design of students within schools, a multilevel principal components analysis was also considered for this process. However, research by Konold et al. (2014) suggests that multilevel factor analysis often reveals that the factor structure at both levels is identical, so the more parsimonious traditional principal components analysis was conducted instead.

Hours that allow for free time and adequate rest. Within the ELS:02 third follow-up dataset, seven variables (sharing the prefix "F3B25") captured information relating to various aspects of each respondent's job. Respondents could rate each of these items from 1: Definitely not an aspect of the job to 5: Very much an aspect of the job. All seven variables

were entered into a weighted principal components analysis in order to explore whether there might exist a single component among these job attributes relating uniquely to hours that allow for free time and adequate rest.

This analysis was conducted across all public school students after weighting by F3BYPNLWT to account for differential representation within the sample (n=7,629 public school students who indicated they were employed at the time of the third-follow up study). By running the analysis across all public school students (i.e., not just those included in the final sample), the principal components analysis was broadened beyond only those who were attending schools with data on the PWT variables of interest in this dissertation.

Results from the analysis suggest that the collection of seven items may be reduced to two components (Appendix B, Table 4). These components were treated with oblique rotation because they were correlated at r=.36 (Appendix B, Table 8), indicating that they were not orthogonal per Tabachnick and Fidell's r=.32 threshold (2007, p. 646). Following a direct oblimin rotation, the items "Enough time for leisure activities" and "Chance to balance work and family responsibilities" (variables F3B25E and F3B25G in the third follow-up of ELS:02) were the only items to load highly on one of the components, with the remainder of the items loading highly on the other. These results suggested that these two items could be expressed as a single component accounting for much of the variance in these items. Lending credibility to this data reduction approach is the explicit mention of time and balance within these items; from the perspective of face validity this wording is appropriately indicative of hours that allow for free time and adequate rest within the Decent Work framework.

Internalization of the school-to-work transition. Principal components analysis was also used to determine if the two items proposed to capture the internalization of the school-to-work transition constituted a single component as opposed to two distinct constructs. For this investigation, only these two items ("Education is important to get a job later on" and "I go to school because I'm learning skills that I will need for a job") were entered into a principal components analysis.

Prior to the analysis, all cases were weighted by F3BYPNLWT. The results indicated that these two items shared a moderate correlation (r=.380) and explained 69 percent of the variance in a single extracted component (Appendix B, Tables 10 and 12). Accordingly, each of the original items loaded quite highly on this component (x=.831 in both cases; Appendix B, Table 13), which supports the hypothesis that the two items reflect a single construct. With support from this principal components analysis, the internalization of the school-to-work transition is represented in this dissertation as a component score derived from the aforementioned two items referencing current schooling and future job experiences. Higher scores reflect higher levels of internalizing the connection between school and work.

Job Satisfaction. A job satisfaction scale is provided in the 2012 follow-up data, measuring a respondent's self-reported satisfaction at his or her job based on responses to the following three individual statements:

1. You feel fairly well satisfied with your present job
2. Most days you are enthusiastic about your work
3. You find real enjoyment in your work

For each of these items, respondents could select one of five response options ranging from "strongly disagree" to "strongly agree." The NCES employed weighted factor analytic

techniques for this set of items, generating a factor score for those respondents who provided a response to all three of the satisfaction items. In the final JOBSATIS variable, higher values represent higher satisfaction. The NCES-generated 3-item scale has a reliability coefficient of .90, indicating very high internal consistency. Additional detail concerning the measurement of these items and the factor analytic processes and procedures is available in Lauff, Ingels, and Christopher (2014).

Dummy variables. All predictor variables considered for entry in the various statistical models were either continuous (metric) or dichotomous (binary). Accordingly, some of the intended variables that were categorical, generated from a combination of original ELS:02 variables, or otherwise not ideally coded for the research at hand, required transformation. These indicators included race, work status, and educational attainment at the student level and school urbanicity at the high school level. For each of these indicators, a set of dichotomous variables was generated following dummy coding guidelines.

For all dummy indicators, the coefficient is interpreted with respect to the intercept score of the reference category. Using the example of educational attainment, if the intercept value is 9 points, the coefficient value for the first of two dummy variables (indicating high school completion) is 1, and the coefficient value for the second dummy variable (indicating college completion) is 3, then the indicators would be interpreted as follows: a person who did not complete high school scoring at the mean on every other predictor in the model would have a score of 9, on average. A high school graduate at the mean on every other variable would have a score of 9+1=10, and a college graduate at the mean on every other variable would have a score of 9+3=12.

Student race was initially reported categorically, with several distinct values representing students' racial and ethnic backgrounds. Some of these categories were collapsed so that the final group of races considered in this study include White, Asian, Black, Hispanic, and Other. Four dummy variables were created to represent and measure these five categories. White students, who constituted the plurality of the sample, comprised the reference category. Four dummy variables thus represented the difference between White and Asian, Black, Hispanic, and Other race categories throughout the analyses.

In the case of high school work status, those who did not work in high school represented the reference category, with those working less than 15 hours per week comprising the first indicator and those working 15 or more hours per week comprising the second indicator.

Similarly, educational attainment was measured with those who did not complete their high school education as the reference category, high school graduates as the first indicator, and bachelor's degree graduates as the second indicator.

Finally, high school urbanicity was captured in a categorical variable indicating urban, suburban, or rural (see Table 5). Here, urban location was the reference category, with the first dummy indicator reflecting a suburban location and the second reflecting a rural location.

Model Construction

Estimation methods. Restricted maximum likelihood estimation (REML) was used for all multilevel analyses involving the four metric Decent Work outcomes: physically and interpersonally safe working conditions, hours that allow for free time and adequate rest, organizational values that complement family and social values, and adequate compensation.

REML provides variance and covariance estimates when regression coefficients are not known *a priori*, and runs separate processes for the fixed and random components of the model. In contrast to full information maximum likelihood estimation (FIML, which underestimates between-group variance), REML produces unbiased between-group variance estimates (Crawley, 2002; McCoach, 2010). For the analyses involving dichotomous outcomes in logistic regression models (e.g., access to healthcare and overall employment status), Laplace estimation was used.

In contrast to the default penalized quasi-likelihood (PQL) estimation method in hierarchical linear modeling, Laplace estimation is based upon a maximum-likelihood framework. Such a framework allows for hypothesis testing and comparison of deviance statistics among models (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011). Additionally, Laplace transformation produces unbiased estimates in models with dichotomous outcomes and randomly varying slopes (Yosef, 2001). The resulting estimates characterize the relationship between the predictors and the dichotomous outcome after statistically controlling for group membership.

For hierarchical linear models using Laplace estimation, both unit-specific and population-average coefficients were computed, with the key difference resting in the treatment of random effects. According to Raudenbush and Bryk (2002, p. 334), the regression coefficients in a unit-specific model reflect the "expected change in the outcome associated with a one-unit increase in the relevant predictor, holding constant other predictors and all random effects in the model," whereas a population-average model does not control for random effects, instead averaging over them. A unit-specific model is thus better suited for identifying how a change in the model affects a particular school's mean, whereas a

population-average model is better suited for exploring how a change in the model affects the overall population mean. Due to the national scope and scale of this research, the population-average model is preferred. Additionally, due to the way in which random effects are handled, population-average models are more robust, both in the sense of standard error estimation as well as distributional assumptions at both levels (Zeger, Liang, & Albert, 1988).

Model building procedures. The analysis phase began with an exploration of simple univariate descriptive statistics, presented in Chapter 4. As a part of the main multilevel analyses, it is essential to account explicitly for the nested data structure and the complex sample design to avoid bias in the statistical estimates.

Intraclass correlations were calculated to help establish a baseline understanding of the variability at the individual and contextual (high school) levels. Low ICCs indicate that very little of the variation in Employment Status or in a particular facet of Decent Work is due to school-to-school differences; nearly all is due to student-to-student differences. Low ICCs and low reliability estimates are related, in that the reliability statistic indicates how much variability exists between groups compared to how much variability exists in total. When the between-group variance is low, the error variance is high; and the higher the error variance, the lower the reliability.

Unconditional models. Following the aforementioned recommendations, unconditional multilevel models were formulated for each of the five facets of Decent Work using HLM 7.03 software (Raudenbush, Bryk, & Congdon, 2017). Unconditional (or null) models are an important initial step in multilevel regression analysis in that they allow the researcher to evaluate the ICC representing the proportion of variance in each outcome

variable due to between-school differences. As they are represented in this study, four of the five Decent Work outcome variables are continuous (physically and interpersonally safe working conditions, hours that allow for free time and adequate rest, organizational values that complement family and social values, and adequate compensation), while the remaining facet is dichotomous (access to healthcare). The separate Employment Status indicator is also dichotomous. For continuous outcome variables, the ICC is estimated as $\tau_{00}/(\tau_{00}+\sigma^2)$, where τ_{00} is the estimated between-group variance and σ^2 is the estimated within-group variance. For dichotomous variables, the ICC is estimated as $\tau_{00}/(\tau_{00}+\pi^2/3)$, where once again τ_{00} is the estimated between-group variance and $\pi^2/3$ is a constant estimating within-group variance proposed by Snijders and Bosker (2012).

Raudenbush and Bryk (2002) recommend generating an unconditional model at the outset of the model building process in order to get a sense of variance attributable to level-1 versus level-2. No predictors were included at this stage; only a random effect for the intercept was entered. Here, the school ID variable served as the indicator of the clustering with schools. Student-level data were weighted using the F3BYPNLWT variable recommended for use for any student included in both the base year and third follow-up ELS:02 surveys, and schools were weighted using the SCHWT variable.

The unconditional model form is as follows, with an intercept and an error term included but no predictor variables. ICCs were generated for each of the five facets of Decent Work using this unconditional model, with additional considerations for continuous versus dichotomous Decent Work variables outlined below.

Student level: $$DECENTWORK_{ij} = \beta_{0j} + r_{ij}$$

School level: $$\beta_{0j} = \gamma_{00} + u_{0j}$$

Where $DECENTWORK_{ij}$ is the predicted value of the selected Decent Work indicator (separate models are run for each facet of Decent Work), γ_{00} (fixed) is the predicted grand mean of Decent Work attainment in the population, u_{0j} is a random level-2 effect (for school *j*) with mean 0 and variance τ_{00}, and r_{ij} is a random level-1 effect with mean 0 and variance σ^2. The fixed effect γ_{00} represents the mean value of Decent Work attainment across all schools (grand mean).

Because binary data do not meet the assumptions of linear regression, the dichotomous outcomes require a transformation to be interpreted appropriately. Specifically, this type of model requires a logarithmic transformation of $DECENTWORK_{ij}$ in order to estimate the probability that the outcome is 0 (absent) or 1 (present). The regression coefficients generated represent the log odds of an outcome of 1 following the form:

$$DECENTWORK_{ij} = \eta_{ij} = log\frac{\varphi_{ij}}{1-\varphi_{ij}}$$

Where η_{ij} is the log odds of observing the characteristic of Decent Work and φ_{ij} is the probability of the indicator being present (e.g., equal to 1) for student *i* in school *j*.

The non-linear model equations are comparable to the linear model equations with the exception of a probabilistic interpretation of the outcome:

Student level: $\eta_{ij} = \beta_{0j} + r_{ij}$

School level: $\beta_{0j} = \gamma_{00} + u_{0j}$

Conditional models. After running and interpreting the unconditional models for each of the five facets of Decent Work, conditional models were constructed sequentially based upon the predictors introduced in each research question. According to best practices in model building, the level-1 (student) models are estimated first, followed by the level-2

(school) intercept models and, if they can be estimated reliably, the level-2 slope models. Within-level interactions may also be generated to explore interrelationships between the internalization indicator and the various indicators of economic constraints and marginalization. The process of constructing and fitting the final models for each of the research questions followed the guidelines and recommendations of McCoach (2010), Raudenbush and Bryk (2002), and Shields (2014). Ultimately, the model building process centers on exploring the student-level predictors of Decent Work attainment followed by exploring whether and how the addition of school-level variables affects the strength of the relationship between student-level variables and each of the five facets of Decent Work.

Centering decisions. Centering is important when using multilevel analysis because it reduces collinearity among the fixed and random components of the models and aids in coefficient interpretation. The collection of continuous predictor variables included in the analyses were grand-mean centered (see e.g., Bickel, 2007; Kelley, Evans, Lowman, & Lykes, 2017), which involved rescaling individuals' scores on the independent variables to deviation scores from those variables' means across the student sample. Dichotomous or dummy variables were not centered so that zero values retain their meaning as reference categories or as the absence of an attribute.

Covariates. When formulating the conditional models, a series of school- and student-level covariates were added to help explain the variability in Decent Work attainment prior to the introduction of the key variables of interest. Including covariates in the early models accomplished two things. First, it elucidated the mechanisms through which student characteristics and school characteristics interrelate with respect to predicting future Decent Work attainment. This type of analysis affords the opportunity to identify any additional

policy levers among public high schools as they relate to future workforce outcomes among students. Second, the inclusion of covariates helped clarify whether the effects of marginalization and economic constraints (among both students and schools) and the internalization of the school-to-work transition (among individuals) on future Decent Work attainment persisted over and above these additional characteristics of students and schools. Such a finding would lend empirical credence to the Psychology of Working Theory as it applies to student vocational development and educational systems more broadly.

In general, if the level-1 slopes can be estimated reliably at this stage, cross-level interactions may be included in the models to examine the moderating effects of school characteristics on the relationships between the student characteristics and the outcome variables (Snijders & Bosker, 2012).

Building conditional models. The model-building process followed a general multi-step order comprising six conditional models. Model 1 identifies a series of covariates at both levels that help explain differences in access to medical care in a person's job ten years hence, prior to the consideration of the Psychology of Working Theory predictor variables. Primarily, this model establishes the baseline model prior to considering the PWT variables. With the later models it is then possible to explore whether and how the PWT helps to explain variation in the outcome beyond the selected covariates, and secondarily (and more broadly) to explore the potential student- and school-level correlates of access to medical care beyond what is outlined in the PWT.

Model 2 expands Model 1 to include the student-level predictors of economic constraints and marginalization. Model 3 incorporates the school-level economic constraints and marginalization predictors in addition to the student-level predictors.

Addressing the internalization of the school-to-work transition independently requires removing the economic constraints and marginalization indicators and reverting to the covariate-only Model 1. Model 4 thus includes only the student-level indicator for the internalization of the school-to-work transition.

Model 5 is specified identically to Model 2 but with the addition of the internalization of the school-to-work transition indicator. Model 5 is a full student-level model but does not include any indicators at the high school level beyond the covariates.

The final, full model (Model 6) includes all available predictor variables: the school- and student-level covariates, the school- and student-level indicators for economic constraints and marginalization, and the student-level indicator for the internalization of the school-to-work transition. This model also incorporates within-level interactions, should the internalization indicator appear to be statistically significant in addition to at least one of the economic constraints or marginalization indicators.

Together, these models help to address the three research questions. Research Question 1 concerns Models 1, 2, and 3; Research Question 2 is addressed with Model 4; and Research Question 3 is evaluated with Models 5 and 6. The sequential model-building process and associated research questions are summarized in Table 6.

Table 6
Illustration of Model-building Process and Research Questions

		RQ 1			RQ 2	RQ 3	
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Student-level variables							
	Student-level covariates	●	●	●	●	●	●
	Economic constraints & marginalization		●	●		●	●
	Internalization of the school-to-work transition				●	●	●
School-level variables							
	School-level covariates	●	●	●	●	●	●
	Economic constraints & marginalization			●			●

RQ: Research Question
Model 0: Unconditional model

As the models were constructed, a series of estimation decisions were made to ensure that the models effectively captured the patterns in the data. If the relationship between any of the student-level predictors and the outcome varied across high schools and could be estimated reliably, the level-1 slopes were allowed to vary. Otherwise, they remained fixed. At this stage, school level variables could be added to predict variability in the intercept, and variables whose coefficients were statistically significant would be retained in the model. For the level-1 (student) slopes that were allowed to vary randomly across schools, level-2 (school) predictors could be entered into the model to predict the variability in these slopes. For example, if the relationship between student socioeconomic status and access to an interpersonally and physically safe job was found to vary among schools (and if this variation could be estimated reliably), then school-level free or reduced-price lunch status could be entered to explain that variability.

The model building approach and other modeling considerations discussed here enable the incremental examination of each research question, accounting for the relative contribution of each component of the theoretical model over and above other possible sources of variability (covariates) in Decent Work attainment. This process represents an attempt to balance a thorough examination of Decent Work attainment with model parsimony. That said, the central analytic priority is to situate the Psychology of Working Theory in an educational context, and to explore proximal and distal factors in terms of how the addition of each new set of variables changes the strengths of the relationships of previous sets to the focal outcome rather than to generate maximally parsimonious models.

Statistical Analyses by Research Question

This section considers the multilevel statistical models associated with each research question and how they expand beyond the unconditional model.

Research Question 1: After controlling for covariates, to what extent are economic constraints and marginalization, measured among both students and high schools in 2002, associated with individuals' attainment of Decent Work ten years later? A comprehensive examination of this question involves formulating five individual statistical models with each of the five facets of Decent Work serving as the outcome variable in separate models. An array of *p* student- and school-level covariates are entered into the models first, followed by the explanatory variables related to economic constraints and marginalization. Variables reflecting these two constructs are entered at the student level. Following the guidelines for building conditional models, a separate set of school-level variables reflecting these same constructs (economic constraints and marginalization) are entered at the school level.

All variables representing economic constraints are entered simultaneously as a block, and the same is the case for marginalization. The equations for the continuous outcomes are as follows:

Student-level effects:

$$DECENTWORK_{ij} = \beta_{0j} + \beta_{(1\rightarrow p)j}(Covariates_{ij}) + \beta_{(P+1)j}(Economic\ Constraints_{ij} - \overline{Economic\ Constraints}_{..}) + \beta_{(p+2)j}(Marginalization_{ij} - \overline{Marginalization}_{..}) + r_{ij}$$

School-level effects:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{(1\rightarrow p)j} = \gamma_{(1\rightarrow p)0} + u_{(1\rightarrow p)j}$$

$$\beta_{(p+1)j} = \gamma_{(p+1)0} + u_{(p+1)j}$$

$$\beta_{(p+2)j} = \gamma_{(p+2)0} + u_{(p+2)j}$$

Where γ_{00} is the grand mean for Decent Work attainment; $\gamma_{(1\rightarrow p)0}$, $\gamma_{(p+1)0}$, and $\gamma_{(p+2)0}$ are the pooled within-school regression coefficients of Decent Work attainment on the selected grand mean centered covariates, economic constraints, and marginalization, respectively; r_{ij} is the residual in the student level equation with mean 0 and variance σ^2; u_{0j} is a random level-2 effect with mean 0 and variance τ_{00}; and $u_{(1\rightarrow p)j}$, $u_{(p+1)j}$, and $u_{(p+2)j}$ are random effects in the school-level equations that reflect the variability in level-1 (student) slopes across level-2 (school) units.

For dichotomous outcomes, the models are as follows, with η_{ij} representing the link function for the log odds of the outcome equaling 1:

Student-level effects:

$$\eta_{ij} = \beta_{0j} + \beta_{(1\rightarrow p)j}\left(Covariates_{ij}\right) + \beta_{(P+1)j}\left(Economic\ Constraints_{ij} - \overline{Economic\ Constraints}_{..}\right) + \beta_{(p+2)j}\left(Marginalization_{ij} - \overline{Marginalization}_{..}\right) + r_{ij}$$

School-level effects:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{(1\rightarrow p)j} = \gamma_{(1\rightarrow p)0} + u_{(1\rightarrow p)j}$$

$$\beta_{(p+1)j} = \gamma_{(p+1)0} + u_{(p+1)j}$$

$$\beta_{(p+2)j} = \gamma_{(p+2)0} + u_{(p+2)j}$$

In the following group of equations, school-level characteristics are added to estimate the relationships among the level-1 intercept (adjusted school mean), level-1 slopes, and school characteristics and each facet of Decent Work attainment. The level-2 model presented below represents the way in which characteristics of schools pertaining to marginalization and economic constraints may be modeled. Specifically, this model is used to explore whether the relationship between student characteristics and Decent Work attainment is moderated by the characteristics of their high school. The final model chosen for the school level is simpler than what is presented here, depending on whether the variability in the level-1 slopes is statistically significant and can be estimated reliably (Raudenbush & Bryk, 2002). The full level-2 model is:

$$\begin{aligned}
\beta_{0j} = {} & \gamma_{00} + \gamma_{0(1\to p)}(SCHCovariates_{(1\to p)j}) \\
& + \gamma_{0(p+1)}(SCHEconomic\ Constraints_{(p+1)j}) \\
& + \gamma_{0(p+2)}(SCHMarginalization_{(p+2)j}) + u_{0j} \\
\beta_{(1\to p)j} = {} & \gamma_{(1\to p)0} + \gamma_{(1\to p)(1\to p)}(SCHCovariates_{(1\to p)j}) \\
& + \gamma_{(1\to p)(p+1)}(SCHEconomic\ Constraints_{(p+1)j}) \\
& + \gamma_{(1\to p)(p+2)}(SCHMarginalization_{(p+2)j}) + u_{(1\to p)j} \\
\beta_{(p+1)j} = {} & \gamma_{(1\to p)0} + \gamma_{(p+1)(1\to p)}(SCHCovariates_{(1\to p)j}) \\
& + \gamma_{(p+1)(p+1)}(SCHEconomic\ Constraints_{(p+1)j}) \\
& + \gamma_{(p+1)(p+2)}(SCHMarginalization_{(p+2)j}) + u_{(p+1)j} \\
\beta_{(p+2)j} = {} & \gamma_{(1\to p)0} + \gamma_{(p+2)(1\to p)}(SCHCovariates_{(1\to p)j}) \\
& + \gamma_{(p+2)(p+1)}(SCHEconomic\ Constraints_{(p+1)j}) \\
& + \gamma_{(p+2)(p+2)}(SCHMarginalization_{(p+2)j}) + u_{(p+2)j}
\end{aligned}$$

Where $\gamma_{0(1\rightarrow p)}$, $\gamma_{0(p+1)}$, and $\gamma_{0(p+2)}$ are regression coefficients for the school-level covariates, $Economic\ Constraints_{(p+1)j}$, and $Marignalization_{(p+2)j}$, respectively. In these equations, there are p covariates, which ultimately impacts the final number of equations and level-2 predictors.

Research Question 2: After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with their attainment of Decent Work ten years later? Addressing this research question involves a similar approach to that used for Research Question 1. At this stage, the blocks of variables representing economic constraints and marginalization are removed from the model and only the block of predictor variables related to the internalization of the school-to-work transition is included beyond the base inclusion of the covariates at both the student and school levels. Importantly, this group of characteristics is measured only at the student level; as such, this group of statistical models accounts for the clustering in the data but does not include predictor variables at level-2. As with Research Question 1, the models presented here are formulated for each of the five facets of Decent Work. The models for continuous outcomes are as follows:

Student-level effects:

$$DECENTWORK_{ij} = \beta_{0j} + \beta_{(1\rightarrow p)j}\left(Covariates_{ij}\right) + \beta_{(P+1)j}\left(Internalization_{ij} - \overline{Internalization_{..}}\right) + r_{ij}$$

School-level effects:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{(1\rightarrow p)j} = \gamma_{(1\rightarrow p)0} + u_{(1\rightarrow p)j}$$

$$\beta_{(p+1)j} = \gamma_{(p+1)0} + u_{(p+1)j}$$

The models for dichotomous outcomes are as follows:

Student-level effects: $$\eta_{ij} = \beta_{0j} + \beta_{(1\rightarrow p)j}\left(Covariates_{ij}\right) + \beta_{(P+1)j}\left(Internalization_{ij} - \overline{Internalization_{..}}\right) + r_{ij}$$

School-level effects: $$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{(1\rightarrow p)j} = \gamma_{(1\rightarrow p)0} + u_{(1\rightarrow p)j}$$

$$\beta_{(p+1)j} = \gamma_{(p+1)0} + u_{(p+1)j}$$

Research Question 3: After controlling for covariates, economic constraints, and marginalization at both the school and student levels, to what extent is students' internalization of the school-to-work transition associated with their attainment of Decent Work ten years later? This research question combines all of the PWT predictors into a single model. As an initial step, the covariates, followed by economic constraints and marginalization, and then the internalization of the school-to-work transition are entered into the model at the student level, with only school-level covariates included at the school level. Following the model building procedures outlined earlier, the final analysis step involves entering economic constraints and marginalization into the model at the school level. The two items representing the internalization of the school-to-work transition are represented by a component score, as previously discussed. The following group of level-1 and level-2 models outlines how the equations may expand depending on how many covariates are ultimately selected for inclusion and modeled, whether level-1 slopes vary across schools, and whether cross-level interaction terms are included.

The models for continuous outcomes are as follows:

Student-level effects: $$DECENTWORK_{ij} = \beta_{0j} + \beta_{(1\rightarrow p)j}\left(Covariates_{ij}\right) + \beta_{(P+1)j}\left(Economic\ Constraints_{ij} - \overline{Economic\ Constraints_{..}}\right)$$

$$+ \beta_{(P+2)j}\left(Marginalization_{ij} - \overline{Marginalization_{..}}\right) +$$

$$+ \beta_{(P+3)j}\left(Internalization_{ij} - \overline{Internalization_{..}}\right) + r_{ij}$$

School-level effects: $\beta_{0j} = \gamma_{00} + u_{0j}$

$$\beta_{(1\to p)j} = \gamma_{(1\to p)0} + u_{(1\to p)j}$$

$$\beta_{(p+1)j} = \gamma_{(p+1)0} + u_{(p+1)j}$$

$$\beta_{(p+2)j} = \gamma_{(p+2)0} + u_{(p+2)j}$$

$$\beta_{(p+3)j} = \gamma_{(p+3)0} + u_{(p+3)j}$$

For dichotomous outcomes, the models are:

Student-level effects: $\eta_{ij} = \beta_{0j} + \beta_{(1\to p)j}\left(Covariates_{ij}\right)$

$$+ \beta_{(P+1)j}\left(Economic\ Constraints_{ij} - \overline{Economic\ Constraints_{..}}\right)$$

$$+ \beta_{(P+2)j}\left(Marginalization_{ij} - \overline{Marginalization_{..}}\right) +$$

$$+ \beta_{(P+3)j}\left(Internalization_{ij} - \overline{Internalization_{..}}\right) + r_{ij}$$

School-level effects: $\beta_{0j} = \gamma_{00} + u_{0j}$

$$\beta_{(1\to p)j} = \gamma_{(1\to p)0} + u_{(1\to p)j}$$

$$\beta_{(p+1)j} = \gamma_{(p+1)0} + u_{(p+1)j}$$

$$\beta_{(p+2)j} = \gamma_{(p+2)0} + u_{(p+2)j}$$

$$\beta_{(p+3)j} = \gamma_{(p+3)0} + u_{(p+3)j}$$

As is the case with Research Question 1, in addition to the school covariates it may be possible to incorporate school-level characteristics with respect to economic constraints and marginalization in the level-2 models. The model presented here is the fullest possible level-2 model:

$$\beta_{0j} = \gamma_{00} + \gamma_{0(1\to p)}(Covariates_{(1\to p)j}) + \gamma_{0(p+1)}(Economic\ Constraints_{(p+1)j}) + \gamma_{0(p+2)}(Marginalization_{(p+2)j}) + u_{0j}$$

$$\beta_{(1\to p)j} = \gamma_{(1\to p)0} + \gamma_{(1\to p)(1\to p)}(Covariates_{(1\to p)j}) + \gamma_{(1\to p)(p+1)}(Economic\ Constraints_{(p+1)j}) + \gamma_{(1\to p)(p+2)}(Marginalization_{(p+2)j}) + u_{(1\to p)j}$$

$$\beta_{(p+1)j} = \gamma_{(1\to p)0} + \gamma_{(p+1)(1\to p)}(Covariates_{(1\to p)j}) + \gamma_{(p+1)(p+1)}(Economic\ Constraints_{(p+1)j}) + \gamma_{(p+1)(p+2)}(Marginalization_{(p+2)j}) + u_{(p+1)j}$$

$$\beta_{(p+2)j} = \gamma_{(1\to p)0} + \gamma_{(p+2)(1\to p)}(Covariates_{(1\to p)j}) + \gamma_{(p+2)(p+1)}(Economic\ Constraints_{(p+1)j}) + \gamma_{(p+2)(p+2)}(Marginalization_{(p+2)j}) + u_{(p+2)j}$$

$$\beta_{(p+3)j} = \gamma_{(1\to p)0} + \gamma_{(p+3)(1\to p)}(Covariates_{(1\to p)j}) + \gamma_{(p+3)(p+1)}(Economic\ Constraints_{(p+1)j}) + \gamma_{(p+3)(p+2)}(Marginalization_{(p+2)j}) + u_{(p+3)j}$$

Employment status. A second round of analysis involves evaluating these research questions and corresponding models on issues related to employment status overall in addition to the Decent Work facets which are, by definition, limited to those who are employed. A dichotomous outcome representing employment status replaces the Decent Work indicators in the various models discussed in this section of the chapter. Aside from a larger sample expanded to include those who are not working but who are able and interested, no additional changes are made to these statistical models or to the model building process identified in Table 6.

Coefficient Interpretation

Both intercepts and slopes may be either fixed or random, depending on the most appropriate way to describe the data. Four combinations are theoretically possible. First, a fixed intercept and fixed slope combination represents ordinary least squares regression, in that there is no meaningful variability in the level-1 variables across level-2 units. Here, average student socioeconomic status does not differ from school to school, nor does the relationship between socioeconomic status and future Decent Work attainment. A single regression line captures the universally applicable intercept and slope across all units in all schools. Second, a random intercept and fixed slope combination constitutes a one-way analysis of covariance [ANCOVA] with random effects. For example, the relationship between student socioeconomic status and Decent Work attainment is consistent across schools, but the mean socioeconomic status of the student body varies from school to school. Third, a fixed intercept and random slope combination is possible. Using the same example, every school has the same average socioeconomic status across the student body, but the relationship between student socioeconomic status and Decent Work attainment varies from school to school. Finally, a random intercept and random slope pairing suggests that in addition to schools differing from one another in terms of average student socioeconomic status, the relationship between socioeconomic status and Decent Work attainment also differs from school to school.

A discussion of fixed and random components estimation follows. Random intercepts are introduced to model variability in the level-1 (student) means across level-2 (high school) units, and random slopes are considered to explore whether there exists variability in the level-1 regression coefficients (slopes) across schools. Through this

process, it is possible to determine whether school-level effects a) relate to Decent Work attainment and employment status and b) moderate the relationship between student-level predictors and future Decent Work attainment and employment status, respectively. Using an intercepts- and slopes-as-outcomes model, it is then possible to model that variability, if any is found, by exploring which specific characteristics of schools help predict the variability in both the intercepts (means) and the slopes (relationships between student-level predictors and outcomes; Raudenbush & Bryk, 2002).

Fixed components. The fixed components in the multilevel models are presented in a series of tables in the pages that follow (see Chapter 4; Tables 9-13, 15). Dichotomous predictors are not centered because in their original form the coefficients may be interpreted as the expected change in the outcome when one possesses the characteristic (1) compared to when one does not (0). All metric predictors are grand-mean centered such that the coefficient value for metric predictors indicates the predicted change in the outcome ($\hat{y}$) corresponding with a one unit increase in the predictor, holding the other predictors constant. In other words, a given coefficient defines the relationship between a single predictor and the outcome for individuals who share the same value for all other predictors.

Odds ratios. Coefficients for the models with dichotomous outcome variables (e.g., Access to medical care; Employment status) are presented alongside their corresponding odds ratios. Because the outcome variable in its raw form is the often difficult-to-interpret log-odds, these ratios are useful for framing the outcome in terms of the odds of securing Decent Work (or employment) relative to a unit change in the predictor.

Random components and slope estimation. Variance components are reported for the unconditional models and for the final, full models (Model 6) for the random intercepts and, where appropriate, for the random slopes.

Random coefficients. Any slope that can be estimated reliably and whose entry into the model as an additional parameter meaningfully reduces the deviance or otherwise enhances model fit is considered for inclusion in the models. Otherwise, slopes are fixed. Where random coefficients can be considered, an error term (u_{ij}) is added to the level-2 model affiliated with the level-1 predictor, representing a randomly varying coefficient at level-1 across level-2 units. The degree of variation in this coefficient represents the universe of slopes seen across all of the schools in the sample. The magnitude and significance of the random slope variance, if and where it may exist, illustrates how the strength of the relationship between student-level predictors and future Decent Work attainment and employment status varies from high school to high school. Where this is the case, additional variables may be entered to predict this variability in the slope (i.e., to help clarify *why* the relationship socioeconomic status and employment status varies across high schools).

Fit statistics. Model fit statistics were calculated for each of the outcome variables concerning Decent Work and employment status. All models involving metric outcome variables were evaluated for deviance, or -2 times the log likelihood. Considered in conjunction with the number of predictors in the model, the deviance is used to evaluate how model fit changes and ideally improves through the addition or modification of various predictors at both the individual and group levels. Deviance is a measure of *relative* fit, functioning as a quantitative indicator of comparative model efficiency with lower deviance

values indicating better fit. The series of analyses presented as a part of this dissertation research do not require measuring *absolute* fit due to the exploratory nature of the research inherent to the use of data collected prior to the development of the Psychology of Working Theory. Accordingly, the deviance statistic suffices in terms of providing a concise and quantifiable comparison of model fit before and after the addition of various predictors at the individual (student) and group (high school) levels.

For the analyses featuring dichotomous outcomes, Tjur's pseudo-R^2 statistic was calculated to measure model fit (Tjur, 2009). This statistic is an absolute fit statistic but is only appropriate for use with dichotomous variables. Tjur's statistic reflects the difference in the average of predicted event probabilities between those observed with Y_{ij}=0 and those observed with Y_{ij}=1. After calculating regression coefficients in each of the models, these coefficients were used to generate predicted probabilities, which were then compared to actual, observed outcomes. Correct interpretation of this statistic required transforming the original predicted log-odds outcome for each of the observed categories (Y_{ij}=0 and Y_{ij}=1) to a probability: first, the log-odds was exponentiated to generate the odds, and then this was converted to a probability by computing *probability = odds / (1 + odds)*. Once these two probabilities were calculated, the absolute value of the difference between them is presented as Tjur's R^2. A model making accurate predictions should have a high predicted y for those with observed Y_{ij}=1, and a low predicted y for those with observed Y_{ij}=0; the bigger the difference, the better the model effectively discriminates. Accordingly, this value is alternatively called a "coefficient of discrimination" (Tjur, 2009, p. 366). Possible values of Tjur's statistic range from 0 to 1, with a value of 1 indicating maximally accurate discriminating power and thus perfect model fit.

CHAPTER 4. RESULTS

This chapter presents variable information, descriptive statistics, and results from the models outlined in Chapter 3. This chapter focuses on presenting results from the three primary research questions regarding Decent Work attainment, followed by results from these same research questions featuring Employment Status as the outcome. These research questions are as follows:

1. After controlling for covariates, to what extent are economic constraints and marginalization, measured among both students and high schools in 2002, associated with individuals' attainment of Decent Work ten years later?
2. After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with their attainment of Decent Work ten years later?
3. After controlling for covariates, economic constraints, and marginalization at both the school and student levels, to what extent is students' internalization of the school-to-work transition associated with their attainment of Decent Work ten years later?

While the various facets of Decent Work remain the primary research interest in this dissertation, the analyses also examine whether economic constraints, marginalization, and the internalization of the school-to-work transition are associated with individuals' employment status ten years later.

Results from these research questions clarify whether and, ideally, the degree to which a student's individual characteristics and contextual environment in high school is associated with future work-related outcomes. For the questions concerning Decent Work attainment, each one is considered with each of the five facets of Decent Work treated as

distinct outcome variables in separate models. All results are presented sequentially in the following pages.

As a part of evaluating the models, a series of fixed and random coefficients appear in a series of tables throughout this chapter. Importantly, anytime the words "relationship," "association," or "effect" are used in this chapter as a part of evaluating and interpreting the coefficients, causality is not implied. No direct causal relationships were discussed or ascertained as a part of this research; only statistically meaningful predictive associations were explored.

Analytic Sample

The final analytic sample represents a subset of schools and students surveyed as a part of the ELS:02 data collection process. As described in Chapter 3, the sample of schools for the Decent Work analyses was limited to a) public schools; b) schools with nonzero sampling weights, c) schools with complete data on the level-2 economic constraints and marginalization indicators, and d) schools containing at least three students eligible for the analysis to allow for the measurement of within-school variability. The student sample was limited to those who a) completed both the 2002 and 2012 surveys, b) indicated they were working, and c) had outcome data for at least one of the five facets of Decent Work. The sample used for the employment-related analyses includes a larger student population clustered within these schools, as it was expanded to include any person who shared information on their employment status overall as of the third follow-up in 2012 (employed or unemployed).

The final Decent Work sample contains 6,620 students in 460 schools, and the Employment sample contains 7,629 students in 460 schools. Sample sizes, in addition to

weighted means and standard deviations, appear in Table 7. These values reflect all imputed missing data as well as transformed and recoded variables, and are entered exactly as they are presented here in the multilevel analyses. The means and standard deviations are weighted by the product of the school and student sample weights discussed in Chapter 3 in order to reflect the values as they are handled within the multilevel models.

Table 7
Descriptive Statistics

Variable	*Decent Work Sample*			*Employment Sample*		
	N	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*
Outcome Variable(s)						
Decent Work: Safety	6202	63.92	11.63	-	-	-
Decent Work: Hours	4940	0.01	0.99	-	-	-
Decent Work: Values	5836	0.06	0.97	-	-	-
Decent Work: Compensation ($)	5723	29102.52	23171.41	-	-	-
Log transformation – Decent Work: Compensation	*5723*	*4.31*	*0.48*			
Decent Work: Health Care	5563	0.76	0.43	-	-	-
Employment Status	-	-	-	7629	0.89	0.32
Student-Level Predictors						
Economic Constraints: Cultural capital	6620	0.51	0.50	7629	0.50	0.50
Economic Constraints: Social capital	6620	5.18	1.30	7629	5.16	1.32
Economic Constraints: Socioeconomic status	6369	-0.09	0.65	7317	-0.11	0.66
Marginalization: Asian (Dummy)	6409	0.02	0.12	7373	0.02	0.13
Marginalization: Black (Dummy)	6409	0.09	0.28	7373	0.10	0.29
Marginalization: Hispanic (Dummy)	6409	0.10	0.30	7373	0.11	0.31
Marginalization: Other (Dummy)	6409	0.06	0.23	7373	0.06	0.24
Marginalization: Generational status	6620	0.10	0.30	7629	0.10	0.30
Marginalization: Sex	6412	0.51	0.50	7376	0.49	0.50
Marginalization: English as first language	6620	0.93	0.25	7629	0.93	0.26
Internalization of the school-to-work transition	6069	-0.09	1.05	6963	-0.08	0.99
Student-Level Covariates						
Student aspirations	6620	5.05	1.45	7629	5.02	1.47
ELS:02 test score	6577	51.12	9.30	7570	50.60	9.43
Class preparation	6620	0.09	0.96	7629	0.07	0.97
# of school activities	6280	1.13	1.32	7201	1.12	1.33
Work <15 hours per week (Dummy)	5339	0.24	0.43	6089	0.24	0.43
Work >=15 hours per week (Dummy)	5339	0.19	0.39	6089	0.18	0.39
Student-rated school safety	6620	0.34	0.93	7629	0.33	0.93
Graduated HS, no bachelor's (Dummy)	6620	0.58	0.49	7629	0.59	0.49
Graduated bachelor's or higher (Dummy)	6619	0.32	0.47	7628	0.30	0.46
Whether student ever cut class	6087	0.26	0.44	6985	0.27	0.44
Whether student was ever suspended	6084	0.07	0.26	6985	0.08	0.27
Whether student was ever expelled	6124	0.01	0.12	7031	0.02	0.13
Family composition: two-parent household	6398	0.58	0.49	7358	0.57	0.50
Local unemployment rate at time of third follow-up (normalized)	6457	97.77	31.55	7436	98.78	31.72
Local opportunity grade at the time of third follow-up (standardized)	6457	0.01	0.95	7436	-0.02	0.97

Descriptive Statistics, cont'd.

Variable	*Decent Work Sample*			*Employment Sample*		
	N	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*
School-Level Predictors						
Economic Constraints: Cultural capital	460	0.57	0.50	460	0.57	0.50
Economic Constraints: Social capital	460	0.25	0.44	460	0.25	0.43
Economic Constraints: Proportion free or reduced-price lunch	460	0.32	0.24	460	0.32	0.24
Marginalization: Proportion limited English proficient	460	0.02	0.06	460	0.02	0.06
Marginalization: Proportion non-White	460	0.25	0.30	460	0.25	0.30
School-Level Covariates						
Student-teacher ratio	460	15.29	5.24	460	15.31	5.24
Urbanicity: Suburban school location (Dummy)	460	0.40	0.49	460	0.41	0.49
Urbanicity: Rural school location (Dummy)	460	0.46	0.50	460	0.46	0.50
Whether school differentiates instruction for students with different abilities	460	0.71	0.45	460	0.71	0.45
# of days in school year for 10^{th} graders	460	179.42	3.39	460	179.43	3.39
# of class periods in day for 10^{th} graders	460	6.22	1.59	460	6.21	1.59
# of minutes of average 10th grade class period	460	61.77	19.33	460	61.71	19.32
# classes per semester for 10^{th} graders	460	6.21	1.33	460	6.20	1.32
Whether parents notified of absences	460	0.94	0.23	460	0.94	0.23
Whether internships are offered to 10^{th} graders	460	0.25	0.43	460	0.25	0.43
Whether job shadowing is offered to 10^{th} graders	460	0.57	0.50	460	0.57	0.50
% of full-time teachers who are certified	460	96.72	10.83	460	96.73	10.81
Whether good teachers are recognized	460	0.43	0.50	460	0.43	0.50
Whether students have an exit examination requirement	460	0.55	0.50	460	0.56	0.50
Whether absenteeism is a daily problem	460	0.95	0.23	460	0.95	0.23
Scale: Teachers press students to achieve	460	3.87	0.76	460	3.87	0.76
Scale: Teacher morale is high	460	3.65	0.80	460	3.66	0.81
Whether college/career databases are available to students	460	0.67	0.47	460	0.67	0.47
Teacher salary differential (highest teacher pay at school minus state average)	460	8783.08	8940.37	460	8871.16	9043.34
Mean school conditions (average rating of 11 school conditions items)	460	0.76	0.67	460	0.76	0.67

Unconditional Models

For each of the six outcome variables – the five facets of Decent Work as well as employment status – null or unconditional models were run to explore how much of the variability in the outcome could be explained by student-to-student differences as opposed to high school-to-high school differences. Each of the resulting ICCs are presented in Table 8, alongside the estimated reliability of the random effect of the student-level intercept (γ_{00}) within each unconditional model.

In all cases, the ICC values suggest that less than five percent of the total variability in the outcomes of interest is explained by high school-level effects. This is low for multilevel models in general, in that it suggests that nearly all (more than 95 percent) of the variability is explained by individual student differences. With ICCs this low, a viable methodological alternative is to use ordinary least squares regression that does not factor in school-level effects, but for the exploratory purposes of this dissertation specifically examining the contextual role of students' high schools, the multilevel approach was retained. Additionally, ordinary least squares regression systematically underestimates the standard errors of the model coefficients by not accounting for group effects, so even if these effects are minimal it is important to consider them in the selected methodology to ensure valid interpretation of the effects.

In addition to the ICC, the reliability of γ_{00} within each of the models is low, ranging from .034 to .272. Reliability is directly related to the intraclass correlation coefficient in that it represents the reliability of the sample intercept or slope in any school for estimating the true population intercept or slope (Raudenbush & Bryk, 2002). As such, low reliability indicates the school mean is not a dependable indicator of the value of the estimated

outcome. A very low reliability value is expected with very low ICCs; the smaller the role that high schools play in predicting a given outcome, the less dependable a person's high school is in estimating an individual's score on that outcome by default.

Finally, the variance components are presented in Table 8, alongside their statistical significance. Significant variance among schools suggests that there is a non-zero school effect with respect to the outcome, and school-level predictors may be introduced to account for school-to-school variability and improve the model fit. A significant variance component does not seem to intuitively fit with low ICCs and low reliability, but what the variance component explains is more specific. While the level-2 (high school) differences may explain very little in the outcome, but within that small proportion of variance the dispersion of high school means may still need to be explained.

Table 8
Variance Components – Unconditional Models

	Interpersonal and physical safety	Hours that allow for free time and adequate rest	Organizational values that complement family and social values (job satisfaction)	Adequate compensation	Access to medical care	Employment status
$\hat{\tau}_{00}$: between-school variance	3.363***	0.003*	0.010*	0.001*	0.069*	0.144***
σ_R^2: within-school variance	131.371	0.994	0.953	0.217	3.290	3.290
ICC	**0.025**	**0.003**	**0.010**	**0.005**	**0.021**	**0.042**
Reliability of $\hat{\tau}_{00}$	0.272	0.034	0.122	0.036	0.133	0.208

*p < .05, **p < .01, ***p < .001

Results by Outcome and Research Question

Results for each research question are arranged according to the featured outcome variable, and follow the model-building procedures outlined in Chapter 3. Beginning with the null models to explore the proportion of variance in the outcome attributable to individuals versus the high schools they attended, covariates at both the school and student levels are entered, followed by the various components (e.g., school- and student-level variables) of the PWT model.

Each of the three research questions is evaluated for each of the five facets of Decent Work and for employment status. The following section is organized by outcome variable, with each research question considered in turn as the various analytic models are evaluated. In some cases, coefficients were scaled to offer clearer interpretation than the original units (e.g., single percentages or dollars) afford: student test score is presented in terms of a ten point increase; the teacher salary differential is presented in terms of a $5,000 difference increase, and each of the school-level marginalization indicators are scaled to reflect a .1 or ten percent increase in the student population.

Decent Work: Interpersonally and physically safe working conditions. The null model indicates that the ICC is .025. About 97.5 percent of the variability in workplace safety is explained by person-to-person differences, and 2.5 percent is explained by school-to-school differences. Results from the model-building process are described below, with full results available in Table 9.

Research Question 1.

Model 1. When modeling only covariate effects at the school and student levels, several variables were associated with whether students had access to interpersonally and

physically safe working conditions ten years later. At the student level, student achievement scores, class preparation scores, and educational attainment were most strongly associated with access to safe workplaces ($\hat{\gamma}_{test} = .748$, SE = .301, $p < .05$; $\hat{\gamma}_{preparation} = .707$, SE = .249, $p < .01$; $\hat{\gamma}_{college} = 5.236$, SE = 1.108, $p < .001$). A ten point (approximately one standard deviation) increase in student test scores above the grand mean predicted a .7 point increase on the 100-point safe conditions scale, representing just under one tenth of a standard deviation difference. Similarly, a one point (one standard deviation) increase in class preparation above the grand mean predicted a .7 point increase in frequency of access to safe conditions. The most sizable regression coefficient (or the strongest predictor, all else being equal) was in educational attainment: while there was no significant difference noted in predicted access to safe conditions when comparing those who did not graduate high school versus those who did, students who ultimately obtained a bachelor's degree or higher had frequency ratings more than five points higher than those without a high school diploma, representing nearly a half of a standard deviation difference. Considered together, and with all else being equal, students with higher test scores, higher rates of class preparation, and more education were most likely to have regular access to working conditions rated as interpersonally or physically safe.

Schools with larger positive differences between the highest teacher salary offered and the state's average teacher wage (i.e., schools that pay their highest earning teachers much more than average teacher wages across the state) positively predicted their students' future frequency of workplace safety ($\hat{\gamma} = .070$, SE = .027, $p < .05$). Based on the regression coefficient of 0.07 for a $1,000 difference, a $5,000 increase over the grand mean of teacher pay differences predicted a school's students scoring 0.35 points higher on the 100-point

workplace safety frequency scale. This finding does not necessarily indicate that highly-paid teachers overall predicted safer job contexts for their students; the pay differential may instead suggest that these schools may have had more experienced or credentialed staff, which explains both the higher wages and predicts future student safety. A school's pay differential may be additionally or alternatively explained by a high local tax base or local budgetary priorities. Absent this additional detail, the source of the true association beyond the value of the coefficient remains unclear.

School location was also associated with students' future access to workplace safety. Relative to urban environments, schools in suburban and rural environments each predicted greater exposure to unsafe working conditions among their students, with the effect for rural schools edging out the effect for suburban schools and representing approximately one sixth of a standard deviation decrease in exposure to safe conditions ($\hat{\gamma}_{\text{suburban}} = -1.672$, SE = .758, $p < .05$; ($\hat{\gamma}_{\text{rural}} = -2.167$, SE = .642, $p < .001$). From a physical safety perspective, these findings are consistent with a 2008 paper on occupational injury, which found that people in rural areas have higher rates of morbidity, mortality, workplace disability, and less time off of work following a workplace injury (i.e., lessened opportunity for recovery, thus potentially exacerbating the injury-induced issues; Young, Wasiak, Webster, & Shayne, 2008). With that said, examining this effect in more detail would require a dedicated analysis to student movement after high school in terms of exploring whether students end up in similar settings to those in which they grew up.

The final school covariate effect of note is the number of days in the school year, which may alternatively be interpreted as a state-level effect due to its determination through state education policy. The results suggest that for each additional day in the school year

above the national grand mean, students rated their working environments as safer by about two tenths of a point on the 100-point safety scale ($\hat{\gamma}$ = .173, SE = .066, p < .01).

Model 2. Adding only the student-level economic constraints and marginalization predictors reveals that individual socioeconomic status, race, and sex were each associated with access to workplace safety after controlling for the other variables in the model. A one standard deviation increase in socioeconomic status relative to the grand mean was associated with about a one point increase in exposure to safe conditions, representing a significant effect ($\hat{\gamma}$ = .999, SE = .356, p < .01). The findings for sex and race were more prominent: relative to White students, Black students reported working conditions over one fifth of one standard deviation safer, all else being equal ($\hat{\gamma}$ = 2.397, SE = .745, p < .01). Being male was associated with working conditions more than a third of a standard deviation more hazardous, all else being equal ($\hat{\gamma}$ = -3.865, SE = .489, p < .001).

The entry of these effects explained some of the variability previously associated with the covariates. Class preparation is shown to no longer have a significant association with future access to workplace safety, after accounting for the other variables. At the school level, the teacher pay differential regression effect became non-significant, as did the difference between suburban and urban schools in terms of students' future collective safety ratings. The rural location effect, however, persisted.

Model 3. After entering the school-level predictors of economic constraints and marginalization, none seemed to be statistically significantly associated with the outcome over and above the previous variables modeled. The model building process from Model 1 through Model 3 illustrates that there were several notable economic constraints and marginalization effects at the level of the individual student, but at the school level these

indicators did not appear to help explain the variability in students' future access to interpersonally and physically safe workplaces.

Research Question 2.

Model 4. The addition of the student-level indicator for the internalization of the school-to-work transition did not alter the covariate regression effects in a significant or meaningful way. Furthermore, students' relative levels of internalization was not related to their access to safety in their future jobs ($\hat{\gamma}$ = -.389, SE = .250, p > .05).

Research Question 3.

Model 5. After modeling the student-level indicators for economic constraints and marginalization, the internalization of the school-to-work transition appeared to be statistically significantly associated with the outcome, but contrary to expectations, higher levels of internalization were associated with *less* safety in the workplace ($\hat{\gamma}$ = -.565, SE = .256, p < .05). The magnitude of the effect does not appear to be practically meaningful, however, with a standard deviation increase in internalization of the school-to-work transition over the grand mean corresponding with a decrease in frequency of safe working environments by one half of one point on the 100-point scale, or approximately one twentieth of one standard deviation. Importantly, because this effect did not differ significantly from zero in Model 4 when it was entered independent of the economic constraints and marginalization variables, it is possible that this finding reflects shared variance with other variables in the model rather than unique variance attributable to internalization in particular.

Model 6. The full model largely reflects the major findings from Model 3 with a few key exceptions: class preparation significantly predicted access to safer workplaces ten years later ($\hat{\gamma}$ = .654, SE = .256, p < .05) and the internalization of the school-to-work transition

significantly predicted working in more hazardous workplaces, all else being equal ($\hat{\gamma}$ = -.735, SE = .365, $p < .05$). Because these effects are relatively small in terms of standard deviation differences and have fluctuated in and out of statistical significance throughout the model building process, the true effect of these variables is not as salient as some of the other predictors.

With all predictors entered into the model, the most prominent regression effects appear to stem from educational attainment ($\hat{\gamma}$ = 4.232, SE = 1.048, $p < .001$), sex ($\hat{\gamma}$ = -3.928, SE = .472, $p < .001$), and race ($\hat{\gamma}_{Black}$ = 2.853, SE = .864, $p < .001$). All else being equal, college graduates, women, and Black individuals were most likely to have high ratings of interpersonal and physical safety in the workplace. The relative urbanicity of students' high schools also predicted future access to safety, with those who grew up in an urban setting most likely to report workplace safety ($\hat{\gamma}_{rural}$ = -1.466, SE = .507, $p < .01$). Also predicting safer workplaces were higher parental socioeconomic status and achievement test scores at the student level, and longer school years at the high school level.

Interaction terms were included in Model 6 to evaluate whether internalization moderated the statistically significant relationships between the student-level collection of economic constraints and marginalization variables and the outcome variables. Here, internalization * each of the dummy race indicators, internalization * male, and internalization * socioeconomic status were each entered and evaluated for their potential contributions to the model. Of these, only the internalization * Hispanic indicator was significant ($\hat{\gamma}$ = -1.426, SE = .615, $p < .05$), suggesting that the relationship between the internalization of the school-to-work transition and access to workplace safety was weaker for Hispanic individuals than for White individuals. The original Hispanic dummy indicator

was not significant, however, indicating that access to workplace safety overall did not differ between Hispanic and White individuals. In other words, while mean workplace safety was comparable between Hispanic and White students, the degree to which the internalization of the school-to-work transition predicts access to safety varied. Overall, the internalization component of the PWT was more prominent for Whites than for Hispanics, despite comparable access to safety in the workplace.

The model building process for interpersonal and physical safety suggests that several elements of the PWT are both statistically and meaningfully related to the outcome. Beyond the consideration of several covariates at the school and student levels, various dimensions of economic constraints (socioeconomic status), marginalization (race and sex), and the internalization of the school-to-work transition meaningfully predicted variability in students' future access to workplace safety, although the internalization regression effect was in the opposite direction to what was expected. While the analysis suggests that the PWT appears to serve a meaningful role in predicting access to workplace safety, there remains a lack of clarity regarding the specific contribution of the internalization of the school-to-work transition beyond its confounding role in adjusting the magnitude of some of the regression coefficients in the model in minor ways. Finally, throughout the model, all level-1 slopes were fixed across schools because the estimation of random slopes was not supported in the model.

The fit of the model, as measured with the deviance statistic, improved throughout the model building process, suggesting that the sequential addition of variables to the model brings additional explanatory power to the prediction of access to interpersonally and physically safe working environments. Notably, the 12-parameter Model 4 has a lower

deviance statistic in comparison to the 26-parameter Model 3, suggesting that the addition of the internalization indicator leads to greater model efficiency even when the indicator itself is not significantly associated with the outcome. Overall, no one model is significantly better fitting than any other, but the trend persists that model fit improves with the addition of the internalization indicator and with the addition of more predictors in general.

Table 9

Outcome Variable: Decent Work – Interpersonal and Physical Safety

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 3: Student- and School-level Economic Constraints & Marginalization*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	64.089***	1.284	64.326***	1.674	64.625***	1.703
Covariates^						
Test score	0.748*	0.301	0.755*	0.316	0.746*	0.316
Class preparation	0.707**	0.249	0.456	0.239	0.456	0.239
Graduated HS, no Bachelor's	-0.107	1.043	-0.379	1.031	-0.350	1.017
Graduated Bachelor's	5.236***	1.108	4.411***	1.130	4.432***	1.118
Economic Constraints						
Cultural capital			-0.436	0.472	-0.430	0.471
Social capital			0.187	0.174	0.193	0.177
Socioeconomic status			0.999**	0.356	0.935*	0.361
Marginalization						
Race – Asian			1.372	0.845	1.354	0.886
Race – Black			2.397**	0.745	2.399**	0.777
Race – Hispanic			0.383	0.690	0.495	0.764
Race – Other			0.241	0.849	0.282	0.860
Generational status – respondent and mother born in U.S.			0.795	1.007	0.820	1.031
Sex – male			-3.865***	0.489	-3.819***	0.483
First language is English			1.203	0.930	1.142	0.925
Internalization of the School-to-Work Transition						
SCHOOL-LEVEL						
Covariates^						
High teacher salary at school – state average	0.070*	0.027	0.050	0.026	0.046	0.025
Urbanicity: suburban	-1.672*	0.758	-0.633	0.643	-0.549	0.590
Urbanicity: rural	-2.167***	0.642	-1.297*	0.539	-1.190*	0.492
Days in school year	0.173**	0.066	0.145*	0.063	0.142*	0.061
Economic Constraints						
Cultural capital					-0.732	0.450
Social capital					-0.020	0.431
Marginalization						
Proportion LEP					-0.241	0.263
Proportion Free/reduced lunch					-0.067	0.130
Proportion Minority					0.025	0.112
Deviance (# parameters)	47172.77 (11)		45462.32 (21)		45454.54 (26)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Outcome Variable: Decent Work – Interpersonal and Physical Safety, cont'd.

	Model 4: Internalization of the School-to-Work Transition		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 6: Full PWT Model*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	64.505***	1.269	64.946***	1.648	65.246***	1.660
Covariates^						
Test score	0.818**	0.312	0.721*	0.318	0.690*	0.310
Class preparation	0.868**	0.269	0.665*	0.259	0.654*	0.256
Graduated HS, no Bachelor's	-0.606	1.014	-0.748	0.958	-0.617	0.915
Graduated Bachelor's	4.754***	1.097	4.099***	1.072	4.232***	1.048
Economic Constraints						
Cultural capital			-0.534	0.470	-0.509	0.470
Social capital			0.220	0.183	0.235	0.185
Socioeconomic status			1.044**	0.343	0.939**	0.345
Marginalization						
Race – Asian			1.532	0.871	1.368	0.930
Race – Black			2.460**	0.772	2.853***	0.864
Race – Hispanic			0.178	0.712	0.300	0.839
Race – Other			0.028	0.939	0.049	0.941
Generational status – respondent and mother born in U.S.			0.799	1.024	0.865	1.009
Sex - male			-3.999***	0.492	-3.928***	0.472
First language is English			1.137	0.987	0.925	1.006
Internalization of the School-to-Work Transition	-0.389	0.250	-0.565*	0.256	-0.735*	0.365
*Interaction: internalization * SES*					*0.121*	*0.299*
*Interaction: internalization * Asian*					*0.492*	*0.661*
*Interaction: internalization * Black*					*-1.494*	*0.785*
*Interaction: internalization * Hispanic*					*-1.426**	*0.615*
*Interaction: internalization * Other*					*-0.102*	*0.944*
*Interaction: internalization * Male*					*0.872*	*0.474*
SCHOOL-LEVEL						
Covariates^						
High teacher salary at school – state average	0.059*	0.028	0.042	0.026	0.041	0.026
Urbanicity: suburban	-1.799*	0.771	-0.859	0.636	-0.865	0.590
Urbanicity: rural	-2.213***	0.642	-1.473**	0.538	-1.466**	0.507
Days in school year	0.211**	0.071	0.158*	0.066	0.150*	0.064
Economic Constraints						
Cultural capital					-0.686	0.449
Social capital					-0.066	0.449
Marginalization						
Proportion LEP					-0.242	0.279
Proportion Free/reduced lunch					-0.076	0.125
Proportion Minority					0.012	0.117
Deviance (# parameters)	43511.83 (12)		43277.58 (22)		43243.29 (33)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Decent Work: Hours that allow for free time and adequate rest (work-life balance). The null model indicates that the ICC is .003, suggesting that less than one percent of the variability in work-life balance is explained by school-to-school differences; nearly all of the variability is explained at the individual student level. Full results are presented in Table 10 and described in detail below.

Research Question 1.

Model 1. Model 1 introduces covariates at the high school and student levels to help explain extraneous variability in students' access to hours promoting work-life balance. This baseline model reveals that the Opportunity Index score where students live at the time of the third follow-up survey was significantly negatively associated with work-life balance. Specifically, a one standard deviation increase in measured opportunity above the grand mean was associated with a .08 standard deviation decrease in work-life balance as represented by a component score ($\hat{\gamma}$ = -.075, SE = .025, $p < .01$). Although this finding may appear counter-intuitive, part of this could be attributable to a supply-demand balance wherein an area with more opportunity overall may additionally offer more demanding jobs that in turn foster reduced opportunities for work-life balance.

At the school level, average student course load was positively associated with students' future self-ratings of their work-life balance ($\hat{\gamma}$ = .044, SE = .027, $p < .05$). Here, schools whose students took one additional course per semester more than the grand mean ended up with students scoring .04 standard deviations higher on work-life balance later in life. Although this effect is relatively small in magnitude, it may indicate that students who balance additional coursework as teens end up better poised to navigate their work and

personal spheres marginally more effectively than students attending schools offering or requiring fewer courses at a time.

Model 2. After introducing the economic constraints and marginalization indicators at the student level, the covariate effects for the Opportunity Index (at the student level) and average course load (at the school level) appear to hold while none of the PWT predictors have a significant association with the outcome.

Model 3. Comparable to Model 2, once the economic constraints and marginalization indicators are introduced at the school level, the covariate effects persisted but none of the economic constraints or marginalization variables appeared to differ significantly from zero. Taken together, this suggests that with regard to the first research question, economic constraints and marginalization were not demonstrably related to students' future access to working hours that allow for free time and adequate rest (measured in terms of work-life balance), after accounting for covariates at the high school and student levels.

Research Question 2.

Model 4. After removing all economic constraints and marginalization predictors and modeling only the covariates and internalization of the school-to-work transition, only the Opportunity Index indicator was significantly associated with self-reported work-life balance ($\hat{\gamma}$ = -.070, SE = .026, $p < .01$). The introduction of the internalization variable appears to explain some of the variance in the outcome previously associated with high school course load ($\hat{\gamma}$ = .038, SE = .019, $p > .05$), but the variable itself is evidently not related to future access to work-life balance.

Research Question 3.

Model 5. The results from Model 5 are similar to those in Model 2, in that they indicate that none of the student-level indicators for economic constraints and marginalization were significantly associated with the outcome, but the student-level covariate relating to the Opportunity Index and the school-level covariate for average student course load retained their significant associations ($\hat{\gamma}_{opportunity}$ = -.077, SE = .027, $p < .01$; $\hat{\gamma}_{courseload}$ = .036, SE = .018, $p < .05$). The internalization of the school-to-work transition did not explain additional variance in the outcome beyond these covariates and the student-level economic constraints and marginalization variables. Compared to Model 4, the school-level indicator for average student course load regained significance, which points to evidence of a possible suppressor variable among the student-level economic constraints and marginalization indicators.

Model 6. Model 6 largely mirrors Model 3, with the exception of the newly statistically significant effect of one race comparison: Hispanic v. White. The magnitude of the coefficient increased with the addition of the school-level economic constraints and marginalization indicators, which once again implies the presence of a suppressor variable among the school-level indicators ($\hat{\gamma}$ = -.169, SE = .079, $p < .05$). Here, the association indicates that compared to Whites scoring comparably on all other measures, Hispanic individuals scored nearly one fifth of a standard deviation lower on work-life balance. Other than this comparative race effect, the only statistically significant predictors of work-life balance are the negatively associated local Opportunity Index ($\hat{\gamma}$ = -.070, SE = .028, $p < .05$) and the positively associated school-level indicator for average student course load ($\hat{\gamma}$ = .037, SE = .018, $p < .05$). Relative to the difference between Hispanic and White individuals,

however, these effects represent a smaller standard deviation difference in work-life balance scores. Students living in an area one standard deviation higher than the grand mean on the Opportunity Index experienced, on average, a .07 standard deviation decrease in work-life balance scores, and schools with students enrolled in one additional course over the grand mean predicted a .04 standard deviation increase among their students in terms of their future work-life balance scores, all else being equal. Beyond the collection of fixed effects, slope effects were estimated but the low reliability of the slopes and the high number of iterations required for model convergence indicated that the model did not support slope estimation.

As was the apparent conclusion from Model 6 featuring access to medical care as the outcome variable, only student race appeared to be statistically significantly associated with work-life balance, controlling for the other predictors in the model. The internalization of the school-to-work transition did not appear to have any noteworthy relationship with the outcome once all of the PWT indicators were included. Taken together, the PWT model does not appear to hold with regard to this particular facet of Decent Work. This may be a true finding in a broad sense, but because "hours that allow for free time and adequate rest" was not an explicitly targeted construct on the third follow-up survey, this finding may instead reflect a measurement issue rooted in construct validity (or a lack thereof). Future research targeting a more comprehensive understanding of hours allowing for free time and adequate rest, as it is defined and expressed within the PWT, may help bring clarity to the findings presented here.

As was the case in the final model predicting access to safety in the workplace, model fit improves with the addition of more predictors and in particular with the addition of the internalization of the school-to-work transition indicator. None of the six models is

significantly better fitting than the others, but the gradual reduction in deviance over the course of the model building process remains evident.

Table 10

Outcome Variable: Decent Work – Hours that Allow for Free Time and Adequate Rest

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 3: Student- and School-level Economic Constraints & Marginalization*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	-0.007	0.022	0.036	0.095	0.043	0.108
Covariates^						
Third follow-up: Opportunity Index	-0.075**	0.025	-0.079**	0.025	-0.074**	0.027
Economic Constraints						
Cultural capital			0.014	0.048	0.015	0.047
Social capital			-0.030	0.021	-0.031	0.021
Socioeconomic status			0.047	0.033	0.046	0.032
Marginalization						
Race – Asian			-0.020	0.117	-0.030	0.113
Race – Black			0.038	0.087	-0.004	0.087
Race – Hispanic			-0.104	0.072	-0.137	0.081
Race – Other			-0.082	0.109	-0.097	0.108
Generational status – respondent and mother born in U.S.			0.080	0.107	0.068	0.107
Sex - male			-0.001	0.053	0.001	0.053
First language is English			-0.054	0.094	-0.042	0.093
Internalization of the School-to-Work Transition						
SCHOOL-LEVEL						
Covariates^						
Course load (per semester)	0.044*	0.017	0.042*	0.016	0.042*	0.016
Economic Constraints						
Cultural capital					-0.040	0.045
Social capital					0.075	0.046
Marginalization						
Proportion LEP					0.019	0.030
Proportion Free/reduced lunch					0.010	0.013
Proportion Minority					0.001	0.011
Deviance (# parameters)	13876.08 (5)		13365.78 (15)		13357.39 (20)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Outcome Variable: Decent Work – Hours that Allow for Free Time and Adequate Rest, cont'd.

	Model 4: Internalization of the School-to-Work Transition		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 6: Full PWT Model*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	-0.002	0.023	0.040	0.097	0.043	0.107
Covariates^						
Third follow-up: Opportunity Index	-0.070**	0.026	-0.077**	0.027	-0.070*	0.028
Economic Constraints						
Cultural capital			0.024	0.051	0.026	0.051
Social capital			-0.032	0.022	-0.033	0.022
Socioeconomic status			0.058	0.035	0.062	0.033
Marginalization						
Race – Asian			-0.020	0.118	-0.029	0.114
Race – Black			0.022	0.090	-0.028	0.089
Race – Hispanic			-0.135	0.073	-0.169*	0.079
Race – Other			-0.073	0.113	-0.090	0.112
Generational status – respondent and mother born in U.S.			0.076	0.111	0.065	0.111
Sex - male			0.016	0.053	0.016	0.052
First language is English			-0.060	0.094	-0.049	0.093
Internalization of the School-to-Work Transition	0.015	0.026	0.020	0.026	0.020	0.026
SCHOOL-LEVEL						
Covariates^						
Course load (per semester)	0.038	0.019	0.036*	0.018	0.037*	0.018
Economic Constraints						
Cultural capital					-0.025	0.046
Social capital					0.061	0.043
Marginalization						
Proportion LEP					0.019	0.032
Proportion Free/reduced lunch					0.017	0.012
Proportion Minority					-0.001	0.011
Deviance (# parameters)	12684.42 (6)		12665.17 (16)		12657.20 (21)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Decent Work: Organizational values that complement family and social values (job satisfaction). The null model indicates that the ICC is .01, suggesting that nearly all (99 percent) of the variability in job satisfaction is explained by individual-level differences rather than school-level differences. Complete results from the model-building process appear in Table 11.

Research Question 1.

Model 1. The preliminary covariate analysis revealed that no school-level variables were statistically significantly associated with job satisfaction, but four student-level covariates exhibited significant effects. Controlling for the other variables in the model, a ten point increase in students' test scores over the grand mean was associated with a .06 standard deviation drop in job satisfaction ($\hat{\gamma}$ = -.060, S.E. = .023, $p < .05$) and a one percentage point increase in unemployment rate relative to the grand mean was associated with a .002 standard deviation drop in job satisfaction ($\hat{\gamma}$ = -.002, S.E. = .001, $p < .05$). Students one standard deviation above the grand mean on the class preparation scale scored about .06 standard deviations higher on job satisfaction later in life ($\hat{\gamma}$ = .059, S.E. = .018, $p < .01$) and those participating in one additional school activity above the grand mean ended up scoring, on average, about .05 standard deviations higher on job satisfaction ($\hat{\gamma}$ = .047, S.E. = .016, $p < .01$).

Overall, these findings appear to suggest that, prior to the consideration of the PWT predictors and compared to students at the grand mean on all other predictors in the model, students indicating higher rates of preparation and participation were more likely to experience job satisfaction ten years later despite individual test scores negatively predicting future job satisfaction. Additionally, higher local unemployment rates were negatively

associated with job satisfaction, though the magnitude of this effect appears to be minimal. Given the unit scaling of the predictors these effects may not be of substantial practical importance, but they are noted here in an effort to illustrate the apparent covariate effects in the model prior to entering the PWT predictors.

Model 2. After accounting for the covariates at the school and student levels and entering the collection of economic constraints and marginalization predictors into the model, only the cultural capital indicator appeared to have any significant association with the outcome ($\hat{\gamma}$ = .121, S.E. = .037, $p < .01$). In this instance, after accounting for all other predictors in the model, having a variety of literary resources in the home was associated with more than a tenth of a standard deviation increase in job satisfaction later in life compared to those without these resources. The literature suggests that cultural capital is significantly and positively associated with access to opportunity in a general sense, so the positive relationship between cultural capital and job satisfaction may be an extension of this opportunity; those with better opportunities in their career pursuits may have more choice in the job they ultimately select, and in this situation rational actors would likely pursue the option that they felt would be most satisfying. While an explicit causal connection between cultural capital and job satisfaction cannot be ascertained, it is indeed possible that this relationship exists as an extension of access to opportunity.

Model 3. After entering all student- and school-level variables intended to reflect economic constraints and marginalization, three indicators appeared to have a statistically significant association with job satisfaction beyond the previously entered covariates. Notably, the local unemployment rate coefficient no longer differed significantly from zero following the addition of the school-level predictors ($\hat{\gamma}$ = .001, S.E. = .001, $p > .05$). As was

the case with Model 2, cultural capital retained its more than a tenth of a standard deviation increase in future job satisfaction for students after accounting for all other variables in the model, including the school-level PWT predictors ($\hat{\gamma}$ = .121, S.E. = .037, p < .01). Additionally, a new regression effect for Model 3 existed among the race dummy variables: compared with White students, those who identified as Hispanic indicated, on average, higher job satisfaction by nearly a fifth of a standard deviation ($\hat{\gamma}$ = .185, S.E. = .087, p < .05). If this finding represents the emergence of a true effect, it may be rooted in the types of jobs typically held at higher rates by Hispanic workers or an extension of unmeasured cultural differences in attitudes toward work.

At the school level, having among the student body an additional ten percent of LEP-designated students over the grand mean in a school was associated with individual students' ratings of job satisfaction about a tenth of a standard deviation below average, when matched on all other characteristics ($\hat{\gamma}$ = -.092, S.E. = .029, p < .01). Although small in terms of a standard deviation difference, this effect is notable given the student-level finding that Hispanic students had *higher* job satisfaction (compared to Whites) juxtaposed with the strong association between LEP designation and Hispanic designation in the United States (77 percent of English Language Learners were native Spanish speakers in 2002; National Clearinghouse for Bilingual Education, 2002). While this regression effect may be valid, part of the apparent strength of this finding may be rooted in the data distribution for schools with LEP students featuring a very low overall weighted mean of two percent (see Table 7).

With Models 1 through 3 in mind, the overall conclusion in response to the first research question is that a diverse array of economic constraints and marginalization variables at both levels did indeed appear to significantly predict students' future job

satisfaction. Among the economic constraints and marginalization variables entered into the model, cultural capital, race, and the school-level regression effect for the proportion of LEP students were most strongly related to students' future job satisfaction. The negative association between the proportion of LEP students in schools and reported job satisfaction among students at those schools, if true, may be indicative of a larger issue in resource allocation: with a higher proportion of English language learners requiring additional staff attention and materials, the focus may rest in encouraging students in these schools to catch up as opposed to (and as a precondition to) preparing them for their futures.

Research Question 2.

Model 4. When the internalization of the school-to-work transition was entered alone with the covariates, the model indicated that this predictor explains a significant proportion of the variance beyond the covariates, even mitigating the coefficient magnitude for class preparation and school activity participation compared to Model 1 ($\hat{\gamma}$ = .083, S.E. = .024, $p < .001$). Specifically, a one standard deviation increase in students' internalization of the school-to-work transition above the grand mean was associated with nearly a tenth of a standard deviation increase in future reported job satisfaction. In response to Research Question 2, the internalization of the school-to-work transition did indeed appear to be positively associated with the job satisfaction facet of Decent Work.

Research Question 3.

Model 5. With all student-level predictors entered into the model, the four covariates maintained their statistically significant associations with job satisfaction in addition to the student-level effect for cultural capital ($\hat{\gamma}$ = .119, S.E. = .037, $p < .01$) and the internalization of the school-to-work transition ($\hat{\gamma}$ = .090, S.E. = .024, $p < .001$). The magnitude and

direction of the cultural capital regression effect is largely comparable to Models 2 and 3; having access to cultural capital was associated with more than a tenth of a standard deviation increase in future job satisfaction (compared to students without these resources but otherwise at the grand mean on the other predictors). A one standard deviation increase in the internalization of the school-to-work transition over the grand mean was associated with just shy of a tenth of a standard deviation increase in future job satisfaction, after accounting for the selected covariates and compared to students at the grand mean on all of the predictors.

Model 6. In the full model, cultural capital, being Hispanic (relative to being White), the internalization of the school-to-work transition, and the school-level indicator for the proportion of students identifying as LEP were all significantly related to students' future job satisfaction, in addition to the covariates relating to student test scores, class preparation, and activity participation. However, after incorporating moderation in the form of interaction terms among the student-level PWT predictors, the main effect for the internalization of the school-to-work transition was no longer significant. Furthermore, this model did not support slope estimation.

The covariate regression effects appear to be comparable to the other models, with student test score negatively related to future job satisfaction ($\hat{\gamma}$ = -.066, S.E. = .027, $p < .05$), and class preparation and school activities each sharing a positive relationship with future job satisfaction ($\hat{\gamma}_{preparation}$= .051, S.E. = .021, $p < .05$; $\hat{\gamma}_{activities}$= .043, S.E. = .017, $p < .05$). In each of these cases, a unit increase in the predictor (e.g., test score: 10 points; class preparation: one standard deviation; activity participation: one additional activity) over its respective grand mean was associated with approximately a one twentieth of a standard

deviation change in job satisfaction after controlling for the additional variables in the model, representing a small effect.

Among the student-level economic constraints and marginalization indicators, having access to cultural capital ($\hat{\gamma}$ = .121, S.E. = .037, p < .01) and being Hispanic ($\hat{\gamma}$ = .196, S.E. = .089, p < .05) were each positively associated with job satisfaction at age 26, with cultural capital predicting a tenth of a standard deviation increase and Hispanic status predicting a fifth of a standard deviation increase relative to White students, all else being equal. As was evident in Model 3, the student-level Hispanic indicator coefficient increased in value following the addition of the school-level economic constraints and marginalization variables, which may suggest a school-level suppressor variable or another school-level effect that somehow explains away some of the shared variance in job satisfaction and thus inflates the relative effect of the Hispanic race indicator.

Because the internalization of the school-to-work transition had emerged as a significant predictor of job satisfaction in the later models, interaction terms were entered, capturing the internalization * cultural capital effect and the four internalization * race effects. Of these, only the internalization * Black effect was significant, suggesting that the relationship between the internalization of the school-to-work transition was stronger for Blacks than for Whites. Notably, neither the main effect for being Black nor the main effect for the internalization of the school-to-work transition was statistically significant.

Among schools, the proportion of students with limited English proficiency was the only level-2 predictor statistically significantly related to job satisfaction as measured for the students who formerly attended these schools ($\hat{\gamma}$ = -.090, S.E. = .029, p < .01). Similar to Model 3, this effect indicates that a ten percent increase in the percentage of students with

limited English proficiency (i.e., a .1 increase in the proportion) over the grand mean corresponded with students in that school ultimately ending up with job satisfaction scores a tenth of a standard deviation lower, on average.

The deviance statistic dropped in accordance with each new model evaluated, suggesting that the addition of more predictors generally improved the model fit. However, as was the case with the previously evaluated outcome variables, the addition of the internalization indicator resulted in a sharper drop in the deviance in comparison with models with more predictors that do not include the internalization indicator.

Regarding the research question, the full model suggests that a student's internalization of the school-to-work transition did not necessarily help to explain the variability attributed to the economic constraints and marginalization variables and that its level of salience with regard to job satisfaction varies by race. Indeed, when comparing Models 3 and 6, the addition of the internalization variable (and its associated interactions) appears to temper only the covariate reflecting the local unemployment effect.

Table 11
Outcome Variable: Decent Work – Job Satisfaction

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 3: Student- and School-level Economic Constraints & Marginalization*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	0.022	0.023	-0.058	0.081	-0.057	0.088
Covariates^						
Test score	-0.060*	0.023	-0.069**	0.026	-0.068*	0.026
Class preparation	0.059**	0.018	0.066***	0.019	0.067***	0.020
Number of school activities - participation	0.047**	0.016	0.049**	0.016	0.048**	0.016
Third follow-up: Unemployment rate where respondent lives	-0.002*	0.001	-0.002*	0.001	-0.001	0.001
Economic Constraints						
Cultural capital			0.121**	0.037	0.121**	0.037
Social capital			-0.012	0.017	-0.011	0.017
Socioeconomic status			0.019	0.037	0.018	0.037
Marginalization						
Race – Asian			0.010	0.090	0.009	0.094
Race – Black			-0.101	0.075	-0.110	0.081
Race – Hispanic			0.149	0.083	0.185*	0.087
Race – Other			0.006	0.104	-0.002	0.105
Generational status – respondent and mother born in U.S.			-0.046	0.095	-0.021	0.090
Sex - male			0.053	0.038	0.056	0.038
First language is English			-0.008	0.066	-0.037	0.068
Internalization of the School-to-Work Transition						
SCHOOL-LEVEL						
Covariates^`						
Economic Constraints						
Cultural capital					-0.001	0.041
Social capital					0.009	0.039
Marginalization						
Proportion LEP					-0.092**	0.029
Proportion Free/reduced lunch					0.005	0.014
Proportion Minority					-0.001	0.013
Deviance (# parameters)	15260.96 (7)		15219.81 (17)		15203.60 (22)	

*p<.05 **p<.01 ***p<.001
^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Outcome Variable: Decent Work – Job Satisfaction, cont'd.

	Model 4: Internalization of the School-to-Work Transition		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 6: Full PWT Model*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	0.023	0.024	-0.089	0.083	-0.087	0.092
Covariates^						
Test score	-0.056*	0.024	-0.065*	0.027	-0.066*	0.027
Class preparation	0.043*	0.019	0.048*	0.020	0.051*	0.021
Number of school activities - participation	0.041*	0.017	0.043*	0.017	0.043*	0.017
Third follow-up: Unemployment rate where respondent lives	-0.002*	0.001	-0.002*	0.001	-0.002	0.001
Economic Constraints						
Cultural capital			0.119**	0.037	0.121**	0.037
Social capital			-0.014	0.017	-0.012	0.017
Socioeconomic status			0.018	0.039	0.015	0.039
Marginalization						
Race – Asian			0.009	0.090	-0.004	0.096
Race – Black			-0.126	0.076	-0.163	0.085
Race – Hispanic			0.163	0.084	0.196*	0.089
Race – Other			0.014	0.108	0.005	0.113
Generational status – respondent and mother born in U.S.			-0.046	0.091	-0.024	0.088
Sex - male			0.058	0.040	0.062	0.039
First language is English			0.028	0.069	0.007	0.070
Internalization of the School-to-Work Transition	0.083***	0.024	0.090***	0.024	0.060	0.040
*Interaction: internalization * Cultural capital*					*0.035*	*0.044*
*Interaction: internalization * Asian*					*0.202**	*0.089*
*Interaction: internalization * Black*					*0.107*	*0.068*
*Interaction: internalization * Hispanic*					*0.032*	*0.066*
*Interaction: internalization * Other*					*-0.031*	*0.096*
SCHOOL-LEVEL						
Covariates^`						
Economic Constraints						
Cultural capital					0.0003	0.045
Social capital					0.004	0.040
Marginalization						
Proportion LEP					-0.091**	0.029
Proportion Free/reduced lunch					-0.002	0.015
Proportion Minority					0.003	0.013
Deviance (# parameters)	14548.99 (8)		14505.22 (18)		14481.22 (28)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Decent Work: Adequate compensation. Because the cost-of-living-adjusted compensation indicator had undergone a log transformation to reshape the data prior to analysis, the coefficients require a back-transformation in order to be interpretable in terms of the original metric. In order to interpret the amount of change in terms of the original metric (e.g., dollars), each coefficient was exponentiated, subtracted from one, and then multiplied by 100 in order to be interpretable in terms of a percentage increase or decrease in dollars earned. In the following paragraphs, all coefficients are presented alongside this resultant percentage change in an attempt to provide meaningful and clear interpretation.

The null model indicates that the ICC is .01. Ninety-nine percent of the variability in log earnings exists at the student level, with minimal additional variability explained at the school level. The results from the model-building process appear in Table 12.

Research Question 1.

Model 1. When modeling only school- and student-level covariates, students who grew up in two-parent households ended up with marginally lower earnings than their counterparts, all else being equal ($\hat{\gamma}$ = -.048, SE = .021, $p < .05$); students with this family background had about 4.7 percent lower cost-of-living-adjusted earnings after controlling for the other variables. Among schools, whether the school offered an internship program was associated with its students out-earning students from other schools by about 4.9 percent later in life, all else being equal ($\hat{\gamma}$ = .048, SE = .020, $p < .05$). Relative to the grand mean, a one point increase in perceived learning hindrance due to school conditions was associated with a slight drop (2.9 percent) in future earnings for students ($\hat{\gamma}$ = -.029, SE = .013, $p < .05$). Although the magnitude of the regression effect is small, it suggests that better quality

conditions that do not hinder learning (and that may relate to per-pupil spending) are associated with improved earnings outcomes for students.

Model 2. Introducing the student-level economic constraints and marginalization predictors revealed no statistically significant relationships with adequate compensation except for the social capital indicator ($\hat{\gamma}$ = .019, SE = .009, p < .05). Each increase of one education level (e.g., High school graduation or GED; Attend or complete 2-year college/school) over the grand mean of parental education aspirations was associated with a 1.9 percent increase in future earnings. The previously identified covariate effects for family composition at the student level and both internship offerings and school conditions at the school level have persisted and remain largely unchanged in terms of their coefficient values.

Model 3. As a final step in exploring the role of economic constraints and marginalization in predicting future earnings, the school-level PWT indicators were added to the model. Two separate variables were found to have positive and statistically significant associations with the outcome: school-level social capital ($\hat{\gamma}$ = .040, SE = .020, p < .05) and the proportion of students in a school enrolled in a free or reduced price lunch program ($\hat{\gamma}$ = .012, SE = .005, p < .05). The social capital finding suggests that students attending schools offering mentoring earned 4.1 percent higher wages, on average, relative to those who attended schools without mentoring, all else being equal. As for the second finding, after accounting for the other variables in the model, students attending schools with ten percent more students enrolled in free or reduced-price lunch over the grand mean ended up with just over one percent (1.2) higher earnings later in life. This effect is barely noteworthy in terms of interpretation and contextual significance, but is mentioned here because the

coefficient was found to differ significantly from zero and operate in an unexpected direction.

Research Question 2.

Model 4. After adding in the student-level indicator for the internalization of the school-to-work transition, this variable did not appear to be associated with future earnings ($\hat{\gamma}$ = -.005, SE = .012, p > .05) and the covariate effects were comparable to Model 1.

Research Question 3.

Model 5. The addition of the internalization of the school-to-work transition predictor to Model 2 resulted in Model 5. After modeling the internalization of the school-to-work transition in addition to the student-level covariates alongside the economic constraints and marginalization indicators, the only variables that appeared to be associated with the outcome were the aforementioned covariates.

Model 6. Model 6 bears much in common with Model 5, with the major exception being that a school's provision of an internship program was no longer significantly associated with students in that school securing higher earnings in their future ($\hat{\gamma}$ = .037, SE = .020, p > .05). The only predictors related to students' future earnings were family composition at the student level ($\hat{\gamma}$ = -.050, SE = .023, p < .05) and school conditions at the school level ($\hat{\gamma}$ = -.033, SE = .013, p < .05). After accounting for the other variables in the model, students who grew up with both a mother and father in the home had 5 percent lower earnings, on average, compared to those with other family arrangements. Schools rated as one scale degree more hindering to student learning over the grand mean predicted 3.3 percent lower future earnings among students who attended these schools, all else being equal. Aside from these covariates, the full model (Model 6) reveals that none of the PWT

predictors related to future earnings after accounting for non-PWT covariates and modeling all of the variables together.

No slopes were estimated as a part of evaluating this model, as the analysis did not support letting student-level slopes vary across schools. Model fit, as was the case with the models measuring the other outcomes, improved as a function of additional predictors in general and the inclusion of the internalization indicator in particular. None of the drops in the deviance, considered in conjunction with the number of parameters estimated, is indicative of any one model fitting significantly better than the others, but the model building process nonetheless highlights how fit changed and improved with different predictors.

Table 12

Outcome Variable: Decent Work – Cost-of-Living-Adjusted Earnings (log transformed)

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 3: Student- and School-level Economic Constraints & Marginalization*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	4.328***	0.014	4.328***	0.046	4.324***	0.045
Covariates^						
Family composition – mother and father	-0.048*	0.021	-0.054*	0.022	-0.052*	0.022
Economic Constraints						
Cultural capital			-0.035	0.024	-0.033	0.024
Social capital			0.019*	0.009	0.019*	0.009
Socioeconomic status			0.017	0.017	0.021	0.017
Marginalization						
Race – Asian			0.039	0.039	0.050	0.038
Race – Black			-0.012	0.027	-0.014	0.035
Race – Hispanic			0.019	0.051	0.031	0.049
Race – Other			0.023	0.036	0.020	0.037
Generational status – respondent and mother born in U.S.			0.024	0.032	0.031	0.031
Sex - male			0.014	0.022	0.016	0.023
First language is English			0.015	0.041	0.007	0.041
Internalization of the School-to-Work Transition						
SCHOOL-LEVEL						
Covariates^						
School offers internships	0.048*	0.020	0.041*	0.020	0.031	0.019
School conditions hinder learning	-0.029*	0.013	-0.028*	0.013	-0.033*	0.013
Economic Constraints						
Cultural capital					-0.019	0.021
Social capital					0.040*	0.020
Marginalization						
Proportion LEP					-0.019	0.013
Proportion Free/reduced lunch					0.012*	0.005
Proportion Minority					-0.006	0.006
Deviance (# parameters)	6980.64 (6)		6925.20 (16)		6905.31 (21)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Outcome Variable: Decent Work – Cost-of-Living-Adjusted Earnings (log transformed), cont'd.

	Model 4: Internalization of the School-to-Work Transition		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 6: Full PWT Model*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
STUDENT-LEVEL						
Intercept	4.323***	0.014	4.332***	0.048	4.330***	0.047
Covariates^						
Family composition – mother and father	-0.047*	0.022	-0.053*	0.023	-0.050*	0.023
Economic Constraints						
Cultural capital			-0.039	0.025	-0.037	0.024
Social capital			0.019	0.010	0.019	0.010
Socioeconomic status			0.021	0.017	0.023	0.017
Marginalization						
Race – Asian			0.040	0.040	0.048	0.039
Race – Black			-0.004	0.029	-0.009	0.038
Race – Hispanic			0.016	0.054	0.026	0.051
Race – Other			0.023	0.038	0.020	0.039
Generational status – respondent and mother born in U.S.			0.025	0.032	0.031	0.032
Sex - male			0.017	0.024	0.018	0.024
First language is English			0.005	0.042	-0.002	0.042
Internalization of the School-to-Work Transition	-0.005	0.012	-0.009	0.012	-0.009	0.012
SCHOOL-LEVEL						
Covariates^						
School offers internships	0.052*	0.021	0.046*	0.020	0.037	0.020
School conditions hinder learning	-0.028*	0.014	-0.028*	0.013	-0.033*	0.013
Economic Constraints						
Cultural capital					-0.020	0.021
Social capital					0.038	0.021
Marginalization						
Proportion LEP					-0.021	0.013
Proportion Free/reduced lunch					0.001	0.006
Proportion Minority					-0.005	0.006
Deviance (# parameters)	6722.72 (7)		6690.78 (17)		6675.33 (22)	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Decent Work: Access to health care. The null model indicates that the ICC is .021, which is low in the sense that it indicates that very little of the variance (two percent) in whether a person has access to medical care through their work is explained by school-to-school differences. Rather, much of it is explained by student-to-student differences. In conjunction with the following discussion concerning the various models, results from the model-building process appear in Table 13.

Research Question 1.

Model 1. In the covariate model, students' achievement scores had a small but statistically significant positive association with the odds of those students later securing access to medical care ($\hat{\gamma}$ = .081, SE = .039, $p < .05$, Odds Ratio [OR] = 1.08), after accounting for the other covariates in the model. A ten point increase in test scores over the grand mean (i.e., approximately a one standard deviation increase) predicted about eight percent higher odds of ultimately ending up in a job offering health insurance. Higher scores on a class preparation scale were likewise associated with 12 percent higher odds of having access to medical care ($\hat{\gamma}$ = .110, SE = .032, $p < .001$, OR = 1.12), with a one standard deviation increase in class preparation over the grand mean predicting 12 percent higher odds of securing access to medical care. Those who graduated from high school (but who did not have a bachelor's degree) had nearly twice the odds of securing access to medical care through work compared to those who dropped out of high school ($\hat{\gamma}$ = .609, SE = .100, $p < .001$, OR = 1.84), and those with bachelor's degrees had almost triple the odds of accessing medical care through work compared to those who dropped out of high school ($\hat{\gamma}$ = 1.031, SE = .116, $p < .001$, OR = 2.80). Finally, the unemployment rate within a respondent's community at the time of the third follow-up (i.e., where he or she lived at the time that

access to medical care was reported) was significantly negatively associated with the odds of having access to medical care through work. Here, a one percentage point increase in unemployment in the community relative to the grand mean was associated with a modest decrease in the odds; however, the resultant change in odds of under one percent suggests that this finding may be spurious ($\hat{\gamma}$ = -.003, SE = .001, p < .001, OR = .997). In other words, while higher local unemployment seemed to be associated with decreased odds of having access to medical care through work, the odds ratio of .997 suggests that changes in unemployment actually leave the odds of securing access to medical care through work functionally unchanged. This could be due to some combination of a distributional or measurement-related concern with the data, or perhaps simply to random error.

Compared to schools at the grand mean of the outcome and controlling for all other predictors, whether a high school offered job shadowing was positively associated with their students' odds of securing access to medical care through their work ten years later ($\hat{\gamma}$ = .144, SE = .068, p < .05, OR = 1.15). School conditions rated as more hindering to students' learning were negatively associated with students' future access to medical care ($\hat{\gamma}$ = -.111, SE = .052, p < .05, OR = .89).

Model 2. After incorporating the student-level indicators for economic constraints and marginalization, the magnitude and significance of the covariates remained largely consistent, with the exception of the School Conditions effect which was rendered no longer statistically significantly different from zero ($\hat{\gamma}$ = -.095, SE = .051, OR = .91). Although their inclusion may have tempered the effects of this high school-level covariate, none of the student-level economic constraints or marginalization indicators appeared to be statistically significantly associated with the outcome on their own.

Model 3. In Model 2, where only student-level economic constraints and marginalization variables were considered, none of the PWT variables were significantly related to access to medical care through work ten years later. Following the addition of economic constraints and marginalization at the high school level, however, the coefficients for student socioeconomic status and the student-level dummy indicator for race: Black increased in magnitude and became statistically significant ($\hat{\gamma}_{SES}$= -.120, SE = .055, $p < .05$, OR = .89; $\hat{\gamma}_{Black}$ = .297, SE = .120, $p < .05$, OR = 1.35). Several factors may explain the behavior of these variables and the shift from nonsignificant to significant. For example, there may be a mediating effect due to another variable in the model relating to the outcome, a suppressor effect from another variable *not* related to the outcome, a confounding variable distorting the association between other predictor(s) and the outcome, or perhaps another factor such as a distributional issue or a failure to adequately meet assumptions of multilevel modeling.

Considered as a group, the economic constraints and marginalization indicators did not appear to have a particularly noteworthy relationship with students' future access to medical care through work. After accounting for a series of covariates and introducing the economic constraints and marginalization variables at both the student- and high school-levels, none of the high school-level indicators for economic constraints or marginalization — and few of the individual-level characteristics — appeared to relate to the outcome. A one standard deviation drop in student socioeconomic status (measured when the student was in high school) was associated with an 11 percent lower odds of securing access to medical care through work ten years later, and in the absence of other predictors, Black students had 35 percent higher odds (compared to White students) of securing access to medical care via

their employment. While the relationships between these factors and the outcome were positive and statistically significant even after accounting for covariates at both levels, it is more prudent to address these associations individually rather than drawing conclusions about the "effect" of economic constraints and marginalization considered in broader terms.

Research Question 2.

Model 4. The entry of the internalization of the school-to-work transition mitigated the coefficient magnitudes for the race indicators. The internalization variable itself appeared to be statistically significantly and positively associated with access to medical care ten years later ($\hat{\gamma}$ = .114, SE = .034, p < .01, OR = 1.12), controlling for the other variables in the model. Specifically, a one standard deviation increase in the internalization component score over the grand mean corresponded with 12 percent higher odds of accessing medical care through work ten years later. Considered together, these findings suggest that students' internalization of the school-to-work transition was significantly and positively associated with access to medical care later in life, over and above the regression effects associated with economic constraints and marginalization.

Research Question 3.

Model 5. After re-introducing the economic constraints and marginalization variables, the internalization indicator retained its statistically significant positive association with students' future access to medical care ($\hat{\gamma}$ = .121, SE = .034, p < .01, OR = 1.13), and designation as an "Other" race exhibited a negative association with students' future access to medical care, relative to White students ($\hat{\gamma}$ = -.314, SE = .142, p < .05, OR = .73). Here, a one standard deviation increase in students' internalization of the school-to-work transition was associated with 13 percent increased odds of access to medical care, and compared to

White students, those reporting their race as "Other" had 27 percent reduced odds of securing access to medical care.

Model 6. Results from Model 6 suggest that, compared to students at the grand mean on all other predictors, students' test scores, class preparation, attainment of a high school diploma, and attainment of a bachelor's degree were all significantly and positively associated with higher odds of securing access to medical care through work ten years later. Beyond these covariates, the PWT component of the model revealed that only race at the student level was associated with whether students ultimately secured access to medical care through their work. Compared to White individuals, being Black was associated with 30 percent higher odds of accessing medical care ($\hat{\gamma}$= .264, SE = .123, $p < .05$, OR = 1.30), but the effect of being of an "Other" race was no longer significant. A one standard deviation increase in the internalization of the school-to-work transition over the grand mean was associated with 15 percent higher odds of securing access to medical care, controlling for the other variables in the model ($\hat{\gamma}$= .143, SE = .046, $p < .01$, OR = 1.15). The interactions between this indicator and race were additionally included in the model in order to explore whether the significant relationship between the internalization of the school-to-work transition and access to health care varied by other significant PWT indicators in the model. None of the four race interactions were significant, indicating that the strength of the relationship between the internalization of the school-to-work transition and access to health care did not vary by race or ethnicity.

At the high school level, only the provision of job shadowing programs appeared to positively predict whether students from that school secured access to medical care through their employers in the future ($\hat{\gamma}$ = .177, SE = .074, $p < .05$, OR = 1.19). Among high schools

at the grand mean on the other predictors, students at those offering job shadowing programs had 19 percent higher odds of access to medical care ten years later. The school conditions variable did not retain its significant association with the outcome once all of the possible variables were considered. Furthermore, none of the school-level PWT predictors were associated with this outcome after modeling school-level covariates and the collection of student-level variables, which may be due to the PWT not holding for group-level effects, the measurement properties and effectiveness of the selected variables intended to reflect PWT domains, the very low ICCs in this analysis, or some combination of these.

Considered overall, the results from Model 6 illustrate a few key findings. First, among the economic constraints and marginalization variables, only race was statistically significantly associated with access to medical care after controlling for the other predictors in the model. Here, Black individuals had a higher likelihood of securing medical care than Whites. Several covariates maintained their statistically significant associations with the outcome, with individual educational attainment most strongly predicting the odds of securing access to medical care in the future (all else being equal).

This model was evaluated for fit using Tjur's pseudo-R^2 measure (Tjur, 2009). This statistic represents the difference in the predicted probabilities of whether or not a person has access to health care when comparing those with access to those without. The pseudo-R^2 value for Model 6 is .244. Seventy-five percent of cases were correctly classified using this model. While Tjur's statistic is far from the maximum possible value of 1, the model fit suggested here is good.

Table 13

Outcome Variable: Decent Work – Access to Health Insurance

	Model 1: Covariates Only			*Model 2: Student-level Economic Constraints & Marginalization*			*Model 3: Student- and School-level Economic Constraints & Marginalization*		
	Coeff.	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*
STUDENT-LEVEL									
Intercept	0.332**	0.101	1.39	0.200	0.176	1.22	0.224	0.180	1.25
Covariates^									
Test score	0.081*	0.039	1.08	0.114**	0.042	1.12	0.109*	0.043	1.12
Class preparation	0.110***	0.032	1.12	0.121***	0.033	1.13	0.121***	0.033	1.13
Graduated HS, no Bachelor's	0.609***	0.100	1.84	0.637***	0.100	1.89	0.628***	0.100	1.87
Graduated Bachelor's	1.031***	0.116	2.80	1.104***	0.121	3.02	1.093***	0.121	2.98
Third follow-up: Unemployment rate where respondent lives	-0.003***	0.001	0.997	-0.003***	0.001	0.997	-0.003***	0.001	0.997
Economic Constraints									
Cultural capital				-0.0002	0.064	1.00	-0.006	0.064	0.99
Social capital				-0.030	0.029	0.97	-0.026	0.029	0.97
Socioeconomic status				-0.110	0.055	0.90	-0.120*	0.055	0.89
Marginalization									
Race – Asian				-0.104	0.143	0.90	-0.070	0.147	0.93
Race – Black				0.201	0.103	1.22	0.297*	0.120	1.35
Race – Hispanic				-0.115	0.128	0.89	-0.062	0.133	0.94
Race – Other				-0.258	0.139	0.77	-0.227	0.139	0.80
Generational status – respondent and mother born in U.S.				0.059	0.120	1.06	0.053	0.121	1.05
Sex – male				0.092	0.070	1.10	0.093	0.070	1.10
First language is English				0.056	0.131	1.06	0.048	0.131	1.05
Internalization of the School-to-Work Transition									
SCHOOL-LEVEL									
Covariates^									
School offers job shadowing	0.144*	0.068	1.15	0.159*	0.069	1.17	0.181*	0.073	1.20
School conditions hinder learning	-0.111*	0.052	0.89	-0.095	0.051	0.91	-0.080	0.051	0.92
Economic Constraints									
Cultural capital							-0.032	0.068	0.97
Social capital							-0.086	0.075	0.92
Marginalization									
Proportion LEP							0.036	0.068	1.04
Proportion Free/reduced lunch							-0.027	0.019	0.97
Proportion Minority							-0.013	0.018	0.99

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Outcome Variable: Decent Work – Access to Health Insurance, cont'd.

	Model 4: Internalization of the School-to-Work Transition			*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*			*Model 6: Full PWT Model*		
	Coeff.	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*
STUDENT-LEVEL									
Intercept	0.417***	0.104	1.52	0.260	0.184	1.30	0.271	0.188	1.31
Covariates^									
Test score	0.095*	0.040	1.10	0.131**	0.043	1.14	0.123**	0.043	1.13
Class preparation	0.107**	0.033	1.11	0.109**	0.034	1.12	0.109**	0.034	1.11
Graduated HS, no Bachelor's	0.513***	0.105	1.67	0.546***	0.106	1.73	0.536***	0.107	1.71
Graduated Bachelor's	0.911***	0.120	2.49	0.995***	0.126	2.71	0.981***	0.127	2.67
Third follow-up: Unemployment rate where respondent lives	-0.003***	0.001	0.997	-0.003***	0.001	0.997	-0.003***	0.001	0.997
Economic Constraints									
Cultural capital				0.015	0.064	1.02	0.008	0.064	1.01
Social capital				-0.050	0.030	0.95	-0.047	0.030	0.95
Socioeconomic status				-0.092	0.057	0.92	-0.106	0.057	0.90
Marginalization									
Race – Asian				-0.155	0.144	0.86	-0.117	0.150	0.89
Race – Black				0.153	0.106	1.16	0.264*	0.123	1.30
Race – Hispanic				-0.113	0.132	0.89	-0.062	0.138	0.94
Race – Other				-0.314*	0.142	0.73	-0.281*	0.142	0.75
Generational status – respondent and mother born in U.S.				0.063	0.124	1.06	0.064	0.127	1.07
Sex - male				0.117	0.072	1.12	0.120	0.072	1.13
First language is English				0.074	0.138	1.08	0.067	0.139	1.07
Internalization of the School-to-Work Transition	0.114***	0.034	1.12	0.121***	0.034	1.13	0.143**	0.046	1.15
*Interaction: internalization * Asian*							*-0.090*	*0.121*	*0.91*
*Interaction: internalization * Black*							*-0.089*	*0.117*	*0.91*
*Interaction: internalization * Hispanic*							*-0.049*	*0.094*	*0.95*
*Interaction: internalization * Other*							*0.053*	*0.149*	*1.05*
SCHOOL-LEVEL									
Covariates^									
School offers job shadowing	0.161*	0.069	1.17	0.167	0.070	1.18	0.177*	0.074	1.19
School conditions hinder learning	-0.092	0.053	0.91	-0.085	0.053	0.92	-0.068	0.053	0.93
Economic Constraints									
Cultural capital							-0.017	0.068	0.98
Social capital							-0.061	0.076	0.94
Marginalization									
Proportion LEP							0.033	0.069	1.03
Proportion Free/reduced lunch							-0.027	0.019	0.97
Proportion Minority							-0.015	0.018	0.99
Tjur's pseudo-R^2								0.244	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Decent Work: facet correlations. After running the six-model series for each of the five Decent Work facets separately, the five outcome variables were evaluated for their interrelationships. Throughout this study, Decent Work was intentionally evaluated in terms of its component parts as opposed to as a single, albeit multidimensional indicator of work quality. Nonetheless, a thorough presentation of Decent Work involves exploring the strength of the relationships among the various facets. Accordingly, weighted correlations (or point-biserial correlations, where the dichotomous indicator for access to health care is involved) are presented in Table 14. These correlations, like the descriptive statistics presented at the beginning of Chapter 4, were weighted by the combined school and student weight to parallel the weighting structure used throughout the multilevel analyses.

The collection of correlations broadly suggest that the facets are not strongly related to one another, adding support to the decision to consider each of them independently throughout this dissertation. In particular, the safety of workplace conditions was positively related to hours allowing for free time and adequate rest (r=.038) but negatively related to access to medical care (r_{pb}=-.042). These findings are unsurprising in that those who report sufficient work-life balance have the opportunity to be away from the workplace and any dangers that present themselves therein. Those who are exposed to dangerous conditions, particularly *physically* dangerous conditions, may also have better medical policies at work or a type of worker's compensation policy, although this cannot be ascertained with the data that are available within ELS:02.

Hours allowing for free time and adequate rest was negatively related to job satisfaction (r=-.045), which is unexpected in the sense that free time presents as a positive attribute, but then again, people who are especially satisfied with their work may not place as

much value in the time they get away from work. Access to health care correlated positively with each of these attributes: hours allowing for free time and adequate rest (r_{pb}=.046) and job satisfaction (r_{pb}=.031). These relationships, while small in magnitude, hint at a general association among fringe benefits at work; those who receive health care as a benefit may generally be satisfied with the offerings in their workplace, which in turn informs overall satisfaction. The apparent connection between access to health care and work-life balance is less clear, especially in the context of the slight negative correlation between this facet and job satisfaction. Notably, earnings were not significantly related to any of the other Decent Work attributes, but given the sparse earnings model highlighted earlier in the chapter, this is not especially surprising.

The small correlations among the facets, whether they were found to be significant or not, highlight the distinct aspects of Decent Work that each of these attributes describes. There is little evidence to suggest that it is appropriate to treat Decent Work as a single indicator, although future research may explore these interrelationships in more detail.

Table 14
Weighted Correlations among the Five Decent Work Facets

	Interpersonal and physical safety	Hours that allow for free time and adequate rest	Organizational values that complement family and social values (job satisfaction)	Adequate compensation	Access to medical care
Interpersonal and physical safety	-				
Hours that allow for free time and adequate rest	.038*	-			
Organizational values that complement family and social values (job satisfaction)	.024	-.045**	-		
Adequate compensation	.007	.029	-.002	-	
Access to medical care	-.042**	.046**	.031*	-.003	-

*p<.05 **p<.01 ***p<.001

Employment status. The final set of models evaluated as a part of this dissertation concern employment status. Because these models involved comparing those who were employed to those who were not as of the third follow-up, the analytic sample is larger than the Decent Work analyses that only included those who were employed ($n_{students}$=7,629; $n_{high\ schools}$=460). The goal of this group of analyses was to explore the degree to which the PWT may be used to predict employment or unemployment overall, thus extending the application of the theory beyond only populations who are working and beyond issues unique to working contexts.

After running the null model, the ICC was determined to be .042, suggesting that about 96 percent of the variability in employment status is explained by student-to-student differences, and just over four percent is explained by high school-to-high school differences. This ICC is higher in value than for any of the Decent Work outcomes, suggesting that while the quality of one's working environment is not largely predicted by high school level differences, whether or not a person ends up employed or unemployed is more attributable to school-level variability. Results from the model-building process appear in Table 15.

Research Question 1.

Model 1. The covariate-only model revealed a large collection of student-level characteristics to be associated with future employment status. At the school level, however, only the average student-teacher ratio appeared to relate to future employment rates among students ($\hat{\gamma}$ = -.030, SE = .010, p < .01, OR = .97). Here, an increase of one student per teacher over the grand mean of students in a classroom was associated with 3 percent lower odds of employment later in life, which represents a small effect but one that is consistent

with the literature regarding the association between lower student-teacher ratios and positive student outcomes.

Student test scores were positively associated with securing employment in the future, with students scoring 10 points above the grand mean having 30 percent higher odds of employment ten years after high school, all else being equal ($\hat{\gamma}$ = .266, SE = .054, p < .001, OR = 1.30). Students scoring one standard deviation above the grand mean on class preparation likewise had higher odds of employment in their future, but this regression effect was smaller at 9 percent ($\hat{\gamma}$ = .085, SE = .038, p < .05, OR = 1.09). Students who worked while in high school were significantly more likely to secure work in their future compared to students who did not work, with those working less than 15 hours having 50 percent higher odds of employment than those without jobs in high school, all else being equal, and those working 15 or more hours having 44 percent higher odds ($\hat{\gamma}_{work<15}$ = .408, SE = .111, p < .001, OR = 1.50; $\hat{\gamma}_{work>=15}$ = .361, SE = .125, p < .01, OR = 1.44). The literature suggests that students who had a job in high school tend to have better academic outcomes, but those who work too many hours struggle as the time commitment is thought to function as a detriment to performance in school (see e.g., Vuolo, Mortimer, & Staff, 2014). With respect to employment outcomes, however, the results here suggest that *any* employment for high schoolers is a positive predictor of future work attainment, after accounting for student achievement and a series of other variables.

In addition to working experiences, student educational attainment was strongly associated with future employment status. Compared to those who never graduated from high school, students with a high school diploma or GED had 67 percent higher odds of employment and students with a bachelor's degree had more than two and one half times the

odds (a 164 percent increase) of employment, all else being equal ($\hat{\gamma}_{highschool}$ = .511, SE = .114, p < .001, OR = 1.67; $\hat{\gamma}_{bachelors}$ = .970, SE = .140, p < .001, OR = 2.64). Whether a student had been suspended negatively predicted future employment status, reducing the odds of having a job ten years later by 32 percent after accounting for the other covariates ($\hat{\gamma}$ = -.384, SE = .124, p < .01, OR = .68). Finally, local opportunity was positively related to individual employment, though this effect was minimal: a one standard deviation increase in local opportunity above the grand mean predicted 13 percent higher odds of employment ($\hat{\gamma}$ = .120, SE = .045, p < .01, OR = 1.13). This may be due to a higher prevalence of jobs in an area of greater overall opportunity considered more broadly.

Model 2. The student-level economic constraints and marginalization predictors appeared to explain some additional variability in employment status over the covariates. Following the introduction of these variables, all of the student-level covariates retained their statistically significant associations with the outcome, but the school-level indicator for student-teacher ratio was no longer significant ($\hat{\gamma}$ = -.018, SE = .010, p > .05, OR = .98). None of the economic constraints variables (e.g., cultural capital, social capital, and socioeconomic status) meaningfully predicted employment status after accounting for the other variables in the model, but among the marginalization indicators, race and gender appeared to be strong predictors of employment. In particular, compared to Whites, Asians were half as likely to be employed, all else being equal, and those of an "Other" race had 31 percent reduced odds of employment ($\hat{\gamma}_{Asian}$ = -.691, SE = .185, p < .001, OR = .50; $\hat{\gamma}_{Other}$ = -.372, SE = .156, p < .05, OR = .69). Finally, compared to women, men had 53 percent increased odds of employment, all else being equal ($\hat{\gamma}$ = .426, SE = .087, p < .001, OR = 1.53).

Model 3. After adding in the school-level indicators for economic constraints and marginalization, none appeared to significantly predict employment status beyond what the individual-level indicators already accounted for. Indeed, all modeled effects, including the covariate coefficients, were largely unchanged from Model 2. This suggests that high school-level characteristics did not contribute to predicting employment over and above individual characteristics and backgrounds.

In addressing the first research question, Models 1, 2, and 3 support the conclusion that student-level marginalization meaningfully predicts employment status beyond the large selection of student-level covariates. However, economic constraints at either level did not appear to add additional explanatory power. High school effects, likewise, did not play a significant role in predicting employment status later in life after accounting for individual attributes. Overall, student-level marginalization — particularly race and sex — appeared to explain the most variability in employment status after accounting for the relevant covariates.

Research Question 2.

Model 4. Model 4 suggests that the internalization of the school-to-work transition did not significantly predict future employment status when considered alongside only the covariate effects ($\hat{\gamma} = .053$, SE = .038, $p > .05$, OR = 1.05). Additionally, the inclusion of this variable appears to have shifted the modeled covariate effects very minimally relative to Model 1. This suggests that in response to the second research question, students' internalization of the school-to-work transition is not related to future employment status when this effect is modeled independently of the other PWT predictors.

Research Question 3.

Model 5. After including all student-level PWT predictors, Model 5 highlights the myriad individual effects that were associated with employment status. The intensity and directionality of the student-level covariates was largely consistent with Model 2, with two key exceptions. Compared to Whites, Black individuals had 24 percent lower odds of securing employment after accounting for the remainder of the student-level variables in the model (including the internalization of the school-to-work transition; $\hat{\gamma}$ = -.272, SE = .129, $p < .05$, OR = .76). Second, and representing a change from Model 4, the internalization of the school-to-work transition was statistically significantly associated with the odds of employment later in life ($\hat{\gamma}$ = .087, SE = .040, $p < .05$, OR = 1.09). Here, students scoring one standard deviation above the grand mean on internalization were predicted to have a 9 percent higher odds of being employed ten years later, all else being equal. This internalization effect is relatively small, which is unsurprising considering that it had not been flagged as statistically significant when initially entered as a part of Model 4. This suggests that some of the student-level economic constraints and marginalization variables may explain some of the shared variance in employment outcomes, thus enabling the unique variance attributable to the internalization of the school-to-work transition to emerge in Model 5.

Model 6. Once all of the variables were considered together, the effect for being Black was reduced away from statistical significance (i.e., the coefficient no longer differed significantly from zero so the true directionality of the effect cannot be ascertained with confidence). The major findings in this model included the strong effects of educational attainment, work experience, race, and gender.

Compared to those who did not complete high school, those who did had 65 percent higher odds of employment ($\hat{\gamma}$ = .501, SE = .116, p < .001, OR = 1.65). Those with a bachelor's degree had nearly three times the odds of being employed than those without a high school diploma ($\hat{\gamma}$ = 1.010, SE = .148, p < .001, OR = 2.75), all else being equal. The magnitude of these effects is substantial, indicating that student education had a significant and powerful association with employment status after accounting for the remainder of the variables in the model. Those who worked while in high school likewise had higher odds of securing employment in their future, whether they worked less than 15 hours (46 percent higher odds than those who did not work in high school) or 15 hours or more per week (36 percent higher odds than those who did not work in high school), $\hat{\gamma}_{<15hours}$ = .378, SE = .112, p < .001, OR = 1.46; $\hat{\gamma}_{>=15hours}$ = .306, SE = .128, p < .05, OR = 1.36. Similar to previous models, the effect of being Asian (relative to being White) was associated with 52 percent reduced odds of employment, all else being equal ($\hat{\gamma}$ = -.728, SE = .185, p < .001, OR = .48). Finally, among the most salient effects, being male was associated with 52 percent higher odds of employment, all else being equal ($\hat{\gamma}$ = .416, SE = .086, p < .001, OR = 1.52).

Results also suggest that the internalization of the school-to-work transition positively predicted employment status over and above the aforementioned major effects ($\hat{\gamma}$ = .182, SE = .072, p < .05, OR = 1.20), with a standard deviation increase in internalization over the grand mean predicting a 20 percent increase in the odds of employment. Several interaction terms were also added to this model, capturing the effects for internalization * race and internalization * male. The latter of these was statistically significant, $\hat{\gamma}$ = -.155, SE = .076, p < .05, OR = .86, suggesting that the strength of the relationship between the internalization of the school-to-work transition and employment was smaller for men than it is for women.

This can be interpreted in conjunction with the main effects, which suggest that males were more likely to be employed and those with higher rates of internalization were more likely to be employed. The negative interaction effect may be due to a ceiling effect within the male sample; if the rate of employment among men is already substantially higher than it is for women, then even men with low rates of internalization of the school-to-work transition are inherently more likely to be employed. Finally, no slopes were estimated as a part of evaluating employment status, as the data did not support the addition of random effects.

In evaluating the full model, no school effects appeared to meaningfully predict employment status over and above the individual effects that are included. This is largely consistent with many of the Decent Work models presented above and may be explained, in part, by the relatively low ICC suggesting that even if group effects were significant predictors, the total amount of variability they could explain was about four percent.

The fit of this model is good, with a Tjur's pseudo-R^2 value of .870. In other words, when comparing those who were employed at the time of the third follow-up study to those who were not (i.e., observed employment status), the difference in predicted probability of employment status approaches the maximum of 1. As such, Model 6 is good at accurately predicting who is employed; when this model is used to guess who is employed and who is not, the estimated employment status is very close to the actual, observed employment status. Furthermore, the model correctly classifies 87 percent of cases.

Considered all together, Model 6 is a well-fitting, informative, and complex model in terms of the various indicators that appear to predict future employment status. The addition of the internalization indicator appears to help positively predict whether or not an individual is employed, but the significant covariates persist even after including all elements of the

PWT as predictors. When considering just the PWT predictors, marginalization (race and sex) and the internalization of the school-to-work transition had the strongest and most meaningful relationships with the outcome. Economic constraints, with respect to future employment prospects, were not particularly notable.

Table 15

Outcome Variable: Employment Status

	Model 1: Covariates Only			*Model 2: Student-level Economic Constraints & Marginalization*			*Model 3: Student- and School-level Economic Constraints & Marginalization*		
	Coeff.	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*
STUDENT-LEVEL									
Intercept	1.355***	0.110	3.88	1.252***	0.198	3.50	1.262***	0.209	3.53
Covariates^									
Test score	0.266***	0.054	1.30	0.209***	0.056	1.23	0.206***	0.056	1.23
Class preparation	0.085*	0.038	1.09	0.096*	0.039	1.10	0.096*	0.039	1.10
Worked <15 hours per week	0.408***	0.111	1.50	0.377***	0.112	1.46	0.372***	0.112	1.45
Worked >=15 hours per week	0.361**	0.125	1.44	0.284*	0.126	1.33	0.280*	0.127	1.32
Ever suspended	-0.384**	0.124	0.68	-0.407***	0.122	0.67	-0.409***	0.123	0.66
Graduated HS, no Bachelor's	0.511***	0.114	1.67	0.522***	0.116	1.68	0.521***	0.116	1.68
Graduated Bachelor's	0.970***	0.140	2.64	1.040***	0.147	2.83	1.039***	0.147	2.83
Third follow-up: Opportunity Index	0.120**	0.045	1.13	0.135**	0.045	1.15	0.129**	0.046	1.14
Economic Constraints									
Cultural capital				0.091	0.092	1.10	0.091	0.093	1.10
Social capital				0.029	0.032	1.03	0.031	0.032	1.03
Socioeconomic status				0.063	0.070	1.07	0.056	0.072	1.06
Marginalization									
Race – Asian				-0.691***	0.185	0.50	-0.686***	0.183	0.50
Race – Black				-0.238	0.125	0.79	-0.222	0.142	0.80
Race – Hispanic				-0.150	0.152	0.86	-0.126	0.162	0.88
Race – Other				-0.372*	0.156	0.69	-0.362*	0.159	0.70
Generational status – respondent and mother born in U.S.				-0.012	0.134	0.99	-0.011	0.137	0.99
Sex - male				0.426***	0.087	1.53	0.430***	0.087	1.54
First language is English				0.039	0.150	1.04	0.026	0.151	1.03
Internalization of the School-to-Work Transition									
SCHOOL-LEVEL									
Covariates^									
Student-teacher ratio	-0.030**	0.010	0.97	-0.018	0.010	0.98	-0.018	0.011	0.98
Economic Constraints									
Cultural capital							-0.044	0.083	0.96
Social capital							0.067	0.092	1.07
Marginalization									
Proportion LEP							-0.019	0.055	0.98
Proportion Free/reduced lunch							-0.007	0.023	0.99
Proportion Minority							-0.003	0.023	0.997

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Outcome Variable: Employment Status, cont'd.

	Model 4: Internalization of the School-to-Work Transition			*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*			*Model 6: Full PWT Model*		
	Coeff.	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*	*Coeff.*	*S.E.*	*O.R.*
STUDENT-LEVEL									
Intercept	1.361***	0.110	3.90	1.259***	0.198	3.52	1.303***	0.211	3.68
Covariates^									
Test score	0.273***	0.054	1.31	0.218***	0.056	1.24	0.216***	0.056	1.24
Class preparation	0.077*	0.038	1.08	0.085*	0.039	1.09	0.084*	0.039	1.09
Worked <15 hours per week	0.416***	0.111	1.52	0.384***	0.112	1.47	0.378***	0.112	1.46
Worked >=15 hours per week	0.389**	0.127	1.48	0.310*	0.129	1.36	0.306*	0.128	1.36
Ever suspended	-0.372**	0.124	0.69	-0.384**	0.122	0.68	-0.398**	0.123	0.67
Graduated HS, no Bachelor's	0.503***	0.114	1.65	0.504***	0.115	1.65	0.501***	0.116	1.65
Graduated Bachelor's	0.951***	0.142	2.59	1.015***	0.148	2.76	1.010***	0.148	2.75
Third follow-up: Opportunity Index	0.118**	0.046	1.13	0.135**	0.046	1.14	0.125**	0.047	1.13
Economic Constraints									
Cultural capital				0.077	0.093	1.08	0.072	0.094	1.07
Social capital				0.020	0.033	1.02	0.022	0.033	1.02
Socioeconomic status				0.065	0.071	1.07	0.057	0.073	1.06
Marginalization									
Race – Asian				-0.712***	0.186	0.49	-0.728***	0.185	0.48
Race – Black				-0.272*	0.129	0.76	-0.265	0.148	0.77
Race – Hispanic				-0.145	0.154	0.86	-0.128	0.166	0.88
Race – Other				-0.375*	0.159	0.67	-0.377*	0.160	0.69
Generational status – respondent and mother born in U.S.				-0.002	0.135	1.00	0.012	0.138	1.01
Sex - male				0.428***	0.087	1.53	0.416***	0.086	1.52
First language is English				0.060	0.151	1.06	0.043	0.154	1.04
Internalization of the School-to-Work Transition	0.053	0.038	1.05	0.087*	0.040	1.09	0.182*	0.072	1.20
*Interaction: internalization * Asian*							*0.124*	*0.135*	*1.13*
*Interaction: internalization * Black*							*0.001*	*0.126*	*1.001*
*Interaction: internalization * Hispanic*							*-0.194*	*0.125*	*0.82*
*Interaction: internalization * Other*							*-0.045*	*0.143*	*0.96*
*Interaction: internalization * Male*							*-0.155**	*0.076*	*0.86*
SCHOOL-LEVEL									
Covariates^									
Student-teacher ratio	-0.030**	0.011	0.97	-0.018	0.011	0.98	-0.018	0.011	0.98
Economic Constraints									
Cultural capital							-0.061	0.084	0.94
Social capital							0.058	0.092	1.06
Marginalization									
Proportion LEP							-0.022	0.055	0.98
Proportion Free/reduced lunch							-0.008	0.023	0.99
Proportion Minority							-0.003	0.023	0.997
Tjur's pseudo-R^2								0.870	

*p<.05 **p<.01 ***p<.001

^All of the covariates in Tables 4 and 5 were evaluated for inclusion in this model, but only those sharing a significant association with the outcome were retained.

Final Conditional Models

The small unconditional ICCs in Table 8 demonstrate that the school-to-school variability in the outcome variables was low from the outset, and the conditional ICCs in Table 16 indicate that after accounting for all relevant covariates and all PWT predictors at the school and student levels, less than one percent of the remaining variability in any of the facets of Decent Work (and employment status overall) could be explained by the characteristics of students' high schools. Stated differently, more than 99 percent of the remaining, unexplained variability in Decent Work and in employment status rests among individuals.

For all outcome variables evaluated in this dissertation, the small amount of school-to-school variability that was available to be explained at the outset was almost fully explained by the modeled high school effects in the final models (i.e., Model 6 for every outcome). This suggests that, for all outcomes, the level-2 PWT indicators and the covariates appeared to largely account for the school effects that were initially present in the unconditional models. For all metric outcomes, the addition of predictors significantly reduced model deviance in addition to helping to explain the formerly significant school-level effect on each of the six outcome variables.

Table 16
Variance Components – Conditional Models (Model 6)

	Interpersonal and physical safety	Hours that allow for free time and adequate rest	Organizational values that complement family and social values (job satisfaction)	Adequate compensation	Access to medical care	Employment status
$\hat{\tau}_{00}$: between-school variance	0.384	0.001	0.005	0.0002	0.015	0.002
σ_R^2: within-school variance	116.788	0.997	0.946	0.220	3.290	3.290
ICC	**0.003**	**0.001**	**0.005**	**0.001**	**0.005**	**0.001**
Reliability of $\hat{\tau}_{00}$	0.039	0.015	0.059	0.014	0.028	0.002

*p < .05, **p < .01, ***p < .001

Assumptions and Model Quality

A series of methodological considerations are fundamental to effectively meeting the standards of high-quality multilevel analysis. Some of the corresponding strengths, shortcomings, procedures, and decisions are presented here.

The central assumption of multilevel modeling concerns equality of population variances, which is also known as the homogeneity of variance assumption (Raudenbush & Bryk, 2002). This assumption was not met for any of the models, but Kasim and Raudenbush (1998) demonstrate that the estimation of *fixed* effects and their corresponding standard errors are robust to this violation. Because no random slopes were included in any of the final models, the analyses presented in this chapter are thus assumed to be robust to potential violations of homogeneity of variance. The presence of non-normal residuals at level-2 is likewise not a serious concern in the included analyses because this lack of normality has "little or no effect on the parameter estimates" (Maas & Hox, 2003, p. 427), particularly where fixed effects and their standard errors are concerned.

A violation of the assumption of homogeneity of variance may additionally suggest that not enough level-1 predictors were included in the model (i.e., the level-1 equation was misspecified). Much of this misspecification risk, however, was by design; only those variables available in the ELS:02 dataset that reflected PWT indicators or that reflected characteristics previously found in relevant literature to have a relationship with work-related outcomes were eligible for inclusion in the analyses. Future research may consider these assumptions in more detail and tailor models to avoid potential underspecification and omitted variable bias.

Snijders and Bosker (2012) discuss the dangers of omitting random effects; doing so may render the tests of the corresponding fixed coefficients unreliable. In order to avoid this issue, the authors recommend testing the random slope effects for all variables of interest and incorporating these effects in the model where appropriate. As mentioned throughout this chapter, slopes were estimated (individually) in all models but none could be estimated reliably, perhaps due in part to the minimal proportion of variability in the outcomes among schools observed throughout these analyses. That these slopes could not be estimated ensures that effects were not wrongfully omitted from the model as Snijders and Bosker (2012) warn.

Raudenbush and Bryk (2002) propose a minimum level-2 sample size of 30 units and a minimum cluster size of 20 level-1 units. The proposed sample size of 460 schools and 7,629 students defines an average cluster size of 16.6 students per school for the larger employment-related analyses and 14.4 students per school for the Decent Work analyses (6,620 students in 460 schools). While the number of schools far exceeds the suggested minimum sample size, the average cluster size falls short of the recommended value of 20. Bell, Morgan, Kromrey, and Ferron (2010) affirm the recommendation set forth by Raudenbush and Bryk but acknowledge that these restrictions are often difficult to attain and, after running nearly 6,000 multilevel design conditions, ultimately conclude that even with cluster sizes as small as five units, it is possible to generate valid and reliable coefficient estimates with almost no statistical bias.

Because this analysis is largely exploratory in terms of incorporating contextual school effects and in terms of its application of the PWT to a national population, the models are, by default, highly inclusive and potentially overspecified. This necessarily raises

concerns about possible instances of collinearity, which may help to explain some of the aforementioned suppressor or confounding effects noted in some of the models. Future research may tailor the predictors more precisely to help avoid these types of issues.

A related issue emerges with the inclusion of covariates measured post-baseline, or after the 2002 base year ELS:02 survey. The central concern is that any variables measured later (e.g., educational attainment) may mask some of the baseline effects by representing an accumulation of advantage or disadvantage as partially informed by the baseline effects. In order to acknowledge this risk, a series of investigative student-level regressions were run, comparing models with only baseline covariates to those with both baseline and post-baseline covariates (Appendix C, Tables 1-6).

The results are largely consistent between the baseline and post-baseline models, suggesting that the inclusion of post-baseline covariates throughout the multilevel regression analyses did not mask the variance explained by PWT predictors or other covariates measured in 2002. In other words, the relative consistency of the coefficients between models suggests that the PWT variables and assorted baseline covariates appear to play an important role in the prediction of future Decent Work attainment and employment, even after accounting for educational attainment. For all six outcomes (each of the five facets of Decent Work as well as employment status), the post-baseline models predicted more variability in the outcomes than what was explained by only baseline covariates, the PWT indicators appeared to have incremental predictive power over and above the post-baseline covariates, and the post-baseline indicators did not appear to obscure the baseline effects, with a few exceptions. Finally, while they increased with the inclusion of post-baseline covariates, the relatively small adjusted R^2 values suggest that variability in Decent Work

attainment and employment remains beyond what is captured by the PWT. Generally speaking, however, the inclusion of post-baseline covariates appears to have enhanced the models by explaining additional variability in the outcomes that was not previously targeted.

While the coefficients tended to be relatively stable between the baseline and post-baseline models, there are a few key exceptions. For the job satisfaction indicator, the introduction of post-baseline effects appears to have masked the previously significant PWT effects of socioeconomic status and the internalization of the school-to-work transition. This suggests that the inclusion of the educational attainment indicators and the Opportunity Index may explain some of the variability in job satisfaction that might otherwise be partially explained by the PWT, and represents a potential limitation of this study in terms of capturing "true" PWT effects.

Notably, the student-level regression model with compensation as the outcome featured several additional trends beyond what was seen throughout the HLM models. While the trends all appeared in a similar direction, the student-level model had more significant parameters, all of which were aligned with common understandings of wage gaps in the United States (e.g., the gender earnings gap; the educational attainment earnings gap). The Psychology of Working Theory indicators featured much more prominently in the student models in comparison to the multilevel models, even after incorporating student educational attainment as a post-baseline covariate. This suggests that the principal methodology used in this study may not be ideally suited to identifying predictors of compensation, as the regression models in Appendix C (Table 4) highlight some important trends that were not as prominent throughout the HLM models in this chapter.

Overall, the supplemental student-level regression models support the conclusion that the PWT plays an incremental predictive role, even after accounting for post-baseline covariates. While the job satisfaction findings challenge this conclusion with regard to socioeconomic status and the internalization of the school-to-work transition, the inclusion of post-baseline covariates throughout the HLM analyses does not appear to have substantially obscured the PWT effects outside of this case.

Finally, regarding model fit for the multilevel analyses, the lower value for Tjur's pseudo-R^2 in the model evaluating access to health care in comparison to the higher value in the model exploring the predictors of employment status suggests that the health care model lacks optimal discrimination ability. While 75 percent of cases were correctly classified, the model presented here may require additional exploration and a pursuit of better fit before true predictor relationships may be ascertained.

CHAPTER 5. DISCUSSION

The rapidly changing world of work necessitates a focus on work *quality* in addition to work availability. Because schools are widely assumed to facilitate students' transitions into productive and rewarding futures, it is necessary to consider the role that education may – or may not – play with regard to student outcomes even years after they leave their high schools behind. Fundamental to the Psychology of Working Theory is the idea that individual characteristics and contextual characteristics separately and jointly relate to individuals' career development. This dissertation represents a contribution to exploring the role of high schools as a contextual factor with respect to high school students' long-term career attainment.

This chapter begins with a summary of the findings presented in Chapter 4, organized by each of the research questions concerning Decent Work attainment and employment outcomes. Following this discussion, the results are evaluated in terms of whether and how they ameliorate and inform some of the major unanswered questions in the study of the school-to-work transition and the role of contextual effects in the attainment of high-quality work. Finally, methodological limitations, implications for educational and workforce policy, and opportunities for future research are discussed.

Research Question 1: Economic Constraints and Marginalization

After controlling for covariates, to what extent are economic constraints and marginalization, measured among both students and high schools in 2002, associated with individuals' attainment of Decent Work ten years later? Addressing this question fully requires evaluating Model 3 for all of the Decent Work facets. Across each of the five

models, each of the three student-level economic constraints indicators (e.g., cultural capital, social capital, and socioeconomic status) variously predicted each of the outcomes. These associations all occurred in the expected direction with the exception of the negative relationship between socioeconomic status and access to health insurance, all else being equal. For the remainder of the relationships, higher levels of social capital, cultural capital, and socioeconomic status were associated with higher levels of Decent Work, or greater odds of attaining Decent Work. In particular, higher cultural capital predicted higher job satisfaction, higher social capital predicted higher earnings, and higher socioeconomic status predicted lower frequency of exposure to hazardous conditions (i.e., higher frequency of exposure to safer conditions). The economic constraints indicators did not meaningfully predict access to workplace hours that allow for free time and adequate rest.

Among the individual-level marginalization indicators, race and gender were the most salient predictors of the various facets, although the direction and strength of these relationships varied by outcome. Compared to White individuals, Black individuals were more likely to have access to health care and more likely to experience safe workplaces, all else being equal. Both of these findings suggest that after controlling for the other variables in the model, Black workers were more likely than Whites to have access to Decent Work. Part of this effect, if it indeed represents a truth in the world of work, could be rooted in White workers occupying some of the most dangerous jobs in addition to some of the safest.

Similarly, concerning job satisfaction, Hispanic workers reported significantly higher scores than White workers, all else being equal. Indeed, after comparing Model 3 across each of the five facets of Decent Work, all statistically significant findings concerning race identified White individuals as less likely than Black and Hispanic workers to secure Decent

Work. Per the PWT this was not an anticipated finding and thus presents an opportunity for future research to clarify and expand what is presented in this study.

Gender (e.g., being female) was a strong predictor of access to physically and interpersonally safe workplaces, but did not meaningfully predict other facets of Decent Work. It is unexpected that gender was not a significant predictor of compensation, but the strong effect noted in the student-level regression models in Appendix C suggest that the apparent lack of an effect in the HLM models may be rooted in a methodological or estimation issue as opposed to the data not reflecting accurate trends in compensation differentials.

The marginalization indicators appeared to carry less explanatory power overall than the economic constraints indicators, and they were statistically irrelevant to predicting two of the five facets of Decent Work: hours allowing for free time and adequate rest; and adequate compensation. Furthermore, two of the marginalization indicators (generational status and speaking English as a first language) did not significantly predict any of the Decent Work outcomes.

At the school-level, the economic constraints and marginalization indicators were largely not meaningfully predictive of the Decent Work outcomes. School-level social capital was the only economic constraints indicator to share a relationship with Decent Work, positively predicting higher earnings among students within schools with higher social capital, on average and all else being equal. Among the school-level marginalization indicators, the proportion of students with limited English proficiency in a school negatively predicted future job satisfaction among students at that school, and the proportion of students enrolled in a free or reduced-price lunch program positively predicted future earnings among

students at that school. The latter of these findings was in opposition to the expected relationship between contextual poverty and future individual earnings, but the small magnitude of the coefficient suggests that the practical significance of this finding is minimal at best.

Considered together, economic constraints and marginalization do appear to hold meaningful predictive power over some of the facets of Decent Work, but the associations are quite varied, with no two facets sharing the same collection of predictors. Furthermore, the student-level effects were more statistically salient than the school-level effects, which were not only fewer in number but smaller in magnitude, in general. While most of the findings were consistent with the Psychology of Working Theory, some of the coefficients were unexpected: Black students had higher odds than White students of securing this aspect of Decent Work, and socioeconomic status was negatively related to access to health insurance. When examining only the relative contributions of economic constraints and marginalization, access to health care thus appeared in opposition to not only the PWT overall but to the other facets of Decent Work evaluated in this study. Additionally, hours allowing for free time and adequate rest was not meaningfully predicted by any of the PWT predictors, and indeed was not strongly predicted by more than a handful of the available covariates.

After controlling for covariates, to what extent are economic constraints and marginalization, measured among both students and high schools in 2002, associated with whether individuals are employed or unemployed ten years later? The employment model featured more variables (parameters) than any of the Decent Work facets, indicating a series of unique relationships between many of the covariates and future employment status.

Student achievement scores, class preparation, work status, educational attainment, and the local Opportunity Index were all positively associated with student employment, and the behavioral indicator for student suspension was negatively associated with future employment.

With regard to the PWT indicators, White individuals had higher rates of employment than Asians and those of an "Other" race, and men had higher rates of employment than women. None of the school-level indicators for economic constraints or marginalization were significant. In addressing the research question, marginalization appears to play a more substantial role in predicting employment status in comparison to economic constraints, with race and gender emerging as the most salient predictors.

Research Question 2: The Internalization of the School-to-Work Transition

After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with their attainment of Decent Work ten years later? When introduced independently of economic constraints and marginalization, the internalization of the school-to-work transition significantly and positively predicted access to health insurance through work as well as job satisfaction. In all four models involving a metric outcome variable (access to physically and interpersonally safe working conditions, hours allowing for free time and adequate rest, organizational values that complement family and social values (job satisfaction), and adequate compensation), the deviance was notably reduced relative to Model 1 following the addition of this predictor. Indeed, the deviance statistic dropped more so than following the addition of any other predictor or group of predictors throughout the model building process, suggesting that the internalization of the school-to-work transition accounts for some of the

error variance in the facets of Decent Work both when it acts as a statistically significant predictor and when it does not.

In sum, the internalization indicator did appear to carry some explanatory power for two of the five facets of Decent Work: job satisfaction and access to health care. These effects both occurred in the expected direction, with higher rates of internalization predicting higher rates of satisfaction and access. Nonetheless, one must exercise caution in interpretation. Causality is neither evaluated nor discussed in this study, so while the nature of the relationship between the internalization of the school-to-work transition and the outcomes may be interesting and informative, the broader interpretation for Decent Work overall is more critical to this study. In the case of this particular research question, for example, the results concern less the relationship between the internalization of the school-to-work transition and health care specifically, and more the association between this predictor and Decent Work as captured and partially reflected through access to health care. In other words, health care may serve as a proxy for adequate benefits considered more broadly.

After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with whether they are employed or unemployed ten years later? After accounting for only the school- and student-level covariates, the internalization of the school-to-work transition did not meaningfully predict employment status. However, a more complete understanding of this variable and the PWT overall requires additional exploration alongside the economic constraints and marginalization indicators.

Research Question 3: The Psychology of Working Theory: Economic Constraints, Marginalization, and the Internalization of the School-to-Work transition.

After controlling for covariates, economic constraints, and marginalization at both the school and student levels, to what extent is students' internalization of the school-to-work transition associated with their attainment of Decent Work ten years later? The analyses conducted in service of this research question help to clarify the role of each of the Psychology of Working Theory elements with regard to predicting Decent Work attainment. Moderation effects were considered throughout these models where appropriate.

The economic constraints indicators were not typically found to be predictors across the models for the five facets of Decent Work. Two significant effects emerged: cultural capital positively predicted job satisfaction and socioeconomic status positively predicted access to interpersonal and physical safety. While these effects occurred in the hypothesized direction, their presence in a single model each suggests that economic constraints are not as salient a collection of predictors as other elements of the theory, after accounting for additional predictors.

With the exception of the adequate compensation facet, various marginalization indicators significantly predicted Decent Work attainment in each of the final models. The most commonly identified characteristic predictive of Decent Work attainment was race, which functioned as a significant predictor of four of the five facets. As previously discussed, some of these effects (e.g., Black individuals experiencing greater workplace safety than White individuals; Hispanic individuals reporting higher job satisfaction than White individuals) did not occur as expected, but may be explained by a series of labor market and cultural trends.

The workplace safety finding is consistent with national research on occupational safety using 2010 data, which suggests that White workers experienced the highest risk of exposure to workplace hazards (Drew & Henning-Smith, 2014). An earlier study found that even after controlling for the racial composition of various occupations, the strongest association between race and occupational injury occurred among white men (Berdahl & McQuillan, 2008).

Importantly, occupational hazard rates are generally higher for racial and ethnic minorities than for Whites, including around the time that ELS:02 data were collected (Bureau of Labor Statistics, 2017), but these measures reflect only gross percentages, without accounting for some of the additional predictors and covariates incorporated in this study. While the trends overwhelmingly point to inequalities in the workforce overall, the results presented here suggest that after accounting for a broad array of student background characteristics and the PWT variables, access to interpersonal and physically safe workplaces is higher for Blacks than for Whites. While this unexpected finding requires some additional validation in future research, the available evidence suggests that this is not necessarily surprising.

As for job satisfaction, using nationally representative General Social Survey [GSS] data, Charles Weaver (2014) showed that compared to previous studies, Mexican Americans as of 2010 had increasingly favorable work attitudes overall, with higher rates of productivity, cooperation, networking, work ethic, and job satisfaction. While Mexican Americans represent just one of many groups of Hispanic-origin workers, the overall conclusions concerning positive work attitudes among this group help to support the findings in this dissertation.

What remains to be determined is whether the racial-cultural attitudinal differences are more a function of individual work experiences or rather the systemic patterns of certain racial groups being more likely to hold certain types of jobs. The latter is more of a Decent Work-related concern in that it suggests that differential access to types of jobs by race or ethnicity may inhibit access to satisfying job experiences on a structural level. Additional research in the realms of sociology, demography, and industrial-organizational psychology may help to bring clarity to these race-related patterns, opportunities, and challenges.

The inclusion of the internalization predictor in addition to the economic constraints and marginalization indicators results in a series of changes throughout the models. The internalization indicator significantly predicted Decent Work attainment in two of the five outcomes after accounting for covariates and the economic constraints and marginalization indicators. The following paragraphs chart the changes induced by the entrance of the internalization indicator and explore its significance and role, model by model.

Decent Work: Physically and interpersonally safe working conditions. Model 6 revealed that the internalization of the school-to-work transition was a significant predictor of access to interpersonally and physically safe work environments. When this predictor was first entered in Model 4 the coefficient did not differ significantly from zero, but following the addition of the economic constraints and marginalization indicators at the student and high school levels (Models 5 and 6, respectively), the coefficient value increased. This pattern is consistent with the emergence of very strong effects among the other predictors that are considered in the later models (e.g., race and gender, in this case). What is likely happening here is that prior to adjusting for these predictors, the proportion of unexplained variability in the outcome is quite large so weaker effects may not be immediately evident.

After accounting for these predictors, however, the internalization indicator emerges as a significant effect, explaining a larger proportion of the remaining variability.

This phenomenon directly highlights the importance of each of the elements of the PWT in predicting access to safe work places by revealing how only after modeling all three classes of predictors (i.e., economic constraints, marginalization, and the internalization of the school-to-work transition) is it possible to see evidence of the unique contribution of each of these in predicting access to workplace safety. With that said, it is unexpected that higher rates of internalization predict lessened access to safety in the workplace. Considering the positive associations between this variable and both job satisfaction and access to health insurance, this finding may say more about the differences among the facets of Decent Work than anything specific concerning workplace safety.

Decent Work: Hours that allow for free time and adequate rest. The final model evaluating hours that allow for free time and adequate rest reveals the significant effect of being Hispanic. Prior to the inclusion of the internalization of the school-to-work transition (and the school-level predictors, minor as they were), this effect did not differ significantly from zero.

The negative coefficient associated with being Hispanic (relative to being White) is especially notable when juxtaposed with the positive coefficient present in the work values (job satisfaction) model. Relative to White individuals, Hispanic workers reported having less of a work-life balance yet had higher rates of job satisfaction: less of one aspect of Decent Work but more of another. If these findings are indeed truly reflective of Decent Work attainment, then they would suggest that Hispanic employees, on average, do not have as much free time as their White counterparts, but their relative lack of work-life balance

does not factor into how they define overall job satisfaction. Additional research on racial, ethnic, and cultural patterns in vocational development and attitudes toward work is necessary to elucidate this with certainty.

Decent Work: Organizational values that complement family and social values (job satisfaction). The addition of the internalization of the school-to-work transition as a student-level variable resulted in no substantive changes when comparing Models 3 and 6. All predictors that shared a significant relationship with the outcome persisted and no new indicators emerged from the remainder. The internalization indicator was not associated with the outcome, however, suggesting that the internalization indicator does not contribute unique variance to the explanation of job satisfaction. Nonetheless, a significant interaction effect points to the relationship between internalization and job satisfaction being stronger for Black individuals than for Whites. While the internalization-satisfaction relationship is minimal overall, future research might explore whether its role is indeed more prominent for certain racial minorities.

A series of strong covariate effects persisted in the final model. Higher achievement scores were negatively related to future job satisfaction, which is interesting when considered in conjunction with the positive association between class preparation and job satisfaction. Broadly, this suggests that those who are organized despite not being strong performers have better job satisfaction than those who are less organized and higher achieving, all else being equal. Both of these effects are small in terms of standard deviation differences in ratings of job satisfaction, but perhaps this indicates that higher achievers may be more likely to pursue more demanding or otherwise less satisfying jobs, and further, that within these jobs, those

who have in the past felt more prepared may be able to navigate these environments more effectively, in turn shaping job satisfaction.

Decent Work: Adequate compensation. The final model capturing compensation outcomes suggests that the internalization of the school-to-work transition was not a significant predictor in itself, but its addition resulted in the student-level social capital indicator, the school-level social capital, and the proportion of students enrolled in free or reduced lunch coefficients no longer registering as significantly different from zero. Throughout the model-building process, the coefficients for the predictors of interest were relatively small in terms of the resultant percentage change in individual earnings, but nonetheless these patterns suggest that the internalization of the school-to-work transition may be partially collinear with these effects.

In the final model, the only noted effects were the negative association between growing up in a 2-parent household and future earnings, and the school-level effect with poorer school conditions predicting lower earnings, all else being equal. The family composition effect does not occur in the expected direction, which when interpreted in the context of the minimal effects overall suggests that the finding may be spurious. The student-level regression models in Appendix C may offer more clarity to patterns in compensation within the ELS:02 dataset.

Decent Work: Access to adequate health care. In the model measuring access to health care, socioeconomic status no longer functioned as a significant predictor of the outcome following the inclusion of the internalization of the school-to-work transition, but the coefficient for race other than those specifically identified did the opposite: the "Other race" effect emerged as a statistically significant predictor of access to health care even

though it was not visible in the earlier models. What may be happening in this case is that the internalization indicator is explaining enough of the error variance in the outcome to functionally enable this additional race effect to emerge, but the more likely possibility is that there exists some degree of collinearity or underspecification among the predictors, which may in turn obscure the "true" effects.

Importantly, some of the effects in this model are not obviously or inherently related to the attainment of health insurance in particular. An achievement score, for example, is not directly conceptually linked to health insurance despite that these variables appear to share an association in the models. Here, health insurance may function simply as a proxy for high-quality fringe benefits, which constitute a universe of opportunities and access unrelated to and in addition to base compensation.

Conclusions across the five facets. In response to the research question, the internalization of the school-to-work transition varies across the five facets in terms of how, where, and to what extent it explains variability in Decent Work attainment after accounting for the economic constraints and marginalization indicators as well as the covariates. As such, Research Question 3 cannot be answered with clarity. With that said, the apparent differential effects of the internalization of the school-to-work transition by each outcome variable represent a compelling finding on their own in that they may attest to the complexity and multidimensionality of Decent Work. Modeling each facet independently underscores not only the vast differences in the included predictors (and their directionality) but additionally helps to clarify how these predictors interact with one another and how they alternately are and are not sensitive to the consideration of the internalization of the school-

to-work transition. It would be prudent for future research on Decent Work to acknowledge these differences and consider them explicitly when studying outcomes.

After controlling for covariates, to what extent is students' internalization of the school-to-work transition, measured among students in 2002, associated with whether they are employed or unemployed ten years later? When evaluating the full model, several of the marginalization indicators as well as the internalization of the school-to-work transition were found to significantly predict employment status. The inclusion of all three PWT indicators did not result in a reduction of any of the original covariate effects, but these effects nonetheless emerged as strong predictors of employment status and appeared in support of some of the literature discussed in Chapter 2. In particular, the relationship between work experience and employment confirms Vuolo, Mortimer, and Staff's (2014) research and the relationship between gender and employment largely reflects American social and cultural trends in which women are more likely than men to assume a stay-at-home parent or spousal role. As another example, while the authors specifically focused on earnings, the negative relationship between student suspension and future employment is echoed in French et al. (2015).

For the first and only time in this study, one of the interaction effects between the internalization of the school-to-work transition and gender was found to significantly predict employment status. Here, the relationship between the internalization of the school-to-work transition and future employment status was stronger for women than for men. As previously discussed, this may be due to a ceiling effect among men due to higher overall rates of employment at every level of internalization, but this may additionally carry

interesting implications for gender differences in terms of the relative salience of internalizing the connection between school and work.

The employment model overall showcases the differential functions of the various components of the Psychology of Working theory. Beyond the strong and myriad covariate effects, marginalization and the internalization of the school-to-work transition individually contributed to the understanding of employment status. Economic constraints were not significant in this model. Finally, when considering all components of the PWT, the internalization indicator appeared to be significantly related to future employment status after controlling for the covariates, economic constraints, and marginalization.

The Psychology of Working Theory and ELS:02

Evaluating all five of the Decent Work models as a group enables the consideration of the various components and indicators of the Psychology of Working Theory and how they predict Decent Work attainment writ large. Nonetheless, perhaps most telling is how different each of these five models is. This dissertation reveals high variation in how the various theory-driven indicators play a role in predicting each of the five facets. This highlights the complexity of the theory and illustrates how future research on Decent Work might consider following the model presented here and begin by exploring each of the facets individually rather than considering Decent Work as a complex but ultimately singular outcome.

Several of the findings in the models are consistent with the PWT. Primarily, within the marginalization category student race significantly predicted access to Decent Work in four of the five models as well as employment status. Race was a factor in all models except for adequate compensation, although the salient races (relative to White) and the

directionality associated with certain races varied by outcome. Illustrative of this inconsistency is the positive relationship between being Black and having access to health insurance juxtaposed with the negative relationship between being Black and experiencing workplace safety. Similarly, Hispanic individuals reported higher job satisfaction than Whites, on average, but lagged behind Whites in terms of hours allowing for free time and adequate rest. Discussing "Decent Work" as a unitary construct rather than in terms of its component parts would obscure these interesting and potentially informative distinctions.

The internalization of the school-to-work transition, considered here in the place of the original work volition and career adaptability elements of the model, likewise significantly predicted three of the five facets of Decent Work and employment status. While some of the positive racial effects of non-white groups and the negative association between the internalization indicator and safety did not occur in the hypothesized direction as outlined in the PWT, that these predictors were meaningfully associated with the various outcomes under consideration suggests that the elements of the PWT are indeed important for predicting work outcomes.

Conversely, some of the results offered less support to central elements of the PWT and may merit additional investigation. Economic constraints predicted Decent Work attainment only for the safety and job satisfaction outcomes and were not associated with employment status. At the school level, the potential contextual effects were limited by small ICCs throughout the models, and the only significant PWT effect was the negative relationship between the proportion of LEP students and future job satisfaction among students.

Also of note is the persistence of the covariate effects alongside PWT indictors. This suggests that the PWT may exist as a part of the conversation, with the selected indicators and the covariates explaining distinct elements of each outcome variable. That said, the PWT and its components (e.g., economic constraints, marginalization, and the internalization of the school-to-work transition) are not prescriptively defined and future research may take further advantage of this flexibility to account for a wider array of individual and contextual variables in the definition of these components.

Conclusions about the five facets of Decent Work and employment status. Among the most noteworthy results from the series of models presented in this chapter is the diverse set of predictors – both school- and student-level – that appear to be associated with each of the six outcome variables. Indeed, no two outcome variables have more than two predictors in common among the collection of indicators drawn from the Psychology of Working Theory. This finding highlights the complex, multidimensional structure of Decent Work and the importance of evaluating each facet individually even as each is considered to be an integral part of the same overarching, holistic construct. These differences additionally extend to predicting employment status, which is a separate analysis from the Decent Work models but nonetheless appears to be an important outcome associated with the Psychology of Working Theory.

The sequential model building procedure used throughout Chapter 4 showcased the gradual drop in deviance (for metric outcomes) and how this drop was sharpest upon the introduction of the internalization of the school-to-work transition indicator, particularly in the models concerning job satisfaction and workplace safety. Even where this indicator did not appear to be significantly related to the outcome variable, the deviance nonetheless

dropped notably (see e.g., hours that allow for free time and adequate rest; adequate compensation). Where deviance was not computed due to the dichotomous structure of the outcome variables, the internalization indicator was found to have positive and significant associations with both access to health care and employment status. Considered all together, the internalization of the school-to-work transition appears to play a meaningful role in considerations of work attainment and work quality.

Of the five facets of Decent Work, the indicator for adequate compensation displayed the weakest association with the predictors of interest. As Model 6 demonstrates, none of the PWT indicators – economic constraints, marginalization, or the internalization of the school-to-work transition – meaningfully predicted students' future earnings, and this lack of predictive power was present at both the high school and student levels. Part of this lack of an apparent effect may be due to the cost-of-living adjustment, which is not often employed in earnings research. Alternatively, due to the timing of the survey, it is possible that wage deflation was still in effect in the immediate post-Recession years, so while the predictive power of the PWT may have been evident when investigated in a more economically robust era, the relatively reduced value of real wages at the time of the third follow-up survey may have suppressed these effects. The regression models in Appendix C suggest that some patterns are still evident, but their failure to emerge throughout the HLM models may indicate that the patterns in students' future earnings are either definitively not related to school clustering, or perhaps these effects would be more noteworthy in another economic time period.

While the findings presented in this study may accurately represent true effects, the sparse and somewhat surprising results from the models featuring cost-of-living-adjusted

earnings suggest a series of alternative possibilities. Myriad additional covariates and contextual effects may inform differences in earnings or the true explanation may rest in something else entirely. Additional possible explanations concern the Psychology of Working Theory specifically: perhaps the theory is not ideally suited for predicting variation in earnings despite having often strong and meaningful predictive power in estimating some of the differences in the other facets of Decent Work. Alternatively, the included predictors may not fully reflect the true extent of the theory, or collinearity and other measurement concerns prevent meaningful interpretation of this variable.

School-level effects. At the student level, each of the three predictors of interest – economic constraints, marginalization, and the internalization of the school-to-work transition – was found to be important in the prediction of Decent Work attainment, lending credence to the PWT. However, the minimal school effects suggest that if there are contextual influencers of Decent Work attainment, they do not reside at the school level. Indeed, only in the prediction of future employment status did students' high schools explain more than three percent of the variability in the outcome; overwhelmingly, work outcomes were predicted by student-level differences.

Accordingly, this study contributes clarity to the debate presented in Chapter 2 regarding the relative role of school effects in predicting future outcomes for students, albeit in terms of the Psychology of Working Theory. Stated plainly, when evaluating the various dimensions of Decent Work and employment status, group-level characteristics of high schools are not meaningfully predictive of these outcomes. This is not to say that schools "do not matter" in terms of preparing students for their futures, but rather when measuring work outcomes among young adults in their mid-twenties, the *contextual* effects associated

with schools do not help to predict students' Decent Work attainment or their employment status more broadly. In other words, while the PWT explores the interaction between individual and contextual effects in how they predict Decent Work attainment, perhaps one's high school environment is not the most salient context with respect to individual work attainment.

Nonetheless, some of the experiences that students have in high school, as well as habits and skills developed therein, are reliably and meaningfully associated with Decent Work attainment and future employment. Students' achievement scores and level of class preparation emerge as particularly salient to predicting students' work outcomes later in life. Student educational attainment was likewise found to be a strong predictor of future access to employment in addition to workplace safety and access to health insurance, which reinvigorates the conversation surrounding educational attainment as a signaling mechanism versus cultivating work-related capital. Whether educational attainment is a precursor to labor market inequality or a shaper of outcomes more directly remains to be determined but presents a compelling opportunity for future research.

The Psychology of Working Theory and the future of work. The Psychology of Working Theory is helpful in terms of guiding discussions and measurement opportunities beyond unidimensional or simplified work outcomes such as salary and "prestige." Results from this dissertation point to how various components of the model (and various indicators) differentially predict the five facets of Decent Work, which highlights the complexity of work attainment and the diversity in student characteristics that help predict these future outcomes.

While the PWT may not appear to meaningfully predict, for example, cost-of-living-adjusted earnings when that facet of Decent Work is considered on its own, the persistent effect of the internalization of the school-to-work transition throughout the models alongside the apparent racial effects at the student level indicate that the PWT holds meaningful predictive power in certain of its components.

Recent empirical research on the Psychology of Working Theory has clarified and confirmed some of the dimensions studied here, with a major conclusion emerging that "each component of Decent Work is unique" (Duffy et al., 2017, p. 14). Moving forward, the authors suggest that research in this area should acknowledge the overarching Decent Work concept while specifically exploring in what ways and to what extent each facet contributes to overall understandings of Decent Work as a whole (Duffy et al., 2017). The present study confirms as appropriate the independent consideration of each of the five facets, highlighting the variation with which each of them is predicted.

As discussed in Chapter 2, the PWT represents a contemporary understanding of vocational development that integrates individual and contextual factors. Even where the specific components of the PWT were not meaningfully predictive of the outcome in this dissertation, throughout every model there existed a combination of individual (e.g., class preparation) and contextual (e.g., school urbanicity) effects that were salient to the various outcomes. This pattern points to the legitimacy of framing students' work-related outcomes in terms of a product of these two universes of influences.

Importantly, the present study does not purport to declare whether the PWT is "right" in its prediction of Decent Work attainment, but rather clarifies whether high school developmental and educational experiences should be explicitly considered as a part of a

context-driven theory measuring work attainment. The uniformly low ICCs and minimal school effects suggest that structurally, the high school context is not strongly related to Decent Work attainment or future employment status. The central role of context in career development, as articulated both in the PWT and throughout the sociological career development literature discussed in Chapter 2, suggests that other environments in students' lives should be considered in an effort to clarify the key contextual drivers of future work attainment among youth

As Savickas (2002) noted, it is neither context nor individual characteristics alone that influence and ultimately determine career development, but rather the combinations and interactions among these. Adding complexity to this matter is an earlier theorist, Super (1980), who posited that the relative importance of and the degree of interaction between these factors may change over time. These continual interactions and intersections between person and context may not be clear but are ultimately fundamental to career development (Anderson & Vandehey, 2012; Lent, Brown, & Hackett, 2000). These theorists paved the way for Duffy et al. (2016), and together suggest the importance of some degree of contextual influence in career development and attainment. While high schools may not be the primary context of influence, there is ample opportunity for future research to consider other potential spheres of influence in students' working lives (e.g., colleges, regions), and to consider when the contextual school effects may cease to meaningfully influence students' development, whether before or during their career journeys.

In addition to providing a means of negotiating the relative and combined influences of the individual and contextual domains of influence for individuals, the PWT highlights the dimensions of work that separately and collaboratively help to illustrate work quality in the

form of Decent Work. As the world of work evolves and modernizes, understanding the quality of work as a complex, multidimensional entity is both helpful and applicable. The continued rise of the gig economy induces a decline in work security in terms of access to benefits, full-time status, and long-term employment. Conversely, the gig economy affords flexibility, work schedule customization, and in many cases a reduced attachment to one's office or city of employment, which may be at once ideal for working parents and highly detrimental to those who seek out social connections through work.

It remains to be seen whether the positives associated with the gig economy will outweigh the negatives, as well as whether the more privileged classes will glean more of the benefits while those who struggle socioeconomically will suffer more of the negative consequences. These trends will be a compelling area of study as far as Decent Work is concerned, in that some employees in the gig economy may secure increased access to hours allowing for free time and adequate rest while, perhaps, losing access to health care through their employer. Wages may rise in terms of hourly rates, while fewer may understand or be able to access their workplace values and support system. As the world of work continues to evolve, particularly in the United States, studying and supporting Decent Work attainment by type of work, by access to opportunity, and by sector will be of paramount importance.

Limitations

The results presented and the conclusions drawn here offer insights into the study of the school-to-work transition, the Psychology of Working Theory, and Decent Work attainment on a national scale. Nonetheless, some of the conclusions must be interpreted with caution due to a series of limitations associated with data availability and the selected research methodology.

Data availability and generalizability. The major limitation in this study involves the use of secondary data, especially data that were collected well prior to the development of the Psychology of Working Theory in its current iteration. This dissertation, therefore, required a degree of "back-fitting," or applying the construct definitions from the PWT to other variables for which it was not explicitly intentioned. While the variables used here were selected after careful consideration of the literature and a series of consultations with one of the theory's authors (D. Blustein, personal communication, 2017-2018), there remains an inherent deficiency in the study due to a lack of construct representation and the resulting adjustment to the model first presented in Chapter 1.

The PWT was published in 2016 whereas the ELS:02 questionnaire was drafted and first administered more than a decade earlier. ELS:02 is not explicitly intended for use with the PWT, nor were the constructs of the PWT specifically included in the ELS:02 survey items. While the theory itself is not prescriptive in terms of *how* its components are measured, the fact that ELS:02 was not developed with the PWT in mind means that only certain parts of the theory may be explored using the dataset and a series of proxy variables must be employed to represent some of the variables of interest. The use of self-report data throughout the ELS:02 body of surveys is related to this challenge, in that the usefulness of the analyses to be conducted is limited by factors such as missing data and response bias. In response to this limitation, this dissertation research employs a modified model to capture general trends, and future research on Decent Work attainment can investigate the specific constructs advanced in the PWT using primary data analysis.

It is also important to acknowledge the limitation that the ELS:02 dataset follows students only for 10 years, through 2012. While many respondents had begun their careers

and were able to respond to the job characteristic variables in the third follow-up survey in 2012, many were relatively early in their careers and some may have not yet begun their lifetime careers due to pursuing education or temporary military service. Ideally, a longer period of follow-up would enable researchers to track work-related trends over time and patterns in Decent Work attainment, but given the constraints of the ELS:02 dataset, this study focused on Decent Work attainment at approximately age 26. Furthermore, exploring intergenerational patterns in the relationships among individual- and school-level characteristics as they relate to the attainment of Decent Work is a compelling area of study, but the data and variables available for such an investigation within ELS:02 and its associated datasets from earlier decades limit this type of research.

With respect to the variables used to measure Decent Work attainment, it is essential to note that "job satisfaction" suffers inherently from selection effects, in that employees may be less likely to accept a job they are not satisfied with, and more likely to leave a job that they deem unsatisfying, if they are able (Kalleberg, 2011). However, it might also be argued that this risk lends urgency to the inclusion of "satisfaction" in a study on work quality; namely, those who report a lack of satisfaction in their working lives may suffer from an added challenge of being unable to change their employment situation. In other words, while work "satisfaction" may skew positive in the population overall, those who report not being satisfied are of acute importance when attempting to measure both work quality and the agency that a person has in changing his or her employment circumstances.

Measurement concerns are also present for the safety indicator, which was imputed at the job level using the O*NET database. Here, the safety indicator represents the overall safety of the job a person holds rather than an individual's experience or attitude toward the

safety of his or her working environment. Future research must capture this individual experience with safety more comprehensively, not least in an effort to model the intricacies of discrimination rooted in the marginalization variables as well as personal background and experiences as shaped by their economic constraints.

Methodology. Sample exclusions were necessary to ensure that multilevel models (necessitating complete data at level-2) could be run. In this situation, any systematic patterns of missing date risks biasing the results. If, for example, a large number of schools with high proportions of students designated as LEP were excluded due to a lack of data availability, the results would not be generalizable to students and schools with similar characteristics.

This study employed a covariate adjustment technique, wherein the covariates were entered before the PWT predictors and thus had the first opportunity to explain variability in each of the outcome variables. These covariates may have shared some of the variability in the outcome with the PWT predictors, but following their entry there was less unique variance left for the PWT indicators to explain. As such, the PWT predictors may appear to share a smaller proportion of the variance in the outcome than they actually do, due to the other set of variables (covariates) having the first opportunity to account for any shared variance. This covariate controlling approach was intentional in that it enabled the exploration of whether the PWT was useful and meaningful in predicting work outcomes even after including a series of covariates, but the risk that this approach may have partially deflated the PWT effects nonetheless stands. The student-level regression models presented in Appendix C help clarify the extent to which post-baseline covariates may have specifically masked some of the PWT effects in this way.

In all models featuring metric outcomes, the reduction in deviance stemming from the addition of the PWT predictor variables, while present, was not especially pronounced. Even with the insights gleaned from this collection of models, there is much left to explain with respect to the various facets of Decent Work and employment overall. Future research may consider a broader array of covariates and examine carefully the possible collinear and non-linear relationships that may or may not exist across the predictors. With all of this in mind, it is important to acknowledge the possibility that the attainment of some of the aspects of Decent Work (and the attainment of employment more generally) may be rooted in regional variability in work availability and industry, economic forces, and broader considerations of opportunity.

Policy Implications

Considering the findings in conjunction with the limitations shapes the universe of policy implications and their potential reach. A series of implications are discussed, with particular attention given to what this study does and does not reveal about the role of schools in students' school-to-work transitions.

The sample restrictions necessitate that any conclusions drawn are limited to public schools and their students. This sample was selected intentionally due to public schools' required adherence to federal data reporting guidelines and, therefore, greater data availability at the high school level on the indicators of interest. Additionally, restricting the sample to public high schools meant that any major school-level findings and associated policy implications could be advanced consistently given the structural similarities of this school type (including their location-driven student body) across the country.

The small ICCs and, therefore, the minimized school effects noted throughout the Decent Work and employment status models suggests that public high school factors are minimally explanatory of the outcomes under investigation. Any policy recommendations at the school level would involve money and resources allocated to ultimately help address up to four percent of the variability in students' future work outcomes at maximum. While the structural characteristics of a students' schooling environment appear to mean very little in terms of his or her long-term outcomes, there nonetheless exists a series of high school-related experiences that are associated with future work-related outcomes. The most notable predictors among these include achievement scores and class preparation scores measured during students' sophomore years. Although these indicators are measured at the individual level, their presence in several of the models suggests that students' experiences while in high school can and do relate to their future work outcomes.

From a policy perspective, this suggests that while the high school itself may have little to do with students' outcomes ten years later, certain habits formed while still in school (e.g., achievement, class preparation) do indeed constitute an investment in one's future. The implication here is that policies geared toward supporting student study and work habits, as a part of a larger focus on individual student attributes and how to address them, may be a better investment for schools than broad, community-wide changes and offerings.

The literature still suggests that schools have an effect to the degree that multilevel research is often touted as a methodological necessity in educational research on student performance and outcomes. Many of these outcomes, however, are measured and evaluated when students are still in school (e.g., course grades, graduation status). This indicates that while school-level effects are salient during the school years and may feature larger ICCs, on

average, than what are presented in this study, the relative predictive power of school effects drops as time passes and students move on with their educational, working, and personal lives. Perhaps colleges have a more pronounced group-level effect in comparison to high schools, when evaluated among students who choose to or who are able to attend college. It is possible that the "high school effect" dwindles over time, which begs a series of interesting research questions: At what point does the high school effect drop off? Does the effect persist for non-college-goers but get functionally "replaced" by college effects for college-goers? Guided by these and other questions, there is ample opportunity to explore the persistence of school effects over time. In terms of informing education policy, these questions are helpful for evaluating how long the shadow is cast, to borrow Braun's (2018) language, not from parents but instead from schools.

Future Directions and Applications of the Psychology of Working Theory

Jointly considering the results, limitations, and implications of this study helps to frame the opportunities for new or expanded research. These opportunities include employing alternative methodologies, investigating more deeply some of the noted covariate effects, and expanding the analysis context to different settings, time periods, and populations.

Alternative methodologies. Multilevel modeling is "an underutilized analysis method in career development scholarship, with promise to illuminate growth trajectories and the delineation of school effects in the processes of career development" (Diemer, 2008, p. 56). This methodology was selected for this study not only to help combat this underutilization but primarily to model the school-to-work transition in a way that adequately accounts for within-school clustering in the exploration of potential school-level effects.

Nonetheless, a series of methodological alternatives may be appropriate for future research exploring Decent Work attainment and the PWT in particular.

Future studies may look to the small ICCs found here and leverage ordinary least squares regression with fixed school effects and clustered standard errors. While the variance associated with each school characteristic cannot be evaluated in this context, the minimal clustering noted at the school level suggests that this may be a more efficient or parsimonious approach to evaluating the school-to-work transition in terms of the PWT components and Decent Work attainment.

Propensity score analysis presents a compelling quasi-experimental opportunity. In terms of Decent Work attainment, this type of analysis would involve estimating the effect of a "treatment" (e.g., college attendance) on Decent Work attainment (or employment) after adjusting for a series of covariates that appear to predict whether the person received or did not receive the treatment. The limitation (and the opportunity) here is that the measured intervention is dichotomized, such that respondents are classified as having received a treatment or not; this method may therefore help in addressing some of the concerns related to the inclusion of post-baseline covariates. This methodology may not be appropriate for school-based action research, however, in that propensity score techniques partial out school effects rather than examining them specifically. In other words, this approach is useful for finding covariates that predict an outcome without necessarily considering the specific mechanisms underlying Decent Work attainment.

As previously discussed, much of the research on the PWT and Decent Work attainment leverages structural equation modeling [SEM] techniques (see e.g., Douglass et al., 2017; Duffy et al., 2017; Duffy et al., 2018; Tokar & Kaut, 2018). This confirmatory

analytic approach is useful for testing and validating theories, but was specifically not pursued here due to a combination of a desire to model school clustering effects and some of the exploratory elements of this research inherent to secondary analysis. Future research may consider these methods either by not accounting for the (albeit minimal) nesting of students within schools or by employing techniques such as multilevel structural equation modeling [MSEM] (Preacher, Zhang, & Zyphur, 2011; Preacher, Zyphur, & Zhang, 2010). This modeling approach is especially useful for testing mediation pathways in clustered data, and future research on the internalization of the school-to-work transition, career adaptability, and work volition may benefit from this added capability.

One of the benefits of SEM is that this type of modeling allows for the exploration of pathway effects, relationships among predictors, and mediation pathways. Recent research has clarified the degree to which the various components of the PWT are more or less salient for different populations, including racially and ethnically diverse working adults, members of sexual minority populations, disabled workers, and workers in different countries (Allan, Tebbe, Bouchard, & Duffy, in press; Douglass et al., 2017; Duffy et al., 2017; Duffy et al., 2018; Tokar & Kaut, 2018). The degree to which the various pathways in Figures 1 and 2 (see Chapter 1) are supported varies across these recent studies, highlighting the need for additional clarification and exploration of mediation pathways. Additionally, each of these studies focused on adult individuals who were working. Consequently, there remains some uncertainty as to whether certain components of the PWT may be more or less salient for those who have not yet entered the workforce. Applied in a longitudinal analysis setting, SEM methodology may be helpful in articulating interrelationships among the components of the PWT with respect to students' future employment and Decent Work attainment. The

degree to which the associations and effect sizes among the PWT components align with those seen in working adult populations may be helpful in clarifying the relative strength of the theory (or certain parts of the theory) as it applies to youth versus adult populations.

Covariates. Throughout the analyses, a variety of student- and high school-level covariates emerged as significant predictors of Decent Work and employment status, with some operating as important predictors across several of the facets. Though not directly linked to the Psychology of Working Theory, these covariate effects present opportunities for further exploration in research concerning work outcomes.

Decent Work. Throughout the Decent Work analyses, students' achievement scores emerged as a salient predictor in three of the five models, suggesting that a student achievement measure is an important and unique contributor to students' future work outcomes. Similarly, the class preparation index and individual educational attainment emerged as significant predictors of two of the five facets, after accounting for the other variables in the models. The relationship between each of these indicators and work outcomes in general is relatively self-explanatory: those with higher scores may secure more advanced educational opportunities that, in turn, set them up for more choice and better access in the career market; those who exhibit a higher ability to exercise responsibility and initiative while still in school to ensure they are prepared may be more responsible and proactive employees who are rewarded for their behavior accordingly; finally, those with more advanced educational credentials signal to employers that that they possess the training, knowledge, and experiences necessary to succeed in more advanced, competitive, or otherwise "good" jobs.

The associations between these non-PWT covariates and the outcome are generally unsurprising. In particular, the positive relationship between educational attainment and access to workplace safety and the relationship between rurality and decreased safety are consistent with the opportunity literature and patterns in regional employment, respectively. Although these predictors were not present in all Decent Work models, these relationships and trends merit further consideration in the study of work outcomes in general and Decent Work in particular.

At the school level, several covariates significantly predicted the outcomes of interest, but due to the small ICCs the relative effect of each of the covariates was inherently and substantially constrained. Even covariates predicting a large proportion of the school-level variability in a given outcome were still predicting, at maximum, about three percent of the total variability. The significance of these predictors (e.g., offering job shadowing, school conditions, average course load, rural location, days in the school year) should not be overlooked, but it is important not to overstate these school effects; the major differences in Decent Work attainment are almost fully attributable to student-to-student differences.

Employment status. The models predicting employment status featured a robust array of covariates, many of which were additionally found throughout the Decent Work models. Student test score and class preparation each positively predicted future employment, although these effects did not predict an increase in the odds of being employed to nearly the extent that student educational attainment did. Here, both the jump between high school non-completers and graduates and the jump between college non-completers and graduates resulted in a statistically and practically significant increase in the odds of employment. It remains unclear whether these differences are consistent with school-to-

work patterns in general or if the recession timeframe exacerbated these differences, so future research may consider evaluating these trends among a broader collection of cohorts. Consistent with the literature, work experience additionally positively predicted employment outcomes, and student suspension (perhaps as a proxy for behavioral concerns) negatively predicted future employment. The suspension indicator was not found to be associated with any of the Decent Work facets, so additional research might clarify the extent to which behavioral concerns in youth are related to employment overall versus specific aspects of employment and work attainment.

Expanding the universe of analysis. The findings are limited to the 2002-2012 time period, which was intentionally selected because it covered a major economic recession, but the true impact of this recession on students' career development cannot be ascertained without a comparable evaluation of a control group from another time period. Future research may lend clarity to this area of study by tracking the same variables over time (see e.g., the High School Longitudinal Study [HSLS] of 2009 and the National Education Longitudinal Study [NELS] of 1988). Comparing cohorts enables the indirect study of intergenerational macroeconomic forces, which speaks to Decent Work attainment in much broader terms than what is presented in this dissertation.

As briefly introduced in Chapter 2, Olsen, Kalleberg, and Nesheim's (2010) international cross-cohort study spanned 16 years and was thus able to account for macroeconomic factors and evaluate with more clarity the extent to which peoples' individual working experiences may be associated with larger trends in the job market. Future research following this model may enable the consideration of the overall health of

the economy and the shift of sectors/fields in response to increased globalization and technological growth.

An additional opportunity for expanding this research involves treating postsecondary education as a key turning point in the school-to-work transition rather than as a covariate to be statistically accounted for. The focus on public high school education in this study was intentional, but the persistent finding that educational attainment (especially postsecondary attainment) positively predicted employment status, workplace safety, and access to health insurance benefits suggests that it is linked to work attainment overall as well as work quality. Exploring some of these quality dimensions in more detail as well as parsing out some of the causal mechanisms at play, if any, would help to drastically expand the study of the school-to-work transition.

The development and refinement of scales targeting the various components of the PWT has likewise paved the way for further research and validation of these components. Duffy et al. (2019) have led this effort, but their research has been limited to working adults and leverages only self-report data. Amending or validating this scale with youth prior to their entry to the workforce would allow for primary evaluation of the applicability of the PWT with student populations and greatly expand the conversation beyond the conclusions made throughout this dissertation.

Decent Work, as it is defined by the ILO, can represent macroeconomic conditions and workforce health of countries overall, and given that its definition is proposed by an explicitly international organization, future research may consider school-to-work transitions into Decent Work as they compare across countries and reflect overall economic health and workforce preparation among youth. The school-to-work transition remains a key

developmental phase across cultures, countries, and time periods, so broadening the scope of this study to an international context may help clarify best practices and intervention opportunities for youth around the world.

Conclusion

The purpose of this research was to explore the extent to which the Psychology of Working Theory could be applied to educational contexts and used to predict future student attainment of Decent Work. This study drew on a robust body of literature spanning the individual and contextual predictors and determinants of labor market outcomes, leveraged nationally representative data, and used multilevel regression to account for the contextual effects of individuals' secondary schooling.

Considered as a whole, the findings suggest that individual characteristics, rather than contextual high school characteristics, explain the vast majority of the variability in both Decent Work attainment and employment status. While schools are widely assumed to cultivate individual development and prepare students for their futures, results from this study indicate that the high school a person attends has little to do with the quality of work that person ends up securing later in life, nor whether that person is employed or unemployed. Indeed, the only PWT-defined school effect that was found to be significantly associated with any of the outcomes considered was the proportion of LEP students, which negatively predicted future individual job satisfaction. Beyond the sparse school-level findings overall, the very low ICCs highlight that the total amount of variability in the outcome that these associations might explain is inherently and substantially limited.

These findings lend clarity to the ongoing debate (see Chapter 2) as to whether schools do or do not share a meaningful relationship with students' future work-related

outcomes. Although this is just one study, using one theory in one time period for one dataset, the results overwhelmingly suggest that high school structural factors are not meaningfully predictive of students' vocational futures. Because individual factors appear to matter a great deal in predicting Decent Work- and employment-related outcomes, there appears to be little opportunity for high schools to "correct" for the advantages or disadvantages that students face as they grow into the working world. Nevertheless, there may remain important contextual factors that may be considered in education policy development that may help positively shape students' likelihood to secure employment, and ideally high-quality employment.

From here the conversation naturally diverges in two directions. First, exploring in more detail the contextual factors that *do* meaningfully predict high school students' future work-related outcomes (e.g., family background, local community structural factors, or higher education contexts). Second, exploring where high school characteristics may meaningfully (and perhaps even causally) predict student outcomes beyond just those related to work. Do these associations cease once students graduate? Do they persist only for those who do not attend college, or vice versa? Do they play a role in predicting outcomes in students' personal lives but not their working lives? These questions far exceed the scope of this dissertation and indeed transcend issues of work overall, but gaining clarity on these and related issues will be helpful in tailoring and refining education policy initiatives in service of securing a meaningful and dignified working future for all individuals.

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APPENDIX A

Missing Data Imputation

Table 1
School-level Covariates and WSHD Imputation Variables

Variable to be imputed	*N (%) missing before imputation*	*Sorting variable*	*Imputation class variables as determined by CHAID analysis*	*N (%) missing after imputation*
CP02STRO - Student-teacher ratio	10 (2%)	BYURBAN	CP02STEN, BYA21, BYSTATE	0 (0%)
BYA04 - Whether school differentiates instruction for students with different abilities	10 (2%)	BYURBAN	BYSTATE, BYA14A, BYA14B, BYA14E	0 (0%)
BYA07 - # of days in school year for 10th graders	10 (2%)	BYURBAN	BYSTATE	0 (0%)
BYA08 - # of class periods in day for 10th graders	10 (2%)	BYURBAN	BYSTATE, BYA06	0 (0%)
BYA09 - # of minutes of average 10th grade class period	10 (2%)	BYURBAN	BYSTATE, BYA08*	0 (0%)
BYA10 - Typical semester class load for 10th graders	10 (2%)	BYURBAN	BYSTATE, BYA06	0 (0%)
BYA13 - Whether parents notified of absences	10 (2%)	BYURBAN	BYSTATE, BYA21, BYA39B, BYA39C	0 (0%)
BYA18B - Whether internships are offered to 10th graders	10 (2%)	BYURBAN	BYG10ER, CP02STEN, BYA21	0 (0%)
BYA18C - Whether job shadowing is offered to 10th graders	10 (2%)	BYURBAN	BYG10ER, CP02STEN, BYA21	0 (0%)
BYA24A - % of full-time teachers who are certified	10 (2%)	BYURBAN	FIN_BYA21, BYSTATE, BYA46A	0 (0%)
BYA28G - Whether good teachers are recognized	10 (2%)	BYURBAN	FIN_BYA21, BYA27A, BYA27B, BYA27C	0 (0%)
BYA32 - Whether students have an exit examination requirement	10 (2%)	BYURBAN	BYSTATE	0 (0%)
BYA49B - Whether absenteeism is a daily problem	20 (4%)	BYURBAN	BYG10ER, BYA21, BYA39B	0 (0%)
BYA51B - Scale: Teachers press students to achieve	20 (4%)	BYURBAN	BYA21, BYA38C, BYA38F	0 (0%)
BYA51C - Scale: Teacher morale is high	20 (4%)	BYURBAN	CP02STEN, BYA21, BYA39B, BYA39C, BYA39F	0 (0%)
BYL12G - Whether college/career databases are available to students	20 (4%)	BYURBAN	BYA44A, BYA44B, BYA44C, BYA44D, BYA44E	0 (0%)
Teacher salary differential (highest teacher pay at school minus state average: BYA26B minus 2001-2002 state salary averages per NCES)	40 (9%)	BYURBAN	CP02STEN, BYA21, BYREGION, BYA51C**	0 (0%)
Mean school conditions (average of BYA50A - school conditions items)	20 (4%)	BYURBAN	CP02STEN, BYA21, BYA38C, BYA38F	0 (0%)

Note: The school sample size and percentages are relative to a total sample of n=460 schools. Pre-imputation Ns are rounded to the nearest 10 in accordance with IES Data Security policies.
Note: All variable information is available in the ELS:02 codebook: https://nces.ed.gov/pubs2014/ELS2012_codebook_Student1.pdf. Prior to their inclusion in the WSHD procedure, each of these variables was recoded appropriately (e.g., the missing value -8 was recoded to missing)
*BYA08 was used to impute the # of minutes of average 10th grade class period after it had been imputed itself (Andridge & Little, 2011).
**BYA51C was used to impute the teacher salary differential after it had been imputed itself.

Table 2

School-level variable descriptive statistics before and after WSHD imputation: Covariates

Variable to be imputed	*Pre-Imputation*			*Post-Imputation*		
	N	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*
CP02STRO - Student-teacher ratio	450	17.15	4.000	460	17.09	4.028
BYA04 - Whether school differentiates instruction for students with different abilities	450	0.81	0.392	460	0.81	0.390
BYA07 - # of days in school year for 10th graders	450	179.56	3.446	460	179.54	3.500
BYA08 - # of class periods in day for 10th graders	460	5.91	1.602	460	5.90	1.602
BYA09 - # of minutes of average 10th grade class period	460	64.40	19.819	460	64.37	19.789
BYA10 - Typical semester class load for 10th graders	460	6.02	1.316	460	6.02	1.318
BYA13 - Whether parents notified of absences	450	0.94	0.237	460	0.94	0.235
BYA18B - Whether internships are offered to 10th graders	460	0.29	0.453	460	0.29	0.454
BYA18C - Whether job shadowing is offered to 10th graders	460	0.57	0.495	460	0.57	0.495
BYA24A - % of full-time teachers who are certified	450	96.60	11.160	460	96.65	11.093
BYA28G - Whether good teachers are recognized	450	0.55	0.498	460	0.55	0.498
BYA32 - Whether students have an exit examination requirement	460	0.67	0.472	460	0.67	0.472
BYA49B - Whether absenteeism is a daily problem	440	0.96	0.193	460	0.96	0.194
BYA51B - Scale: Teachers press students to achieve	440	3.96	0.793	460	3.95	0.800
BYA51C - Scale: Teacher morale is high	440	3.71	0.857	460	3.71	0.862
BYL12G - Whether college/career databases are available to students	460	0.73	0.444	460	0.74	0.441
Teacher salary differential (highest teacher pay at school minus state average: BYA26B minus 2001-2002 state salary averages per NCES)	420	13675.22	9530.230	460	13458.09	9369.271
Mean school conditions (average of BYA50A - school conditions items)	440	0.78	0.654	460	0.79	0.658

Note: The school sample size and percentages are relative to a total sample size of 460 schools. Pre-imputation Ns are rounded to the nearest 10 in accordance with IES Data Security policies.

Table 3
Student-level Covariates and WSHD Imputation Variables

Variable to be imputed	*N (%) missing before imputation*	*Sorting variable*	*Imputation class variables as determined by CHAID analysis*	*N (%) missing after imputation*
BYHOMLIT - Cultural capital: Home literacy resources	1320 (17%)	BYURBAN	BYSES2, BYSTLANG, F3ED_BACH, BYSEX, BYGNSTATr, BYFCOMPr, RACE_WHITE, BYS24Br, BYSEX	77 (1%)
BYGNSTAT - Marginalization: Generational status	1220 (16%)	BYURBAN	BYSTLANG, RACE_WHITE, F3ED_BACH, BYPARASP	77 (1%)
BYSTEXP - How far in school student thinks he/she will get	1080 (14%)	BYURBAN	BYPARASP, F3ED_PS, BYTXCSTD, F3EVERDO, BYXTRACU, F3ED_BACH, F3ED_POSTBACH	0 (0%)
BYSTPREP - Scale: Class preparation	820 (11%)	BYURBAN	BYTXCSTD, RACE_WHITE, BYPARASP, BYS24Ar, BYS24Br, BYSTLANG, BYSEX	0 (0%)
BYSCSAF2 - Student-rated school safety index	910 (12%)	BYURBAN	BYTXCSTD, BYS24Fr, BYSTLANG, BYXTRACU, BYS24Br, BYGNSTATr, BYSEX	0 (0%)

Note: The student sample size and percentages are relative to a total sample size of 7,629 students. 7,629 students are included in the analysis of overall employment outcomes, whereas a smaller sample size of 6,620 students are included in the analysis of the Decent Work outcomes. Pre-imputation Ns are rounded to the nearest 10 in accordance with IES Data Security policies.
Note: All variable information is available in the ELS:02 codebook: https://nces.ed.gov/pubs2014/ELS2012_codebook_Student1.pdf. Prior to their inclusion in the WSHD procedure, each of these variables was recoded appropriately (e.g., the missing value -8 was recoded to missing)

Table 4

Student-level variable descriptive statistics before and after WSHD imputation: Variables missing for more than 10% of students

Variable to be imputed	*Pre-Imputation*			*Post-Imputation*		
	N	*Mean*	*S.D.*	*N*	*Mean*	*S.D.*
BYHOMLIT - Cultural capital: Home literacy resources	6390	0.47	0.499	7629	0.48	0.499
BYGNSTAT - Marginalization: Generational status	6490	0.22	0.416	7629	0.21	0.409
BYSTEXP - How far in school student thinks he/she will get	6630	5.12	1.464	7629	5.12	1.468
BYSTPREP - Scale: Class preparation	6890	0.01	1.010	7629	0.02	1.013
BYSCSAF2 - Student-rated school safety index	6390	0.47	0.499	7629	0.48	0.499

Note: The student sample size and percentages are relative to a total sample size of 7,629 students. 7,629 students are included in the analysis of overall employment outcomes, whereas a smaller sample size of 6,620 students are included in the analysis of the Decent Work outcomes. Pre-imputation Ns are rounded to the nearest 10 in accordance with IES Data Security policies.

APPENDIX B

Principal Components Analysis

Principal Components Analysis: Hours that allow for free time and adequate rest

Table 1
Weighted Descriptive Statistics: Aspects of current/most recent job

	Mean	Std. Deviation	Analysis N
Work-family balance	3.59	1.226	1818247
Job security	3.88	1.284	1818247
Opportunity to learn new things	4.00	1.228	1818247
High earnings	3.12	1.352	1818247
New challenges	3.79	1.272	1818247
Time for leisure activities	3.31	1.292	1818247
Useful for society	3.38	1.420	1818247

Table 2
Weighted Correlation Matrix

	Work-family balance	Job security	Opportunity to learn new things	High earnings	New challenges	Time for leisure activities	Useful for society
Work-family balance	1.000	0.277	0.282	0.252	0.250	0.607	0.393
Job security	0.277	1.000	0.373	0.377	0.327	0.220	0.279
Opportunity to learn new things	0.282	0.373	1.000	0.436	0.746	0.189	0.473
High earnings	0.252	0.377	0.436	1.000	0.465	0.240	0.262
New challenges	0.250	0.327	0.746	0.465	1.000	0.168	0.496
Time for leisure activities	0.607	0.220	0.189	0.240	0.168	1.000	0.284
Useful for society	0.393	0.279	0.473	0.262	0.496	0.284	1.000

Table 3
Communalities

	Initial	Extraction
Work-family balance	1.000	0.784
Job security	1.000	0.355
Opportunity to learn new things	1.000	0.761
High earnings	1.000	0.456
New challenges	1.000	0.778
Time for leisure activities	1.000	0.793
Useful for society	1.000	0.480

Extraction method: Principal component analysis

Table 4
Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	3.149	44.985	44.985	3.149	44.985	44.985	2.954
2	1.259	17.986	62.970	1.259	17.986	62.970	2.025
3	0.826	11.793	74.763				
4	0.651	9.302	84.065				
5	0.491	7.017	91.082				
6	0.377	5.389	96.470				
7	0.247	3.530	100.000				

Extraction method: Principal component analysis

Table 5
Component Matrix (Unrotated)

	Component 1	Component 2
Work-family balance	0.624	0.629
Job security	0.594	-0.055
Opportunity to learn new things	0.786	-0.378
High earnings	0.649	-0.186
New challenges	0.778	-0.416
Time for leisure activities	0.531	0.715
Useful for society	0.693	0.004

Extraction method: Principal component analysis

Table 6
Pattern Matrix (Rotated: Direct Oblimin)

	Component 1	Component 2
Work-family balance	0.389	0.882
Job security	0.580	0.335
Opportunity to learn new things	0.866	0.209
High earnings	0.675	0.270
New challenges	0.871	0.175
Time for leisure activities	0.273	0.889
Useful for society	0.655	0.444

Extraction method: Principal component analysis

Table 7
Structure Matrix (Rotated: Direct Oblimin)

	Component 1	Component 2
Work-family balance	0.086	0.851
Job security	0.527	0.148
Opportunity to learn new things	0.906	-0.113
High earnings	0.662	0.035
New challenges	0.925	-0.154
Time for leisure activities	-0.049	0.906
Useful for society	0.569	0.242

Extraction method: Principal component analysis

Table 8
Component Correlation Matrix

	Component 1	Component 2
Component 1	1.000	0.355
Component 2	0.355	1.000

Principal Components Analysis: Internalization of the school-to-work transition

Table 9
Weighted Descriptive Statistics: Aspects of current/most recent job

Item	Mean	Std. Deviation	Analysis N
Education is important to get a job later	1.42	0.592	1902102
Learns skills for job in school	1.11	2.365	2105821

Table 10
Weighted Correlation Matrix

	Education is important to get a job later on	I go to school because I'm learning skills that I will need for a job
Education is important to get a job later on	1.000	0.380
I go to school because I'm learning skills that I will need for a job	0.380	1.000

Table 11
Communalities

	Initial	Extraction
Education is important to get a job later	1.000	0.690
Learns skills for job in school	1.000	0.690

Extraction method: Principal component analysis

Table 12
Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.380	69.012	69.012	1.380	69.012	69.012
2	0.620	30.988	100.000			

Extraction method: Principal component analysis

Table 13
Component Matrix (Unrotated)

	Component 1
Education is important to get a job later on	0.831
I go to school because I'm learning skills that I will need for a job	0.831

Extraction method: Principal component analysis

APPENDIX C

Student-level Regression Analyses: Baseline and Post-Baseline Covariates

Table 1
Safety: Student-level OLS Regression Model

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 4: Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition with post-baseline covariates*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
Intercept	53.653***	0.912	49.437***	1.516	51.189***	0.950	49.516***	1.565	55.442***	1.647
Covariates										
Test score	2.19***	0.17	2.18***	0.22	2.63***	0.18	2.23***	0.017	1.22***	0.023
Class preparation	0.398*	0.177	0.453*	0.177	0.420*	0.184	0.592**	0.177	0.520**	0.179
Post-baseline Covariates										
Graduated HS, no Bachelor's									-2.171***	0.610
Graduated Bachelor's									2.907***	0.699
Economic Constraints										
Cultural capital			0.437	0.313			0.315	0.321	0.231	0.318
Social capital			0.485***	0.131			0.513***	0.135	0.398***	0.133
Socioeconomic status			2.418***	0.282			2.398***	0.294	1.981***	0.290
Marginalization										
Race – Asian			-0.566	3.427			-0.224	3.483	-2.050	3.422
Race – Black			5.814***	0.689			6.058***	0.700	5.327***	0.712
Race – Hispanic			-1.959**	0.736			-2.145**	0.748	-2.461**	0.742
Race – Other			2.263**	0.650			2.621***	0.695	1.269	0.690
Generational status – respondent and mother born in U.S.			6.424***	0.669			6.022***	0.685	6.698***	0.675
Sex - male			-3.802***	0.314			-3.980***	0.321	-3.842***	0.316
First language is English			2.870**	1.060			2.413*	1.092	2.840**	1.076
Internalization of the School-to-Work Transition					-0.344*	0.144	-0.614***	0.143	-0.600***	0.141
Adjusted R^2	.034		.126		.048		.129		.161	

Table 2
Hours: Student-level OLS Regression Model

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 4: Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition with post-baseline covariates*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
Intercept			0.304*	0.122	0.095***	0.017	0.340**	0.125	0.538***	0.144
Covariates	-	-	-	-	-	-	-	-	-	-
Post-baseline Covariates										
Graduated HS, no Bachelor's									0.104	0.062
Graduated Bachelor's									0.081	0.068
Third Follow-up: Opportunity Index									-0.056**	0.020
Economic Constraints										
Cultural capital			0.199***	0.033			0.213***	0.034	0.174***	0.034
Social capital			-0.063***	0.013			-0.058***	0.014	-0.081***	0.015
Socioeconomic status			0.034	0.029			0.041	0.030	0.103**	0.032
Marginalization										
Race – Asian			-0.556	0.330			-0.621	0.333	-0.773*	0.331
Race – Black			0.267***	0.059			0.228***	0.059	0.172**	0.065
Race – Hispanic			-0.163*	0.063			-0.314***	0.068	-0.542***	0.080
Race – Other			-0.213**	0.074			-0.196*	0.082	-0.304***	0.084
Generational status – respondent and mother born in U.S.			0.655***	0.061			0.666***	0.064	0.704***	0.064
Sex - male			-0.070*	0.032			-0.027	0.033	0.026	0.034
First language is English			-0.024	0.092			-0.084	0.095	-0.203*	0.099
Internalization of the School-to-Work Transition					-0.010	0.015	0.022	0.016	0.039*	0.016
Adjusted R^2			.055		.0001		.056		.063	

Table 3
Job Satisfaction: Student-level OLS Regression Model

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 4: Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition with post-baseline covariates*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
Intercept	0.185*	0.079	-0.051	0.136	0.178*	0.080	-0.153	0.141	0.521**	0.160
Covariates										
Test score	-0.02	0.02	-0.04*	0.02	-0.01	0.02	-0.05*	0.02	-0.11***	0.02
Class preparation	0.068***	0.015	0.079***	0.016	0.052**	0.016	0.057**	0.017	0.081***	0.018
Number of school activities - participation	0.055***	0.010	0.055***	0.010	0.047***	0.010	0.048***	0.011	0.022	0.013
Post-baseline Covariates										
Graduated HS, no Bachelor's									0.081	0.059
Graduated Bachelor's									0.235**	0.068
Third Follow-up: Opportunity Index									-0.005***	0.001
Economic Constraints										
Cultural capital			0.103***	0.028			0.128***	0.028	0.101**	0.031
Social capital			-0.022*	0.011			-0.013	0.011	-0.002	0.013
Socioeconomic status			0.072**	0.025			0.059*	0.026	0.025	0.027
Marginalization										
Race – Asian			0.226	0.295			0.201	0.299	0.249	0.291
Race – Black			0.009	0.063			-0.044	0.065	0.093	0.067
Race – Hispanic			0.218**	0.063			0.227***	0.064	0.303***	0.078
Race – Other			0.267***	0.056			0.270***	0.060	0.359***	0.061
Generational status – respondent and mother born in U.S.			-0.107	0.056			-0.089	0.058	-0.062	0.059
Sex - male			0.164***	0.027			0.182***	0.028	0.188***	0.029
First language is English			0.335***	0.095			0.408***	0.097	0.327**	0.100
Internalization of the School-to-Work Transition					0.048***	0.013	0.057***	0.013	0.028	0.015
Adjusted R^2	.011		.033		.013		.038		.057	

Table 4
Compensation: Student-level OLS Regression Model

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 4: Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition with post-baseline covariates*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
Intercept	4.384***	0.013	4.003***	0.064	4.380***	0.014	4.007***	0.006	4.027***	0.071
Covariates										
Family composition – mother and father	-0.093***	0.017	-0.127***	0.018	-0.087***	0.018	-0.120***	0.019	-0.129***	0.019
Post-baseline Covariates										
Graduated HS, no Bachelor's									-0.011	0.030
Graduated Bachelor's									0.078*	0.034
Economic Constraints										
Cultural capital			-0.090***	0.017			-0.091***	0.017	-0.100***	0.017
Social capital			0.049***	0.006			0.050***	0.007	0.043***	0.007
Socioeconomic status			0.046**	0.015			0.052**	0.016	0.041*	0.016
Marginalization										
Race – Asian			0.093	0.160			0.082	0.165	0.065	0.165
Race – Black			-0.044	0.032			-0.038	0.033	-0.024	0.035
Race – Hispanic			0.115***	0.032			0.088*	0.035	0.101**	0.036
Race – Other			0.041	0.034			0.049	0.037	0.024	0.037
Generational status – respondent and mother born in U.S.			0.130***	0.031			0.138***	0.032	0.139***	0.032
Sex - male			0.096***	0.016			0.106***	0.017	0.113***	0.017
First language is English			0.142**	0.048			0.119*	0.050	0.117*	0.050
Internalization of the School-to-Work Transition					0.012	0.008	-0.005	0.008	-0.007	0.008
Adjusted R^2	.007		.054		.006		.055		.060	

Table 5
Health Care: Student-level Logistic Regression Model

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 4: Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition with post-baseline covariates*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
Intercept	-0.396*	0.195	-0.301	0.306	-0.264	0.204	-0.096	0.319	0.407	0.369
Covariates										
Test score	0.030***	0.004	0.024***	0.005	0.029***	0.004	0.024***	0.005	0.009	0.005
Class preparation	0.179***	0.035	0.206***	0.036	0.191***	0.036	0.192***	0.037	0.223***	0.038
Post-baseline Covariates									0.663***	0.121
Graduated HS, no Bachelor's									1.224***	0.149
Graduated Bachelor's									-0.004**	0.001
Economic Constraints										
Cultural capital			-0.070	0.074			-0.055	0.076	-0.034	0.079
Social capital			0.094**	0.030			0.051	0.031	0.034	0.033
Socioeconomic status			-0.056	0.062			-0.022	0.064	-0.090	0.068
Marginalization										
Race – Asian			-0.440	0.320			-0.502	0.325	-0.603	0.334
Race – Black			-0.073	0.135			-0.158	0.139	0.079	0.144
Race – Hispanic			-0.627***	0.142			-0.652***	0.146	-0.612***	0.157
Race – Other			-0.168	0.155			-0.269	0.157	-0.264	0.160
Generational status – respondent and mother born in U.S.			0.263	0.152			0.283	0.155	0.345	0.161
Sex - male			0.178*	0.073			0.230**	0.075	0.261**	0.078
First language is English			-0.271	0.179			-0.208	0.183	-0.392*	0.194
Internalization of the School-to-Work Transition					0.212***	0.033	0.219***	0.034	0.138***	0.037
Nagelkerke R^2	.035		.048		.052		.063		.093	

Table 6
Employment Status: Student-level Logistic Regression Model

	Model 1: Covariates Only		*Model 2: Student-level Economic Constraints & Marginalization*		*Model 4: Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition*		*Model 5: Student-level Economic Constraints & Marginalization with Internalization of the School-to-Work Transition with post-baseline covariates*	
	Coeff.	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*	*Coeff.*	*S.E.*
Intercept	-0.263	0.238	0.070	0.345	-0.266	0.239	-0.032	0.349	0.230	0.398
Covariates										
Test score	0.046***	0.005	0.035***	0.006	0.046***	0.005	0.037***	0.006	0.026***	0.006
Class preparation	0.146***	0.041	0.157***	0.041	0.154***	0.041	0.163***	0.042	0.119**	0.044
Worked <15 hours per week	0.250*	0.105	0.184	0.106	0.240*	0.105	0.183	0.107	0.190	0.112
Worked >=15 hours per week	0.765***	0.130	0.668***	0.132	0.736***	0.131	0.653***	0.133	0.596***	0.136
Ever suspended	-0.280*	0.138	-0.326*	0.141	-0.325*	0.140	-0.358*	0.142	-0.144	0.148
Post-baseline Covariates										
Graduated HS, no Bachelor's									0.605***	0.124
Graduated Bachelor's									1.241***	0.169
Third follow-up: Opportunity Index									-0.004**	0.001
Economic Constraints										
Cultural capital			0.083	0.088			0.101	0.089	0.150	0.092
Social capital			0.018	0.034			0.017	0.035	-0.008	0.036
Socioeconomic status			0.031	0.074			0.036	0.074	-0.095	0.078
Marginalization										
Race – Asian			-0.511	0.316			-0.436	0.318	-0.407	0.325
Race – Black			-0.299*	0.146			-0.261	0.148	-0.109	0.152
Race – Hispanic			-0.517***	0.146			-0.363*	0.153	-0.178	0.167
Race – Other			-0.468**	0.159			-0.438**	0.160	-0.426**	0.163
Generational status – respondent and mother born in U.S.			-0.110	0.156			-0.156	0.158	-0.159	0.163
Sex - male			0.482***	0.089			0.448***	0.089	0.484***	0.092
First language is English			0.041	0.182			0.070	0.185	0.120	0.195
Internalization of the School-to-Work Transition					-0.091*	0.041	-0.063	0.042	-0.077	0.044
Nagelkerke R^2	.054		.074		.057		.072		.093	