Characterizing the developmental heterogeneity of connectedness to school or work during the transition into adulthood

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Abstract

Prior research has focused on "disconnected youth," often defined as individuals between 16 and 24 who are neither enrolled in school nor employed. This particular issue has gained attention, at least partially due to research that suggests that there are individual consequences such as worse health and lower income associated with precarious connections to school or work and societal consequences such as lost taxes and costs associated with public assistance, healthcare, and crime. However, most prior research has been cross-sectional and has defined connectedness to school or work as an either-or outcome. This conflicts with research on the transition into adulthood that suggests there are varied, individualized pathways in moving from adolescence into young adulthood.

The purpose of this study was to characterize differences in the developmental trajectories of connectedness to school or work across the transition into adulthood. Two research questions were posed: (1) Are there individual differences in the developmental trajectories of being connected to school or work during the transition into adulthood? (2) What childhood factors are associated with individual differences in the developmental trajectories of being connected to school or work during the transition into adulthood?

Latent variable mixture models were used to answer the first question. The sample included 2,027 individuals between the ages of 18 and 26 who participated in at least two waves of the Transition into Adulthood Supplement of the Panel Study of Income Dynamics (PSID) between 2005 and 2015. The second question was answered using a subsample of 757 individuals from the original sample of 2,027 who had data from middle childhood (i.e., ages 8, 9 or 10) collected in either the 1997 or 2002 PSID Childhood Development Supplement

interviews. Multinomial logistic regression examined childhood factors related to differences in the developmental trajectories identified in the first analytic phase.

Based on model comparison fit statistics, examination of classification quality, and subjective evaluation of usefulness and interpretability, a four-class latent growth mixture model was selected to describe four qualitatively different developmental patterns of connectedness to school or work. Overall, findings implied that there is considerable heterogeneity in connectedness patterns across the transition into adulthood, with a substantial proportion of sample members experiencing sporadic connections to school or work across the transition into adulthood. Further, at least some middle childhood factors were related to differences in connectedness pathways during the transition into adulthood, even when controlling for young adult demographic factors.

Future research is necessary to improve the conceptualization and measurement of this phenomenon, as well as research that examines how differences in the developmental trajectories of connectedness to school or work fit within the broader life course. These findings and future research may inform policies and programs that target supports to young people before and during the transition into adulthood.

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Dedication

This dissertation is dedicated to the late Dr. Andrew Zinn who guided and supported the methods and analysis for well over a year. Andy helped me understand the utility of person-centered methods—along with when and how to use them. I will carry that with me always. More importantly, though, Andy gave me confidence and mentorship through the highs and lows of the dissertation process and helped me acclimate to academia. I will always be indebted to him and the unwavering patience, humor, optimism, and support he provided – especially when I did not understand what on earth he was talking about (which was frequent)! Finishing this dissertation without him here to help celebrate is bittersweet. But, Andy had faith in me and in this dissertation, and I know he would be proud of the finished product. This one is for you, Andy.

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Chapter I
Overview of the Problem

Introduction

The experiences an individual has during young adulthood carry critical implications for future social and economic well-being (Stroud, Walker, Davis, & Irwin, 2015). In recent years evidence has indicated that the ordering and timing of traditional markers of adulthood has become less differentiated (Arnett, 2000; Côté & Bynner, 2008; Furstenberg, 2010; Shanahan, 2000). Yet, completing education or training and obtaining full-time employment continue to be viewed as important hallmarks of adulthood (Berlin, Furstenberg, & Waters, 2010; Settersten & Ray, 2010). Thus, although research on the transition from secondary school into adulthood has highlighted that pathways tend to be increasingly individualized (Pollock, 2008; Settersten & Ray, 2010), existing age-graded expectations about social roles and pathways young people should pursue following-high school remain salient. Considering this transition from a life course perspective (Elder, 1994) highlights that deviating from these age-graded social role expectations, in this case, being enrolled in school or working, may be considered as an "off-time" event, from which, perhaps, arises the social issue of "disconnected youth."

Disconnected youth have often been described as individuals between ages 16 and 24 who are neither enrolled in school nor employed. The age range and terms used vary some, depending upon the national context (e.g., Europe versus the U.S.) but the general conceptualization and concern is similar – young people who have exited secondary school and are not enrolled in school or working pose considerable economic and social risk to themselves and to society (Andersen, 2017; Belfield, Levin, & Rosen, 2012; Fernandes-Alcantara, 2015; White House Council for Community Solutions, 2012). This issue has caught the attention of policymakers abroad and within the U.S., because annual estimates of disconnected youth

indicate that there are a substantial minority of individuals who experience disconnection each year (Belfield, Levin, & Rosen, 2012; Bureau of Labor Statistics [BLS], 2018a; Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015).

Prevalence of Disconnection from School and Work

Given that the definition of being a "connected youth" would involve being enrolled in a postsecondary education institution or work, one way to consider the issue of disconnected youth is to examine statistics on the prevalence of this issue. For the purpose of this study, research focused on disconnected youth in the U.S. has been chosen. This is due to the differences in secondary and postsecondary institutions and pathways internationally as compared to the U.S. (Kerckhoff, 2003).

Research about disconnected youth within the U.S. primarily has relied on cross-sectional data to produce estimates of disconnected youth (Annie E. Casey Foundation, 2009; Belfield, Levin, & Rosen, 2012; Bridgeland & Milano, 2012; Burd-Sharps & Lewis, 2012; Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015; Lewis & Burd-Sharps, 2013; Lewis & Burd-Sharps, 2015; Ross & Prchal Svajlenka, 2016; Wald & Martinez, 2003; Wight, Chau, Aratani, Wile Schwarz, & Thampi, 2010). Estimates vary, largely due to differing datasets and different definitions of what it means to be a disconnected youth.

For example, some studies on disconnected youth have defined a disconnected youth as someone between 16 and 23 who is not enrolled in education, employed, in the military – nor married to someone who is connected in one of those institutions – for 26 or more consecutive weeks during a given year. Three such studies used data from the National Longitudinal Study of Youth (NLSY) – either the 1979 or 1997 surveys (Besharov & Gardiner, 1998; Brown & Emig, 1999; Hair, Moore, Ling, McPhee-Baker, & Brown, 2009). Using NLSY97 data, Hair et al.

(2009) found that among a sample of 5,419 individuals, nearly 20 percent of youth experienced disconnection between ages 16 and 23. Similarly, Besharov and Gardiner (1998) used NLSY79 data and found that around one-quarter of males and females in their sample of 4,000 youth experienced disconnection. Taken together, between one-quarter (Besharov & Gardiner, 1998) and one-fifth (Hair et al., 2009) of young people between 16 and 23 in these two samples were not enrolled in education, employed, or married to someone who was enrolled or employed for 26 or more consecutive weeks in a given year.

Alternative definitions have been used and reflect different estimates. For instance, Fernandes-Alcantara (2015) used 2014 CPS ASEC data and defined disconnected youth as individuals between 16 and 24 who were not employed at the time of the survey or during the prior year (for a primary reason other than being enrolled in school), not enrolled in school at the time of the survey, and not married and parenting. Applying that definition, 2.4 million (6.1%) 16 to 24 year olds were disconnected youth in 2014 (Fernandes-Alcantara, 2015). Similarly, Ross and Prchal Svajlenka (2016) defined disconnected youth as those between 16 and 24 who were not employed or in the labor force\, not enrolled in school, not in the military, had incomes below 200 percent of the federal poverty level, did not live in group quarters, and had attained less than an associate's degree. Using 2012-2014 ACS microdata, the resulting estimate was 3 million disconnected youth, or 7.6 percent of the 16-24 year old population (Ross & Prchal Svajlenka, 2016). Measure of America has commissioned several reports since 2012, all using the ACS data (Burd-Sharps & Lewis, 2017; Burd-Sharps & Lewis, 2012; Lewis & Burd-Sharps, 2015; Burd-Sharps & Lewis, 2017). In those studies, disconnected youth were defined as individuals not in school (i.e., not enrolled in an educational institution or homeschooled during the past three months) and not working (i.e., not being employed part-time or full-time and not

looking for work in the previous week and not a member of the armed forces). According to their most recent analysis using 2016 ACS data, the national average has slowly and steadily dropped from 2010 until 2016. While 2016 ACS data illustrates an improvement in the overall proportion of disconnected youth – 4.6 million, or 11.7 percent of 16 to 24 year olds in the U.S.– this estimate also continues to reflect a substantial proportion of disconnected youth (Burd-Sharps & Lewis, 2017).

Finally, Belfield, Levin, and Rosen (2012) defined and measured disconnection in a couple of different ways. As a point-in-time experience, their analysis produced an average annual estimate of 6.7 million; however, they also distinguished disconnection by intensity for some analyses. Using the weekly employment and educational data from the NLSY97, Belfield, Levin, and Rosen (2012) created an Opportunity Youth Intensity Measure (OYIM) to illustrate time per month spent on either school or work. The OYIM assigned weighted values between 1 for full time employment or full time education and 0 for not engaged in either. According to the OYIM approach, an estimated 11.8 million youth, on average, spent time as disconnected youth, and 30 percent of youths' time each month was not spent in work or school (Belfield, Levin, & Rosen, 2012). The authors' also used data from the NLSY97 and ELS2002 and created a chronic disconnection count (i.e., chronic defined as never having been enrolled education or work since age 16). This approach resulted in an estimate of 3.4 million chronically disconnected youth, and the remaining 3.3 million young people were classified as "under-attached," which meant that they had some previous or current attachment to employment or education during the transition to adulthood but lacked a consistent, secure attachment to these formal institutions (Belfield, Levin, & Rosen, 2012).

Summary. Definitions and estimates of the prevalence of disconnected youth vary. While point-in-time estimates suggest that being disconnected from school or work is not an uncommon experience for a substantial minority of individuals in the U.S. to further understand the scope of this issue, it seems imperative to examine trends in postsecondary enrollment and persistence, employment, and disconnection from school and work across the transition from adolescence into adulthood.

Trends in Connectedness to School or Work

Connections to postsecondary education institutions. Between 2000 and 2017 total postsecondary enrollment rates at 2- and 4-year postsecondary institutions increased from 35 to 40 percent among 18 to 24 year olds – with enrollment rates at 2-year institutions hovering around 10 percent in both 2000 and 2017, and 4-year institution enrollment rates ranging from 26 in 2000 to 30 percent in 2017. Though there continue to be differences in enrollment by racial and ethnic groups, rates increased for all racial and ethnic groups between 2010 and 2016 except for those identifying as American Indian/Alaska Native or Pacific Islander (National Center for Education Statistics [NCES], 2019).

While enrollment is an important indicator of connection to postsecondary schools, enrollment status can and does change for a substantial number of individuals. Thus, the persistence rate for first-time college students is an important metric to gage how individuals are progressing through to degree completion. The NCES utilized longitudinal data from the Beginning Postsecondary Students study and provided statistics on three-year persistence rates for first-time college students who first enrolled in 2011-2012 and were still in school or had completed a certificate or degree by the spring 2014. The majority of those who enrolled in

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either level of institution in 2011-2012 were ages 19 or younger, though this age group comprised a smaller number of enrollees (66%) at 2-year institutions (NCES, 2017a).

Overall, the three-year persistence rate among first-time students was 70 percent; however, this varied by demographic factors, such as age group and level of institution. For example, the persistence rate for those initially enrolled in 2-year institutions was more than 20 percentage points lower than the persistence rate for those initially enrolled in a 4-year institutions (i.e., 57% versus 80%; NCES, 2017a). Age also played a role in persistence, with higher persistence rates for students ages 19 and younger at both 2- and 4-year colleges – 62% and 85%, respectively. At 4-year institutions, those ages 30 or older had the second highest persistence rate, at 57 percent, followed by 20 to 23 year olds (53%) and 24 to 29 year olds (48%). Among those initially enrolled at 2-year institutions, 49 percent of individuals ages 20 to 23 persisted, and those ages 24 to 29 and ages 30 and older had persistence rates of 48 percent (NCES, 2017a).

Summary. Overall, postsecondary enrollment rates increased 5 percentage points from 2000 to 2017, and this was true among all racial and ethnic groups. Most of the postsecondary enrollment gains came from increases in enrollment at 4-year institutions (NCES, 2019). As for college persistence, younger individuals (e.g., those 19 and younger) comprised the largest age group of enrollees in both two- and four-year institutions. This age group also had the highest three-year persistence rate ((i.e., had obtained a degree or were still enrolled after three years) regardless of institution type (two-year: 62%, four-year: 85%; NCES, 2017a). The increase in college enrollment rates during this timeframe was likely due, at least in part, to changing labor market and economic conditions, in that the demand for different types of knowledge or skills,

combined with the lasting effects of the Great Recession have likely contributed to the increase (Bell & Blanchflower, 2011; Long, 2014).

Connections to employment. This section will focus on employment trends for 16 to 24 year olds from the year 2000 through 2018 presented within a recent Congressional Research Service report (Fernandes-Alcantara, 2018), as those are most relevant to the period subject to analyses in this study and correspond closely with the 2000 to 2016 enrollment data presented in the prior section. The CRS report presented changes in employment-population ratios (i.e., the proportion of non-institutionalized adults who are employed) for 16 to 24 year olds, separating statistics for 16 to 19 year olds from those ages 20 to 24. This presentation seems useful to aid in considering how to describe these trends *across* the transition into adulthood.

16 to 19 year olds. For the entire 2000 to 2017 period, teenagers ages 16 to 19 experienced a negative 33.0 percentage change in the employment-population ratio – decreasing from 45 percent to 30 percent – with a slightly larger decline for males and for White individuals (Fernandes-Alcantara, 2018). White individuals consistently had the highest employment-population ratio across this period, and they also had the largest decrease between 2000 and 2017 – a negative 35 relative change. This meant that by 2017, the employment-population ratio gap between White and Black teenagers had decreased to around 10 percentage points, around 12 percentage points between White and Asian teenagers, and around 5 percentage points between White and Hispanic teens. These closing gaps were primarily due to decreases in employment among White teenagers and gains among Black, Hispanic, and Asian teenagers between 2014 and 2107, Employment-population ratios were similar for males and females ages 16 to 19 across this period (Fernandes-Alcantara, 2018).

20 to 24 year olds. Compared to teenagers, individuals in their early twenties had higher average employment-population ratios and a less drastic relative change in these ratios between 2000 and 2017 – with a negative relative change of around 9 percentage points (Fernandes-Alcantara, 2018). There were gender differences; however, though the employment-population ratio in 2000 was 9 percentage points higher for males as compared to females, this gap was reduced to about 4 percent in 2017 – reflecting to a larger, negative relative change for males. White 20 to 24 year olds consistently had the highest employment-population ratio, followed closely by Hispanic individuals. Asian individuals had the largest relative change – negative 15 percentage points – and also had the lowest employment-population ratio across all years. Due to larger negative relative changes for White and Hispanic individuals and a slight increase (0.5 percentage points) among Black individuals, the employment-population ratio difference between White and Black individuals was less than 10 percentage points in 2017, and a gap of about 20 percentage points between White and Asian individuals (Fernandes-Alcantara, 2018).

Summary. Both supply and demand influence labor force trends. Employers (demand-side) tend to prefer hiring individuals with more experience and possibly more education or skills whom they see as longer-term employees (Bell & Blanchflower, 2011; Fernandes-Alcantara, 2018). Factors such as increased enrollment in educational institutions, labor force strength, seasonality of work (e.g., summer months versus school-term months), and neighborhood characteristics may interact to help explain the fluctuation in employment for those ages 16 to 24 (Bell & Blanchflower, 2011; Fernandes-Alcantara, 2018).

Age is an important factor in employment-population ratio trends. Those ages 16 to 19 have long had lower employment-population ratios than individuals ages 20 to 24 (Fernandes-Alcantara, 2018). Among individuals ages 20 to 24, a near continuous uptick in employment

population ratios since the 1960's, especially for females, was seen until around 2000, when these rates began to decline. Both teenagers and young adults saw a decrease in employment-population ratios during and following the Great Recession – though this decrease was much larger for 16 to 19 year olds. Though employment gains have been seen for young people in recent years, the employment-population ratio has not returned to pre-2000 rates (Fernandes-Alcantara, 2018). Even though employment-population ratios may have decreased since 2000, the increase in postsecondary enrollment rates for individuals ages 18 to 24 between 2000 and 2016 would seem to suggest that there may be a decrease in disconnectedness from school or work between the late teens and mid-to-late twenties.

Disconnection from school and work. Among individuals ages 16 to 24, rates of disconnection from school and work increased directly following the Great Recession (NCES, 2017b). This differed by age, though, with a one-percentage point increase in disconnection between 2006 and 2011 for younger individuals (16-17 and 18-19 year olds) and a four-percentage point increase among those ages 20 to 24. This was true regardless of race or ethnicity or poverty status (NCES, 2017b). While this seems incongruent with the postsecondary enrollment and employment-population trends presented previously, these statistics align with other research that has found higher disconnection rates at the upper end of the age range captured by the definition of disconnected youth (Fernandes-Alcantara, 2015; Hair et al., 2009). One explanation might be that older individuals have experienced a less steep increase in school attendance than 16 to 19 year olds; thus, 20 to 24 year olds may have experienced a less drastic decline in employment, but also did not see that decrease matched by a corresponding increase in enrollment. For instance, 16 to 19 year olds also saw an inverse trend of school attendance, moving from around 40 percent in 1998 to almost 59 percent in 2014. The same cannot be said

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for young people ages 20 to 24, for whom school enrollment increased from 12 percent to 17 percent during this period. (Canon, Kudlyak, & Liu, 2015).

A few studies on disconnected youth have examined trends of disconnection from education and employment. For instance, using hazard-based duration models, MaCurdy, Keating, and Nagavarapu used data from the National Longitudinal Study of Youth (NLSY) 1979 and 1997 to compare trends of disconnection between these two nationally representative cohorts. The authors found lower rates of disconnection among the NLSY97 sample than in the NLSY79 sample (i.e., about 10 percentage points lower in 2000 than in 1980), which the authors mainly attributed to increases in school retention and higher educational attainment for the younger cohort. However, they also found that men in the NLSY97 cohort had higher rates of renewed disconnection episodes than the men in the NLSY79 sample, meaning that among men who were disconnected and then reconnected, rates of disconnecting again were higher in the 1997 cohort sample (MaCurdy, Keating, & Nagavarapu, 2006).

Fernandes-Alcantara (2015) also examined trends in disconnection, using cross-sectional data from the U.S. Census Bureau's American Community Survey from 1988 through 2014. Fernandes-Alcantara's (2015) study highlighted variation in national rates of disconnection across this 26-year period, ranging from 4.1 percent in 1988 to 2.9 percent in 2000, 4.9 percent in 2007 and 7.5 percent in 2010, decreasing to 6.1 percent in 2014. It is notable that this trend reflects shifts in disconnected youth surrounding the timing of three economic recessions (Fernandes-Alcantara, 2015). Wight et al. (2010) used the 2010 Current Population Survey Annual Social and Economic Supplement to examine trends of disconnected youth from 2000 to 2010. They found a 3 percentage point increase in disconnection during that timeframe—up from

11.4 percent in 2000 to 14.8 percent in 2010—, or a 30 percent increase in the total number of disconnected youth over that 10-year period (Wight et al., 2010).

Summary. These trends in enrollment and employment, particularly the way in which these pathways are intertwined, but also seem to differ across late adolescence and early adulthood, highlight why it might be useful to look at connections to *either* of these institutions *across* this transition into adulthood. Examining the developmental progression of connections to only one institution may result in missing others who are solely connected by the other. That is only relevant, however, if it is reasonable to assume that being connected to either of these institutions matters during this particular transition period.

Why does Connectedness to School or Work Matter?

Individual impacts. At an individual level, both education and employment have important consequences for health and economic well-being. For instance, higher levels of educational attainment have been found to be positively associated with employment rates, income, and wealth, and negatively associated with physical health problems (Adams, 2002; Cutler & Lleras-Muney, 2006; Hummer & Lariscy, 2011; BLS, 2018b; NCES, 2019). Similarly, steady employment has been found to be associated with better mental health and physical health well as higher income (Canivet et al., 2016; Hergenrather, Zeglin, McGuire-Kuletz, & Rhodes, 2015a, 2015b; Vancea, & Utzet, 2017). Moreover, limited evidence suggests that individuals who experience long-term disconnection have worse social and economic outcomes in young adulthood than their counterparts (Besharov & Gardiner, 1998; Lewis & Gluskin, 2018) – with the most recent analysis indicating lower income, home ownership, and higher unemployment rates (Lewis & Gluskin, 2018).

Societal impacts. At a societal level, studies have estimated staggering social and economic costs associated with having a significant minority of young people disconnected from both of these post-high school institutions. For example, one study found that in 2013, there were 5.5 million disconnected youth in the U.S., with an estimated annual sum of direct costs for incarceration, Medicaid, Supplemental Security Income, and public assistance payments for these youth that totaled $26.8 billion dollars (Lewis & Burd-Sharps, 2015). Similarly, research conducted by economists Belfield, Levin, and Rosen (2012) estimated the annual federal fiscal impact of 6.7 million disconnected youth at $32 billion – with state and local governments losing approximately $61 billion annually. Those estimated costs come from lost earnings, lost taxes, and costs associated with crime, health, and public assistance (Belfield, Levin, & Rosen, 2012). These societal costs, along with the rapidly increasing older adult population (i.e., those 65 years and older), make it particularly important that young adults are engaged in the labor force (Ortman, Velkoff, & Hogan, 2014).

Relevance to social work. As a profession, social work is tasked with enhancing individual and societal well-being, particularly for those who experience marginalization or oppression (NASW, 2008). Recognizing the potential for worse social and economic well-being at the individual and societal level (Canivet et al., 2016; Cutler & Lleras-Muney, 2006; Hummer & Lariscy, 2011; Lewis & Burd-Sharps, 2015; Lewis & Gluskin, 2018), the issue of connectedness to education, training, and employment, then, should be of particular concern to social workers. Studying connectedness to school or work during the transition to adulthood is crucial to develop interventions that reduce the individual and societal impact associated with youth disconnectedness. However, as will be discussed further in Chapter II, connections to those institutions vary based on age, family socio-economic status, race, marital and parenting

status, and disability status. As such, disconnection among youth is, at its core, an issue of social and economic justice.

Social work is well positioned to contribute to this scholarship because our profession embraces the person-in-environment perspective. We recognize that it is not person *or* environment, but rather the combination that influences how one develops and functions. In particular, professional social work values such as the importance of human relationships, dignity and worth of the person, and, social justice (NASW, 2008) demand attention be paid to understanding whether there are different developmental trajectories of connectedness to school or work, how those might be related to later adult outcomes, and the relationship to cumulative inequality beginning early in life. For that reason, this study, which will utilize a person-centered approach, fits well with social works' person-in-environment perspective in order to elucidate patterns of connection to education and work during the transition to adulthood. A person-centered approach may help identify distinct subgroups of young people who may function similarly in a given situation and thus differently than other groups of young people in this transition period (Magnusson, 2003). Magnusson (2003) notes that "the overriding goal [of person-centered approaches] is not to arrive at strong predictions of individuals' life courses but to understand and explain principles underlying developmental processes and mechanisms operating in these processes" (p. 5).

Sociopolitical context. The growing focus in the United States on whether or not individuals are "connected" to education, training, or employment during the transition to adulthood cannot be separated from the strong, underlying values of "rugged individualism" and "self-sufficiency" that permeate our society. Within the U.S., the ideology of individualism has long been prominent (Segal, 2016). Others have written extensively about how this belief has

shaped societal perceptions and definitions of issues and corresponding responses by government entities, at all levels (e.g., Trattner, 2007). Individualism is often manifested through use of concepts such as "independence" and "self-sufficiency," and nowhere is this more salient than in discussions about what it means to be a disconnected youth. The common markers of adulthood tout social roles and transitions that signify independence from both family and government assistance – finishing education, obtaining employment, establishing an independent residence, and forming a family. Research on emerging adulthood highlighted that those common markers may not reflect what young adults today see as being an adult; however, that research continues to point to the idea that financial "self-sufficiency" and making "independent" choices signals adulthood (Arnett, 2000, 2004).

The irony of independence, especially during late adolescence and young adulthood, can be seen when one examines the extent to which a majority of individuals are truly "independent." In the U.S., parents provide the bulk of support for their young adult children until they can establish an independent household, with many young people living at home and receiving financial assistance from their families into their mid to late twenties in forms such as cash support, childcare, or room and board (Furstenberg, 2010; Schoeni & Ross, 2005). For example, in 2017, 31 percent of young people ages 18 to 34 were living in a parental home (Vespa, 2017). Those with family support may be afforded a slightly longer transition period; however, those without family support may be thrust into adult roles early on. Further, while having some type of postsecondary education or training does increase earnings (NCES, 2019), it is critical to acknowledge that a large number of young people between 16 and 24 are not pursuing education at any given time. For instance, 16.3 million 16 to 24 years olds were not enrolled in school in October 2017 (BLS, 2018a). Moreover, it is important to acknowledge that simply being

employed does not predict economic self-sufficiency. In fact, in 2015, around 8.6 million Americans, or 5.6 percent of those participating in the labor force, met the definition of the "working poor," – i.e, spent at least 27 weeks in the labor force and still lived below the poverty line (BLS, 2018c).

Nonetheless, many studies in the U.S. and abroad about disconnection from school and work during this transition have been implicitly framed by theories of capital and or adolescent/young adult risk behavior (Besharov & Gardiner, 1998; Belfield, Levin, & Rosen, 2012; Bridgeland & Milano, 2012; Fernandes-Alcantara, 2015; Snyder & McLaughlin, 2008; Wight et al., 2010), while others have centered on risk and resilience or human capabilities (Burd-Sharps & Lewis, 2012, 2017; Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011; Lewis & Burd-Sharps, 2013, 2015). Thus, the response to disconnection from school and work has primarily focused on these areas – building capital and reducing risk.

Federal responses to connectedness to school or work. Considerable attention has been paid to assisting children and youth throughout the 20th century, though the focus of such programs have shifted over time and approaches have been fragmented and consistently underfunded (for a detailed account, see Fernandes-Alcantara, 2014). Perhaps the most well-known and encompassing policy that targets disconnected youth is the Workforce Innovation and Opportunity Act of 2014 (WIOA, 2014). The WIOA replaced the Workforce Investment Act of 1998 and authorized Youth Workforce Investment Activities (hereafter Youth WIA), Job Corps, and YouthBuild. All three of these programs are designed to connect individuals ages 16 to 24 with education or training, and support finding and securing employment. Another federal program targeting disconnected young people is the National Guard Youth ChalleNGe program. This program targets youth ages 16 to 18 who have dropped out of school. Like the WIOA-

authorized programs, National Guard Youth ChalleNGe is focused on helping youth complete schooling and enhance skills to aid in securing employment ("About Challenge," 2016).

While there have been a variety of federal programs authorized to address youth unemployment through training and education, the creation and administration of them has been fragmented (Fernandes-Alcantara, 2014) and there is limited evidence of their effectiveness. In recognition of this issue, the Tom Osborne Federal Youth Coordination Act of 2006 (P.L. 109-365) was passed to address the lack of comprehensive legislation and policies for vulnerable young people. However, the activities contained in this policy have yet to be funded (Fernandes-Alcantara, 2014), and this consistent lack of dedicated funding for comprehensive legislation continues. An executive order in 2008 led to the creation of the Interagency Work Group on Youth Programs [IWGYP] (Fernandes-Alcantara, 2014). The IWGYP created a website that provides access to information resources surrounding effective programs for young people and has initiated two rounds of Performance Partnership Pilots (P3) that allow recipients to waive original federal grant reporting requirements and blend federal funds targeted toward youth programs in order to assist disconnected young people (youth.gov). While the federal agencies involved with the IWGYP have contributed some money to assist with start-up costs (i.e., a few hundred thousand dollars), to this point, Congress has not appropriated any new federal money to support the P3 pilots. Rather, P3 pilots were designed to create flexibility of already awarded federal funds (youth.gov).

Study Rationale

Both abroad and within the U.S., considerable attention has been paid to disconnected youth over the past two decades. Research on trends in postsecondary education enrollment, persistence, and graduation, along with labor force statistics illustrate that rates of connection to

school or work during late adolescence and the early- to mid-twenties fluctuates. However, there is a dearth of longitudinal research in this area. Many of the existing studies about disconnected youth have focused on generating estimates to ascertain the scope of the issue and creating a profile to describe disconnected youth. These studies have been useful, insofar as they highlight how connectedness to school or work varies based on characteristics such as geography, race, ability, and parenting status. However, most have used cross-sectional data and that limits our understanding of [dis]connectedness to a point-in-time.

While some longitudinal research has acknowledged that there is heterogeneity within the broader population of those considered to be "disconnected youth," (Andersen, 2017; Kuehn, Pergamit, & Vericker, 2011; MaCurdy, Keating, & Nagavarapu, 2006), there remains a lack of understanding about the phenomenon of disconnected youth. It is critical to understand the diverse experiences of connections to school or work during the transition, particularly given some limited evidence that there are underlying patterns of connectedness to education and/or employment during the transition to adulthood (Kuehn, Pergamit, & Vericker, 2011; Macomber et al., 2008).

Thus, while it has been helpful to consider the scope of the problem and who might be experiencing it, lacking understanding about the totality of connectedness experiences across the transition from secondary school into young adulthood necessarily impacts how the issue is approached. As such, this study seeks to increase our understanding of connectedness to school or work during the transition into adulthood by elucidating differences in developmental trajectories of connectedness to school or work across the transition into adulthood. Characterizing these differences and examining how earlier experiences may be related to those

differences provides a foundation for examining how connectedness to school or work is related to later experiences and outcomes. That, in turn, may enable better targeting and program design.

Opportunities during the transition to adulthood are structured by factors such as social class, social networks, policies, and institutions, and the resulting pathways into adulthood result from decisions that young people make based on past experiences, present situation, and their evaluations of future prospects (Côté & Bynner, 2008; Heinz, 2009; Shanahan, 2000). In essence, there is a "dynamic interplay between person and context" (Shanahan, 2000, p. 682), which suggests that young people can be strategic during the transition when it comes to making choices, but they experience real constraints on their educational and employment opportunities based on structural factors and social factors. This study integrated life course perspective and cumulative inequality theory, which emphasize that human development continues across the life course, the importance of transitions, and the link between childhood experiences and life course trajectories (Elder, 1994; Ferraro, Shippee, & Schafer, 2009).

The current study builds on prior work done by Kuehn and colleagues (2009, 2011) in a couple of important ways. First, outside of these studies, the developmental heterogeneity of connectedness to school or work during the transition to adulthood has not been explored. Additional research is necessary to further our understanding of this phenomenon. For instance, while those authors explored developmental heterogeneity of this phenomenon between ages 18 and 24, the transition to adulthood may last through the late-twenties for some (Arnett, 2004). Exploring a wider age range may better reflect the transition process for many young people and could be an important part of identifying distinct, meaningful subgroups. Further, this study examines childhood experiences, which may better contextualize how early experiences may be associated with underlying trajectories of connectedness to school or work during the transition

to adulthood (Elder, 1994; Ferraro, Shippee, & Schafer, 2009). It is important to understand adolescent risk factors for disconnection; however, looking at factors earlier in childhood will provide information that may inform better targeting of early prevention and intervention efforts that bolster connectedness.

This study begins to fill the current gap in the scholarly literature by employing person-centered methods with a nationally representative longitudinal sample in order to examine the developmental heterogeneity of connectedness to education and/or employment across the transition into adulthood as well as childhood factors associated with connectedness experiences. Understanding how connectedness to school and/or work develops across the transition as well as the early experiences associated with differences in connectedness to school or work across the transition into adulthood is of critical importance for both prevention and intervention efforts.

Chapter II
Literature Review

Connectedness to education and/or employment during the transition to adulthood, and in young adulthood more broadly, are viewed as imperative for future economic self-sufficiency and well-being. Thus, it is not surprising that not being connected to either (i.e., being "disconnected") is viewed as problematic – both abroad and within the United States. However, the scholarly peer-reviewed literature base on disconnectedness of U.S. youth and young adults is scant, as illustrated by searches in academic databases such as Academic Search Complete, Psychology and Behavioral Sciences Collection, Education Abstracts, Vocational and Career Collection, ERIC, Criminal Justice, ProQuest Research Library, ProQuest dissertation and theses, Sociological Abstracts, PsycINFO, ERIC, Social Services Abstracts, Google Scholar, and Worldwide Political Abstracts using the terms "NEET," "disconnected youth," "opportunity youth," and "idle youth." Much of the literature specific to the U.S. exists in the form of policy reports.

This chapter reviews the state of the literature on the phenomenon of disconnected youth within the United States, presents evidence about factors associated with education and employment in young adulthood, and provides an overview of the theoretical orientations that guided this study,. Chapter II concludes with a discussion of the limitations of the current research and how this study began to fill those gaps.

Overview of Theoretical Frameworks Related to Research on Disconnected Youth

Many studies on disconnected youth in the U.S. do not explicitly state a theoretical framework. However, a few frameworks – such as human capital, risk and resilience, and human development and capabilities – emerge in some manner when reviewing this literature base.

Human capital framework. The focus on attachment to school or the labor force and the choice of individual characteristics included in many studies implicitly suggests a human capital orientation (e.g., Besharov & Gardiner, 1998; Belfield, Levin, & Rosen, 2012; Bridgeland & Milano, 2012; Fernandes-Alcantara, 2015; Wight et al., 2010). Theodore Schultz (1961) specified human capital as the skills and knowledge an individual has, which then affects their ability to engage in productive work. In other words, human capital might be defined as having skills and knowledge that are translated into economic value, both for an individual and for society (Schultz, 1961). Applying a human capital lens to disconnection leads to questions, analyses, and implications that suggest improving individual skills or knowledge. As noted in Chapter I, this particular orientation has resulted in policies and programs that target those particular areas.

Human capital and risk behavior frameworks. Analyses conducted by Kuehn and colleagues (2011) with a sample of individuals from the 1997 National Longitudinal Study of Youth were guided by theories of human capital (e.g., economic vulnerability directly impacting human capital) and risk behavior (e.g., economic vulnerability influencing risky behavior, which in turn, influenced human capital). In this study, the adult outcome examined was the trajectory of connectedness to school or work during the transition into adulthood. Economic vulnerability was proxied using family income and family structure, with the assumption that those factors influence human capital investments. Risky behaviors, which were assumed to be potential behavioral mechanism through which economic vulnerabilities impact adult outcomes were measured as a cumulative score of 13 risk behaviors as well as dropping out of school (Kuehn, Pergamit, & Vericker, 2011). The findings from this particular study indicated that economic vulnerabilities had a strong direct effect on connectedness to school or work and thus, targeting

those vulnerabilities might be important for enhancing connectedness to school or work during the transition into adulthood (Kuehn, Pergamit, & Vericker, 2011). However, family structure also had an indirect relationship with adult outcomes that operated through risky behaviors, suggesting that some targeted interventions toward children from single-parent families might be warranted (Kuehn, Pergamit, & Vericker, 2011).

Risk and resilience. Similarly, Hair and others (2009) framed their analyses of disconnected youth in a risk and resiliency framework. They included individual and family background characteristics associated with risks as well as potential risk buffers such as participation in a job training, job search, or school-to-work program, and family interactions in their analyses of the 1997 National Longitudinal Study of Youth. Findings suggested that, while background characteristics were associated with disconnection, those who participated in a program that sought to increase readiness for post-high school employment were less likely to be disconnected (Hair et al., 2009). The application of a risk and resilience framework attempts to capture protective factors outside of the individual or family that may mitigate other risk factors related to disconnection. However, the focus on adolescent risk and resilience factors may obscure earlier experiences and events that begin to shape life trajectories.

Human development and capabilities approach. Measure of America produced a series of reports using pooled American Community Survey data that sought to describe individual and geographic characteristics associated with disconnection that highlight the needs for policies that prevent disconnection beginning in adolescence or alleviate disconnection during the transition into adulthood (Burd-Sharps & Lewis, 2012, 2017; Lewis & Burd-Sharps, 2013, 2015). All reports stated their research on disconnected youth was rooted in Amartya Sen's human development and capabilities approach, which they described as viewing human

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development as improving individual well-being and enhancing choices and opportunities to lead lives they have chosen freely and value (Burd-Sharps & Lewis, 2012, 2017; Lewis & Burd-Sharps, 2013, 2015).

Summary. These frameworks – human capital, risk and resilience, and human development and capabilities – focus on individual development. While each has its merits, they do not account for human development being a continuous process that begins even before birth and continues until death. As such, studies guided by these frameworks may not adequately support the exploration of how connectedness experiences fit within larger life trajectories – which is an important piece of exploring how human agency (an individual's ability to act and influence events or individual functioning; Bandura, 2017) and social structure work together to influence life trajectories and outcomes and in considering policies and practices that support those connections. The following sections focus on empirical work surrounding connectedness to school or work during the transition into adulthood and present the theoretical orientations that guided this study.

Distinguishing Connectedness to School or Work during the Transition into Adulthood

Both nationally and internationally, transitions for adolescence into adulthood have garnered considerable attention over the past two decades – particularly among demographers and sociologists. While a variety of seemingly important "transition" milestones, such as age of living independently and age of marriage and family formation have been studied, the transition from secondary school to full-time employment has received a considerable amount of attention (Pollock, 2008). Not only has research established that there are individualized, non-linear patterns for youth making this transition, but it has also identified that the complexity and types of pathways between secondary school leaving and full-time employment have increased

(Furstenberg, 2010; Pollock, 2008; Settersten, Furstenberg, & Rumbaut, 2005; Shanahan, 2000).

Studies such as that conducted by Osgood et al. (2005), who used data from the Michigan Study of Adolescent Life Transitions (MSALT) to study pathways into adulthood, have highlighted these differences in transition. Osgood et al. (2005) utilized latent class analysis and included variables representing five transition domains to define pathways[1] (i.e., romantic relationship, residence, parenthood, employment, and education). They reported a six class solution to describe classes at age 24: "fast starters," "parents without careers," "educated partners," "educated singles," "working singles," and "slow starters." The authors focused on social stratification, as measured by family background and individual characteristics at age 18, as the predictors of these six pathways, while also acknowledging that individual agency (e.g., high educational expectations, strong academic performance) was associated with pathway membership by age 24. Yet, while the authors found that over half (56%) of the young people in this sample tended to cluster around the educated singles and educated partners pathways, perhaps exemplifying Arnett's (2004) theory of emerging adulthood, many other young adults followed different pathways (Osgood et al., 2005), which corresponds with findings from other longitudinal research (e.g., Sandefur, Eggerling-Boeck, & Park, 2005).

Findings from studies such as these supported the hypothesis that individuals' likely have distinct experiences related to connectedness to education and/or employment during the transition to adulthood. Yet, research about "disconnected youth" does not generally reflect the possibility of varied connectedness pathways. A few studies have begun to explore disconnection from school and work in a more nuanced way, and the results provide empirical support for

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[1] The authors use the words "paths" and "pathways" when they describe the latent clusters in this analysis. Those words might be misleading, as latent class analysis is a cross-sectional method. The data used here was measured at age 24. Thus, it represents participants transition experiences at age 24, but does not describe the pathways of those roles from teenage years through the mid-twenties.

approaching future research on connectedness differently. For example, Belfield, Levin, and Rosen (2012) distinguished disconnection by intensity and chronicity, which served to begin to move our understanding of connectedness to school or work from simply an either/or construct to more of a continuum – i.e., the extent to which someone might be connected. In fact, the acknowledgement that about half (3.4 million) of those who were included in a point-in-time estimate of disconnected youth actually did have some connection to school or work over time reflected that it is important to think about variations in connectedness over time (Belfield, Levin, & Rosen, 2012).

Similarly, two earlier studies attempted to distinguish between short- and long-term disconnection experiences (Besharov & Gardiner, 1998; Brown & Emig, 1999), reflecting concern for the duration and chronicity of disconnectedness, not just the occurrence itself. Short-term disconnection was defined as being disconnected for 26+ consecutive weeks in a given year for 1 to 2 years whereas long-term disconnection meant experiencing 26+ consecutive weeks of disconnection in a given year for 3 or more years (Besharov & Gardiner, 1998; Brown & Emig, 1999). According to this definition, Besharov and Gardiner's (1998) analysis indicated that about 13 percent of males and 16 percent of females in their sample experienced long-term disconnection. Similarly, Brown and Emig's (1999) found that around 11 percent of their NLSY79 sample experienced long-term disconnection. Further, the authors found that individuals between ages 16 and 23 who experienced short-term disconnection had similar economic and social outcomes in their late twenties when compared to their never-disconnected peers. However, individuals who had experienced long-term disconnection had worse economic and social outcomes (Brown &Emig, 1999).

In order to increase understanding about disconnection over time, MaCurdy, Keating, and Nagavarapu (2006) applied hazard-based duration analyses with a NLSY97 sample to examine the timing and duration of experiencing disconnection from age 16 to 23. The authors' defined disconnection two different ways for most analyses: (1) not working, not being enrolled in school and (2) a combination of not working, not being enrolled in school and not living with a spouse. Regardless of definition used, they found that it was common for individuals to experiences a spike in disconnection between 17 and 18 and then again around age 20. In general, connectedness to education or employment fluctuated for sample members, as evidenced by around 12 percent of the sample having accumulated 12 total months of disconnection (not necessarily consecutive) by age 20 – a figure that doubled to 25 percent by age 22; (MaCurdy, Keating, & Nagavarapu, 2006).

Further, the authors created duration distributions and ran analyses where disconnection was conceptualized as a phenomenon that may occur in "spells." For those analyses, youth were considered disconnected in a given month if they were disconnected in that month and for eight of the next eleven months. Results showed that around one-fifth of the sample experienced a first spell of disconnection by age 20, and by age 22, the proportion was closer to one-quarter. Overall, probabilities of experiencing an initial spell of disconnection were similar for males and females (MaCurdy, Keating, & Nagavarapu, 2006). However, the duration of disconnected spells varied, indicating heterogeneity in connectedness among sample members. For example, about 70 percent of youth who experienced a first episode of disconnection remained disconnected for over 12 months. While many of them reconnected, around 30 percent were still disconnected after 24 months, and a few (about 7 percent) were disconnected for over 36 months (MaCurdy, Keating, & Nagavarapu, 2006).

Moreover, MaCurdy, Keating, and Nagavarapu (2006) found that between one-quarter and one-third of young people who initially experienced a spell of disconnection went on to experience a subsequent spell. For example, within 24 months of experiencing an initial spell of disconnection, around 33 percent of males and 24 percent of females experienced another spell of disconnection. Additionally, by 36 months, 44 percent of males and 33 percent of females experienced another spell of disconnection. Thus, like the aforementioned studies, findings from this study illustrated that while having a first spell of disconnection by the early 20's was fairly common (i.e., between 20% and 25%), there was considerable variation in experiencing initial spells of disconnection as well as the length of disconnection spells and subsequent spells of disconnection (MaCurdy, Keating, & Nagavarapu, 2006).

Additionally, a recent study used data from the Panel Study of Income Dynamics (PSID): to examine long-term outcomes associated with both short and long periods of disconnection for two cohorts of 16-to-24 year olds (Lewis & Gluskin, 2018). Connectedness was defined as being employed or being a student currently (at time of survey) and/or having worked 500 or more hours in the past year. Analyses looked not only at current connectedness, but also at connectedness status for three adjacent PSID study waves. Using a series of multiple regressions, the authors regressed family income, employment status, self-reported health status, and wealth on connectedness at baseline – examining these outcomes 3-5 years, 8-10 years, and 13-15 years later. Results suggested there were large differences in family income, home ownership, and employment when comparing those who were connected to school or work at baseline and those who were not – particularly 13-15 years later (Lewis & Gluskin, 2018).

Finally, a few longitudinal studies have utilized latent variable models to explore heterogeneity in the developmental progression of school and/or work connectedness over time –

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with all three studies reviewed here commissioned by the Urban Institute (Kuehn, Pergamit, & Vericker, 2011; Kuehn, Pergamit, Macomber, & Vericker, 2009; Macomber, Kuehn, McDaniel, Vericker, & Pergamit, 2008). Macomber and others (2008) used group-based trajectory analysis (also referred to as latent class growth analysis) with administrative state earnings data from three U.S. states to explore heterogeneity in connectedness to work during the transition to adulthood among former foster youth. A four trajectory model of connectedness to employment was selected, with groups labeled as consistently-connected, initially-connected, later-connected, and never-connected, though details on how and why this four-class model was selected were not shared (Macomber, Kuehn, McDaniel, Vericker, & Pergamit, 2008). Trajectory shapes and the proportion assigned to each trajectory group were similar for youth in each. By their mid-20's, nearly half of former foster youth had fairly high predicted probabilities of employment (i.e., the consistently and later connected individuals). For instance, anywhere from 16% (North Carolina) to 22% (Minnesota) and 25% (California) were assigned to the consistently connected trajectory, indicating consistent connections to employment across this age range. About one-fifth of former foster youth in California and Minnesota (20% and 21%) and about 16% in North Carolina were assigned to the later connected trajectory, which illustrated initial disconnection with a steady climb to higher predicted probabilities of being connected by the early twenties.

Similarly, two papers, which seemed to present findings from the same analyses, included findings on developmental trajectories of connectedness to school or work for young people between 18 and 24 in the U.S (Kuehn, Pergamit, & Vericker, 2011; Kuehn, Pergamit, Macomber, & Vericker, 2009). Connectedness was operationalized as being employed or in school or both in the past week. Similar to Macomber and colleagues' study (2008), the authors selected a four-trajectory model described as consistently-connected, initially-connected, later-

connected, and never-connected. Like the Macomber et al. study, no details were provided about why that particular four-class model was selected (Kuehn, Pergamit, & Vericker, 2011; Kuehn, Pergamit, Macomber, & Vericker, 2009).

The sample included 2,041 individuals from the NLSY97 who were between ages 15 and 17 in 1997 and for whom outcomes were tracked through 2005 (Kuehn, Pergamit, & Vericker, 2011). Around 62 percent of young people were consistently-connected to either school or work for around 90 percent of the time between ages 18 and 24, and the remaining 38 percent were assigned to the other three trajectories. Around 12 percent were initially-connected, which meant that they initially had high rates of connectedness to school or work but that declined steadily over time. Fifteen (15) percent of young people were later-connected to school or work. These youth had consistently low connections to education (less than 20%) and had low levels of connectedness to employment early on but by age 23 almost 85% were employed. Finally, about 10 percent were never-connected, which depicts a subgroup with low levels of connectedness both to education and employment across the entire transition (Kuehn, Pergamit, & Vericker, 2011). While critical methodological details were lacking, this study illustrated that the phenomenon of connectedness to school and/or work warrants further exploration and description, in order to best serve those who would benefit from intervention.

Summary. While the merits of conceptualizing "disconnected youth" simply as those not employed and not enrolled in school warrants further attention that exploration was beyond the scope of the study. However, a couple of important implications were drawn related to the current conceptualization of disconnected youth as those ages 16 to 24 who are not employed and not enrolled in education. First, this prevailing conceptualization of disconnected youth prompts one to think about a disconnected youth being something someone is or is not, which

does not appear to be supported, at least for a majority of youth, when the phenomenon is conceptualized, defined, and measured longitudinally; rather it appears to be a process rather than a static state. Exploring differences in connectedness *across* the transition into adulthood increases our understanding of connectedness as a longitudinal process.

Second, findings from studies that have measured disconnection in ways that try to capture intensity, duration, or population heterogeneity indicate there may be distinct patterns of connectedness among young people (Belfield, Levin, & Rosen, 2012; Kuehn, Pergamit, & Vericker, 2011; Macomber, Kuehn, McDaniel, Vericker, & Pergamit, 2008; MaCurdy, Keating, & Nagavarapu, 2006). Results from these studies suggest that "disconnection" from both education and employment is common among individuals between the late teens and mid-twenties and that the temporality, chronicity, and pattern of connectedness varies. These findings reinforced the present study's hypothesis that there may be subgroups of young people with differences in the developmental trajectories of connectedness to education and employment during the transition to adulthood.

Characteristics Associated with Disconnected Youth

There is a dearth of research on the phenomenon of disconnected youth in the U.S., thus, this section draws from the disconnected youth literature base as well as relevant education and employment literature. This is not an exhaustive review of the empirical evidence from all areas. Rather, this section includes a compilation of individual and family characteristics found to be associated with connectedness to education and employment among young people in the U.S.

Demographic characteristics. A number of demographic characteristics have been identified to profile disconnected youth. Those characteristics include belonging to a racial/ethnic minority groups, particularly Native American or Black, non-Hispanic youth; age;

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prior criminal involvement; being foreign-born; living in poverty and use of government

assistance; having a disability; being a teenage mother; and having low levels of educational

attainment (Belfield, Levin, & Rosen, 2012; Besharov & Gardiner, 1998; Brown & Emig, 1999;

Burd-Sharps & Lewis, 2012; Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015; Hair et

al., 2009; Lewis & Burd-Sharps, 2013; Lewis & Burd-Sharps, 2015; MaCurdy, Keating,

Nagavarapu, 2006; Ross & Prchal Svajlenka, 2016; Wight, et al., 2010). An overview of

empirical evidence related to these factors is presented below.

Age. Several studies have found that rates of disconnection tend to be higher for older

youth (Fernandes-Alcantara, 2015; Hair et al., 2009; MaCurdy, Keating, Nagavarapu, 2006;

Ross & Prchal Svajlenka, 2016). Findings from MaCurdy, Keating, Nagavarapu's (2006)

analysis of NLSY97 data also showed a sharp increase in rates of disconnectedness among males

and females between 17 and 19, with higher rates for Black males and females, which then

decreased or remained steady until ages 21 to 22 when there was another sharp rate increase.

Ross and Prchal Svajlenka's (2016) recent analysis of the 2012-2014 ACS microdata found that

74 percent of the estimated 3 million disconnected 16 to 24 years old in the U.S. between were

between ages 20 and 24. Results from earlier studies have slightly different findings, likely based

on different cohort experiences. Results from an early study using a sample of 4,000 NLSY79

youth who were ages 14-16 at baseline and 26-28 in the 1991 follow-up, found that among all

racial and ethnic groups, rates of disconnection peaked around age 19 and then leveled off or

decreased slightly through age 23 (Besharov & Gardiner, 1998).

Race/ethnicity and nativity. In general, American Indian/Alaska Native, Black, and

Hispanic individuals have higher rates of disconnection from school and work than White and

Asian individuals, regardless of age (Annie E. Casey Foundation, 2009; Burd-Sharps & Lewis,

2017; Hair et al., 2009; Lewis & Burd-Sharps, 2015; NCES, 2017b; Wight et al., 2010);

however, one study found that the difference is more pronounced among those ages 20 to 24 –

with 31 percent of American Indian/Alaska Native individuals, 26 percent of Black individuals,

20 percent of Hispanic individuals, 14 percent of those reporting two or more races, 13 percent

of White individuals, and 12 percent of Asian individuals meeting the definition of disconnected

(NCES, 2017b).

Examining trends of disconnected youth by race, from 1988 through 2014 Black, non-

Hispanic males had an average rate of disconnection 6.6 percentage points higher than White,

non- Hispanic males and 4.7 percentage points higher than Hispanic males (Fernandes-

Alcantara, 2015). Black, non-Hispanic and Hispanic females also consistently had higher rates of

disconnection over time, though rates dropped drastically for both groups from 2011 forward.

Yet, Black, non-Hispanic females' average rate of disconnection was still around 4 percentage

points higher than white females in 2014 (Fernandes-Alcantara, 2015).

Racial and ethnic differences have also been found in longitudinal studies of

disconnected youth. MaCurdy, Keating, and Nagavarapu (2006) found a strong statistically

significant, negative association between race and experiencing a spell of disconnection (i.e.,

being disconnected for at least 9 out of 12 consecutive months). Specifically, results showed that

Black and Hispanic individuals, male and female, had statistically significantly higher

probabilities of experiencing an initial spell of disconnection than White youth. However, the

increased probability was larger for Black males and females than for Hispanic males and

females (MaCurdy, Keating, & Nagavarapu, 2006). However, when parental education level was

included in the models, MaCurdy, Keating, and Nagavarapu (2006) found that, while still

statistically significantly related to disconnection, the magnitude of association between race and

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disconnection status decreased. Additionally, Kuehn, Pergamit, Macomber and Vericker's (2011) trajectory analysis of the NLSY97 found that when controlling for other socio-demographic variables, being African American was negatively, statistically significant related to being in the consistently-connected trajectory group. In other words, African American's between 18 and 24 were less likely to have been connected to either education or employment consistently across the transition than White young adults.

Likewise, Hair et al.'s (2009) analysis of NLSY97 data showed that, when controlling for individual and family-level factors, non-Hispanic Black youth were at statistically significantly higher risk of disconnection. Finally, a study using Add Health data found that, prior to school context being included in the model, being Black was associated with 66 percent higher odds of being disconnected. However, in the full model that included individual, family, school, and neighborhood factors, being Black was no longer statistically significant related to disconnection, though being Native American was associated with lower odds of being disconnected (Rendon, 2014). Rendon (2014) suggested that, based on these results, the higher odds of disconnection among Black youth were related not only to family background and individual academic performance, but also to type and racial composition of school attended.

Gender. Studies have mixed findings regarding the association of gender with disconnection. Some studies have found a higher rates of disconnection for females (Bridgeland & Milano, 2012; Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015; Rendon, 2014), whereas others have found that males are more often disconnected youth (Annie E. Casey Foundation, 2009; Snyder & McLaughlin, 2008; Wald & Martinez, 2003) and some have found roughly equal proportions (Hair et al., 2009). These conflicting findings may have to do with gender differences in education and labor force participation –with young adult females tending

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to have higher postsecondary education enrollment rates (NCES, February 2019) but lower

employment rates than males (Danziger & Ratner, 2010) or with martial or parenting status

(Fernandes-Alcantara, 2015; MaCurdy, Keating, & Nagavarapu, 2006) and age (Ross & Prchal

Svajlenka, 2016). For example, an analysis of pooled data from the 2012-2014 ACS microdata

found that when disconnected youth were split into two age groups, roughly equal proportions of

male and female were disconnected as teenagers (ages 16-19); however, among 20 to 24 year

olds, females rates of disconnection were around 11 percentage points higher than their male

peers (Ross & Prchal Svajlenka, 2016).

Results from the studies on education also have conflicting results when it comes to

gender, as illustrated by a comprehensive review of 203 empirical studies on high school dropout

conducted between 1983 and 2007 (Rumberger & Lim, 2008). In a review of 102 analyses where

gender was included as a predictor of high school dropout, 27 found that females had higher

rates of dropout than males, 20 found that females had lower dropout rates, and 55 found no

statistically significant relationship between gender and dropping out (Rumberger & Lim, 2008).

One study that looked at education and employment outcomes found that females were likely

than males to be persistently unemployed (Ainsworth & Roscigno, 2005). Research on

employment has found gender differences in employment as well as educational attainment. In

particular, since the 1970's, there has been an increase in labor force participation and

postsecondary educational attainment for women, though women continue to be employed at

lower rates than men (Danziger & Ratner, 2010).

Parenthood. Findings that females are more likely to be disconnected may stem from the

fact that disconnected females have higher rate of parenthood than connected females.

Fernandes-Alcantara (2015) presented disconnection rates by parenting status, which illustrated

that when females with children were removed from the analysis, females had lower rates of disconnection than males (Fernandes-Alcantara, 2015). Other literature on disconnected youth has also found differences in connectedness based on parenting status. According to Wight et al.'s (2010) analysis, rates of parenthood were over two times higher for disconnected youth as compared to their connected peers. Likewise, an analysis of 2015 ACS data, showed that disconnected female were four times more likely to be parents than connected (Burd-Sharps & Lewis, 2017).

Moreover, longitudinal studies have found associations between early parenthood and disconnection. Being a teen parent was negatively associated with being a member of the initially-connected trajectory group (i.e., those who were highly connected early on and later became disconnected), but was not statistically significantly related to belonging to the other three groups (Kuehn et al., 2011). This was true for early studies as well. Using the NLSY79 dataset, two studies found that early parenthood was associated with longer term disconnection (ie., being disconnected for 26+ weeks out of the year for over 3 years) for males as well as females (Besharov & Gardiner, 1998; Brown & Emig, 1999).

Marital status. Further, MaCurdy, Keating, and Nagavarapu's (2006) analysis illustrated that gender differences in experiencing disconnection depended upon the definition of disconnected youth. When defined as not being employed and not working, a larger proportion of females were disconnected from their late teens to early twenties; however, when defined as not being employed, not working and not married, males were more often disconnected during their late teens – though, proportions were similar for both genders again by age 23. Examining further, by race, when disconnection excluded those who were married, White and Black females consistently had lower rates of disconnection than males across most ages between 16 and 23;

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this was not the case for Hispanic females, where there was more fluctuation. Concerning re-connecting and then subsequently disconnecting, there were no statistically significant differences by gender when considering marital status (MaCurdy, Keating, & Nagavarapu, 2006).

    Disability status. While physical health has not been included in studies on disconnected youth, disability status has been included in several studies. Descriptively speaking, disconnected youth have higher rates of disability than connected youth (Burd-Sharps & Lewis, 2012; 2017; Fernandes-Alcantara, 2015; Lewis & Burd-Sharps, 2013; 2015), though disability was defined differently by the data sources used. Several of these reports used data from the U.S. Census Bureau's American Community Survey (Burd-Sharps & Lewis, 2012; 2017; Lewis & Burd-Sharps, 2013; 2015), in which having a disability is defined as reporting any of six different types of difficulties: hearing difficulty, vision difficulty, cognitive difficulty, ambulatory difficulty, self-care difficulty, or independent living difficulty (U.S. Census Bureau, 2017a). For instance, using the 2013 ACS data, Lewis and Burd-Sharps (2015) found that rates of disability were three times higher among disconnected youth as compared to connected youth (15% versus 5%). Moreover, one study found gender difference, with disconnected males having higher rates of disability (18.0% for males versus 12.2 % for females; Burd-Sharps & Lewis, 2017). Another used the Current Population Survey Annual Social and Economic Supplement, which focuses on work-limiting disabilities (Fernandes-Alcantara, 2015). Specifically, if an individual did not work in the past year due to illness or disability, are covered by Medicare and less than 65 years old or received Supplement Security Income, or received Veteran's Administration disability income in the prior year they meet the criteria for having a severe work disability (U.S. Census Bureau, 2017b).

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Though definitions may be different, these findings on disability being associated with higher rates of disconnection from school and work aligned with research on employment and education, where statistics have consistently indicated lower levels of educational attainment and lower rates of employment among young people with disabilities (BLS, 2015; BLS, 2017).

Mental health and health. Little of the research on disconnected youth within the U.S. has included variables such as mental health or general health status. One study on disconnected youth included overall health in the analysis and found that disconnected youth were more likely have poor health status, as reported by their parents during adolescence (Hair, et al., 2009). Some studies have examined the relationship between health and high school dropout. One such study found that, controlling for socio-demographic variables, students reporting excellent and very good health had lower odds of dropping out of high school (Roebuck, French, & Dennis, 2004). Other studies have also found that poor health during adolescence is related to lower educational attainment (Hale, Bevilacqua, & Viner, 2015).

When variables such as mental health have been included in analyses, results have been mixed – even when using the same dataset. For instance, Hair et al. (2009) did not find mental health in early adolescence to be statistically significantly related to being a disconnected youth (Hair et al., 2009). On the other hand, Kuehn and colleagues (2011) also used the NLSY97 for their group-based trajectory analysis of connectedness and found that better mental health was statistically significantly associated with a higher likelihood of being in the consistently-connected trajectory; mental health scores, however, were not statistically significantly related to being a member of the other three connectedness groups. This reflects the potential importance of exploring differences in connectedness experiences rather than considering connectedness as a static outcome.

Mental health problems have also been associated with poorer educational and employment outcomes. For instance, having a psychiatric disorder has been found to be positively associated with dropping out of high school (Barbaresi, Katusic, Colligan, Weaver, & Jacobsen, 2007; Dunham & Wilson, 2007; Esch et al., 2014). Likewise, young men with more mental health problems during adolescence were less likely to be employed than those without mental health problems (Wiesner, Vondracek, Capaldi, & Porfeli, 2003).

Delinquency and criminal activity. Exhibiting behaviors such as engaging in delinquent activities, hanging out with peers that engage in delinquent acts, and being arrested and/or convicted of a crime have all been found to be associated with being a disconnected youth (Belfield, Levin, & Rosen, 2012; Hair et al., 2009; MaCurdy, Keating, & Nagavarapu, 2006). MaCurdy and colleagues (2006) found that having been convicted of a crime prior to one's first spell of disconnection was statistically significantly associated with an increased probability of experiencing subsequent spells of disconnection. Likewise, Hair et al. (2009) found that associating with peers who engaged in delinquent behavior was associated with being disconnected. Similarly, Rendon (2014) found that school expulsion was associated with 79 percent higher odds of being disconnected and 85 percent higher odds of dropping out of high school. This coincides with other research that has found youth who had problem behaviors in school were more likely to drop out of high school (Hickman, Bartholomew, Mathwig, & Heinrich, 2008; Jimerson, Egeland, Sroufe, & Carlson, 2000; Leventhal, Graber, & Brooks-Gunn, 2001; Rumberger, 1995), and that involvement in various types of delinquent activities (such as drug use and skipping school) are negatively related to educational outcomes (Ensminger, Lamkin, & Jacobson, 1996; Rumberger & Lim, 2008; Tanner, Davies, & O'Grady,

1999). Further, some research has found that juvenile arrests in adolescence also decreased likelihood of being employed in early adulthood (Wiesner, Vondracek, Capaldi, & Porfeli, 2003)

Cognitive ability. Some studies have found a negative association between cognitive ability and connectedness to school or work in the transition into adulthood. For instance, Besharov and Gardiner (1998) found that among a sample of 16 to 23 years olds in the NLSY79 cohort, low scores on the Armed Forces Qualifying Test (AFQT) was statistically significantly related to long-term disconnectedness (i.e., being disconnected for 26+ weeks out of the year for a total of 3 or more years) – even when controlling for family background characteristics. Kuehn and colleagues (2011) group-based trajectory analysis of the NLSY97 data also included a similar measure for cognitive ability. They found that having higher cognitive ability was statistically significantly negatively associated with being in the never-connected and later-connected groups and positively associated with being a member of the consistently-connected group (Kuehn, Pergamit, & Vericker, 2011). Finally, regarding school performance, Hair et al. (2009) found that among their NLSY97 sample, having poor grades in 8th grade was positively associated with being disconnected. Similarly, Rendon (2014) found that having a higher high school GPA was statistically significantly associated with 30 percent lower odds of being disconnected.

This corresponds with research on educational attainment and employment. Having lower cognitive ability and/or lower standardized achievement scores have consistently been associated with poorer connections to education, particularly school dropout and lower educational attainment (Daniel, Walsh, Goldston, Arnold, Reboussin, & Wood, 2006; Eckstein & Wolpin, 1999; Hickman, Bartholomew, Mathwig, & Heinrich, 2008; Rumberger, 1995). Studies have

also found lower cognitive ability to be associated with higher risk of unemployment (Caspi et al., 1998; Rivera-Batiz, 1992).

Level of education. Research has found that lower educational attainment is associated with lower odds of employment and employment stability (Klerman & Karoly, 1995; Leventhal, Graber, & Brooks-Gunn, 2001). Thus, it is not surprising that having lower levels of educational attainment has been found to be a characteristic associated with disconnected youth (Besharov & Gardiner, 1998; Bridgeland & Milano, 2012; Brown & Emig, 1999; Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015; Lewis & Burd-Sharps, 2015; Wight et al., 2010). Wight et al. (2010) defined young people as disconnected if they were unemployed, not enrolled in education, and had no degree higher than a high school diploma. The authors further disaggregated the educational attainment of the disconnected youth in their 2010 CPS ASEC sample of 18 to 24 year olds and found varying degrees of education. For instance, while 62 percent had graduated from high school, 6.2 percent had gone to 12th grade but not graduated, almost 13 percent reported 11th grade as their highest level of education, and 19 percent had dropped out prior to 11th grade. Fernandes-Alcantara's (2015) analysis of the 2014 CPS ASEC data illustrated that over one-quarter of 19-24 year old who were disconnected in 2014 had less than a high school diploma, as compared to less than 8 percent of connected youth, and the highest level of educational attainment for another 55 percent was a high school diploma or GED – almost double the percentage of connected youth. Similarly, among Bridgeland and Milano's (2012) sample of 613 disconnected youth, 40 percent of 16 to 24 year olds, and 36 percent of 19 to 24 year olds, did not have a high school diploma or equivalent.

Income. Having lower educational attainment is associated with lower earnings in the U.S. (Bureau of Labor Statistics, 2018b). Since disconnected youth are not employed, by

definition, it is intuitive that their income would be lower. Therefore, results illustrating that disconnected youth have higher rates of poverty and lower income are not surprising. A study using 2010 CPS ASEC data highlighted that disconnected young adults between 18 and 24 were two times more likely to live in poverty than connected young adults. This gap has been persistent. In fact, using 2014 CPS ASEC data, Fernandes-Alcantara (2015) found rates of poverty among disconnected youth ages 16 to 24 in the U.S. to be two and a half times higher than for connected youth (44% versus 17%). The gap was larger when broken down by age group -- three times as many disconnected youth experienced poverty between ages 22 and 24 as compared to connected youth (51% versus 17%; Fernandes-Alcantara, 2015). Similarly, analysis of 2015 ACS data showed that, compared to connected youth, disconnected youth were almost two times more likely to come from households with incomes below the federal poverty line (41% versus 27%; Burd-Sharps & Lewis, 2017). Kuehn and colleagues' (2011) group-based trajectory analysis of NLSY97 data found that higher income as a percent of the federal poverty level was statistically significantly associated with lower odds of being in the never-connected trajectory group and higher odds of being a member of the consistently-connected group.

There are important racial differences in the association between income and disconnection. For instance, Burd-Sharps and Lewis (2017) found that among young people with the same income level, all minority racial and ethnic groups except Asian Americans were more likely to be disconnected than White individuals. As an illustration, their results showed that the probability of becoming disconnected for a Native American young person with an income around five times higher than the federal poverty level was about the same as for a White youth with an income below the federal poverty level; findings were similar for Black youth (Burd-Sharps & Lewis, 2017).

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Family background. Research on disconnected youth from the U.S. has also highlighted the critical role that family background has in relation to disconnected youth. However, only studies utilizing longitudinal datasets, the NLSY79, NLSY97, or Add Health, specifically, have examined associations between family-level characteristics and connectedness (i.e., Besharov & Gardiner, 1998; Brown & Emig, 1999; Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011; MaCurdy, Keating, & Nagavarapu, 2006; Rendon, 2014). Within these analyses, parent education level, family receipt of government assistance, family income and/or poverty status, and family structure have been found to be associated with connectedness to education and/or employment (Besharov & Gardiner, 1998; Brown & Emig, 1999; Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011; MaCurdy, Keating, & Nagavarapu, 2006).

Educational literature has emphasized family background for decades. The Equality of Educational Opportunity study, considered one of the most important studies in this area, highlighted the strong relationship between family background and educational outcomes (Coleman et al., 1966). The report indicated that family background was more important than school composition or resources as it related to educational outcomes (Coleman et al., 1966). Since then, considerable research has found family background factors (i.e., parent education level, family structure, family income, family socioeconomic status, residential mobility) to be related to educational outcomes (Ainsworth & Roscigno, 2005; Barnard, 2004; Coleman et al., 1966; Daniel, Walsh, Goldston, Arnold, Reboussin, & Wood, 2006; Entwisle, Alexander, & Olson, 2005a; Entwisle, Alexander, & Olson, 2005b; Roebuck, French, and Dennis, 2004; Swanson & Schneider, 1999). Empirical evidence related to family-level factors and connectedness to education and/or employment is presented below.

Family socioeconomic status (SES). Though research on disconnected youth does not tend to create a composite measure for family SES, education studies frequently do. Often, family SES is a combination of parent education level, family income, and/or parent employment status. Research on education has highlighted the critical role that family SES plays in educational outcomes. For instance, the Coleman report (Coleman et al., 1966) found that after controlling for individual, family, and school factors, family SES was the strongest predictor of educational outcomes. Ainsworth and Roscigno's (2005) analysis of the NELS:88 showed that higher family SES was negatively associated with dropping out of high school and positively associated with attending a four-year college. Likewise, lower family SES was positively associated with dropping out at age 16 and age 17 in Entwisle, Alexander, and Olson's (2005b) analysis of the Beginning School Study (BSS) data. Moreover, recent studies have found that statistically significant racial and ethnic differences in educational outcomes decrease, disappear or even reverse once family SES was controlled (Ainsworth and Roscigno 2005; Allensworth, 2005; Crowder & South, 2003; Daniel, Walsh, Goldston, Arnold, Reboussin, & Wood, 2006; MaCurdy, Keating, & Nagavarapu, 2006).

Studies on disconnected youth often examined parent education level, parent employment, and family income as separate variables. Studies have found that higher parental education was statistically significantly associated with education outcomes such as completing high school and college enrollment (Anguiano, 2004; Barnard, 2004; Rosenthal, 1998). Thus, it may not be surprising that having a parent with low levels of educational attainment has been found to be associated with being a disconnected youth (Besharov & Gardiner, 1998; Brown & Emig, 1999; Hair et al., 2009; MaCurdy, Keating, & Nagavarapu, 2006, Rendon, 2014). Similarly, among the reportedly national representative sample of 613 disconnected youth

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surveyed by Bridgeland and Milano (2012), 16 percent reported that neither of their parents had graduated from high school, while around 60 percent had at least one parent with a high school diploma or equivalent. In their bivariate analysis of factors associated with long-term disconnectedness, Besharov and Gardiner (1998) found that having a parent that dropped out of high school was associated with three times higher odds of experiencing long-term disconnection (25% versus 9%). MaCurdy, Keating, and Nagavarapu's (2006) longitudinal analysis illustrated that, for youth from all races, having a parent with higher levels of education was associated with lower probability of experiencing an initial episode of disconnection. Conversely, Kuehn, Pergamit, Macomber and Vericker's (2011) multivariate analysis did not find any statistically significant relationships between parent educational attainment and belonging to any of the four connectedness trajectory groups.

Additionally, having an employed parent has also been found to be positively, statistically significantly related to completing high school (Barnard, 2004) and enrolling in college (Fomby, 2013). Only two studies on disconnected youth indicated that parental employment status was included in their analyses, and their results differed. Hair et al. (2009) found that youth who had an unemployed parent during adolescence (at baseline data collection when youth were ages 12 to 14) had close to two time's higher rates of disconnection between ages 16 and 23. Conversely, Kuehn, Pergamit, Macomber and Vericker's (2011) did not find a significant relationship between having at least one parent employed full-time and belonging to any of the four connectedness trajectory groups.

Moreover, growing up in a poor household has been found to be associated with being disconnected (Besharov & Gardiner, 1998; Brown & Emig, 1999; Fernandes-Alcantara, 2015; Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011). One of the first studies on disconnected

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youth in the U.S. found that young people in their NLSY79 sample whose families were poor during adolescence (between ages 13 and 15, specifically) had three times higher rates of long-term disconnection by age 23 (Brown & Emig, 1999). Studies have also examined the association between family receipt of government assistance and disconnection. Besharov and Gardiner (1998) found a strong, bivariate relationship between coming from a family that received government assistance and experiencing long-term disconnection (i.e., being disconnected for 26+ weeks in a year for 3 or more years). Likewise, results from Brown & Emig's showed between three and four times higher rates of long-term disconnection for young people whose families received government assistance during adolescence (34% of males, 40% of females versus 10%).

Multivariate analyses examining government assistance and disconnection have produced conflicting results. For instance, as it specifically relates to trajectories of connectedness to education and employment in young adulthood, Kuehn et al.'s multivariate analysis (2011) did not find any statistically significant relationships between receipt of government assistance and membership in any connectedness trajectory. Conversely, after controlling for individual, family, school, and neighborhood factors, Rendon (2014) found that youth whose parents' reported receiving public assistance had 39 percent higher odds of being disconnected. Similarly, MaCurdy, Keating, and Nagavarapu (2006) found a strong association between parental receipt of government assistance and higher disconnection rates among youth.

Family structure. In research on education and on disconnected youth, family structure has been examined using variables such as type and combination of parental figures in the household (i.e., single-parent, two-parent, step-family) and by household size or number of children under 18 (Ainsworth & Roscigno, 2005; Anguiano, 2004; Brown & Emig, 1999; Hair et

al., 2009; Kuehn, Pergamit, & Vericker, 2011; Rumberger, 1995). For instance, having more siblings has been found to be associated with dropping out of high school (Ainsworth & Roscigno, 2005). Likewise, living in a two-parent home was negatively associated with dropping out in multiple studies (Ainsworth & Roscigno, 2005; Anguiano, 2004), though one study has found important differences by race once family economic variables were controlled (Boggess, 1998). Indeed, after controlling for economic variables, family structure was only statistically significant related to completing high school for Black females (Boggess, 1998).

Results from Kuehn and colleagues' (2011) study on connectedness on education and employment between ages 18 and 24 showed that, as compared to families with two biological parents, youth from families with one biological parent had statistically significantly higher odds of belonging to the never-connected and initially-connected trajectories. Similarly, larger household size was positively statistically significantly associated with being initially-connected but not with any of the other connectedness groups (Kuehn, Pergamit, & Vericker, 2011). Another study on disconnected youth found that having older siblings was associated with higher rates of disconnection as was living in a household with a single-parent, step-parent, or no parent (Hair et al., 2009).

Other parental factors. Results from Kuehn et al.'s (2011) study on connectedness to education and employment between ages 18 and 24 did not find any statistically significant relationship between having a supportive parent, as measured in adolescence, and being a member of any of the four connectedness trajectory groups. Likewise, controlling for individual-level and family factors, Hair et al. (2009) found no statistically significant relationship between parental monitoring, parent-child relationships, or parent involvement in school during adolescence, and disconnection from school or work during the transition into adulthood.

However, the quality of caregiving and relationships has been found to be related to educational outcomes in other studies (e.g., Jimerson, Egeland, Sroufe, & Carlson, 2000).

Other analyses have found that parental involvement in school during childhood and adolescence was associated with overall educational attainment as well as either college attendance or stable employment in early adulthood (Fomby, 2013; Jimerson, Egeland, Sroufe, & Carlson, 2000; Ou, Mersky, Reynolds, & Kohler, 2007). Parent-child discussions about academics also have been found to be associated with the academic achievement scores (Stewart, 2008). Likewise, parents' educational aspirations and expectations were also statistically significantly related to college enrollment and completion (Byun, Irvin, & Meece, 2012; Fomby, 2013), though findings related to parent educational expectations and educational outcomes have been mixed (Rumberger & Lim, 2008). Rumberger and Lim's (2008) systematic review of educational literature found among analyses that included this variable, 11 found no statistically significant relationship with dropping out and 15 found a negative statistically significant relationship.

Childhood correlates of young adult education and employment. All of the studies specifically examining disconnected youth included demographic characteristics measured during adolescence and/or young adulthood. During the course of this study, no literature was found that examined childhood factors as they related to being a disconnected youth during the transition into adulthood. Some of the above studies from the education or employment literature referenced in the preceding section may have measured demographic factors in childhood as well as during adolescence. This section provides an overview of evidence from literature that specifically examined childhood correlates of educational attainment and employment in young

adulthood – both personal characteristics and resources as well as contextual factors –, which served to inform the second research question and variables to be included.

Prior research on connectedness to education or employment in young adulthood indicates that there is value in looking at both childhood and adolescent factors related to school or work outcomes during the transition to adulthood. Some of this research has been framed using a life course perspective and examined both childhood and adolescent factors as they relate to young adult outcomes. Results have been mixed. For instance, results from two studies indicated that childhood factors were associated with educational and employment outcomes on a bivariate level, but after adding adolescent factors, they became non-significant (Caspi et al., 1998; Wiesner, Vondracek, Capaldi, & Porfeli, 2003). Those findings might be interpreted to mean that, while childhood experiences were important, later (proximal) experiences accounted for most of the relationship with young adult economic outcomes. However, another study found that some childhood factors, such as school readiness in early childhood and grade retention during middle childhood, remained statistically significant even when adolescent factors were included in the analysis (Leventhal, Graber, & Brooks-Gunn, 2001). Moreover, some findings from research on education implies that educational trajectories remain fairly stable for young people as they move through compulsory schooling, thus indicating that childhood experiences themselves matter long-term (Alexander, Entwisle, & Dauber, 2003; Dauber, Alexander, & Entwisle, 1996; Hickman, Bartholomew, Mathwig, & Heinrich, 2008). Finally, one study, which applied a transactional developmental model, found that early experiences informed both adolescent antecedents of educational outcomes as well as the outcome itself (Jimerson, Egeland, Sroufe, & Carlson, 2000).

Personal traits and resources. Some studies on education outcomes have included variables such as childhood temperament, self-concept, or socio-emotional maturity, which may be thought of as capturing personal traits or resources that individuals may draw from (O'Rand, 2006). One study – concerned with social stratification – examined how personal resources and social contexts, as measured in first grade, were associated with educational outcomes at age 22. Data from the Beginning School Study, which randomly sampled public school students who were starting first grade in Baltimore in 1982 was analyzed for this study (Entwisle, Alexander, & Olson, 2005a). Having a positive temperament or disposition was statistically significantly positively associated with educational attainment at age 22 (Entwisle, Alexander, & Olson, 2005a). Further, a positive temperament was associated with lower odds of dropping out of school higher odds of enrollment in a four-year college. Finally, cognitive ability was positively associated with enrolling in a four-year college (Entwisle, Alexander, & Olson, 2005a). The conceptual framework for this study emphasized life course perspective and cumulative advantage – particularly with its focus on looking at early school experiences rather than centering on adolescent factors.

Another study utilized data from the Chicago Longitudinal Study, which focused on a sample of children who participated in an early intervention program in high-poverty inner city neighborhoods (Barnard, 2004). The authors found that, while holding demographic characteristics, family background, and parent involvement constant, cognitive ability, as measured by word analysis in kindergarten, and socio-emotional maturity, as measured in 1st grade, were statistically significantly, positively associated with higher educational attainment by age 20, and socio-emotional maturity was related to high school completion by age 20 (Barnard, 2004).

Additionally, a different study controlled for family- and child-level early, middle, and adolescent experiences, and found that academic achievement and problem behaviors in first grade were statistically significantly related to dropping out of school by age 19 (Jimerson, Egeland, Sroufe, & Carlson, 2000). This sample was small and limited to families deemed at-risk during the mother's pregnancy, for poverty or other reasons; however, the results seem to correspond with the larger samples used in other studies.

Though there was mixed evidence, a review of literature on correlates of school dropout found that many studies assessing the relationship between academic self-concept, self-esteem, and locus of control have not found statistically significant relationships with dropping out of school (Rumberger & Lim, 2008). However, school misbehavior, particularly in elementary and middle school analyses, has been found to be statistically significantly related to dropping out of school in some studies. Additionally, when included, very good or excellent health was often associated with lower odds of dropping out of school (Rumberger & Lim, 2008).

Childhood factors associated with employment outcomes have been studied less often. One study, however, utilized a life course capital framework and highlighted the importance of looking at childhood predictors of employment in young adulthood. Caspi and others (1998) used data from the Dunedin Study (a longitudinal study of New Zealanders born between 1972 and 1973) to examine preschool (ages 3 to 5), elementary school (ages 7 to 9), and secondary school (age 15) factors associated with employment outcomes in young adulthood. Preschool factors associated with employment outcomes in early adulthood included intelligence and temperament (Caspi et al., 1998). Elementary age child factors (measured at ages 7 to 9) that were statistically significantly related to months employed in early adulthood included being male, intelligence, and behavior problems (Caspi et al., 1998). However, when including early

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childhood, elementary age, and teenage factors in the model, the authors found that experiences measured in childhood were no longer statistically significantly related to employment outcomes – likely due to those factors being explained by increased exposure to adolescent risk factors, which were statistically significant in the full model (Caspi et al., 1998).

Contextual factors. Studies such as these outlined above have also consistently found family background factors to be associated with educational outcomes. In particular, family socioeconomic status (SES) has generally been a strong predictor of educational attainment. For example, Entwisle, Alexander, and Olson (2005a) found that family SES measured in first grade was associated with educational outcomes at age 22 – including highest grade completed and enrollment in a four-year college. Likewise, the results showed that living in a poor neighborhood was negatively associated with educational attainment at age 22 and that parent psychological support was related academic outcomes in first grade and with educational attainment at age 22 (Entwisle, Alexander, & Olson, 2005a). Jimerson and colleagues (2000) found that when only including variables from childhood, quality of early caregiving, parental involvement in sixth grade, and SES measured in third grade were statistically significantly associated with school status (enrolled or having dropped out) at age 19. When variables from adolescence were included, the associations between quality of early caregiving and parental involvement in sixth grade and school status at age 19 remained statistically significant, but SES was no longer statistically significant (Jimerson, Egeland, Sroufe, & Carlson, 2000). Similarly, Barnard (2004) also found that parent education and family income were statistically significantly associated with educational outcomes at age 20. Finally, Caspi and others (1998) found that family structure in elementary school was related to employment outcomes in early adulthood.

Additionally, the education literature has explored family variables such as parent-child interaction or relationships, quality of caregiving in early childhood, parental monitoring, and parental educational expectations (Baptiste Pingault, Côte, Petitclerc, Vitaro, & Tremblay, 2015; Ensminger, Lamkin, & Jacobson, 1996; Jimerson, Egeland, Sroufe, & Carlson, 2000; Rumberger, 1995). Only two studies of disconnected youth in the U.S. mentioned included such factors and neither found a statistically significantly association with connectedness (Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011).

Summary. Literature on connectedness to education and employment has focused considerable attention on associated individual and family-level factors – often measured during adolescence. Characteristics such as age, race, gender, ability, income, educational attainment, mental health and conduct problems, family socioeconomic status, parent involvement and educational expectation (parent and child) consistently have been found to be associated with connectedness to education and/or employment (e.g., Ainsworth & Roscigno, 2005; Entwisle, Alexander, & Olson, 2005a; Fernandes-Alcantara, 2015; Hair et al., 2009; MaCurdy, Keating, & Nagavarapu, 2006; Ou, Mersky, Reynolds, & Kohler, 2007). These individual-level factors and their relationship with connectedness to education and employment vary by race and gender, with some studies finding that statistical significance or strength of association changes when controlling for family background, particularly family SES (Ainsworth & Roscigno, 2005; Allensworth, 2005; MaCurdy, Keating, & Nagavarapu, 2006).

Theoretical Orientation for this Dissertation

This section outlines how this study draws from and contributes to both life course theory and cumulative inequality theory. The first research question (are there differences in the developmental trajectories of being connected to school or work during the transition into

adulthood?) seeks to characterize an important life course transition (i.e., post-compulsory schooling), which is necessary to better understand how connectedness to these institutions during the transition into adulthood fit within the context of larger life course trajectories.

Life course perspective and connectedness to school or work during the transition into adulthood. Elder notes that the concept of a life course pertains to "the interweave of age-graded trajectories such as work careers and family pathways, that are subject to changing conditions and future options, and to short-term transitions ranging from leaving school to retirement" (Elder, 1994, p. 5). Life course theory posits that development continues across the life span and that individual agency, social structures or institutions, and the interdependent nature of relationships influence development (Elder, 1994). Life course theory has four central principles: (1) lives and historical times; (2) timing of lives; (3) human agency, and (4) linked lives (Elder, 1994; Elder, Johnson, & Crosnoe, 2003). As it pertains to this study and the first research question, the principle "timing of lives" and the concept of "transitions" are most relevant and will be the focus of this section. Cumulate inequality theory, which will be discussed later in this section, ties directly into these four life course principles.

As noted previously, most prior research on disconnected youth has characterized "disconnected youth" as individuals between 16 and 24 who are not enrolled in school or employed at a particular point in time (e.g., at least 3 months in past year, all of past year, at time of survey). Those studies provide a snapshot of connectedness, which may be useful for generating awareness of the breadth of this problem at a particular point in historical time, but is inadequate for fully understanding the totality of connectedness to school or work during the transition into adulthood.

Timing of lives. This life course principle emphasizes that the occurrence, timing, sequence, and duration of social roles and events and related age-graded beliefs and expectations influence development across the life course. The concept of "disconnected youth" reflects age-graded societal expectations that young people should be connected to at least one of these institutions, school or work, in the late teens and early twenties; however, research has largely ignored how the social timing of connectedness to school or work varies, treating connectedness as an either/or experience.

Research on the transition to adulthood indicates that there may be considerable variability in one's connectedness to education and/or employment during this transition (Furstenberg, Rumbaut, & Settersten, 2005; Mortimer, Staff, Wakefield, & Xie, 2008; Osgood et al., 2005; Sandefur, Eggerling-Boeck, & Park, 2005). Yet, we have little understanding about the nature of connectedness experiences across the transition to adulthood. It is imperative to better understand developmental variations in connectedness to school or work during the transition to adulthood because it enables us to consider whether and how the nature and timing of such connectedness matters for later experiences and events and allows for identifying earlier experiences and events for intervention purpose.

Transitions. According to life course theory, transitions are short-term changes in a trait or state, and are often referred to as "off-time" or "on-time" as they related to societal expectations for the age-graded roles or behaviors (Hutchison, 2005). The concept of on- or off-time events is relevant to research on connectedness to education or employment across the transition to adulthood because age and timing are central to the way that disconnected youth have been defined. Disconnection from both school and work during the transition to adulthood would be considered an "off-time" event – one that is presumed to lead to current and future

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social and economic disadvantage (Belfield, Levin, & Rosen, 2012). Notably, two studies on disconnected youth have examined how chronicity of disconnection was related to later life outcomes; both studies found that individuals who experienced long-term disconnection had worse social and economic outcomes (Brown & Emig, 1999; Lewis & Gluskin, 2018).

Cumulative inequality theory and connectedness to school or work. Findings from research that has generated profiles of disconnected youth indicate that structural inequality in connectedness to school or work may be manifested by disproportionate proportions of 'disconnected youth' based on characteristics such as race, gender and parenting status, disability, and place (Lewis & Burd-Sharps, 2015; MaCurdy, Keating, & Nagavarapu, 2006; Fernandes-Alcantara, 2015). Further, as noted above, at least a couple of studies indicate that longer-term disconnection from school and work are associated with worse social and economic outcomes (e.g., Brown & Emig, 1999; Lewis & Gluskin, 2018) – seemingly further exacerbating inequality. Yet, it seems unlikely that these inequities begin during this transition period. Thus, it is crucial that we gain an understanding of childhood factors associated with connectedness to school or work during the transition into adulthood in order to improve prevention efforts that mitigate risks and amplify opportunities as one enters adulthood. As such, the second research question (what childhood factors are associated with connectedness to school or work during the transition into adulthood?) seeks to create a foundation for exploring earlier factors associated with inequities in connectedness to school or work.

Cumulative inequality theory integrates multiple perspectives, particularly the life course perspective and cumulative advantage/disadvantage theory, and provides specific, testable five axioms with associated propositions (Ferraro, Shippee, & Schafer, 2009). The first three of those axioms relate to my second research question: (1) Social systems generate inequality, which is

manifested over the life course through demographic and developmental processes, (2) Disadvantage increases exposure to risk, but advantage increases exposure to opportunity, and (3) Life course trajectories are shaped by the accumulation of risk, available resources, and human agency (Ferraro, Shippee, & Schafer, 2009). Examining childhood predictors associated with connectedness to school or work during the transition to adulthood has the potential to inform cumulative inequality theory (hereafter CI theory) as it pertains to each of these three axioms.

Social systems generate inequality, which is manifested over the life course through demographic and developmental processes. Propositions included within this axiom assert that childhood experiences and events are associated with later adult outcomes – particularly when differences emerge early (Ferraro, Shippee, & Schafer, 2009, p. 418). However, there may not only be differences in developmental trajectories of being connected to school or work, but also some of those differences may generate (or continue to generate) inequality as one ages. Therefore, from a prevention and intervention perspective, it is important to not only better understand the nature of connectedness to school or work during this transition but to also examine early experiences and events that may be associated with differences in these developmental processes.

Disadvantage increases exposure to risk, but advantage increases exposure to opportunity. CI theory purports that disadvantage and advantage are not simply opposites of one another (Ferraro, Shippee, & Schafer, 2009). The idea that an increase in either advantage or disadvantage reduces the other oversimplifies a more complex reality – that advantage and disadvantage may be different across various life domains. Further, both advantage and disadvantage may diffuse across domains so it is important to examine both across multiple

domains (e.g., health, economic, social). Finally, the onset of exposure to advantage or disadvantage, along with the magnitude and duration of exposure shape life course trajectories (Ferraro, Shippee, & Schafer, 2009). This axiom provides a foundation for thinking about early disadvantage and advantage across life domains and how these may be related to differences in the developmental trajectories of connectedness to school or work during the transition into adulthood. Additionally, findings from this study will inform how this axiom and its propositions might be applied outside of studies on life course health.

Life course trajectories are shaped by the accumulation of risk, available resources, and human agency. This axiom and its propositions align with social work's holistic view of both person and environment. It is important to acknowledge that while accumulation of risk may negatively alter life course trajectories, cumulative disadvantage is not deterministic of poor outcomes. Indeed, human agency and resource mobilization, at various points in life, may alter life course trajectories. In particular, life course transitions, such as post-high school moves signaling a shift from adolescence into young adulthood, may provide turning points that disrupt the expected outcomes associated with cumulative disadvantage. Likewise, it is important to consider that the accumulation of opportunities could be disrupted, depending upon human agency and exposure to risks. As it pertains to this study, it is important to consider not only early disadvantage or exposure to risks as they relate to connectedness to school or work during the transition into adulthood, but also available resources and the child's own human agency. The availability and utilization of resources in various domains and the child's perception of agency might alter anticipated consequences of cumulative disadvantage.

Summary. Due to its longitudinal household panel design, the PSID and its supplements allowed one to examine how early experiences are associated with differences in the

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developmental trajectories of being connected to school or work between ages 18 and 27. First, it is important to characterize the nature of these age-graded role expectations, which contributes to life course literature by providing a foundation for future research that examines how differences in developmental trajectories of connectedness to school or work during the transition into adulthood fit within the broader life course. Second, most research on disconnected youth has examined adolescent risk factors or current socio-demographic characteristics associated with connectedness (Andersen, 2017; Burd-Sharps & Lewis, 2012, 2015; Hair et al., 2009; Kuehn et al., 2011; MaCurdy, Keating, & Nagavarapu, 2006). This study expands the application of CI theory, often utilized in health-related research, to research on disconnected youth and provides an opportunity to examine which childhood experiences are related to differences in developmental trajectories of connectedness to school or work across late adolescence and early adulthood.

Conclusion

The first section of this literature review highlights the needs for a fuller understanding of the phenomenon of disconnection. Overall, the peer-reviewed literature base on disconnected youth in the U.S. is scant. The phenomenon has been conceptualized as young people between 16 and 24 who are not connected to education or employment – two developmentally important markers of a successful transition to adulthood within the U.S. (Settersten & Ray, 2010). However, connections to these institutions vary as young people move into adulthood (Furstenberg, 2010; Pollock, 2008; Shanahan, 2000), and the existing research base does not describe the totality of connectedness to education and employment throughout the transition. In fact, the temporal dimension of connection to education and employment has been largely ignored. Some research, however, indicates that young people have distinct experiences of

connectedness to education and employment between ages 16 and 24 (Belfield, Levin, & Rosen, 2012; Kuehn, Pergamit, & Vericker, 2011; MaCurdy, Keating, & Nagavarapu, 2006). Therefore, in order to better understand connectedness experience, there is a need for research that characterizes differences in the developmental process of connectedness to education and employment.

The educational, employment, and disconnected youth literature highlight similar factors associated with success in each area. This is not shocking, considering educational attainment is a critical predictor of employment, and thus, not being connected to either institution, particularly education, during the transition to adulthood may increase the likelihood of being disconnected from the other. Most research that has examined factors associated with connectedness to education and/or employment has focused on individual and family factors measured during adolescence--, though a strand of research has begun to examine community-level factors (Bray et al., 2016; Burd-Sharps & Lewis, 2012; 2017; Lewis & Burd-Sharps, 2013; 2015). Unlike the disconnected youth literature, the education literature and the employment literature have some studies that have examined childhood predictors of education or employment outcomes. While studies found mixed results, there is some evidence to suggest that childhood factors may be associated with connectedness to school or work during the transition into adulthood (Barnard, 2004; Caspi et al., 1998; Entwisle, Alexander, & Olson, 2005a; Jimerson, Egeland, Sroufe, & Carlson, 2000; Rumberger & Lim, 2008). Thus, if the goal is to reduce disconnectedness from school or work among youth and young adults, research on connectedness to those institutions should examine childhood factors, with an eye toward better understanding how early experiences may be related to the social roles deemed acceptable within the U.S. following the post-high school transition.

Chapter III
Data and Methods

Details about research questions, data, participants, measures, and the analytic procedures followed are provided within this section. In order to answer both research questions, analysis was conducted in two phases. Due to the exploratory nature of this study and the methods used, no hypotheses were formulated. This section will be organized by research question to aid in clarity.

Research Questions

RQ1: Are there individual differences in the developmental trajectories of being connected to school or work during the transition into adulthood?

RQ2: What childhood factors are related to differences in developmental trajectories of being connected to school or work during the transition into adulthood?

Data

This study used data from the Panel Study of Income Dynamics (PSID) conducted by the Survey Research Center at the University of Michigan (hereafter called "main PSID") and two of its supplements: the Child Development Supplement (CDS) and Transition into Adulthood Supplement (TAS). The PSID began in 1968, spurred by the War on Poverty, and is the longest running nationally representative panel study in the world. The original 1968 PSID sample combined a nationally representative sample of 3,000 families with a sample of 1,802 low-income, mostly Black or African American families. Therefore, the original sample of 4,802 families, with its oversample of low-income individuals, was well-suited for investigating issues related to poverty in the U.S. To be a sample member in the PSID, one must have the "PSID gene," which means that they were (a) part of the 1968 household unit surveyed, (b) became part of a PSID family unit through birth or adoption to an original 1968 sample member, or (c) were

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part of a Latino or immigrant refresher. Each PSID family unit has a "Head," who must be 16 years or older and have the primary financial responsibility for the family unit[2].

The PSID was conducted annually from 1968 through 1997, after which funding cuts resulted in biennial data collection. About two-thirds of the original low-income sample was slated to be discontinued in 1997 (Survey Research Center, 2008a). However, based on increased interest in child development, extra funding was received in 1997 that allowed for the reinstatement of some low-income families who had both a Black "head" and at least one child under age 12 in 1996. Additionally, an immigrant refresher sample was added in 1997 to enhance the national representativeness of the panel (Survey Research Center, 2008a).

Child Development Study (CDS). In 1997, CDS began to gather data about parent-child interactions, time use, health status, and development. The 1997 CDS sampling frame was family units (FU) who participated in the 1997 PSID main interview and had at least one child between 0 and 12 years old. Children were randomly selected for CDS participation, with up to two children per household eligible to participate. This sampling method resulted in a sample of 2,380 households with primary caregivers who provided information about 3,563 children ages 0-12[3]. Primary caregivers had the opportunity to participate in two interviews – one about the child and another about their household. Children ages 3-12 participated in age-appropriate assessments and those ages 8+ were invited to participate in individual interviews.

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[2] The "Head" is not necessarily a sample member (i.e., someone with the PSID gene) because the PSID used the Census' approach where "Heads" are always men, even if they do not have the PSID gene. This means that females, even if they do have the PSID gene, are always labeled Wives/"Wives," unless they are a single-parent (http://psidonline.isr.umich.edu/Guide/FAQ.aspx). The Head is generally interviewed for the main PSID interview, though sometimes the Wife or "Wife" (i.e., female partner of the family unit) participates.
[3] Eighty-nine (89) of those children were later determined to have been incorrectly identified as sample children; their data was retained for cross-sectional analyses using 1997 data (Survey Research Center, 2017), but have been excluded from this study's sample because they were not eligible for the TAS sample.

Transition into Adulthood Supplement (TAS). The TAS began in 2005. It was created to bridge the gap between when CDS sample members turned 18 and exited high school and the establishment of a financially independent household when someone becomes their own PSID family unit. The TAS gathers information related to key transitions areas such as work, education, marriage and family formation, and on topics such as psychosocial well-being, health, income, and time use for young people between 18 and 28 (Survey Research Center, 2008b). Data for the TAS are collected every two years, with seven waves available as of fall 2018 – 2005, 2007, 2009, 2011, 2013, and 2015.

Individuals accrued into the first six waves of the TAS (2005, 2007, 2009, 2011, 2013, and 2015) from the CDS. In order to be eligible for the TAS sample, the individual had to have participated in at least one CDS interview (1997, 2002, or 2007), have a family unit that completed the main PSID interview for the given TAS year, be at least 18 years old during that survey period, and have exited high school (Survey Research Center, 2008b). Overall, TAS response rates were high, with wave-specific response rates ranging from 87 to 93 percent (Survey Research Center, 2008b, Survey Research Center, n.d.).

RQ1: Are there individual differences in the developmental trajectories of being connected to school or work during the transition into adulthood?

Participants. The target sample for the first phase of this study were individuals transitioning into adulthood, defined here as ranging from age 18 to age 26[4]. All youth accrued into this study's sample from the 1997 Panel Study of Income Dynamics Child Development Supplement. An accelerated cohort design was used, with participants entering the sample over

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[4] This is consistent with the age range utilized by others who study youth and young adults (e.g., Stroud, Walker, Davis, & Irwin, 2015).

the course of four survey years – 2005, 2007, 2009, and 2011 – when they were aged 18 and older. This technique maximized the sample size and ability to research change across a broader age range (ages 18 to 26). A total of 2,155 individuals met this criteria. The sample was further restricted to individuals who participated in at least 2 TAS surveys between 2005 and 2015, due to the longitudinal nature of analyses. As shown in Figure 1, a total of 2,027 individuals were retained, or 94 percent of age-eligible individuals. Individuals who only participated in one TAS survey were compared to those who participated in two or more on basic demographic characteristics. Chi-square tests indicated that males were slightly less likely to have participated in two or more surveys; there were no statistically significant differences related to family income in 1996 or participants' reported race.
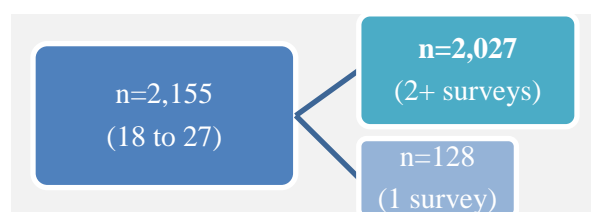
Figure 1. Sampling Frame, Phase I

Measures: Descriptive Analyses. Demographic characteristics measured when individuals entered the TAS sample were used for descriptive analyses. These measures were chosen based on relevance to connectedness identified by prior studies (Besharov & Gardiner, 1998; Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015; Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011; MaCurdy, Keating, & Nagavarapu, 2006; Ross & Prchal Svajlenka, 2016). Baseline demographic variables included age, parent status, marital or cohabiting status, having lived in parental home sometime during the past year, self-reported health, non-specific psychological distress, history of arrests, and total family income past year. Other demographic variables included race, as reported by primary caregiver in 1997, and participant sex.

Race/ethnicity. The race/ethnicity variable reflected the child's race/ethnicity as reported

by their primary caregiver in the 1997 CDS. This variable was used instead of race and ethnicity

reported by individuals in the TAS because reported race changed for some individuals across

TAS years. Race/ethnicity was originally coded as a 7-category variable (1=White, non-

Hispanic, 2=Black, non-Hispanic, 3=Hispanic, 4=Asian/Pacific Islander, 5=Native

American/Alaskan Native; 7=other race; 8=DK, 9=NA; refused). Five participants were coded as

8 or 9; those values were recoded as missing. The original variable was used to describe sample

characteristics. Due to small sample sizes for several race categories, a three-category variable

coded as 1=White, non-Hispanic, 2=Black, non-Hispanic, and 3=other races was created for use

in bivariate and multivariate analyses.

Sex. Sex was a binary, time-invariant variable collected as part of the main PSID survey.

Originally, males were coded as 1 and females as 2. This variable was recoded as 1=male,

0=female for use in this study.

Age at sample entry. Age at survey interview was calculated using participants'

month/year of birth and the month/year of their *main* interview[5] (i.e., the one in which they

provided their responses for the employment status question). Ages ranged from 18 to 25 at

baseline, with 90 percent of individuals between ages 18 and 20.

Parent status at sample entry. At each TAS interview, participants were asked how

many children (adopted, step, and biological) they had. Answers reflected the actual value

reported; seven individuals had missing data. A dichotomous variable was created with 0=no

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[5] Individuals who have established a financially independent household may take both the main PSID and remain in the TAS sample until they turn 28. When someone was the Head or Wife/"Wife" of their own PSID family unit their employment status responses were filled into the comparable TAS question (i.e., they were not asked that question again during the TAS). This is important to distinguish because some people participated in both the PSID Core and TAS surveys, and the TAS interviews occurred, on average, about 5 months after the PSID Core interview.

children and 1=parent if they had any children during the survey year they entered this sample (i.e., 2005, 2007, 2009, or 2011).

Marital status at sample entry. Participants were asked about their marital and cohabiting status during each TAS interview. PSID staff generated a combined variable that was coded as 1=never married, cohabiting; 2=never married, not cohabiting; 3=married, spouse present; 5=separated; 6=divorced, cohabiting; 7=divorced, not cohabiting; 8=widowed; 9=NA; DK; refused. That variable was dichotomized for this study, coded 1 if individuals were either married or cohabiting (i.e., combining categories 1, 3, and 6) and 0 (a combination of 2, 5, 7, and 8) if there were neither married nor cohabiting during the survey year they entered this sample (i.e., 2005, 2007, 2009, or 2011). One individual was coded as 9, and that value was set to missing.

Lived in parental home sometime in past year at sample entry. This variable was created using two different TAS variables – one asking about primary fall/winter residence in the fall/winter and the other asking about primary summer residence. The original fall/winter residence variable was coded 1=parent's home, 2=apartment or room rented by participant, 3=college dorm or resident hall, 4=college fraternity or sorority, 5=house or condominium owned by participant's parents, 6=house or condominium owned by participant, 7=other. The original summer residence variable was coded 1=parent's home, 2=apartment or room rented by participant, 3=college dorm or resident hall, 4=college fraternity or sorority, 5=house or condominium owned by participant's parents, 6=house or condominium owned by participant, 96=same as last winter, 97=other, 98=DK.

These two variables were combined into a dichotomous variable that reflected whether a participant had lived in a home owned by their parent sometime within the past year. There were

no missing values for both of these variables. Individuals were coded as 1 if they had reported having lived in a parental home as a primary residence either in the fall/winter or in the summer (i.e., either reported living with parent or living in a house or condominium owned by their parent) and 0 otherwise.

Number of arrests at sample entry. Participants were asked "have you ever been arrested?" Answers were coded as never (1), once (2), more than once (3), and NA; refused (9). One person was coded as 9 originally; that value was set to missing. In addition to the original three-category variable, a binary variable was created for use in multivariate analyses, with those who had never been arrested coded as 0 and those who had been arrested one or more times coded as 1.

Health at sample entry. Participants were asked to self-rate their health. The original variable was coded as 1=excellent, 2=very good, 3=good, 4=fair, 5=poor, 9=NA; refused. This variable was used to create a dichotomous indicator, coded as 1=excellent or very good health, and 0=good, fair, and poor health. Two individuals originally coded as 9 for the health variable had those values set to missing.

Non-specific psychological distress in past month at sample entry. The Kessler 6 (K6) scale was used to measure non-specific psychological distress. Participants were asked to rate how often they experienced six different symptoms in the past month (nervous, hopeless, restless, everything was an effort, sad, and worthless). For each symptom, respondents rated the frequency of distress from 0 (never) to 4 (very often) for a scale range of 0-24[6]. Scores of 13 or higher indicate that an individual may be experiencing clinically significant psychological

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[6] The K6 variable may be based on fewer than the above six variables. Only the total scale sum was available in the public-use dataset so it is not possible to know whether anyone had missing values on some of the individual scale items. Items containing "don't know" and "refused" responses are not included in the calculation of the scale (Institute for Social Research, n.d.).

distress (Kessler et al., 2003). Two individuals had codes of 99 for the K6 total score variable, indicating missing values for all six items. For those individuals, the K6 values were coded as missing.

Total family income prior year at sample entry. This variable reflects the total income generated by all family members in the prior year. Values reported were dollar amounts for the prior year. In other words, the total family income variable available in the 2005 PSID survey was total family income from 2004 and was reported in 2004 dollars.

Total family income was adjusted to 2018 dollars using the U.S. Bureau of Labor Statistics Consumer Price Index (CPI). CPI-All Urban Consumers (Current Series, not seasonally adjusted) data for years 1996 through 2018 was exported into an Excel spreadsheet. Total family income values for each participant's baseline year were transferred into the spreadsheet. There, total family income from the baseline year (i.e., 2004, 2006, 2008, 2010) was multiplied by the average CPI for 2018 and divided by the average CPI for the year income was reported (Appelbaum, n.d.). This data was imported into Stata 15 and merged with the master dataset.

Values for this continuous variable ranged from $0 to $2,657,423. Data was highly positively skewed and leptokurtic. As such, a five-category variable was created using the upper limits of the first four quintiles and the lower limit of the top fifth percentile of household income distribution utilized in Census Bureau reports on income and poverty (U.S. Census Bureau, 2018). This variable was coded 0 for those earning less than or equal to the upper dollar amount for the lowest income quintile, 1 for those earning more than the lowest income quartile and less than or equal to the upper dollar amount for the second income quintile, 2 for those earning more than the second income quintile and less than or equal to the upper dollar amount for the third income quintile, 3 for those earning more than the third income quintile and less

than or equal to the upper dollar amount for the fourth income quintile, and 4 for those earning more than the upper limit of the fourth income quintile.

Measures: Latent Variable Mixture Models. Variables used to answer the first research question are described below. These included age in months (linear and quadratic terms), connectedness to school or work, and average national unemployment rate.

Connected to school or work. Individuals' employment and education history data were collected at each PSID or TAS interview, using retrospective questions to gather dates of employment within the past two years and enrollment in college since high school. These dates were dichotomized with a value of 1 indicating being employed or enrolled in college in a given month and a value of 0 indicating not being employed or in college in that month. Details are provided below.

Connected to employment. Individuals were asked a series of questions about employment at the time of each TAS interview (or the main PSID interview, if the individual had established their own household, as noted previously). Participants reported whether they were working now or had worked for money any time since January 1, two years prior to the current survey wave (e.g., if the interview was part of the 2007 survey, respondents were asked if they had done any work for money since January 1, 2005). If they reported having been employed or working for money in the past two years, they were then asked to provide information about beginning and end dates of employment for the past two years, for up to five employers[7]. In this study, the beginning and end dates provided for each employer were used to create start and end dates of employment for each person. This was done for all six survey waves (2005-2015) and

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[7] Per personal communication with the PSID help desk, the data that are released for public use are data driven. The questionnaires allow for up to 10 employment mentions each interview. Since only 5 mentions were released, it suggests that no one mentioned more than 5 employers during an interview (N. Insolera, personal communication, March 19, 2019).

the resulting variables were used to create dichotomous monthly "connected to employment"

variables for each sample member (i.e., 1=employed during that month/year; 0=not employed

during that month/year). Those who reported no employment in the past two years were coded as

"0" for all months in that particular retrospective time period. Just under 1,000 individuals

(~49%) reported some partial dates for employment (e.g., did not know the month they became

employed but knew the year). Partial start and/or end dates were used to construct known periods

of employment. This was done by using the unknown start and end dates to create known dates

before, between, or after each of the unknown dates. All of the known dates were then used to

fill in the monthly employment variables with a 0, 1, or -9, respectively. For example, someone

might have reported starting a job in 2009 but did not know the month and then reported the

month and year that job ended as being June 2011. Based on this information, it was known that

the person was employed for all 12 months of 2010 and 6 months of 2011 so those monthly

employment variables were coded as 1. All 12 months of 2009 were still unknown and were

flagged as -9.

Connected to education. At each TAS interview, participants were asked about college

enrollment since high school. If individuals reported they had ever attended college, they were

then asked to provide beginning and end dates for the two most recent colleges attended[8]. Those

dates were used to create start and end enrollment dates. This was completed for all six survey

waves (2005-2015) and the resulting start and end variables were used to create dichotomous

monthly "connected to education" variables for each person (i.e., 1=enrolled during that

month/year; 0=not enrolled during that month/year). Having reported not having attended college

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[8] There is no documentation about why only 2 college mentions were allowed each TAS interview. However, cell
sizes were small for those who mention a second college institution, suggesting that a third mention would be rare
(N. Insolera, personal communication, March 19, 2019).

was coded as "0" indicating no connection to education during this time period. About 86 people (~4%) reported some partial dates for their enrollment history. Partial start and/or end dates were used to construct known periods of enrollment using the same methods described for employment.

A master file was created with 132 binary "connected to either school or work" variables, ranging from January 2005 through December 2015. The "connected to employment" and "connected to education" data files were merged into this master file, and the monthly connectedness variable was coded 1 if *either* of the monthly employment or monthly enrollment variables were coded as 1 and remained 0 if *neither* monthly employment or monthly enrollment variable was coded as 1. A variable that reflected date of last survey was created and all monthly indicator values after that date were set as missing[9]. A variable that reflected date last in high school was used and all monthly indicator values prior to that date were set to missing.

After combining all fully known employment and enrollment data to construct the binary connectedness outcome, missing data related to individuals providing only partial dates accounted for less than two percent (2%) of the total monthly observations. However, individuals who had any remaining missing data due to providing partial dates were flagged. Bivariate tests were conducted to look for associations between having missing data due to partial dates and race, gender, age at sample entry, or total family income at sample entry. No statistically significant relationships were found.

Monthly age. In order to elucidate differences in connectedness to school or work across the transition into adulthood, a time indicator reflecting age in month was created. Age in months

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[9] The monthly connected to school or work variables following the month/year of the last survey in which a person provided employment history were coded as missing. This is because individuals who participated in both the main PSID and TAS provided employment information at the main PSID and enrollment information at the TAS, creating a gap in which there is no known employment history.

was created by subtracting individuals' month and year of birth from each month and year ranging from January 2005 through December 2015. Age was centered at 18 years and 1 months (i.e., 0=216 months or 18 years) for analyses. Observations were kept if the age was greater than or equal to 18 years and 1 month (i.e., 216 months old) and less than or equal to 26 years and 1 month (i.e., 312 months old)[10]. Additionally, consistent with two prior studies exploring developmental trajectories of connectedness to education and/or employment (Kuehn et al., 2011; Macomber et al., 2008), a quadratic age term (age^2) was created to capture non-linear age effects.

Monthly unemployment rate. The Great Recession, which resulted in a drastic rise in national unemployment rates, began in December 2007 and ended in June 2009 (BLS, 2012). In order to account for potential influence of unemployment rates on connectedness to school or work, average national unemployment rates from January 2005 through December 2015 were downloaded from the U.S. Bureau of Labor Statistics website (BLS, n.d.) and used to create a monthly average unemployment rate. Those variables were converted to reflect the average national unemployment rate for individuals by age in months. The resulting variable was centered by taking the overall average unemployment rate of this time period (i.e., 6.8%) and subtracting it from the original monthly unemployment value (e.g., 7.0 - 6.8 = 0.2).

Analytic Procedures. The objective was to characterize heterogeneity in the developmental trajectories of connectedness to education and/or employment across the transition to adulthood. To achieve this, a combination of univariate, bivariate, multivariate, and

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[10] Though data was available for some individuals up to age 28, the cut-off used here was age 26 years. This decision was supported by other studies that have used the PSID TAS data to examine the transition adulthood, where researchers have excluded individuals age 27 and older due to concerns about the small cell sizes producing unreliable estimates (Bosick & Fomby, 2018) and by data exploration, which confirmed small cell sizes after age 26.

person-centered methods were employed. Public-use data from the TAS 2005, 2007, 2009, 2011, 2013, and 2015 were downloaded from the PSID data center into Stata 15.

First, univariate analyses were conducted in Stata 15 with data in wide format (one record per person). Univariate statistics were conducted to examine missingness and describe the sample at baseline. Data was then converted into long format (i.e., multiple records per person) imported into Latent Gold 5.1 Basic + Adv/Syntax for LVMM model estimation. Due to the accelerated cohort design and age restrictions for the TAS (e.g., must be at least 18 and out of high school, must be younger than 28), many individuals had "missing" observations over time, generally due to right censoring; however, some individuals exited the sample before they became too old to participate, which might suggest that data was truly missing, rather than right-censored. A flag variable was created and bivariate tests were conducted to examine whether there was a relationship between participants demographics including race, gender, total family income at sample entry, parenting at sample entry, and being married or cohabiting at sample entry and having been age 25 or younger at the last survey. No statistically significant relationships were found. Based on this information, data were assumed to be missing at random. Both LCGA and LGMM accommodate unbalanced data and Latent GOLD 5.1 handles missingness at random using full-information maximum likelihood (FIML; Vermunt & Magidson, 2016).

Latent Variable Mixture Models (LVMMs). The purpose of the first research question was to explore heterogeneity in the developmental trajectories of connectedness to education and/or employment across the transition to adulthood. Accordingly, the first stage incorporated two different types of latent variable mixture models (LVMMs). LVMMs are used when there is interest in identifying population heterogeneity (i.e., subgroups within a potentially

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heterogeneous population) related to a particular longitudinal outcome, behavior, or developmental process (Jung & Wickrama, 2008; Lubke & Luningham, 2017). LVMM's are person-centered methods, which means that the focus is on relationships among individuals and classifying individuals into subgroups with others who have similar response patterns on a repeated measure, rather than examining the relationships among variables (Jung & Wickrama, 2008). LVMMs are primarily exploratory methods (Lubke & Luningham, 2017). As such, they were appropriate for this study, where there was some evidence to suggest that there could be population heterogeneity related to connectedness to school or work over time (e.g., Belfield, Levin, & Rosen, 2012; Kuehn et al., 2011; Osgood et al., 2005) but little was known about differences in the developmental trajectories of being connected to school or work from late adolescence through early adulthood.

When utilizing LVMMs, the software creates a latent grouping variable with a specified number of categories (i.e., classes). The statistical software then uses the observed longitudinal data (i.e., repeated observations of connectedness to school or work) to determine the probability that each participant is a member of each class. Those posterior class probabilities are then used to determine the most probabilistic latent class membership for each individual. Simultaneously, a separate regression model is estimated, regressing the categorical latent class variable on the predictors (age, age^2, and unemployment rate), which results in estimated mean intercept and growth parameters for each class. It was assumed, based on limited empirical work, that the effects of intercept and time on connectedness may be different for each class (i.e., Kuehn et al., 2011; Macomber et al., 2008), but that the effect of unemployment rate on connectedness would be the same across classes. Accordingly, in the models specified for this study, intercept, linear

(age) and quadratic (age^2) parameters were allowed to vary across classes whereas unemployment rate parameters were held constant[11].

Two different types of LVMMs were employed in this study – latent class growth analysis (LCGA), also called group-based trajectory modeling, and growth mixture models (GMM). LVMMs are exploratory methods as such, it is common to begin with more restrictive models (LCGAs) and move to more flexible models (LGMMs) in order to compare model fit and interpretability (Lubke & Luningham, 2017). When specifying models, the default setting for random starting sets in LatentGOLD 5.1 is 10; this study used 100 random sets of starting values with 50 full iterations of each. This specification was utilized to increase estimation power and reduce likelihood of achieving local maxima[12], which may result in selecting a model solution that could be substantially different than the actual maximum likelihood solution (e.g., fewer or more classes, different trajectory shapes, etc.; Hipp & Bauer, 2006). Essentially, each of the 100 random set of starting values was used to run the estimated maximization (EM) algorithm and repeated 50 times for each set. The software selected the starting set with the highest log-likelihood and used it in subsequent iterations until the model converged (Hipp & Bauer, 2006).

The goal was to select the most parsimonious model that would enable a practical description of differences in developmental trajectories of connectedness during the transition into adulthood. Additionally, class sizes needed to be large enough to examine this outcome among a smaller subsample of individuals in the second analytic phase. Therefore, after models were estimated, the optimal model type and number of classes were determined based mainly on

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[11] Models were also run allowing the effect of unemployment rate to vary across classes. Model fit statistics and parameters were similar for these models. Treating unemployment rate as class independent resulted in a more parsimonious model (e.g., fewer parameters estimated) so it was specified as such.
[12] Within the data, there may be various "bumps" in the distribution; one of those may be selected as the maximum log-likelihood rather than the "best" highest log-likelihood across the whole distribution (Hipp & Bauer, 2006).

the Bayesian Information Criteria (BIC) statistic but also upon examining classification quality, usefulness, and interpretability (Muthén & Muthén, 2000).

The BIC allows comparison of model fit and rewards parsimony by penalizing number of parameters and sample size (Masyn, 2013). This statistic is used to compare two or more alternative models, and generally, the model with the lowest BIC value is be considered to fit the data best (Muthén & Muthén, 2000). However, the combination of examining BIC values along with other information is generally recommended when choosing a model (Muthén & Muthén, 2000). Classification precision was evaluated using entropy values, which range from 0 to 1 with values closer to 1 indicating perfect discrimination between classes (Celeux & Soromenho, 1993), and by examining class-specific classification error and average posterior probabilities for each trajectory subgroup. There is no agreed upon value for entropy. Some have suggested values greater than .70 (Wang & Wang, 2012) are acceptable or values equal to or greater than .80 suggest "good" classification precision ((Muthén, 2018). While entropy may be helpful in discerning between two similarly fitting models, experts caution that it should not be prioritized over the BIC comparison procedure (Muthén & Muthén, 2000). Additionally, the statistical software generates a modal classification table for the latent model estimation, which presents information on expected versus observed classification based upon weighted probabilities of being assigned to each of the four classes. The modal classification table was used to calculate class-specific classification error, which aided in considering the clarity with which the model was able to separate individuals into classes. There is no agreed upon value for class-specific classification error; however, examining these values enables one to see whether some classes are more clearly distinguished than others (Muthén, 2018). Average posterior class probabilities, or estimates of the probabilities of an individual being assigned to each of the trajectory classes

(i.e., these sum to 1 for each individual), were also examined to explore classification precision. Like entropy and class-specific classification error, there are no agreed upon values for average posterior probabilities. When the average posterior probabilities are higher for a respective class (i.e., the average posterior probability of being assigned to class 1 is highest for people who were assigned to class 1) this indicates better discrimination of classes (Muthén & Muthén, 2000; van Lier, Vitaro, Wanner, Vuijk, & Crijnen, 2005). Finally, usefulness and interpretability were assessed by plotting estimated means and predicted probabilities of connectedness to school or work for models under consideration and examining class sizes (i.e., the proportion of the sample assigned to each latent trajectory subgroup).

LCGA. LCGAs, made popular by Nagin (1999), assume that population heterogeneity can be explained by identifying discrete, homogenous latent trajectory groups. LCGA models are fairly restrictive because they assume there is no within-class variation (i.e., within class variance is set to 0). In other words, a growth curve is estimated for each latent class trajectory with the assumption that individuals within each trajectory class are homogeneous (Muthén & Muthén, 2000). Two prior studies have used LCGA to explore developmental trajectories of connectedness to education and/or employment (Kuehn et al., 2011; Macomber et al., 2008). Both of these prior studies described a four-trajectory model solution with consistently high, consistently low, increasing, and decreasing trajectories, though no information was provided on why a four-trajectory model was selected. Still, those findings supported the decision to begin by estimating LCGAs before moving to estimating LGMM models.

LGMM. Since LCGAs assume there is no within-class variation, overextraction of classes was possible; in other words, model fit may improve with the addition of more classes because additional classes may capture some of the within-class variation (Lubke & Neale, 2006). As

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such, LGMMs were also used to explore population heterogeneity. LGMMs are more flexible

than LCGA models. Like, LCGAs, LGMMs classify individuals into latent classes with

individuals who have similar patterns and produce mean growth curves for each trajectory class;

however, LGMMs also capture within-class variation with growth factor variances (Muthén &

Muthén, 2000). Thus, LGMM may capture the population heterogeneity with fewer trajectory

classes (Lubke & Luningham, 2017).

   Summary. For Phase I, the analytic procedure began with estimating a single growth

curve model to provide baseline comparisons. This was followed by estimating a series of LCGA

models, a series of LGMM models with random intercept coefficient only, and a final series of

LGMM models with random intercept and random slope coefficients included (Lubke &

Luningham, 2017). All models were specified with connectedness to school or work as the

dependent variable and age in months as the indicator of time. A quadratic term (age^2) was

included to capture nonlinear change over time. Finally, the average national unemployment rate

was included as a predictor of connectedness to school or work, due to the effects of

unemployment rate, particularly during the Great Recession, on youth and young adult

employment and educational enrollment (BLS, 2012). As a result, the estimated latent class

growth trajectories were conditional on mean-level differences in connectedness to school or

work, age, and average national unemployment rate.

   Post-LVMM analyses. Output including the class modal classification variable was saved

in an SPSS file and then converted and imported into Stata IC/15. The class modal variable

provides the class assignment for each individual based on the class for which they had the

highest posterior class probability of being assigned. Baseline demographic characteristics were

used to create a profile for each trajectory subgroup. Bivariate analyses were conducted to

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examine associations between baseline demographic characteristics and differences in developmental trajectories of connectedness to school or work during the transition into adulthood. Stata IC/15 was used for all post-LVMM analyses.

RQ2: What childhood factors are related to differences in developmental trajectories of being connected to school or work during the transition into adulthood?

Participants. To answer the second research question, which focused on childhood correlates of differences in connectedness to school or work, a subsample of the 2,027 individuals from the first phase were selected. This subsample was designed to include individuals with information from middle childhood (ages 8-10) who had a primary caregiver who participated in either the 1997 or 2002 CDS, when the children were ages 8, 9, or 10 (n = 824; see Figure 2). Some sample members had a sibling who was also in the sample. In order to reduce nested effects, one sibling was randomly removed, and the remaining sibling's sampling weight was doubled. The final subsample after removing siblings was 757 children.
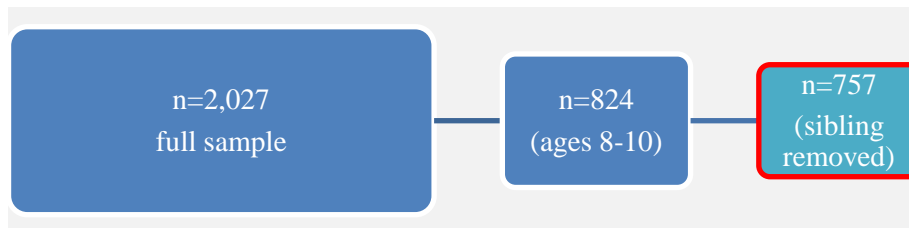
Figure 2. Sampling Frame, Phase II

Measures. Most measures used to answer the second research question were taken from the main 1997 or 2001 PSID surveys and the 1997 or 2002 CDS primary caregiver interviews and child interviews. Additionally, several young adult demographic characteristics measured at baseline entry into the full sample for this study – when most (98%) were between ages 18 and 21 – were included as control variables: self-reported health status, marital status, parent status, living in parental home sometime during the past year, history of arrests, non-

specific psychological distress score, and total family income past year. These were controlled

for based on prior research indicating these young adult factors might be related to

connectedness to school or work (Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015).

Childhood control variables. As identified in Chapter II, some education and

employment studies have found child and family demographic factors associated with

educational and/or employment outcomes (Barnard 2004; Caspi et al, 1998; Entwisle, Alexander,

& Olson, 2005a; Rumberger & Lim, 2008). As such, several of those variables were included as

control variables in Phase II analyses: race, sex, total family income in the past year, total years

of education completed by head of household, total hours worked in the past year by head of

household, and family structure. Two control variables had missing data ($< 5.0\%$) – child race

and total years of education completed by head of household.

Child race and sex. These variables were the same as used for the first analytic phase.

Family SES. Three variables, *total family income, number of years of completed

education for the head of household,* and *total hours worked by the head of household in the

prior year* were used to proxy family socioeconomic status.

The *total family income* variable available in the main PSID data is all taxable income for

the prior year. That includes all of the taxable income of the head and wife/"wife", transfer

income of the head and wife/"wife", taxable income of other family unit members, transfer

income of other family unit members, and Social Security income. Though it was possible to

have a negative value, which indicated business or farm associated losses, the lowest value for

those in this subsample was zero, which reflected no gains or losses (i.e., neutral). There were no

missing values for this variable.

Total family income was adjusted to reflect 2018 dollars. Values for this continuous variable ranged from $0 to $1,274,637. Data was highly positively skewed and leptokurtic. As such, a five-category variable was created using the upper limits of the first four quintiles and the lower limit of the fifth quintile of household income utilized in Census Bureau reports on income and poverty. This variable was coded 0 for those earning less than or equal to the upper dollar amount for the lowest income quintile, 1 for those earning more than the lowest income quartile and less than or equal to the upper dollar amount for the second income quintile, 2 for those earning more than the second income quintile and less than or equal to the upper dollar amount for the third income quintile, 3 for those earning more than the third income quintile and less than or equal to the upper dollar amount for the fourth income quintile, and 4 for those earning more than the upper limit of the fourth income quintile. Consistent with recommendations for applying cumulative inequality theory in research (Ferraro, Shippee, & Schafer, 2009), the third income quintile was used as a middling reference group in order to examine lower income and higher income as compared to middle income in the multivariate analyses

Number of years of completed education for the head of household was a continuous variable ranging from 0 to 17 that reflected highest number of grades completed by the head of household. Just under 5 percent of participants had missing values for this variable.

The measure selected for *parent employment* was a continuous variable reflecting total hours worked during the prior year. The variable was treated as continuous for these analyses, and ranged from 0 hours to 5200 hours. There were no missing values for this variable.

Family structure. A categorical variable signifying the marital or cohabitation of the head of household was created by PSID staff and used in these analyses. The variable was coded as 1=Married or permanently cohabiting; wife, "wife," or husband is present in the family unit;

2=Single, never legally married and no wife, "wife," or husband is present in the family unit; 3=Widowed and no wife, "wife," or husband is present in the family unit; 4=Divorced and no wife, "wife," or husband is present in the family unit; 5=Separated; legally married but no wife, "wife," or husband is present in the family unit; 9=NA; DK. None of the individuals had missing values on this variable. It was recoded as 1=married or cohabiting (i.e., original values of 1) or 0=not married or cohabiting (i.e., combining original values 2 through 5).

Independent variables. Variables of interest are being selected based on prior research, as reviewed in Chapter II, and as guided by cumulative inequality theory. Independent variables were all measured when children were ages 8, 9, or 10. The following independent variables were included in this study: child's overall health status, child's cognitive ability in reading and math, positive and problematic behavior, child's academic self-concept in reading and math, and parent-child interactions. All of these variable had less than 5 percent missing data.

Child health. Prior studies have found a positive association between health and educational outcomes (Rumberger & Lim, 2008). In the CDS, *child health* was a primary caregiver report, with five categories ranging from poor (1) to excellent (5). A dichotomous variable was created and coded 1=excellent/very good health (i.e., combining original categories 1 & 2) and 0=good/fair/poor health (i.e., combining original categories 3, 4, & 5).

Cognitive ability. Findings from some studies suggest that cognitive ability and/academic performance assessed in childhood may be related to later educational and employment outcomes (Barnard, 2004; Caspi et al, 1998; Entwisle, Alexander, & Olson, 2005a; Jimerson, Egeland, Sroufe, & Carlson, 2000). As it pertains to "disconnected youth," some studies have found a relationship between cognitive aptitude in adolescence and disconnected as a young adult (Besharov & Gardiner, 1998; Kuehn, Pergamit, & Vericker, 2011).

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The measures of cognitive ability used for this study were standardized broad reading and the applied problem math test scores from the Woodcock-Johnson Revised Tests of Achievement (WJ-R), Form B. When assessed for factorial invariance and criterion-related validity, WJ-R was found to be a comparable measure to use for both Black and White children (Edwards & Oakland, 2006). Children ages 6-12 were administered all four sub-scales of the WJ-R which provide information on math and reading and are continuous variables. The PSID staff created variables using standardized scores for these tests. Those broad reading and applied problems standardized score variables were converted to z-scores in this study, with z-scores above zero representing cognitive ability above the mean and z-scores below zero representing cognitive ability below the mean.

Positive social behavior. Some research suggests that temperament, disposition, and self-regulation or compliance may be associated with educational and employment outcomes (Barnard, 2004; Entwisle, Alexander, & Olson, 2005a; Rosenthal, 1998). In the PSID CDS, positive social behavior was measured using the Positive Behavior Scale (Polit, 1998), which assesses social competence, autonomy, and compliance with authority figures. This 10-item scale asks the primary caregiver to what extent each of the positive behaviors is like the target child (1=not at all like child to 5=totally like child). Examples of questions asked on the positive behavior scale included: the target child… "Gets along well with other kids," "Does things for (him/her)self, is self-reliant," and "Waits his or her turn during activities." The Cronbach's alpha for the total scale was .79. The PSID created an average positive behavior scale score, with higher average scores reflecting higher levels of positive behavior. That variable was standardized by age and converted to a z-score for use in analyses.

Behavior problems. Prior research has found problem behaviors in early childhood to be related to lower educational attainment and worse employment outcomes in early adulthood (Caspi et al., 1998; Jimerson, Egeland, Sroufe, & Carlson, 2000; Rumberger & Lim, 2008). Within the CDS, the Behavior Problems Index, created by Peterson & Zill (1986) using items from the Achenbach Behavior Problems Checklist (BPI), was used to measure severity of behavior problems (Hofferth, Davis-Kean, Davis, & Finkelstein, 1997). Primary caregivers were asked how true each of the behaviors were for the target child. For instance, the BPI asks, are the following always true, sometimes true, or never true of the target child: 'He/she is rather high strung or nervous?' 'He/she argues too much?' and 'He/she feels worthless or inferior?' PSID staff conducted a confirmatory factor analysis and items loaded onto two factors: externalizing and internalizing. The total BPI index had a Cronbach's alpha of .90 (Institute for Social Research, 2010). Items were reverse coded and summed by PSID staff, with higher scores indicating higher levels of problem behaviors. Those total scores were standardized by age and converted to a z-score for this analysis.

Academic self-concept. There has been mixed evidence pertaining to self-esteem or self-concept on educational outcomes (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995; Rosenthal, 1998; Rumberger & Lim, 2008). Given that one's level of self-concept may be related their human agency (i.e., capability to influence their own functioning or events through their actions; Bandura, 2017), two measures of academic subject-specific self-concept was included in analyses. Subject-specific ability self-concept was measured for reading and math using a scale developed and validated by Jacquelynne Eccles (Eccles, Wigfield, Harold & Blumenfeld, 1993). Higher scores indicated higher self-concept.The total scores for reading and math were standardized by age and converted to a z-score for this analysis.

Parent-child interactions. During formative years, interactions with parents may hold considerable influence on development (Baptiste Pingault, Côte, Petitclerc, Vitaro, & Tremblay, 2015; Ensminger, Lamkin, & Jacobson, 1996; Jimerson, Egeland, Sroufe, & Carlson, 2000; Rumberger, 1995). The CDS asked a series of questions about various types of interactions parents may have with their children doing household tasks or other activities, with five response items ranging from 1="not in the past month" to 5="every day." Examples of questions about parent-child interactions included "How often in the past month have you … 'Gone to the store with (Child)?' 'Talked to (him/her) about your family?' 'Worked on homework with (him/her)?' 'Looked at books or read stories with (him/her)?' and 'Prepared food together?' Scores on 13 items were summed for a composite score, with higher scores indicating more frequent parent-children interactions.

Dependent variable. Trajectory groups identified in Phase I were treated as the categorical dependent variable for Phase II. This resulted in a four-category variable, which is described in Chapter 5.

Analytic procedures. A multivariate logistic regression was used for this phase of analysis so a regression model that included all independent and control variables was used to assess for multicollinearity. Variation inflation factors (VIFs) of 10 or more may indicate multicollinearity (Cohen, Cohen, West, & Aiken, 2003); all VIFs were all less than 3.00. Univariate analyses were used to examine all control and independent variables included in Phase II analyses. All variables had less than 5 percent of values missing. Little's (1988) MCAR test was utilized to test whether data were missing completely at random. The test was significant at the $p < .001$ level, indicating that the data was not missing completely at random (Little, 1988).

There is no way to confirm whether data are missing at random or missing not at random (Gelman & Hill, 2006). However, when it is reasonable to assume that missingness may be related to observed variables within the dataset and not related to the variable itself (e.g., having missing data for income isn't related to level of income) it may be acceptable to assume that data might be missing at random (i.e., missing conditional upon other observed variables) and utilize multiple imputation (Gelman & Hill, 2006). As suggested by Garson (2015) and Gelman and Hill (2006), dummy variables were created to flag missingness, coded 1 if the participant had missing values on a variable and 0 if they did not, and a series of chi-square and t-tests were conducted to test for associations between missingness and observed data. There were some statistically significant relationships found for all variables with missing data, indicating that missingness was to some degree predicted by variables in this dataset (Garson, 2015). As such, it was determined appropriate to consider these data as missing at random and all related variables were included in the imputation model. Multiple imputation uses the observed distribution to generate multiple sets of values that reflect the uncertainty around the "true" value. The Stata multiple imputation reference manual (StataCorp, LLC, 2017) recommends using a minimum of 20 imputations in order to reduce sampling error due to imputations. For this study, multiple imputation by chained equations was used to generate 20 imputations. Stata then pools the parameters (i.e., the coefficients and standard errors) for all of the complete sets and combines those for inference (StataCorp, LLC, 2017).

Bivariate analysis was used to examine relationships between each of the independent and control variables and the dependent variable (trajectory class assignment). Then, multinomial logistic regression was used to examine the relationship between childhood factors and differences in developmental trajectories of connectedness to school or work during the transition into adulthood, controlling for factors measured in middle childhood and early young adulthood.

Chapter IV
Results

Phase I: Sample Characteristics

Table 1 presents weighted percentages to describe the sample for Phase I of this study. The sample consisted of slightly more male-identifying individuals (51%) and was majority White, non-Hispanic (65%). Around 16 percent of participants were identified as being Black or African American, non-Hispanic, 12 percent of the sample as being Hispanic (any race), just over 3 percent had another race reported, over 3 percent were identified as Asian or Pacific Islander, and under 1 percent reported being American Indian or Alaska Native. Overall, most participants were between ages 18 to 20 when they entered the sample (91%), were not married (89.9%), and did not have any children (91%). Around 84 percent of sample members had lived in a parental home (i.e., with parents or in a home owned by parents) at some time during the past year.

Regarding current employment or student status at baseline, 52 percent reported being currently employed, 60 percent reported being a student, and 27 percent reported being employed and also being a student. Eighty-four percent (84%) reported having never been arrested when they entered this sample. At baseline, a majority of participants (67%) reported being in very good or excellent health. The mean score for the Kessler 6 scale, which is a measure of mental health that ranges from 0 to 24, was 5.33 and the median score was 5.00; this variable was positively skewed (skewness = 1.10) and leptokurtic (kurtosis = 4.84). Total family income at baseline was adjusted to 2018 dollars; values ranged from $0 to $2,657,423, with a median income around $81,641, and a mean income of $95,558. Income values were highly positively skewed (skewness = 8.75) and leptokurtic (kurtosis = 137.24).

Are there Differences in Developmental Trajectories of Connectedness to School or Work during the Transition into Adulthood?

The objective of this study was to characterize individual differences in connectedness patterns provides a more holistic and nuanced picture of experiences surrounding these expected age-graded social roles. The use of latent variable mixture models enabled the exploration of individual differences in the growth or change of being connected to school or work over time (Muthén & Muthén, 2000).

Table 1
Sample characteristics at baseline (n=2,027)

Demographic variables	%
Male	51.1%
Race/Ethnicity	
White, non-Hispanic	64.6%
Black, non-Hispanic	16.2%
Hispanic	11.8%
Asian or Pacific Islander	2.9%
American Indian or Alaskan Native	0.8%
Other race reported	3.4%
Age	
18-19	73.0%
20-21	24.6%
22-25	2.4%
Excellent/very good health	66.8%
Married/Cohabiting	11.1%
Parenting	8.3%
Lived in parental home, past year	83.5%
Arrested ever	
Never	84.0%
Once	9.6%
More than once	6.4%
Employed	52.1%
Student	60.3%
Employed & student	26.6%
	Mean (SD)
Non-specific psychological distress score (0-24)	5.33
	Median
Total family income, prior year	$81,640.66

Notes. SD=Standard deviation. Estimates were adjusted for complex survey design.

Model estimation: Latent Class Growth Analyses (LCGAs). The LCGA approach, often referred to as group-based trajectory modeling, assumes that individual differences in a longitudinal process or outcome (herein, repeated measures of individuals' connectedness to school or work) can be captured solely by between-class variability. In other words, growth patterns among individuals assigned to each trajectory subgroup are thought to be homogenous. Thus, a LCGA model estimates a discrete number of trajectories, each with their own mean intercept and slope, and the error terms for each classes' intercept and slope are constrained to zero (Nagin, 1999). Evidence from a limited set of prior research indicated that the developmental heterogeneity in connectedness to school or work might be captured using a set of discrete sub-group trajectories (Kuehn et al., 2011, 2009; Macomber et al., 2008). Both of those studies included both linear (age) and quadratic (age^2) slope terms (Kuehn et al., 2011, 2009; Macomber et al., 2008), and the exploration of mean connectedness over time also suggested there may be nonlinear change over time.

A one-class model was estimated first to provide a baseline comparison. Subsequently, a series of LCGAs with increasing classes were specified and estimated. Then, a series of LCGA models specifying two through ten classes were estimated with a linear slope (age) to provide a baseline for model comparison. For the next series of two through ten class LCGA models, a quadratic age term was added to capture non-linear changes in connectedness to school or work over time. The BIC for these models was smaller than for those without the quadratic (age^2) term, indicating that some of the heterogeneity may be due to non-linear change. However, similar to the baseline models, model fit continued to improve as more classes were added to the model, which was expected based on prior wok (Kuehn et al., 2011). An examination of plotted means indicated that there were not substantial differences in the trajectory subgroups; in other

words, the trajectory subgroups did not appear to be discrete enough to characterize as distinctly different subgroups. Finally, a series of two through ten class LCGA models that included linear and quadratic age terms (age & age^2) and the average national unemployment rate were estimated. The BIC values were smaller, though notably, the inclusion of the unemployment rate did not appear to influence the model parameters to any practical extent.

Conclusions. An important guideline when using LVMMs is to select a model that is useful and interpretable (Lubke & Luningham, 2017; Muthén & Muthén, 2000). The LCGA model results indicated that it would take an increasing number of classes to capture the heterogeneity in connectedness experiences over time. There was not practical utility in identifying ten or more trajectories, particularly with similar trajectory shapes and increasingly small class sizes (Muthén & Muthén, 2000). These findings supported moving on to the next planned step, which was to utilize more flexible LVMMs that allowed exploration of between- and within-class variance in connectedness over time.

Model estimation: Latent Growth Mixture Models (LGMMs). Literature suggests that, if given the ability to capture within-class variance and between-class variance, it may take fewer classes to find a best fitting model (Lubke & Luningham, 2017). So, rather than estimating baseline through ten class LGMM models, a series of baseline through seven class LGMMs with random intercept only and baseline through five class LGMMs with random intercept and random slope were estimated.

First, LGMMs that included a random intercept were estimated. All of these models included age, age^2, average national unemployment rate, and a random intercept factor. This means that each LGMM model estimated a mean intercept and slope for each class, but also allowed individual intercepts within each class to vary around the mean intercept.

Unemployment rate was treated as class independent, meaning that the effect of unemployment rate on connectedness was specified to be the same across classes. A baseline model was estimated for comparison followed by a series of two through seven class models.

Next, LGMMs that included a random intercept and a random slope were estimated. All of the models included age, age^2, average national unemployment rate, a random intercept factor, and a random slope factor. This specification resulted in the LGMM model estimating a mean intercept and slope for each class, but also allowing individual intercepts within each class to vary around the mean intercept and the mean slope. In effect, the mean intercept would be interpreted as the average initial connectedness to school or work for each class, and the slope would be interpreted as the average change in connectedness for each monthly increase in age for each class. For each respective class, the random intercept parameter would be interpreted as the standard deviation of the individual variation from the mean intercept and the random slope parameter would be interpreted as the standard deviation of the individual variation from the mean slope parameter. A baseline model was estimated for comparison followed by a series of two through seven class models. The random effects were allowed to be correlated in these models.

Model selection. Scholars utilizing LGMM suggest comparing BIC values, and then examining classification quality as well as usefulness, which may include looking at the class sizes and trajectory shapes to consider interpretability and fit with prior theoretical and empirical work (Muthén & Muthén, 2000. These factors do not often align perfectly; thus, a considerable amount of model selection is subjective and based in combination on statistical fit, usefulness, and interpretability (Lubke & Luningham, 2017; Muthén & Muthén, 2000).

Table 2

Model comparison fit statistics for models including age, age², and unemployment rate predictors

	Loglikelihood	BIC	Entropy
LCGA-baseline	-59479.3766	118989.2105	1.00
LCGA-2 class	-40361.5086	80783.9317	0.98
LCGA-3 class	-36987.6212	74066.6141	0.97
LCGA-4 class	-34866.0511	69853.9313	0.96
LCGA-5 class	-33584.3869	67321.0601	0.96
LCGA-6 class	-32716.4411	65615.6258	0.94
LCGA-7 class	-32032.978	64279.1568	0.94
LCGA-8 class	-31344.7574	62933.1728	0.92
LCGA-9 class	-30780.8373	61835.7898	0.93
LCGA-10 class	-30404.4347	61113.442	0.92
LGMM-randint-baseline	-36155.0083	72348.0881	1.00
LGMM-randint-2 class	-32878.7785	65833.7001	0.85
LGMM-randint-3 class	-31506.7736	63127.7619	0.77
LGMM-randint-4 class	-29901.6317	59955.5497	0.80
LGMM-randint-5 class	-29244.5203	58679.3984	0.79
LGMM-randint-6 class	-28915.3993	58059.228	0.83
LGMM-randint-7 class	-28352.9798	56972.4606	0.82
LGMM-randboth-baseline	-31241.3246	62535.9494	1.00
LGMM-randboth-2 class	-28252.1329	56610.8662	0.73
LGMM-randboth-3 class	-27526.6065	55213.1136	0.60
LGMM-randboth-4 class	-26893.3047	53999.8102	0.65
LGMM-randboth-5 class	-26904.1819	54074.8647	0.69

Notes. LCGA=Latent Class Growth Analysis. LGMM=Latent Growth Mixture Model. randint=random intercept only. randboth=random intercept and random coefficient. BIC=Bayesian Information Criteria.

Compared to LCGA (Table 2, top section. LCGA) and LGMMs with a random intercept only (Table 2, middle section, LGMM-randint), models that included a random intercept and random slope had the smallest BIC values (Table 2, bottom section, LGMM-randboth). As additional classes were specified for LGMM models with random intercept and random slope factors, the BIC value decreased steadily through the four class LGMM and then increased slightly for the five class LGMM model. The BIC value for the four class model was well over 10 points lower than the five class model, indicating that the four class model had improved

model fit (Raftery, 1995). However, both the four and five class model were explored further instead of selecting the four class model based solely upon the BIC value.

Entropy values, average posterior class probabilities, and class-specific classification error were used to examine classification precision. Entropy values for two through five class LGMM models with random intercept and slopes were between 0.65 and 0.75 (Table 2, Column 4), indicating that overall classification quality was lower than prior LCGA and LGMM random-intercept only models. However, while entropy may be used to compare similar models, experts advise that it should not take precedence over a lower BIC value (Muthén & Muthén, 2000). Tables 3 and 4 present the average posterior probabilities for the four- and five-class LGMM models that included a random intercept and random slope. As shown in Tables 3 and 4, average posterior class probabilities for the four class LGMM ranged from 0.78 to 0.93 and average posterior class probabilities for the five class LGMM ranged from 0.80-0.93. These average posterior class probabilities were considerably higher for their respective class (i.e., assigned to class 1, higher average posterior probability of being in class 1, etc) indicating acceptable classification for both the four and five class LGMMs (Muthén & Muthén, 2000). Class-specific classification error were calculated using the classification modal table, which aided in examining how clearly individuals were able to be separated into each class (Muthén, 2018). As shown in Table 5, classification errors were similar for both the four and five class models. In both models, class one appeared to be clearly distinguished from the others; likewise, the model seemed to be able to separate individuals into class four (and in the five-class model, class five) fairly accurately. The class-specific classification errors for classes two and three suggest that it was more difficult to separate individuals into those classes. This might be why the entropy value

(i.e., overall classification precision) was lower. This can occur when some classes are more clearly distinguished than others (Muthén, 2018).

Finally, the usefulness of the four- and five-class LGMM random intercept, random slope models were considered by looking at class sizes and plotted means and predicted probabilities of being connected to school or work across the transition into adulthood. Given the sample size of 2,027, the guideline that the smallest class should be comprised of more than 1 percent of the sample (Jung & Wickrama, 2008) was utilized. The proportion of individuals assigned to the smallest class for both the four and five class LGMM random intercept, random slope models were above 1 percent (see Table 5). Estimated class means (i.e., the proportion of each trajectory subgroup that was connected at each age) were plotted for the baseline through five class LGMM random intercept and random slope models. Additionally, the fixed intercept and slope parameters were converted from logit coefficients into predicted probabilities and plotted for each of the baseline through five class LGMM random intercept and random slope models (see Appendix A and Appendix B for plotted means and plotted predicted probabilities for all five LGMM random intercept and random slope models).

In examining the plotted means for both the four and five class LGMM random intercept, random slope models (see Appendix A), it appeared that two of the classes in the five class model had similar shapes. Muthén and Muthén (2000) have suggested that models with classes with similar shapes may indicate less practically useful models. Thus, with all other criteria being similar, the four class model, which had the lowest BIC value, was ultimately selected (Muthén & Muthén, 2000).

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Table 3

Average posterior class probabilities, four class LGMM with random intercept and random slope

	1	2	3	4
Class 1	0.78	0.09	0.12	0.01
Class 2	0.01	0.93	0.03	0.03
Class 3	0.01	0.08	0.89	0.02
Class 4	0.01	0.07	0.01	0.91

Note. LGMMs=latent growth mixture models

Table 4

Average posterior class probabilities, five class LGMM with random intercept and random slope

	1	2	3	4	5
Class 1	0.80	0.13	0.06	0.02	0.01
Class 2	0.00	0.92	0.04	0.02	0.01
Class 3	0.00	0.08	0.89	0.01	0.02
Class 4	0.00	0.06	0.01	0.93	0.00
Class 5	0.00	0.02	0.04	0.01	0.93

Note. LGMMs=latent growth mixture models

Table 5

Class-specific classification error and class sizes, four- and five-class LGMMs with random intercept and random slope

Four-Class Model	Class 1	Class 2	Class 3	Class 4	
Classification error	.07%	25%	37%	14%	
Sample proportion	43%	27%	21%	10%	
Five-Class Model	Class 1	Class 2	Class 3	Class 4	Class 5
Classification error	.00%	27%	27%	17%	14%
Sample proportion	41%	30%	16%	8%	5%

Note. LGMMs=latent growth mixture models

Model interpretation. Each of the four trajectory subgroups in the four class LGMM random intercept, random slope model had different shapes (see Figure 3). Around 43 percent of the sample was estimated to be assigned to a trajectory subgroup that, on average, appeared to highly connected to school or work from ages 18 to 26 (hereafter consistently high connectedness [CHC]). Another 27 percent to a trajectory subgroup appeared to have more sporadic connectedness to school or work across the transition into adulthood (hereafter intermittent connectedness [IC]), and about 21 percent were assigned to a trajectory characterized by high initial connectedness that dipped in the early twenties and returned to high

connectedness by the mid-twenties (hereafter high-dipping connectedness [HDC]). Finally,

nearly 10 percent of sample members were assigned to a trajectory subgroup that reflected low

initial connectedness to school or work, that then increased and peaked in the early twenties

before returning to low connectedness by the mid-twenties (hereafter low-peaking connectedness

[LPC]).
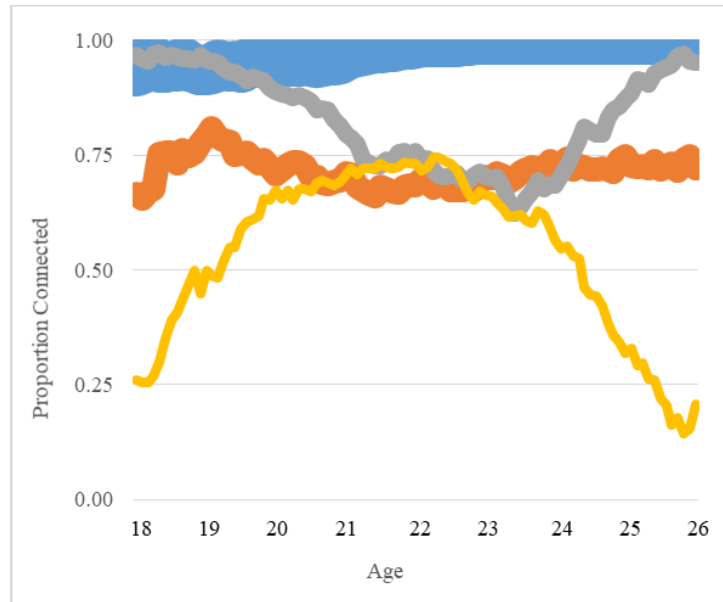
Figure 3. Plotted estimated means of connectedness to school or work for four class LGMM with random intercept and random slope

Differences in connectedness to school or work across the transition into adulthood.

Estimates for intercept, slope, acceleration, and unemployment rate means for each trajectory

subgroup as well as within-class growth factor variance means for intercept and slope random

effects were presented in Table 6. The intercept mean reflected initial connectedness to school or

work at age 18 (216 months), controlling for the national unemployment rate. The slope (age)

mean shows the linear rate of change in connectedness to school or work and the quadratic slope

(age²) mean indicates the acceleration or deceleration in the rate of change over time. Finally, the

intercept and slope variance estimates represent the standard deviation of individual variation in

connectedness from the intercept and slope means (i.e., these are the random intercept and random slope coefficients).

Latent GOLD uses the Wald(=) statistic to test for differences between the beta coefficients for each class (Vermunt & Magidson, 2016). Differences in intercept means across trajectory subgroups were statistically significantly (Wald(=) = 198.35, $p < 9.60E-43$). Likewise, the Wald(=) statistic for linear (age) and quadratic (age^2) slopes indicated that the differences in the betas across trajectory subgroups were significant; in other words, age and age^2 had a significantly different influence on connectedness across each of the trajectory subgroups (age: Wald(=) = 253.78, $p = 9.90E-55$; age^2: Wald(=) = 415.02, $p = 1.20E-89$).

To increase interpretability, the logit coefficients for intercept mean and linear (age) and quadratic (age^2) slope terms were converted to predicted probabilities of trajectory subgroup membership across the transition into adulthood and plotted in Figure 4. Figure 4 illustrates the fixed estimates for connectedness to school or work across the transition to adulthood, by subgroup. Unemployment rate was specified as class independent – meaning that the effects of unemployment rate on connectedness to school or work were specified to be the same, regardless of class membership. The z-score for unemployment rate was less than 2, indicating it was not significantly related to connectedness to school or work (β = -0.091, z = -1.63). At age 18 (216 months), controlling for average national unemployment rate, intercept means for the *consistently high connectedness (CHC)*, *intermittent connectedness (IC)*, and *high-dipping connectedness (HDC)* trajectory subgroups all indicate high initial levels of connectedness to school or work (see Table 6) whereas the intercept mean for the *low-peaking connectedness* (LPC) trajectory subgroup illustrates low initial levels of connectedness to school or work. Figure 4 illustrates that initial connectedness looked similar for the CHC, IC, and HDC

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trajectories. However, the pathways themselves appeared to be different over time, and as can be seen in Table 6, the size of the intercept and slope means were different – which suggested that the magnitude of initial connectedness and rate of change were different across groups (see Table 6).

Those who were assigned to the *consistently high connectedness* (CHC) subgroup had positive significantly high initial connectedness to school or work ($\beta = 15.254$) and a significant, negative rate of change in connectedness with each monthly increase in age ($\beta = -0.695$) that was accompanied by a more positive acceleration in rate of change over time ($\beta = 0.029$). Though the *intermittent connectedness* (IC) trajectory also had significantly high, positive initial connectedness ($\beta = 4.833$), the intercept mean was significantly lower than the CHC trajectory. For those in the IC subgroup there was a significant, negative rate of change in connectedness to school or work with each monthly increase in age ($\beta = -0.072$), which was less steep than for the CHC subgroup, and an acceleration in the rate of change over time ($\beta = 0.001$). The intercept mean for the *high-dipping connectedness* (HDC) trajectory was significant ($\beta = 43.151$) and, as compared to the CHC and IC subgroups, this group had the highest level of initial connectedness to school or work. However, the HDC subgroup also had the steepest significant, negative rate of change ($\beta = -1.482$) with a positive acceleration over time ($\beta = 0.0135$). Finally, initial connectedness for those in the *low-peaking connectedness* (LPC) trajectory was significantly lower than other groups ($\beta = -1.882$); with each monthly increase in age, there was a positive, significant rate of change in connectedness ($\beta = 0.2065$) that was accompanied by a deceleration in the rate of change over time ($\beta = -0.003$).

This model also included a random intercept and random slope factor to capture within-class variance from the intercept and slope means for each subgroup. The random intercept

estimates (labeled intercept variance in Table 6) for each class were statistically significant, thus

indicating a significant degree of individual variance from the mean intercept within each

trajectory. Further, slope variance estimates were also statistically significant, suggesting that

there was a significant degree of individual variance from the mean slope (i.e., rate of change in

connectedness over time) within each trajectory. This within-class variance can be seen when

comparing the differences in the trajectory shapes seen in Figure 4, which illustrated the

predicted probabilities of connectedness for each class by age, and Figure 3, which showed the

plotted estimated means by class and age.

Table 6

Parameter estimates for four class LGMM with random intercept and random slope

	Consistently high	Intermittent	High-dipping	Low-peaking
	Logit (se)	Logit (se)	Logit (se)	Logit (se)
Intercept mean	15.254* (1.92)	4.833* (0.41)	43.151* (5.21)	-1.882* (0.87)
	Logit SD (se)	Logit SD (se)	Logit SD (se)	Logit SD (se)
Intercept variance	9.240* (1.20)	2.916* (0.31)	13.150* (1.17)	3.345* (0.37)
	Logit (se)	Logit (se)	Logit (se)	Logit (se)
Slope (age) mean	-0.695* (0.09)	-0.072* (0.02)	-1.482* (0.18)	0.207* (0.04)
	Logit SD (se)	Logit SD (se)	Logit SD (se)	Logit SD (se)
Slope (age) variance	0.072* (0.04)	0.001* (0.00)	0.002* (0.00)	0.002* (0.00)
	Logit (se)	Logit (se)	Logit (se)	Logit (se)
Quadratic slope (age[2)) mean	0.029* (0.00)	0.001* (0.00)	0.014* (0.00)	-0.003* (0.00)
Unemployment rate mean	-0.091 (0.06)	-0.091 (0.06)	-0.091 (0.06)	-0.091 (0.06)
Proportion Assigned	42.6%	27.1%	20.7%	9.6%

Notes. LGMM=latent growth mixture model. se=standard error. SD=standard deviation. * $p < .05$.
LatentGOLD 5.1 uses two-tailed z-statistics to indicate statistical significance at the $p < .05$ level
(Vermunt & Magidson, 2005).
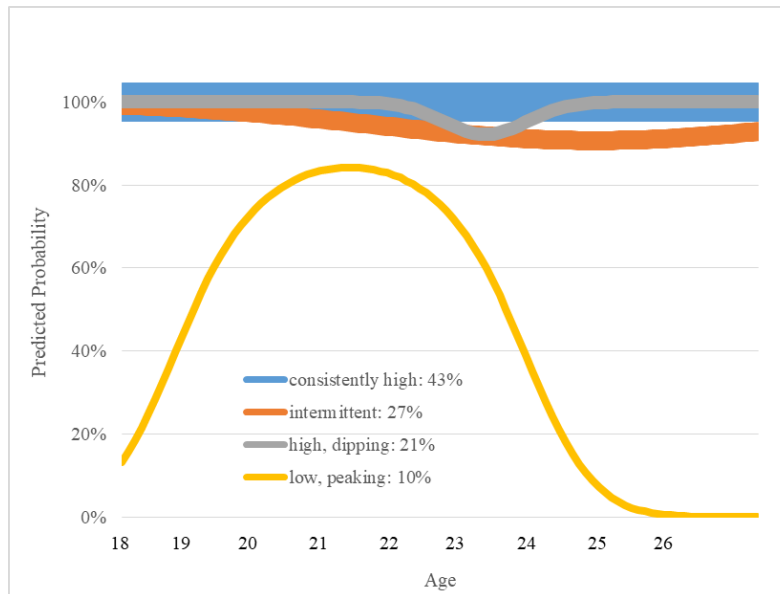
Figure 4. Plotted predicted probabilities of connectedness to school or work for four class LGMM with random intercept and random slope

Demographic characteristics associated with differences in connectedness pathways between 18 and 26. The class modal assignments[13] were saved to an SPSS out-file to be used as a dependent variable in bivariate and multivariate analyses. Due to statistical differences in how class modal and estimated latent class distribution are calculated within the software, the class modal variable reflects different class sizes and proportions than the estimated latent class distribution presented in Table 3 (Vermunt, & Magidson, 2016).

Bivariate chi-square tests and t-tests were conducted to examine associations between demographic characteristics at baseline and class modal assignment (see Table 7). There were statistically significant associations between class modal assignment and race, overall health status, age at sample entry, parent status, and marital/cohabiting status at baseline. For example, as seen in Table 7, as compared to the other three trajectory groups, the *consistently high*

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[13] Individuals are assigned a probability of being assigned to each of the four trajectories, called classification posterior probabilities. Those posterior probabilities sum to 1.00 for each person. Individuals are assigned to the class modal trajectory groups for which they had the highest posterior probability.

trajectory might be characterized as having a greater proportion of White, non-Hispanic

individuals and individuals with total family income in the fifth quintile, and a lower proportion

of individuals with total family income in the lowest quintile as well as lower proportions of

individuals who were parents at baseline. Further, as compared to those in the *intermittent* or

low-peaking trajectories, the mean non-specific psychological distress score was lower for those

assigned to the *consistently high* trajectory, as were the proportions of individuals who were

married or cohabitating at baseline or had been arrested one or more times.

On the other hand, Table 7 illustrates that the *low-peaking* trajectory had a greater

proportion of Black, non-Hispanic individuals and individuals who entered the sample at ages 20

or 21, and a lower proportion of individuals reporting excellent or very good health or having a

total family income in the fifth quintile at baseline than each of the other three trajectories. Other

bivariate associations included a significantly greater proportion of those who were parents at

baseline or being married or cohabiting at baseline assigned to both the *intermittent* and *low-

peaking* trajectories as compared to the *consistently high* and *high-dipping* trajectories. Further,

the proportion of individuals who entered the sample at ages 18 or 19 was significantly greater

among the *high-dipping* trajectory than the other three trajectories.

Conclusion. Latent variable mixture model analyses indicated that there were differences

in the developmental trajectories of connectedness to school or work during the transition into

adulthood. The best fitting model for this data was a four-trajectory latent growth mixture model

(LGMM) with random intercept and random slope coefficients. These four trajectory subgroups

appeared to have different connectedness pathways: *consistently high connectedness* (CHC),

intermittent connectedness (IC), *high-dipping connectedness* (HDC), and *low-peaking

connectedness* (LPC). There were differences in initial connectedness at age 18 (216 months) as

well as the change in connectedness to school or work across the transition. Additionally, there

were also individual differences in connectedness within each trajectory, suggesting that there

may be considerable heterogeneity in connectedness experiences during this transition.

Table 7

Comparison of characteristics measured at baseline TAS interview and trajectory assignment (n=2,027)

	Consistently high (A) n=1,014	Intermittent (B) n=476	High-dipping (C) n=291	Low-peaking (D) n=246	Significance
Race/ethnicity					
White, non-Hispanic	72.9%	54.8%	62.7%	43.6%	A > B, C, D; B & C > D
Black, non-Hispanic	11.0%	20.2%	18.2%	34.5%	A < B, C, D; B & C < D
Other race	16.0%	25.1%	19.0%	21.9%	A < B
Male	53.7%	49.2%	43.1%	52.9%	A > C
Age					
18-19	74.6%	71.1%	80.9%	55.9%	A > D; C > A, B, D
20-21	23.9%	26.3%	16.3%	38.0%	A & B > C; D > A, B, C
22-25	1.6%	2.6%	2.8%	6.1%	-
Excellent/very good health	69.2%	61.5%	71.6%	58.0%	D < A, B, C; B < C
Married/cohabiting	8.5%	17.1%	8.3%	16.3%	A < B & D; B & D > C
Parent	3.5%	15.1%	8.0%	20.9%	A < B, C, D; C < B & D
Lived in parental home sometime during past year	85.6%	80.3%	82.1%	81.4%	-
Arrested once or more	11.7%	23.5%	16.7%	22.3%	A < B & D
Non-specific psychological distress (mean)	5.06	5.75	5.41	5.87	A < B & D
Total Family Income (household income quintiles)					
Lowest quintile	7.1%	18.1%	18.4%	20.1%	A < B, C, D
Second quintile	13.1%	18.0%	15.3%	20.6%	A < D
Third quintile	16.5%	16.2%	16.6%	20.7%	-
Fourth quintile	24.2%	20.5%	17.6%	20.3%	A > C
Fifth quintile	39.0%	27.2%	32.0%	18.3%	A > B, C, D; B & C > D

Note. Significance listed for relationships at $p < .05$ or lower.

Phase II: Subsample Characteristics

Demographic characteristics reflect the original subsample, prior to multiple imputation and are displayed in Table 8. For variables that had missing values, the number of available observations is reflected beside the variable name. The table has been separated by middle childhood and young adult characteristics.

Middle childhood characteristics (ages 8 to 10). As seen in Table 8, the majority of subsample members were White, non-Hispanic and just over half were male, similar to the race and sex characteristics reported for the full sample from Phase I. Almost half of the subsample members were age 10 when middle childhood information was collected. Among subsample participants, the median total family income in the prior year was approximately $75,500 in 2018 dollars, with incomes ranging from $0 to 1,274,637. Most (80%) of the heads of households were married or cohabiting. On average, heads of households had completed 13 years of education (range: 0 to 17 years) and had worked 2,029 hours in the prior year (range: 0 to 5,200 hours).

The majority of children (86%) were reportedly in excellent or very good health during middle childhood. Composite scores for the 13 variables that were summed to reflect frequency of parent-child interactions for various household tasks and activities ranged from 15 to 59, with an average score of 34.24. Scores for the Behavior Problem Index (BPI), the Positive Behavior Scale (PBS), Woodcock Johnson Revised Form broad reading and applied problems tests, and math and reading self-concept scales were standardized by age and converted to z-scores for comparison purposes. Table 8 displays the range of z-scores for each of those measures across the whole subsample. BPI scores ranged from just over one standard deviation below the mean (-1.35) to over three standard deviations above the mean (3.32), whereas scores for the PBS ranged

from nearly five standard deviations below the mean (-4.70) to one and a half standard deviations above the mean (1.52). Reading self-concept z-scores ranged from -4.37 to 1.93. Math self-concept z-scores ranged from -3.62 to 2.13. Z-scores for the Woodcock Johnson Revised Form broad reading test ranged from -3.45 to 3.74. Similarly, the Woodcock Johnson Revised Form applied problems test z-scores ranged from to -4.69 to 3.16.

Table 8
Subsample characteristics (n=757)

Middle childhood	%
Male	52.2%
Race/ethnicity	
White, non-Hispanic	68.8%
Black, non-Hispanic	14.6%
Hispanic	10.1%
Asian or Pacific Islander	2.5%
American Indian or Alaska Native	0.01%
Other race reported	3.3%
Age	
8	19.8%
9	33.7%
10	46.4%
Head of household married	79.6%
Total Family Income (median)	$75,540.11
Total Family Income (household income quintiles)	
Lowest quintile	9.8%
Second quintile	15.5%
Third quintile	18.9%
Fourth quintile	24.4%
Fifth quintile	31.5%
Excellent/very good health (n=752)	85.9%
	Mean
Head of household, highest grade completed (n=720)	13.00
Head of household, hours worked past year	2,069.33
Parent-child interactions, frequency (n=755)	34.25
	Range
Behavior Problem Index z-score (n = 742)	-1.35 3.32

Positive Behavior Scale z-score (n=754)	-4.70	1.52
WJ-R reading z-score (n=753)	-3.73	4.20
WJ-R math z-score (n=753)	-4.53	3.87
Reading self-concept z-score (n=747)	-4.37	1.93
Math self-concept z score (n=747)	-3.62	2.13
Young adulthood		
Age at sample entry		
18-19	91.6%	
20-21	7.6%	
22-25	1.0%	
Excellent/very good health at sample entry (n=756)	69.1%	
Married/cohabiting at sample entry	8.0%	
Parent at sample entry (n=756)	5.3%	
Lived in parental home sometime during past year at sample entry	88.0%	
Arrested once or more at sample entry (n=756)	13.1%	
Non-specific psychological distress (mean)	5.33	
Total Family Income (median)	87,189.87	
Total Family Income (household income quintiles) at sample entry		
Lowest quintile	9.5%	
Second quintile	15.6%	
Third quintile	15.2%	
Fourth quintile	23.5%	
Fifth quintile	36.2%	

Notes. WJ-R=Wood Johnson Revised Form. Estimates were adjusted for complex survey design and are based on original data, prior to multiple imputation. Behavior Problem Index, Positive Behavior Scale, WJ-R reading and applied problems scores, and reading and math self-concept scores were standardized by age and converted to z-scores. Income values were adjusted for inflation to 2018 values using the CPI. Income quintiles were created based upon household income quintiles used in Census Bureau reports on income and poverty

Young adult characteristics (ages 18 to 25). Most (92%) of the individuals in this

subsample were ages 18 or 19 when they entered the TAS sample. The majority (69%) reported

their overall health as excellent or very good health when they entered the TAS sample, and

scores for the Kessler 6 scale, which measures non-specific psychological distress, ranged from 0

to 23 with an average score of 5.33. Nearly 90 percent of individuals in the subsample reported

having lived in a home owned by their parent(s) sometime in the prior year when they entered

the TAS sample. Few reported being married or cohabiting or being a parent when they entered

the TAS sample (8% and 5%, respectively). Approximately one-eighth (13%) reported having

been arrested at least one time by the time they entered the TAS sample. Finally, when they

entered the TAS as young adults, over half of this subsample had total family incomes from the

prior year in the fourth or fifth Census Bureau household income quintiles.

What Childhood Factors are associated with Differences in Developmental Trajectories of

Connectedness to School or Work during the Transition into Adulthood?

    Bivariate analysis. Bivariate tests of association were conducted and results are displayed

in Table 9. Trajectory assignment was used as the dependent variable for these tests. There were

demographic differences found among trajectories related to race as well as middle childhood

factors such as family background, behavior, and cognitive test scores. Additionally, there were

some significant associations between young adult characteristics such as marital/cohabiting

status, parent status, and total family income, all measured at sample entry.

    As shown in Table 9, during middle childhood the *consistently high* trajectory had a great

proportion of married household heads and White, non-Hispanic participants than the *high-*

dipping or *low-peaking* trajectories. The proportions of those with total family income in the

second and third income quintiles during middle childhood was greater for the *intermittent* and

low-peaking trajectories than the *consistently high* and *high-dipping*; whereas the proportion of

family income in the fifth quintile was greater for the *consistently high* as compared to the *low-*

peaking trajectory. The mean level of head of household education for those in the *consistently*

high trajectory was greater than those of the *intermittent* and *low-peaking* subgroups. Finally, the

low-peaking trajectory had different racial composition and middle childhood family background

characteristics – especially as compared to the *consistently high* trajectory – and had lower

cognitive test scores and higher behavior problem index scores compared to all other trajectories.

Table 9

Bivariate associations of demographic characteristics and trajectory assignment (n=757)

	Consistently high (A) n=395	Intermittent (B) n=161	High-dipping (C) n=118	Low-peaking (D) n=83	Significance
Middle childhood control variables					
Race/ethnicity					
White, non-Hispanic	76.9%	62.6%	58.0%	42.5%	A > B, C, D; B > D
Black, non-Hispanic	10.0%	16.6%	18.6%	37.9%	B & D > A D > B & C
Other race	13.1%	20.7%	23.4%	19.6%	-
Male	55.1%	49.2%	45.4%	52.2%	-
Head of household married	84.9%	77.8%	71.7%	59.4%	A > C & D
Total Family Income (household income quintiles)					
Lowest quintile	7.8%	6.7%	17.5%	16.5%	D > B
Second quintile	11.0%	24.9%	12.5%	33.8%	B > A & C; D > A & C
Third quintile	17.8%	19.7%	23.1%	14.9%	-
Fourth quintile	26.9%	23.1%	19.7%	18.2%	-
Fifth quintile	36.5%	25.5%	27.3%	16.6%	A > D
Head of household, highest grade completed	13.5	12.1	12.6	11.6	A > B & D
Head of household, hours worked past year	2152	2012	1914	1908	-
Young adulthood control variables					
Excellent/very good health at sample entry	70.9%	62.8%	67.2%	75.0%	-
Married/cohabiting at sample entry	4.3%	15.8%	10.6%	11.2%	A < B & D
Parent at sample entry	2.1%	11.5%	3.0%	20.9%	D > A & C; B > A & C
Lived in parental home sometime during past year at sample entry	89.8%	86.1%	85.7%	84.0%	-

Arrested once or more at sample entry	9.8%	19.9%	15.7%	15.6%	-
Total Family Income (household income quintiles)					
Lowest quintile	4.3%	18.0%	16.5%	13.0%	A < B, C, D
Second quintile	15.8%	14.1%	15.0%	18.6%	-
Third quintile	14.3%	16.6%	14.3%	20.9%	-
Fourth quintile	22.7%	26.0%	21.0%	29.2%	-
Fifth quintile	42.8%	25.3%	33.2%	18.2%	A > B & D
Non-specific psychological distress (mean)	5.03	5.94	5.67	5.41	-
Middle childhood, independent variables					
Excellent/very good health	87.3%	86.4%	82.6%	80.5%	-
Behavior Problem Index z-score	-0.14	-0.00	0.10	0.62	D > A, B, C
Positive Behavior Scale z-score	0.06	-0.09	-0.13	-0.26	-
Parent-child interactions	33.76	34.66	35.70	33.56	C > A
WJ-R reading z-score	0.66	0.59	0.66	-0.23	A, B, C > D
WJ-R math z-score	0.95	0.69	0.78	0.13	A, B, C > D
Reading self-concept z-score	-0.20	-0.01	-0.04	-0.05	-
Math self-concept z-score	-0.02	-0.20	-0.17	0.08	-

Notes. Estimates were adjusted for complex survey design. Significance noted for relationships at $p < .05$.

Multinomial logistic regression analysis. A multinomial logistic regression was conducted that controlled for both middle childhood and young adult demographic characteristics. The base group used for comparison was the *consistently high connectedness* trajectory. This class was chosen as the base group because it was the comprised of around 57 percent of subsample members and also because there was practical utility in comparing those with consistent connectedness to all other groups (Menard, 2010). Results are displayed in Table 10.

Control variables. Several control variables were associated with being either in the *intermittent* or *low-peaking* trajectories instead of the *consistently high* trajectory. Each

additional year of completed education among the household head during middle childhood was related to around 15 percent decreased odds of being in the *intermittent* (RRR = 0.86, *p* < .01) or *low-peaking* (RRR = 0.87, *p* < .05) trajectories compared to the *consistently high* trajectory. Further, compared to those in the *consistently high* trajectory, being a parent when they entered the full sample for this study was related to higher relative risk of being assigned to the *intermittent* (RRR = 2.95, *p* < .05) or *low-peaking* (RRR = 5.18, *p* < .01) trajectory. Total family income during young adulthood was only related to being in the *intermittent* versus the *consistently high* trajectory. Specifically, having a total family income in the lowest income quintile as compared to the third quintile was associated with almost 3 times higher relative risk of being in the *intermittent* trajectory rather than the *consistently high* trajectory (RRR = 2.98, *p* < .05). Finally, being Black, non-Hispanic, as compared to White, non-Hispanic, was associated with over four times higher relative risk of being in the *low-peaking* trajectory as compared to the *consistently high* trajectory (RRR = 4.37, *p* < .01).

Table 10
Multinomial logistic regression results (n=757)

	Intermittent (B) vs Consistently high (A) B vs. A		High- dipping (C) vs Consistently high (A) C vs. A		Low- peaking (D) vs Consistently high (A) D vs. A	
	RRR	SE	RRR	SE	RRR	SE
Middle childhood control variables						
Race/ethnicity (Ref. White, non-Hispanic)						
Black, non-Hispanic	1.94	0.73	2.24	0.91	4.37**	2.33
Other races	1.20	0.50	2.35	1.05	1.13	0.76
Male	0.97	0.30	0.76	0.22	0.83	0.35
Head of household married	0.85	0.29	0.77	0.29	0.59	0.33
Head of household, hours worked past year	1.00	0.00	1.00	0.00	1.00	0.00

Head of household, highest grade completed	0.86**	0.05	0.93	0.06	0.87*	0.05
Total Family Income (Ref. third quintile)						
Lowest quintile	0.43	0.26	0.89	0.52	0.68	0.55
Second quintile	1.64	0.93	0.60	0.27	1.79	1.10
Fourth quintile	1.13	0.49	0.67	0.28	0.91	0.64
Fifth quintile	1.42	0.62	0.74	0.39	1.52	1.13
Young adulthood						
Excellent/very good health	1.02	0.34	1.27	0.38	1.52	0.78
Married/cohabiting	2.65	1.29	2.00	0.72	1.36	0.80
Parenting	2.95*	1.46	0.80	0.59	5.18**	2.76
Lived in parental home past year	0.94	0.31	0.81	0.32	0.81	0.47
Arrested once or more	1.33	0.51	1.30	0.59	1.22	0.75
Non-specific psychological distress	1.04	0.03	1.04	0.05	0.99	0.05
Total Family Income (Ref. third quintile)						
Lowest quintile	2.98*	1.22	1.96	0.92	0.97	0.67
Second quintile	0.71	0.31	0.84	0.40	0.73	0.34
Fourth quintile	1.14	0.57	1.03	0.43	2.09	1.34
Fifth quintile	0.90	0.46	1.37	0.61	1.60	1.11
Middle childhood independent variables						
Child excellent/very good health	1.17	0.40	0.85	0.29	1.48	1.10
Behavior problems index	1.01	0.19	1.17	0.22	2.45**	0.66
Positive behaviors scale	0.81	0.15	0.82	0.12	1.25	0.35
Parent-child interactions	1.02	0.02	1.04*	0.02	0.99	0.02
WJ-R math score	0.99	0.01	0.99	0.01	0.99	0.02
WJ-R reading score	1.02	0.01	1.02	0.01	0.97	0.02
Math self-concept	0.79	0.11	0.84	0.11	1.14	0.28
Reading self-concept	1.20	0.18	1.12	0.17	1.29	0.24

Notes. Ref=Reference category. RRR=Relative Risk Ratio. SE=Standard Error. $* = p < .05$, $** = p < .01$.

Independent variables. In comparing assignment to the *intermittent* trajectory versus the

consistently high trajectory, none of the independent variables had a statistically significant

relationship. Column 2 in Table 10 shows that the relationship between parent-child interactions and being assigned to the *high-dipping* trajectory as compared to the *consistently high* trajectory remained the same, even with the addition of control variables from young adulthood. When controlling for all other variables, an increase in the composite scores for parent-child interactions was associated with 1.04 higher odds of being in the *high-dipping* trajectory as compared to the *consistently high* trajectory ($p < 0.05$). Finally, higher behavior problems were associated with being in the *low-peaking* trajectory as compared to the *consistently high* trajectory. Each one unit increase in scores on the behavior problem index was associated with almost two and a half higher odds of being in the *low-peaking* trajectory rather than the *consistently high* trajectory (RRR = 2.45, $p < 0.01$).

Conclusion. In order to examine childhood factors associated with differences in developmental trajectories identified in Phase I, a subsample of individuals from the larger sample (n=2,027) were selected based on having information measured during middle childhood (ages 8 to 10). Bivariate tests of association highlighted different characteristics for those assigned to these trajectories, with the *consistently high* and *high-dipping* trajectories having more similar characteristics and the *low-peaking* and *intermittent* trajectories having more similar characteristics. When controlling for individual and family characteristics from middle childhood and early young adulthood, parent-child interactions were associated with being assigned to the *high-dipping* as compared to the *consistently high* trajectory and behavior problems during middle childhood were associated with being assigned to the *low-peaking* trajectories as compared to the *consistently high* trajectory.

Chapter V
Discussion

Scholarship within the United States tends to focus on "disconnected youth" (Fernandes-Alcantara, 2015, Hair et al., 2009). However, research on the transition into adulthood points to increased individualization of post-high school pathways into adulthood (Osgood et al., 2005; Shanahan, 2000) and some research on disconnected youth implies there may be varied degrees of connectedness to school or work across the transition period (Belfield, Levin, & Rosen, 2012; Kuehn, Pergamit, Macomber, & Vericker, 2009; Kuehn, Pergamit, & Vericker, 2011). The combination of these bodies of work gave rise to the first research question for this study, which sought to explore whether there were individual differences in the developmental trajectories of being connected to school or work across the transition into adulthood. Further, research on disconnected youth has tended to examine adolescent risk factors and young adult characteristics associated with connectedness to school or work (Fernandes-Alcantara, 2015, Hair et al., 2009; Kuehn, Pergamit, Macomber, & Vericker, 2009; MaCurdy, Keating, & Nagavarapu, 2006). It is important to understand adolescent risk factors for disconnection; however, looking at factors from childhood has the potential to inform better targeting of early prevention and intervention efforts that bolster connectedness. This study applied a cumulative inequality lens to examine the second research question about what childhood factors were related to differences in connectedness trajectories across the transition into adulthood. The discussion of results has been organized according to the study's two research questions.

Are there differences in the developmental trajectories of being connected to school or work during the transition into adulthood?

The concept of disconnected youth centers around cultural norms and age-graded expectations and beliefs about the social roles one should assume post-high school. In particular,

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those expected roles include completing additional education or training and becoming gainfully employed. One of the central paradigms of life course theory is that the timing of lives, which includes how social timing of roles and events – and the related age-graded expectations and beliefs – may be interrelated to early and later experiences (Elder, 1994). Following the transition from high school, then, being connected to either education or employment is considered an "on-time" event, whereas being connected to neither ("disconnected") would be an "off-time" event. The findings from this study, however, highlight how the social timing of connections to school or work across the transition into adulthood varies. While many young people between ages 18 and 26 may be connected to school and work fairly consistently – like those following the consistently high connectedness (CHC) pattern – there is considerable variation in those connections for others. This suggests that being disconnected from both school and work during this transition into adulthood is not truly an "off-time" event.

For instance, it is possible that some of those who begin the post-high school transition highly connected and then experience a decrease in connectedness during their mid-twenties (HPC) do so purposely. Perhaps they work for a few years or finish postsecondary school and then take time off to get married, or have children, or both – as part of a synchronized plan of timing those events. On the other hand, it is also possible that the finishing of postsecondary education was followed by difficulty finding and securing steady employment. Or that after being steadily employed for a few years, individuals experienced a lay-off due to the timing of a historical event, such as the Great Recession. Similarly, others such as those assigned to the LPC trajectory may be fairly disconnected from school or work in their late teens but gradually become more connected in their early-twenties before experiencing decreased connectedness again in the mid-twenties. For some, it is possible that a choice was made to take a "gap year"

before school or full-time employment. However, for others, it might be due to taking longer to finish high school, living in an area with few job opportunities, experiencing legal issues, having children at a young age or some combination of these events.

A few prior studies have explored differences in developmental trajectories of connectedness to work or school utilizing latent class growth analysis (LCGA) – two using a national sample of young adults (Kuehn, Pergamit, Macomber, & Vericker, 2009; Kuehn, Pergamit, & Vericker, 2011) and the other using administrative and child welfare data for individuals who aged out of foster care in three states (Macomber, Kuehn, McDaniel, Vericker, & Pergamit, 2008). In each of those studies a four-class model solution was selected and similar patterns of connectedness to either school or work were identified and discussed. Importantly, those studies did not provide details on why a four-class LCGA model was selected. For this reason, it is difficult to compare the findings from this current study with prior findings. Still, there are some noteworthy differences and similarities.

First, the connectedness measure for this study was created similarly to that used by Kuehn and colleagues in their studies (2009, 2011). The authors also used employment and enrollment data to create binary indicators of connectedness across the transition into adulthood. However, those studies used weekly data and explored differences in individual growth or change in connectedness to school or work between the ages of 18 and 24 for a sample of individuals from the National Longitudinal Study of Youth 1997 (Kuehn, Pergamit, Macomber, & Vericker, 2009; Kuehn, Pergamit, & Vericker, 2011). Instead, this study used monthly data and explored differences between the ages of 18 and 26 for a sample of individuals from the Panel Study of Income Dynamics Transition into Adulthood Supplement.

Second, despite these methodological similarities, results from this study indicated that LCGAs may not be the best fitting or most adequate way to describe differences in the developmental trajectories of connectedness to school or work. Rather, LGMM, which allow for within-trajectory variation fit the data better. For comparison purposes, predicted probabilities for the four-class LCGA solution estimated with this study's data were plotted, and those trajectories looked similar to those plotted by Kuehn, Pergamit, Macomber and Vericker (2011), even though the age range for this study was broader (18 to 26) and a different national dataset was utilized. This suggests that the data in both of our studies may reflect similar connectedness experiences; however, the lack of detail on their methods and model selection make it difficult to tell for sure.

Finally, findings from this study indicated that a four class LGMM model was the "best-fitting" model for this data. This is an important difference because it suggests that it may not be adequate to try and capture the developmental heterogeneity in connectedness experiences by exploring only between-class differences (i.e., using LCGA models) like those prior studies have done. In other words, assuming that there is no individual variation in connectedness among those assigned to each respective trajectory subgroup may mask some important individual variation in connectedness to school or work. Though the BIC did stop decreasing for a four-class LGMM with random intercept and slope coefficients, the within-class variation and the class-specific classification error indicated that there was some fuzziness when trying to separate individuals into a couple of the classes – indicating that these may not be four entirely "discrete" subgroup patterns of connectedness to school or work across the transition. The class-specific classification error indicated that the CHC and LPC trajectory were more easily distinguished from others. However, these are data-driven exploratory methods that are best used to consider

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qualitative differences rather than "true" subgroups (Lubke & Luningham, 2017). In that vein, this part of the discussion focuses on some prominent features that warrant further discussion.

First, while around half of individuals were assigned to the CHC trajectory, a substantial proportion of individuals had less stable connectedness experiences across the transition to adulthood. For example, the second largest trajectory included individuals with *intermittent connectedness* (IC) across the transition into adulthood. This signals that some individuals have unstable or sporadic connections to school or work between their late teens and mid-twenties. Similarly, the LPC trajectory also reflected sporadic connectedness; however, this subgroup seemed to be differentiated from the IC by low initial average levels of connectedness and similarly low average levels of connectedness in the mid-twenties with a peak in connectedness in the early twenties. Conversely, the HDC trajectory, which included approximately one-fifth of the sample, reflected that the early- to mid-twenties may be a time of weaker connections to school or work for a substantial minority of individuals.

Second, there may be some parallels between these findings and those of the aforementioned studies that utilized LCGA to explore connectedness trajectories. For instance, this study and the prior studies all identified a connectedness trajectory wherein assigned individuals were consistently connected across the transition into adulthood and also identified patterns of initial connection followed by a gradual decline in connectedness as well as initially disconnected with a gradual increase in connectedness over time (Kuehn, Pergamit, Macomber, & Vericker, 2009; Kuehn, Pergamit, & Vericker, 2011; Macomber, Kuehn, McDaniel, Vericker, & Pergamit, 2008). The "initially connected" trajectory identified in prior studies partially resembled the HDC trajectory identified in this current study, where there was initially high connectedness that declined in the early twenties. However, this study's findings indicated that,

on average, individuals in the HDC then experienced another steady increase in connectedness from the early- to mid-twenties. Likewise, the "later connected" trajectory identified in those prior studies illustrated a similar pattern as the LPC in this study, moving from initial disconnection to higher connectedness by the early twenties. However, the LPC trajectory identified in this study is differentiated by a subsequent decline in connectedness beginning in the early twenties.

Findings from this study suggest that initial connectedness to school or work in the late teens may correspond with the connectedness in the mid-twenties (i.e., starting high, ending high; starting low, ending low). The individual variation of connectedness within each trajectory subgroup also implies that we should not base availability or delivery of services that seek to bolster connections to school or work solely on whether someone is connected to school or work in their late teens. Moreover, these findings highlight that it is inadequate to examine connectedness to school or work at one point in time. Perhaps more importantly, this longitudinal study provides a more holistic view of connectedness as a process, not as an outcome. Treating connectedness as an outcome would potentially result in missing individuals who experience sporadic connectedness throughout the late teens and early twenties as well as those who experience a decrease in connectedness in their early- and mid-twenties.

Demographic characteristics were associated with differences in connectedness pathways between 18 and 26. Trajectory group profiles for the full sample of 2,027 individuals highlighted different demographic characteristics across trajectory groups. As indicated by other cross-sectional and longitudinal studies of connectedness to school or work, race, income, age, parent and marital status were related to differences in connectedness patterns (Burd-Sharps & Lewis, 2017; Fernandes-Alcantara, 2015; Hair et al., 2009; MaCurdy, Keating, Nagavarapu,

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2006; Ross & Prchal Svajlenka, 2016). Kuehn and others (2009) presented descriptive analysis findings related to factors that predicted group membership. However, they focused largely on adolescent and young adult crime, risk behaviors, and employment and education status in their descriptive analysis, whereas demographic factors were the focus of the descriptive analysis conducted in this study. Therefore, income was the only descriptive comparison that can be made between that study and the current study.

Similar to Kuehn and others' (2009) findings that higher annual median income was related to being in the consistently connected trajectory as compared to the other three subgroups, this study found that higher total family income in the prior year was associated with being in the CHC trajectory identified in this study. As compared to the other three trajectories, a lower proportion of those in the CHC had total family incomes in the lowest income quartile when they entered this study's sample and a greater proportion had total family incomes in the top five percent of households. Further, a greater proportion of White, non-Hispanic individuals were assigned to the CHC trajectory than the other three trajectories. This was not identified in the bivariate or multinomial analyses conducted by Kuehn and colleagues (2009); however, it is consistent with more general findings that race and ethnicity are associated with disconnection from school and work (Burd-Sharps & Lewis, 2017; MaCurdy, Keating, & Nagavarapu, 2006).

The results of this study showed that those in the CHC trajectory had lower mean non-specific psychological distress scores and a lesser proportion had been arrested one or more times when compared to those in the IC and LPC trajectories. Each of these particular experiences – higher psychological distress and being arrested – might contribute to more sporadic connections to school or work. However, it is also important acknowledge that there may be complex relationships between these characteristics and other factors, such as heavy

policing of particular communities, minority stress or generational trauma. These findings align with other studies that have found a relationship between poor mental health and delinquent behavior and connections to school or work (Belfield, Levin, & Rosen, 2012; Hair et al., 2009; Kuehn, Pergamit, Macomber, & Vericker, 2009; MaCurdy, Keating, & Nagavarapu, 2006).

Compared to all other groups, a smaller proportion of those in the LPC reported being in excellent or very good health and the LPC trajectory had the highest proportion of Black, non-Hispanic individuals. Moreover, both the IC and LPC trajectories had greater proportions of individuals who were older when they entered this study's sample, became parents at an early age, and were married or cohabiting in their teens or early twenties than those assigned to the CHC and HDC trajectories (where individuals started and ended with high average levels of connectedness). This is consistent with findings from other studies that have highlighted parenting individuals (usually female) and those who are older often experience higher rates of disconnection from school or work (Fernandes-Alcantara, 2015; Ross & Prchal Svajlenka, 2016), which may have distinct policy implications that will be discussed later in this section.

What childhood factors are associated with differences in connectedness to school or work across the transition into adulthood?

The second research question focused on examining what childhood factors were associated with differences in developmental trajectories of connectedness to school or work during the transition into adulthood. This question was related to three of the five axioms associated with cumulative inequality theory (CI theory): (1) Social systems generate inequality, which is manifested over the life course through demographic and developmental processes; (2) Disadvantage increases exposure to risk, but advantage increases exposure to opportunity; (3) Life course trajectories are shaped by the accumulation of risk, available resources, and human

agency. A brief discussion about how the findings from this study may inform CI theory follows below.

Cumulative inequality theory purports that childhood conditions are related to adulthood outcomes and recommends the importance of exploring inter- and intra-individual differences in developmental processes (Ferraro, Shippee, & Schafer, 2009). This study used LGMM in the first phase, which explored inter- and intra-individual changes in connectedness to school or work over time, and then linked a subsample of participants with information from middle childhood in order to examine childhood predictors of those differences. Findings from this study suggest that there might be differences in the developmental patterns of connectedness to school or work across the transition into adulthood and that childhood factors, such as frequency of parent-child interactions, behavior problems, head of household education, and race may be associated with those differences, even when controlling for young adult demographic characteristics.

While one cannot conclude from this study whether the differences in developmental trajectories of connectedness represent risk or opportunity, the correlation between education, employment, and earnings (NCES, February 2019) may imply that being in the CHC trajectory could afford different structural advantage to individuals. At least a few other studies have investigated childhood factors related to young adult education and employment outcomes (Caspi et al., 1998; Entwisle, Alexander, & Olson, 2005a), but at the time of this study, no studies specifically focused on disconnected youth had included childhood factors. By examining childhood factors related to differences in connectedness to school or work across the transition into adulthood, findings from this study contribute to the cumulative inequality theoretical base.

Bivariate tests of association indicated that family socioeconomic status, race, and cognitive ability and behavior problems in childhood were related to differences in connectedness trajectories. A greater proportion of those assigned to the CHC trajectory had higher mean levels of education for the head of household than those with more sporadic connections to school or work (i.e., IC and LPC trajectories). Further, those in the CHC trajectory had higher total family income, a greater proportion of White, non-Hispanic individuals, and higher cognitive test scores for reading and math, and lower behavior problem index scores than those in the LPC trajectory.

Some of the bivariate trajectory relationships remained statistically significant in the multivariate analysis, where being Black, non-Hispanic as compared to White, non-Hispanic and having a head of household with fewer years of education were related to being assigned to a subgroup that experienced more instability in connectedness to school or work (i.e., IC or LPC) rather than the CHC trajectory. This finding supports findings from prior studies where individual or family factors such as race and family socioeconomic status were related to education and/or employment outcomes (Ainsworth & Roscigno, 2005; Barnard, 2004; Caspi et al, 1998; Entwisle, Alexander, & Olson, 2005a). Additionally, having higher behavior problems in middle childhood (as reported by the primary caregiver) was associated with higher odds of being in the LPC subgroup as compared to CHC subgroup. This aligns with findings from at least two other studies that also found that problem behaviors in childhood were associated with less positive education or employment outcomes (Caspi et al, 1998; Jimerson, Egeland, Sroufe, & Carlson, 2000).

Race and family socioeconomic status. Research on disconnected youth has consistently found that race is related to disconnection from school and work (Annie E. Casey

Foundation, 2009; Burd-Sharps & Lewis, 2017; Hair et al., 2009; Lewis & Burd-Sharps, 2015; NCES, 2017b; Wight et al., 2010). Additionally, some studies surrounding disconnected youth have found lower parent education to be related to disconnection, particularly having a parent who has dropped out of school (Besharov & Gardiner, 1998; Brown & Emig, 1999; Hair et al., 2009). Studies regarding educational outcomes and disconnected youth have found contradicting relationships between race and educational outcomes when controlling for family socio-economic status (SES). For example, some studies found that after controlling for family SES, White or European American students had higher odds of dropping out of high school than minority racial/ethnic group students (Ainsworth & Roscigno 2005; Allensworth, 2005; Crowder & South, 2003; Daniel, Walsh, Goldston, Arnold, Reboussin, & Wood, 2006). Conversely, Dunham and Wilson (2007) found that after controlling for family socioeconomic status, African American and Hispanic youth still had higher odds of dropping out than White youth, and Asian youth had lower odds of dropping out than White youth. Similarly, one study on disconnected youth found that, after controlling for parental education level, the magnitude of association between being Black or Hispanic (as compared to White individuals) and experiencing disconnection from school or work decreased (MaCurdy, Keating, & Nagavarapu, 2006).

In this study, race remained a significant predictor of being in the LPC trajectory, even after controlling for family socio-economic (proxied using hours worked by head of household in the prior year, total family income in the prior year, and total years of education for the head of household). These analyses utilized a three-category race variable (i.e., White, non-Hispanic; Black, non-Hispanic; and Other race reported) due to small cell sizes for some of the original race categories. Thus, the findings suggest that further discussion about how structures shape the availability of resources or exposure to risk differently for White, non-Hispanic individuals as

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compared to Black, non-Hispanic individuals is warranted. However, other important racial differences related to differences in connectedness to school or work were unable to be adequately explored here.

Moreover, the relationships between race and household education levels and disconnection from school or work may not be adequately discussed without talking about the correlation between race and family socioeconomic status. In this study, being Black, non-Hispanic as compared to White, non-Hispanic was related to being in the LPC trajectory rather than the CHC trajectory. Likewise, a one unit increase in highest grade completed by the household head was related to around 13 percent lower odds of being in the IC or LPC trajectories compared to the CHC. According to the National Center for Education Statistics (NCES, April 2018), high school completion increased for young adults (ages 25 to 29) across racial and ethnic groups between 2000 and 2017, though White young adults had high school completion rates three percentage points higher than Black young adults. Yet, the gap between White and Black young adults who had completed an associate's degree or higher in 2017 was similar to the gap that existed in 2000; the percentage of White young adults attaining at least an associate's degree was 21 percentage points higher than for Black young adults (NCES, April 2018). Further, a recent Pew Research Center study (Kochhar & Cilluffo, 2018) highlighted that there continue to be income gaps across different racial and ethnic groups. Black individuals in the lowest income percentiles earned just over half as much as White individuals, and similar gaps were found between Black and White individuals in the 50th and 90th income percentiles (65% and 68%, respectively). Further, there continues to be a positive correlation between higher educational attainment and earnings (BLS, 2018b). The fact that there are differences in both of these experiences by race may further exacerbate these structural inequalities.

Behavior problems. Literature suggests that higher behavior problems may contribute to decreased engagement in school (Rumberger, 1995; Rumberger & Lim, 2008). This study demonstrated that higher behavior problems in middle childhood were associated with higher odds of being in the LPC trajectory rather than the CHC trajectory. This coincides with other research that has found youth who had problem behaviors in school were more likely to drop out of high school (Hickman, Bartholomew, Mathwig, & Heinrich, 2008; Jimerson, Egeland, Sroufe, & Carlson, 2000; Leventhal, Graber, & Brooks-Gunn, 2001; Rumberger, 1995). Though the exact mechanism is unknown, it seems reasonable to consider how misbehavior may correspond with negative experiences in school and potentially result in diminished support or resources for staying connected to either school or work during the transition into adulthood.

This, too, must be considered within a larger interrelated context that sets up structural advantage and disadvantage. For instance, in addition a relationship between higher behavior problems and school disengagement or dropout (Hickman, Bartholomew, Mathwig, & Heinrich, 2008; Jimerson, Egeland, Sroufe, & Carlson, 2000; Rumberger & Lim, 2008) higher behavior problems may also result in negative experiences such as school suspension or expulsion. These experiences, in turn, are correlated with factors such as race and income. For example, in 2012, statistics showed that the suspension rates for Black males and females were over two times as high as those of students from other racial backgrounds (Musu-Gillette, Robinson, McFarland, KewalRamani, Zhang, & Wilkinson-Flicker, 2016). Additionally, a recent analysis of 2016 American Community Survey (ACS) data found that the high school dropout rate for individuals between 16 and 24 was higher for American Indian/Alaska Native youth, Hispanic, Black, and Pacific Islander youth as compared to White and Asian youth (McFarland, Cui, Rathbun, & Holmes, 2018). This same study analyzed data from the 2016 Current Population Survey (CPS)

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and found that the dropout rate for youth ages 15 to 24 from families whose income was in the lowest quarter of household income was almost 4 percentage points higher than that of youth from families in the middle and upper quarters of household income (McFarland, Cui, Rathbun, & Holmes, 2018). In essence, whereas certain characteristics such as race, family income, household education level, and behavior problems in childhood may increase exposures to risk or opportunities, the combination of characteristics may further increase or decrease exposures to risk or opportunities.

Parent-child interactions. The idea that parent-child relationships or interactions may be related to young adult educational and/or employment outcomes can be traced to social capital theory, which emphasizes the importance of the amount of time and type of resources parents are investing in their child's development (Coleman, 1988). As that relates to cumulative inequality theory, there may also be a connection between more frequent parent-child interactions and increased exposure to opportunities. Only two studies of disconnected youth in the U.S. included factors such as parent-child relationships or involvement, and neither found a statistically significantly association with connectedness (Hair et al., 2009; Kuehn, Pergamit, Macomber, & Vericker 2011). Results from this study showed that, as compared to those who were *consistently highly* connected to school or work, those with more frequent parent-child interactions had slightly higher odds of being in the *high-dipping* trajectory. These results seem counterintuitive; however, given that the individuals assigned to both of these trajectories started and ended with high levels of connectedness. There were few significant differences in predictors of HDC trajectory membership versus CHC membership. Additionally, the class-specific classification error highlighted that the model had difficulty assigning people to the HDC rather than the CHC. It might be the case that these two trajectory subgroups were not clearly differentiated, and that

may be why significant differences did not exist. In other words, many of the individuals assigned to each may have similar characteristics and experiences, overall.

Other childhood factors. Other studies have had mixed findings on the relationship between self-concept and educational outcomes (Rumberger & Lim, 2008). Due to discrepancies in how global self-concept (a broader measure that may better capture self-efficacy and agency) was measured in the 1997 and 2002 CDS surveys, it was unable to be included in this study. In an effort to proxy human agency during middle childhood for this study, two subject-specific self-concept measures (math and reading self-concept) were utilized. Neither of these measures were associated with differences in the developmental trajectories of connectedness to school or work across the transition into adulthood. There could be various reasons for this. For instance, it is possible that this is because young children's perspectives on their math and reading ability do not proxy human agency well, and that a broader measure may prove to be a better measure of human agency in childhood. Conversely, perhaps human agency during adolescence or young adulthood, as opposed to middle childhood, has more importance as it pertains to connectedness to school or work during the transition into adulthood. Yet, it is also possible that this proxy was adequate, but that, when controlling for other middle childhood and young adult variables, human agency in middle childhood was less important as it relates to differences in connectedness to school or work across the transition to adulthood. Regardless, it seems important to continue to consider how to account for the influence of human agency and the interaction between human agency and social structures in research on connectedness to school or work.

Finally, findings from some studies have suggested that cognitive ability or intelligence (Barnard, 2004; Caspi et al, 1998; Entwisle, Alexander, & Olson, 2005a; Jimerson, Egeland,

Sroufe, & Carlson, 2000), sex (Rumberger & Lim, 2008), health (Rumberger & Lim, 2008), and socio-emotional maturity or temperament (Barnard, 2004; Entwisle, Alexander, & Olson, 2005a) may be related to educational or employment outcomes. In the multivariate analysis for this study, no significant relationship was found between cognitive ability (as measured by reading and math scores) and differences in the developmental trajectories of connectedness to school or work. At the bivariate level, the LPC trajectory had significantly lower average reading and math scores compared to the other three trajectories. Though this significant relationship did not remain in the multivariate model, the findings appear similar to those from at least one other study. In their multinomial model, Kuehn et al., (2009) found that having higher cognitive ability scores was positively related to being in the consistently connected trajectory and negatively related with being in the never connected trajectory.

There are several possible explanations for the similarities and discrepancies in findings about cognitive ability and connectedness to education and employment in young adulthood. For example, while those studies were examining a relationship between childhood variables and a quantifiable, point-in-time outcome (e.g., highest grade completed) the outcome variable for this study was actually a categorization of the developmental process of being connected to school or work over time. Moreover, in this study, one was connected if they were *either* enrolled in school or employed, which means that even if, for instance, cognitive ability was related to not being enrolled in education, it would also need to be related to not being employed to be associated with the differences in developmental patterns of connectedness to school or work in this current study. Additionally, it might be that some of the other variables simply held more explanatory power than cognitive ability during middle childhood when it came to predicting connectedness to school or work.

Finally, the finding in this study that positive behavior scale scores were not significantly related to differences in connectedness trajectories may be an artifact of differences in measurement. In this study, the Positive Behavior Scale, which includes 10 questions to primary caregivers about temperament (e.g., 'Is cheerful, happy') as well as emotional regulation (e.g., 'Can get over being upset quickly') was used to proxy these factors. Entwisle, Alexander, and Olson (2005a) used teacher ratings of how much each of the following six items was "like" the child: very enthusiastic, interested in a lot of different things; likes to express ideas; usually in a happy mood, very cheerful; is creative or imaginative; keeps to himself or herself, spends a lot of time alone; very timid, afraid of new things or new situations. Barnard (2004) used an index of socio-emotional maturity, though it was not clear from reading the study whether the measure was constructed by the author specifically for that study or whether an existing measure was used. Similar to Entwisle and others (2005a), Barnard measured teacher ratings of socio-emotional maturity with items such as child works and plays well with others; came to school ready to learn; and child complies with classroom rules. Neither of those studies included a behavior problems index (Barnard, 2004; Entwisle, Alexander, & Olson, 2005a). While positive behavior is not the inverse of problem behaviors, it is possible that the inclusion of both may have tempered the relationship.

Strengths & Limitations

This study has many strengths. It utilized a large national dataset that specifically collected data during the post-high school transition from late adolescence into young adulthood. Additionally, the employment and enrollment history data collected for the PSID and TAS interviews allowed for the creation of fairly continuous monthly connectedness histories. That, in turn, made it possible to utilize person-centered methods that explored the possibility of different

subgroups that may have different connectedness trajectories. Moreover, the PSID TAS supplement was an extension of the CDS supplement, which enabled the linking of participants to information from childhood; this allowed examination of childhood differences related to differences in connectedness to school or work across the transition into adulthood. Finally, many of the individuals who were part of this study's sample went on to participate in the main PSID study, which provides future opportunities to examine how connectedness to school or work is related to later adult outcomes. In spite of these strengths, however, there were several limitations to this study.

While the employment and education history variables allowed for the construction of a fairly continuous connectedness history, there were some potential limitations to constructing connectedness in this way. Individuals were allowed five mentions for employers over the past two years and two mentions for colleges attended over the past two years. If someone had more than five employers or attended more than two colleges during the timeframe, those dates would not be captured; however, personal communication with the PSID help desk staff suggested that this would be a small limitation, as the number of mentions for multiple employers and colleges were small (N. Insolera, personal communication, March 19, 2019).

Additionally, partial employment or education dates were provided by some individuals. Known dates were constructed to the extent possible, but those who still had partially missing dates would not have the same continuous connectedness history as those with full dates. Finally, the monthly connected to school or work variables following the month/year of the last survey in which a person provided employment history were coded as missing. For individuals who only participated in the TAS, this was simply the last known date of connectedness to either school or work. For those who participated in the main PSID and the TAS, however, this resulted in

coding some known education data as missing. This was done because individuals who participated in both the main PSID and TAS provided employment information at the time of their last main PSID interview and enrollment information at the time of their last TAS interview, creating a gap in which there was no known employment history. For example, someone who provided employment information in their last main PSID interview in March 2013 would be giving employment history back to January 1, 2011. That employment information would be filled into their 2013 TAS survey and no new employment history would be gathered during the TAS. So if the person was interviewed for the 2013 TAS in January 2014, they would provide enrollment information that covered the gap between the main PSID and TAS surveys, but no new employment history would be gathered for the time period between for April 2013-January 2014. If that person was not enrolled in education during those months, they could be inaccurately coded as "disconnected" because there was no way to know about their employment between the surveys.

Another potential limitation was that the young adult demographic variables included in the bivariate and subsequent multivariate analyses were measured at baseline. These variables did not account for changes in status during the observation period were not captured; some changes, such as to relationship or parenting status, might be related to differences in connectedness to school or work over time.

In regard to model specification and estimation, one possible limitation was that the best fitting four-class LGMM model selected could have been based upon local maxima, which might result in a model with trajectories that look different than one that is based on a global solution (Hipp & Bauer, 2006). To try and avoid this possibility, 100 random sets of starting values were

used with 50 iterations for each set (Hipp & Bauer, 2006); however, there was no way to be certain that this was not a local solution.

Finally, community-level factors were not included in this study. Findings from some literature that examines education or employment outcomes has suggested that neighborhood and/or school factors might be related to education or employment outcomes (Brooks-Gunn, Duncan, Klebanov, & Sealand,1993; Ensminger, Lamkin, & Jacobson, 1996; Harding, 2003). The inclusion of community-level factors would have decreased the subsample size to a point that inferences about trajectory differences would not have been possible. However, given the importance of person-in-environment interactions on development, future research should examine both individual and community factors.

Despite these limitations, this study offers several key implications for future research as well as potential policy considerations. Those implications will be discussed in the following sections.

Implications for Research

The findings from this study suggest that both qualitative and quantitative research are needed to improve the conceptualization and understanding of connectedness. In particular, implications for future research center around two interrelated areas: conceptualizing and operationalizing connectedness and investigating how earlier and later experiences are associated with connectedness experiences.

Conceptualization and measurement. Disconnectedness has tended to be conceptualized and measured as whether or not someone was connected to school or work during a particular time. From this stems at least a couple of issues. First, this results in an either-or conceptualization of connectedness to school or work rather than a process. This study attempted

to explore connectedness to school or work as a developmental process, and in doing so, found that there were qualitative differences in the developmental trajectories of connectedness across the transition into adulthood. This was further indicated by finding distinct predictors of different trajectory assignment. However, the classification precision statistics also indicated that the model had some trouble distinguishing the HDC and IC trajectories from the CHC trajectory. The random intercept and slope parameters suggest there was considerable variation in connectedness experiences within each trajectory subgroup. In the future, researchers utilizing LGMMs may wish to consider a different way to model connectedness to school or work, with fewer measurement periods and/or continuous rather than binary measures and explore whether this aids in more clear separation of trajectory subgroups. Additionally, Muthén and Muthén (2000) suggest that adding covariates into the specified LGMM model may also aid in class separation. Moreover, considering the extent of connectedness to school or work (e.g., hours worked; full-time versus part-time work, full-time versus part-time student) might better capture differences in connectedness experiences and lead to a more nuanced exploration of how earlier and later experiences might be related to differences in connections to school or work during the transition into adulthood.

Second, there are a variety of domains that may be important sources of connection for young adults (Townsend & McWhirter, 2005). While the study of connectedness to school or work may be an important endeavor, for both individuals and society, the current conceptualization privileges European-centric and capitalist perspectives about the type of connections that are important (i.e., individual involvement in the formal labor system is privileged as a means to generating capital and competitiveness in a global market—regardless of individual pay or quality of life). Research on connectedness could be improved by

incorporating critical, Indigenous, and anti-oppressive perspectives, as researchers work to consider other types of connections might be meaningful such as interpersonal, spiritual, familial, community and environmental connections. These other domains may be particularly critical aspects of connectedness to capture given that some individuals cannot or do not wish to be connected to either education or employment during this transition period. For instance, for some young people, having a disability might be one of the reasons they are not connected to employment or education (Fernandes-Alcantara, 2015). The dataset used for this study did not provide an adequate measure of disability to include in analyses. However, this particular experience is of critical importance to consider in future research because recent estimates suggest that only four out of ten working-age adults with a disability (i.e., those ages 25-54) are employed (Ross & Bateman, 2018). Similarly, for individuals who decide to form families during their late teens and early twenties, connections to school or work may not be the most meaningful – or practical. Young adults with these life experiences may have meaningful connections that do not include school or work but would be considered "disconnected" under traditionally used definitions[14]. In this study, the relationship between being a parent in early young adulthood and total family income in early young adulthood remained significant when controlling for all other young adult and middle childhood factors in the multivariate model for the second analytic phase. This suggests that it may be important to further explore the *extent* to which disconnection is a negative experience (e.g., occurring due to social structures that constrain human agency) or positive experience (e.g., social structures do not limit that agency), and how the nature of these experiences varies based on social identities.

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[14] Some studies on disconnection have excluded individuals who were married or cohabiting (e.g., MaCurdy, Keating, & Nagavarapu) or parenting but partnered with an individual who was connected to school or work (e.g., Fernandes-Alcantara, 2015) from their definition of disconnected youth.

Accordingly, research is needed to improve the conceptualization and understanding of this phenomenon. Future qualitative research could apply a critical lens and utilize anti-oppressive methods, such as community-based participatory action research, to explore what it means to young adults to be connected. Incorporating other cultural perspectives to explore similarities and differences in perceptions of connectedness by identities such as gender identity, race, nativity, religion, place, family status and how those perceptions impact young people would enable better targeting of policies and practices to support young people during this transition to adulthood. Such research would be a critical step to increasing understanding of connectedness during this transition period. Further, this qualitative work could inform quantitative research in that it may help with the operationalization of connectedness, which is necessary to improve data collection and analysis for cross-sectional and longitudinal studies, which are often used to inform policymakers about issues such as connectedness among young adults.

Experiences and outcomes associated with differences in connectedness to school or work. This study found that a few individual child and family factors were associated with differences in connectedness to school or work during the transition into adulthood– even when controlling for young adult characteristics or experiences. However, it is likely that important experiences or events were missing from these analyses. Cumulative inequality theory suggests not only that childhood factors are associated with adult outcomes but also that cumulative exposure to risks and disadvantage and opportunities and advantage begin early – even prenatally (Ferraro, Shippee, & Schafer, 2009). Future research could include child, family, and community characteristics, experiences, and events from birth, early and middle childhood, and adolescence in order to capture whether and/or how differences in developmental patterns of

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connectedness to school or work may be related to cumulative inequality processes. Researchers may want to consider other ways to proxy human agency during middle childhood and adolescence, as it is important to better understand how agency, structure, and the interaction of both may be related to connectedness to school or work during the transition into adulthood.

Additionally, while a couple of studies have found social and economic outcomes associated with disconnection from school and work during the transition into adulthood (Besharov & Gardiner, 1998; Lewis & Gluskin, 2018), little is known about whether disconnection from school or work is inherently "bad" and/or for whom it is a negative experience. For example, this may depend on *why* one is disconnected. Is disconnection from school or work a result of institutionalized oppression based on race or sex, for instance, or is it a result of being born into a family with enough wealth and privilege to support purposeful periods of disconnection. Both the perceptions of disconnection and the social and economic outcomes associated with disconnection might seemingly be different in those scenarios. In that vein, the findings that race, head of household education, and behavior problems during middle childhood, and parenthood in early young adulthood were all related to more sporadic connectedness to school or work during the transition into adulthood imply that further exploration is needed surrounding those factors and the contexts in which they occur and interact. Research that utilizes a critical approach could explore how factors such as geography, race, gender, parenthood, and income, for example, are related to connectedness to school or work before, during, and after this transition period. Additionally, this study's findings provide an opportunity to examine how differences in the developmental trajectories of connectedness to school or work may be related to later outcomes including but not limited to physical and mental health,

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perceived quality of life, accumulated assets, annual income, community engagement, and interpersonal relationships.

Implications for Policy

As mentioned in Chapter I, research indicates that both education and employment have individual benefits, such as better health and mental health and increased income (Cutler & Lleras-Muney, 2006; Hummer & Lariscy, 2011; BLS, 2018b; Vancea, & Utzet, 2017), and that there are staggering economic and social costs to society when young adults are not connected to school or work (Belfield, Levin, & Rosen, 2012; Lewis & Burd-Sharps, 2015). As such, this sections begins by discussing policy implications that may increase connectedness to school or work during the transition into young adulthood at different time points: (1) policies that seek to intervene *during* the transition into adulthood – either to prevent disconnection or intervene with those who have become disconnected from school or work – and (2) policies that seek to prevent disconnection by targeting supports during childhood. A third section discusses another policy option that may increase connectedness to the formal economy outside of connections to school or work, which seems particularly relevant given that some individuals may not desire or be able to engage in school or work during (or after) this transition period.

Policies targeting individuals during the transition into adulthood. Policies that specifically target supports and resources toward young people transitioning into adulthood tend to target those deemed at-risk of poor outcomes. As they relate to promoting connectedness to school or work during this transition, policies authorize programs that are limited by age, characteristics or experiences, and often have time limits between 12 and 24 months (Palmer & Narendorf, in progress). For example, in addition to authorizing Job Corps and YouthBuild, the Workforce Innovation and Opportunity Act (2014) specifically targeted workforce and training

opportunities for out-of-school youth between the ages of 16 and 24 through the Youth Activities programs (29 U.S.C. § 3161-3164). The Reconnecting Homeless Youth Act (2008), on the other hand, authorizes Transitional Living Programs (TLPs) which specifically target young people aged 16 and 22 who are homeless or at-risk or homelessness. TLPs have a participation limit of 18 months (42 U.S.C. § 5701-5732a). Findings from this study indicate that there may be individual differences in the developmental pathways of connectedness to school or work, with a substantial proportion of individuals experiencing fluctuation in connectedness to school or work across the transition. This suggests that if the aim is to have a majority of young adults connected to school or work across this transition period, policies that restrict based on age and/or time limits may be inadequate to achieving this goal. Policies that provide opportunities and supports that promote connectedness to school or work would need to be available across the transition age range, rather than limited to a particular age or time period.

Additionally, in this study, both bivariate associations tested for the whole sample (n=2,027) and multivariate analyses for the subsample (n=757) suggest that parenting at an early age may be related to sporadic connections to school or work across the transition into adulthood. Having access to high quality childcare[15] may increase parents' ability to be connected to school or work. According to the American Academy of Pediatrics (Donoghue & AAP Council on Early Childhood, 2017), many families do not have access to high quality childcare within their communities. Beyond costs constraints, lower-income families may face additional constraints to accessing quality childcare such as having non-conventional work

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[15] High quality childcare may include highly qualified staff as well as consistent regulations related to physical and emotional safety and promoting of health through nutrition and physical activity (APA, 2017).

schedules and inadequate access to reliable transportation (Sandstrom, Giesen, & Chaudry, 2012).

Individuals who are pregnant or parenting are a priority group for programs such as Transitional Living Programs (TLPs), Job Corps, and WIOA Youth Activities programs—all of which target education and employment activities (Palmer & Narendorf, in progress). Only Job Corps, however, requires that child care be provided for participants' children (Palmer & Narendorf, in progress). Thus, policy changes may be necessary to ensure that parenting young adults have the option to pursue connections to school or work, should they desire. One example would be a universal child care policy that provides a three-pronged approach to ensuring that children receive quality care. The Economic Policy Institute notes that a comprehensive universal child care policy should (1) ensure that parents (including adoptive and foster parents) who wish to care for their infants and young children have the option to do so, (2) lower the cost burden of paying for child care, particularly for parents who have low- and moderate-incomes (3) improve the quality of the early childhood education workforce by investing in education, training, and pay for the early childhood education workers (Goud, Austin, & Whitebook, 2017). Senator Elizabeth Warren's newly unveiled proposal for universal child care targets two of these areas, but does not include a provision for ensuring that parent who wish to care for their small children themselves are able to do so (Warren, 2019). As such, a universal childcare policy such as that proposed by Senator Warren's presidential campaign (2019) may improve opportunities for young adults (and other parents) to be connected to school or work. However, it might be important to include a child care tax credit for stay-at-home parents to ensure that parents have the freedom to make that choice without incurring financial hardship (Warren & Tyagi, 2004).

Bivariate relationships were found between physical and mental health as well as justice-system involvement and being in the LPC trajectory compared to the CHC trajectory. This aligns with findings from other studies that have found relationships between poorer physical health or mental health and lack of persistent employment (Canivet et al., 2016; Hergenrather, Zeglin, McGuire-Kuletz, & Rhodes, 2015a, 2015b; Vancea, & Utzet, 2017) or lower educational attainment (Cutler & Lleras-Muney, 2006). Additionally, other research indicates that high proportion of young people with juvenile justice involvement have a diagnosable mental health condition (Development Services Group, 2017). In states that have not expanded Medicaid, many low-income young adults with mental health conditions fall into a triple coverage gap currently, where they are not eligible for Medicaid or marketplace premium subsidies, and neither they nor their parents have employer-sponsored coverage (Palmer, 2016). While it is important to acknowledge that having a mental health condition does not necessarily cause delinquent behavior (Development Services Group, 2017), and having access to health insurance does not mean that all young adults who have mental health conditions will access care (Narendorf & Palmer, 2016), it seems that targeting overall health – which includes mental health – has the potential to improve outcomes for young adults. As such, a universal health care policy – that equally covers mental health services – may serve to help improve health outcomes and potentially increase connections to school or work during the transition into adulthood. There are a variety of proposals that would approach universal healthcare differently; however seemingly all of them would increase coverage for young adults (Neuman, Pollitz, & Tolbert, 2018).

Policies targeting prevention beginning in childhood. Findings from the multivariate analyses showed that having higher behavior problems in middle childhood was related to being

in the LPC trajectory as compared to the CHC trajectory. Likewise, Black, non-Hispanic individuals had higher relative risk of being in the LPC trajectory compared to the CHC trajectory, as did children whose parents had lower levels of education. Research has highlighted that disproportionately higher rates of suspension occur in elementary and middle school for students who belong to historically marginalized groups such as individuals who are Black or American Indian or Alaska Natives, those with disabilities, and English language learners (Skiba & Losen, 2016).

In regard, then, to this study's findings related to behavior problems in childhood and later connections to school or work, policies that target school discipline may be important mechanisms for preventing disconnection during the transition into adulthood. In recent years, school discipline reform policies have been enacted in multiple states. A recent review of progress made under these policies reflected mixed findings on effectiveness (Ritter, 2018). Some types of school suspensions decreased, but others, such as second incidents of suspension (Baker-Smith, 2018) or total suspensions (Lacoe & Steinberg, 2018) remained consistent or increased. Further, decreased suspensions was found to be related to higher school absenteeism and lower academic performance in one study (Lacoe & Steinberg, 2018) and decreased absenteeism and improved academic performance in another (Hinze-Pifer & Sartain, 2018).

Generally, there seems to be a need to ensure that school discipline reform policies (a) are implemented uniformly, (b) teachers and administrators receive training and coaching to increase buy-in and skills for utilizing alternative disciplinary approaches, and (c) that evaluations of policy implementations examine outcomes related to aggregate student success *and* overall school climate (Ritter, 2018; Skiba & Losen, 2016). At least a couple of alternative school discipline approaches have some empirical support – restorative justice practices (Anyon et al.,

2014; Ritter, 2018; Skiba & Losen, 2016) and schoolwide positive behavioral interventions and supports (Ritter, 2018; Skiba & Losen, 2016). The continued implementation and evaluation of such programs might be important to prevent disconnection from school and work during the transition into adulthood. However, school discipline reform policies alone do not change the institutional discrimination toward students from historically marginalized groups (Anyon et al., 2014; Ritter, 2018). As such, teachers and administrators might benefit from coaching and self-reflection on individual as well as systemic biases.

The findings that the total years of education completed by the head of household during middle childhood was related to more sporadic connections to school or work during the transition into adulthood (i.e., being assigned to the IC or LPC trajectories as compared to the CHC) may lend support for policies that seek to promote and increase adult education levels. Currently, all states offer adult education and literacy programs, which are authorized by the Adult Education and Family Literacy Act (AEFLA) – Title II of the Workforce Innovation and Opportunities Act (2014). These programs aim to increase adult education and workforce readiness and economic self-sufficiency by increasing basic numeracy and literacy skills, secondary credential completion, and the completion of postsecondary education or training credentials (29 U.S.C. §3271). In fact, one of the purposes stated in Title II is that adult education programs should "assist adults who are parents or family members to obtain the education or skill that are necessary to become full partners in the education developmental of their children…" (29 U.S.C. §3271(2)(A)). A national summary of statewide performance reports covering the period from July 1, 2016 to June 30, 2017 indicated that 44 percent of the

1.5 million individuals who participated in AEFLA programs made measurable skill gains[16] (Office of Career, Technical, and Adult Education [OCTAE], 2018a). The extent to which these programs have been designed to meet the needs of adult learners is unclear – as is the type of outreach that is being done to ensure that parents who may desire and benefit from increased education or training are being both recruited and retained. While this study's findings suggest that adult education programs may be one way to indirectly increase children's eventual connectedness to school or work, it seems critical learn more about program processes at both local and state levels. It is possible that families who need these programs the most may not have awareness of, access to, or supports that allow them to maintain participation in these programs. Thus, it seems important to rigorously evaluate local and state AEFLA programs – not just based on performance outcomes but also with an eye toward access and process – to ensure that they are reaching all families who may benefit.

Increasing connectedness to the formal economy. The discussion of findings and policy implications mentioned thus far have been geared toward how such policies may increase connectedness to school or work during the transition into adulthood. As noted in Chapter I, the conceptualization of connectedness as being related to these two domains is inherently linked to the idea of individual economic self-sufficiency and global competiveness based on participation in the formal labor market. However, the findings from this study as they relate to the existence of different patterns of connections to school or work – and the difference in characteristics associated with such pathways – suggest a complementary policy approach may be warranted.

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[16] Per the WIOA Statewide and Local Performance Report Specifications table, having measurable skill gains means that a participant met one of five possible gains: 1) educational functional level gain; 2) secondary diploma or equivalent; 3) secondary/postsecondary transcript/report card; 4) training milestone; or 5) skills progression (Office of Career, Technical, and Adult Education, 2018b, Item 30).

As noted in the research implications, it is possible that connections to school or work during the transition into adulthood are not desired, or for some, not possible due to other circumstances. Furthermore, as technology and automation continue to increase, the emphasis on postsecondary credentials as a means for better jobs for all, and the reliance on individual income from labor force participation to sustain one's family may become less realistic for an increasing number of people (Ford, 2015). From this perspective, a basic guaranteed income could be a potential method for enhancing the safety net for all Americans, reducing inequality, increasing creativity and/or community participation, and ensuring individuals may continue to participate in the formal economy (Ford, 2015). At least three of the current Democratic presidential candidates have proposed something akin to this – be it a monthly tax credit (Harris, 2018), a children's savings account provided to all children at birth (Corasaniti, 2019), or an universal basic income (Yang, 2019). A Gallup poll conducted in 2017 found that close to half (48%) of Americans supported the idea of a basic guaranteed income for individuals whose jobs are lost due to advances in artificial intelligence, though it was split heavily along party lines and by age (Reinhart, 2018). From a social work standpoint, more research is needed to understand and compare potential policy solutions – including who would benefit, how it would be delivered, and how it would be funded – to ensure that it would enhance social justice and improve individual and societal well-being. However, it seems that given the differing pathways of connectedness to school or work that appear to exist and continued advances in technology, this type of policy could be an increasingly important tool to ensure individual well-being and economic participation.

Conclusion

The purpose of this study was to elucidate the developmental heterogeneity of connectedness to school or work across the transition into adulthood. Prior research has focused on "disconnected youth," often defined as individuals between 16 and 24 who are neither enrolled in school nor employed (Belfield, Levin, & Rosen, 2012; Burd-Sharps & Lewis, 2012, 2017; Hair et al., 2009; Lewis & Burd-Sharps, 2013, 2015; MaCurdy, Keating, & Nagavarapu, 2006). This particular issue has gained attention, seemingly due to research that suggests that there are individual consequences such as worse health and lower income associated with infrequent connections to school or work (Canivet et al., 2016; Hummer & Lariscy, 2011; Lewis & Gluskin, 2018; BLS, 2018b) and societal consequences such as lost taxes and costs associated with public assistance, healthcare, and crime (Belfield, Levin, & Rosen, 2012).

Disconnection is generally treated as an outcome – something that someone is or is not for a particular period of time (e.g., not connected to school or work for 26 or more consecutive months in the past year) and much of this research has used cross-sectional data (Burd-Sharps & Lewis, 2012, 2017; Fernandes-Alcantara, 2015; Lewis & Burd-Sharps, 2013, 2015; Wight et al., 2010). Longitudinal studies have tended to treat the outcome similarly (Besharov & Gardiner, 1998; Brown & Emig, 1999; Hair et al., 2009). Most have utilized variable centered approaches to examining connectedness – in other words, they examined how certain variables were related to a binary outcome of being connected or disconnected from school and work. This study used a person-centered approach, which focuses on inter- and intra-individual changes in a developmental process or outcome over time (Muthén & Muthén, 2000), followed by a variable-centered analysis that examined childhood factors related to differences in the developmental trajectories of being connected to school or work across the transition into adulthood.

Based on model comparison fit statistics, examination of plotted trajectories, and subjective evaluation of usefulness and interpretability of the models as they related to prior literature and theoretical work, a four-class LGMM was selected. This model indicated that there may be four developmental trajectories of connectedness during the transition into adulthood: the consistently high connected, the intermittently connected, the high-dipping connected, and the low-peaking connected trajectories. However, there was also considerable within-trajectory variation, suggesting that there may be overlap in connectedness experiences for those assigned to different trajectories (i.e., the trajectory subgroups may not be entirely discrete). These findings implied that there is considerable heterogeneity in connectedness patterns across the transition into adulthood.

The second phase of analysis found that, similar to other studies on disconnected youth and on education and employment outcomes more broadly (Ainsworth & Roscigno 2005; Annie E. Casey Foundation, 2009; Besharov & Gardiner, 1998; Burd-Sharps & Lewis, 2017; Dunham & Wilson, 2007; Hair et al., 2009; Kuehn, Pergamit, & Vericker, 2011), individual and family background factors such as being Black, non-Hispanic rather than White, non-Hispanic and having a head of household with fewer years of education were related to higher odds of being in trajectories other than the consistently high connectedness trajectory (i.e., those with more sporadic connections to school or work over time). Further, when controlling for those individual and family background characteristics from middle childhood and demographic factors from early young adulthood, higher behavior problems were associated with higher relative risk of being in the low-peaking connectedness trajectory as compared to the consistently high connected trajectory. This finding also aligned with those from prior studies examining connections between childhood factors and young adult education and employment outcomes

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(Hickman, Bartholomew, Mathwig, & Heinrich, 2008; Jimerson, Egeland, Sroufe, & Carlson, 2000; Leventhal, Graber, & Brooks-Gunn, 2001; Rumberger, 1995).

There remains a need for research that aids in improving the conceptualization and understanding of this phenomenon. Qualitative research could explore perceptions of what it means to be connected, with an eye toward including individuals from a variety of racial, geographic, religious, and ability backgrounds and the use of a critical theoretical lens and methodological approaches that examine and result in action toward dismantling the structural factors at play. This could inform quantitative research in that it may help with the operationalization of connectedness, which is necessary to improve cross-sectional and longitudinal studies that are often used to inform policymakers about issues such as this. Further, in order to inform policies and programs that target supports to young people, it seems crucial for research to continue to examine how early experiences and later outcomes are related to differences in connectedness to school or work across this transition into adulthood.

Finally, if the goal is to promote connections to school or work during this transition, policy changes might be necessary to increase connectedness. In particular, policies such as universal child care, universal health care, school discipline reform approaches (e.g., restorative practices), adult education programs, and a universal basic income might be particularly relevant based on the findings from this study related to differences in connectedness trajectories and the young adult and middle childhood characteristics associated with differences in connectedness to school or work during the transition into adulthood.

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Appendix A: Plotted Estimated Means for Baseline through Five Class LGMMs
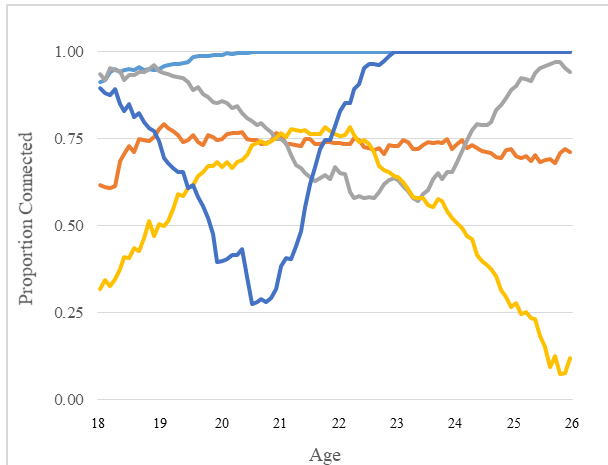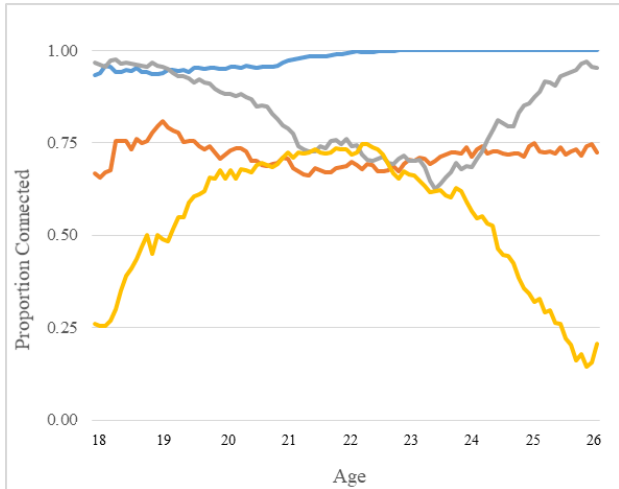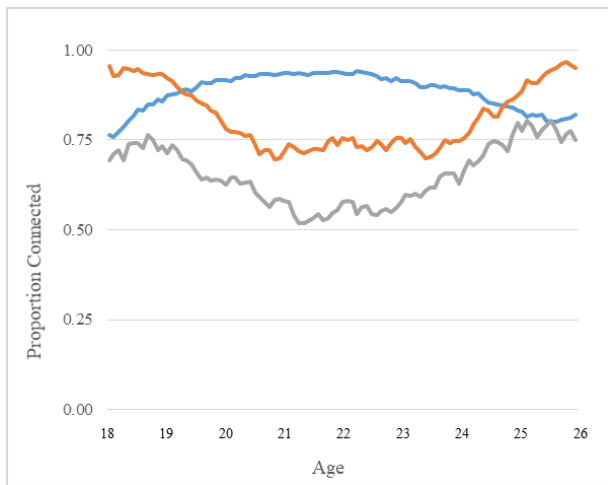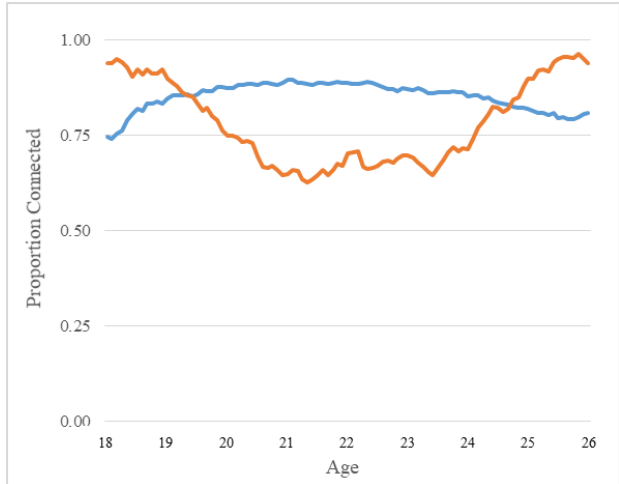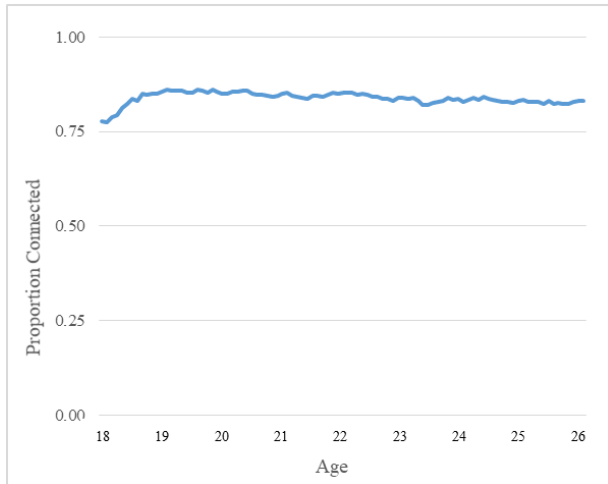
Appendix B: Plotted Predicted Probabilities for Baseline through Five Class LGMMs
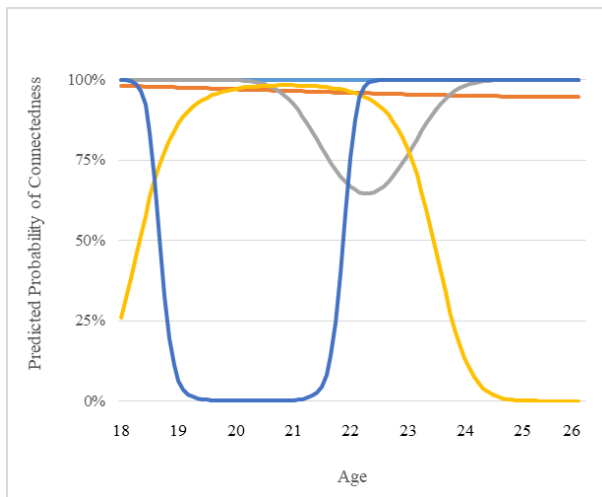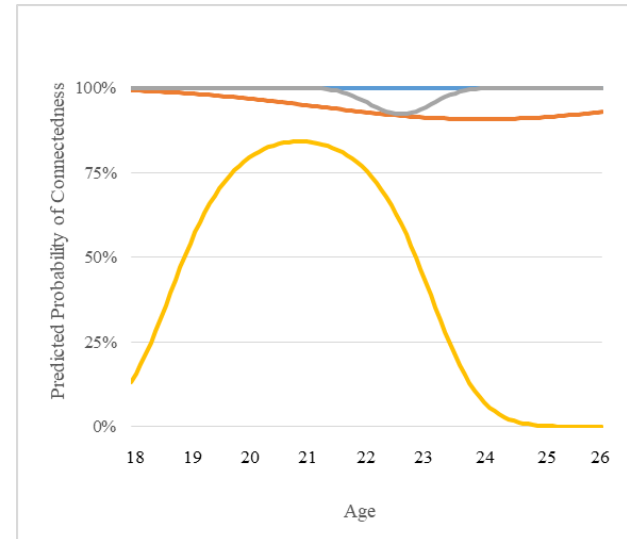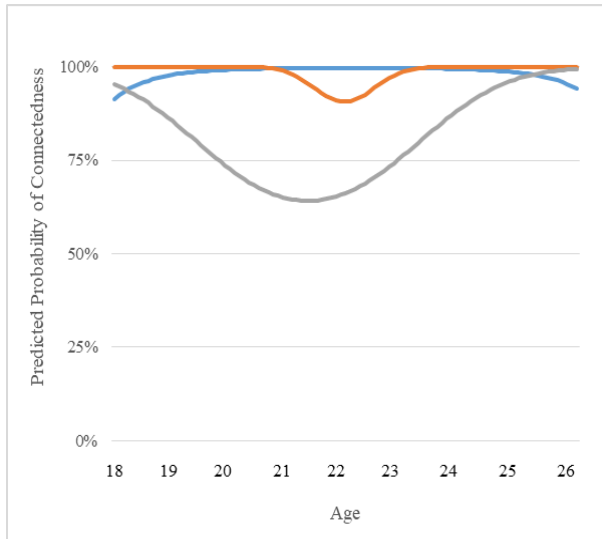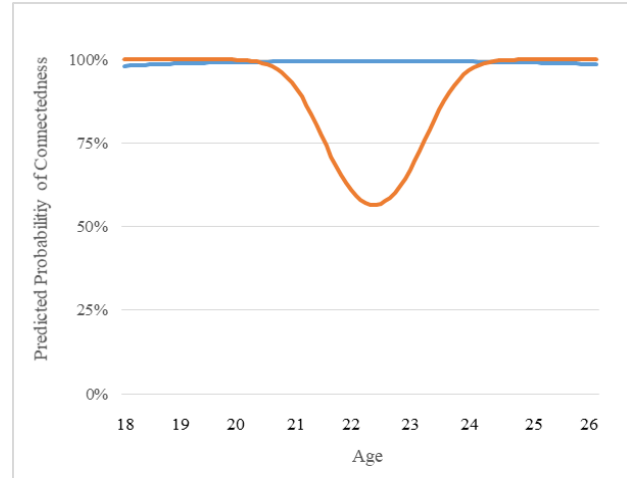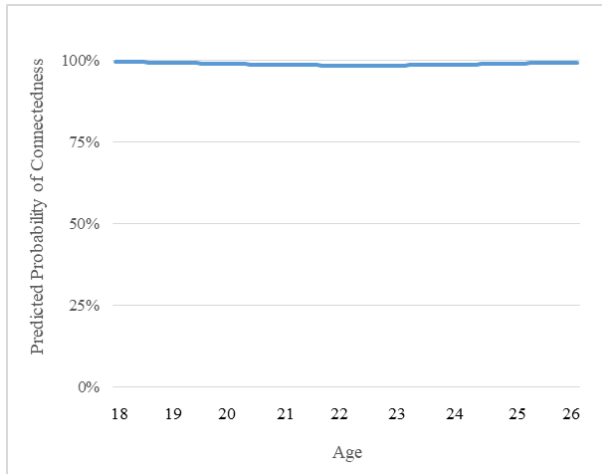
Appendix C
List of Abbreviations & Key Terms

ACS   American Community Survey

ACES   Annual Social and Economic Supplement

BIC   Bayesian Information Criteria

CDS   Childhood Development Supplement

CPS   Current Population Survey

LVMM   Latent Variable Mixture Model

LCGA   Latent Class Growth Analysis

LGMM   Latent Growth Mixture Model

PSID   Panel Study of Income Dynamics

TAS   Transition into Adulthood Supplement

Disconnected youth (also referred to as opportunity youth): An individual between 16 and 24 (or 18 and 24) who is not enrolled in education, training, or employed (usually including the military).

Long-term disconnection: A 16 to 24 year old who is not enrolled in education, employed, in the military – or married to someone who is connected in one of those institutions – for 26 or more consecutive weeks during a given year for three or more years.

Short-term disconnection: A 16 to 24 year old who is not enrolled in education, employed, in the military – or married to someone who is connected in one of those institutions – for 26 or more consecutive weeks during a given year for one to two years.

Spell of disconnection (also referred to as episode of disconnection): Not enrolled in education or employed during a given month and at least 8 consecutive months (i.e., at least 9 out of 12 consecutive months).