Reproducing inequality: The role of self-control, social support, and maternal education in the development of human and economic capital

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Abstract

The development of human and economic capital in the transition to adulthood may set individuals on different life trajectories as the skills, knowledge, and income developed during this period may be foundational to their later life outcomes. Self-control (the deliberate regulation of impulses, thoughts, feelings, and behaviors) in adolescence may be related to the development of these forms of capital as it may help individuals to pursue long-term goals, create stable relationships, and engage in employment. It is likely that higher self-control helps individuals find, obtain, and maintain employment because it lowers the potential for distraction and disengagement from the job search process and may allow individuals who are currently employed or in school to regulate their behavior to meet the demands of those contexts. However, recent research on self-control shows that contextual factors (e.g., social relationships and environments) may alter whether and to what extent self-control relates to developmental outcomes. In particular, the relation between self-control and human (e.g., skills, knowledge, and capabilities) and economic (e.g., money) capital may be mediated by whether youth feel supported by family and friends. These perceptions of support may relate to greater earnings and lower receipt of welfare dollars as parents and friends may transmit economic, social, and human capital to the individual. Furthermore, in a time of growing inequality the relation between education and outcomes is strengthened. Maternal education levels may enhance or constrain the resources available to her children, initiating processes of cumulative advantage and disadvantage that lead to differences in human, social,

and economic capital for her children; and moderating the relation of self-control and perceptions of social support to these outcomes.

Drawing on data from the Project for Human Development in Chicago Neighborhoods (PHDCN), for my dissertation research, I used structural equation modeling to answer three research questions. First, I examined the relation between self-control in adolescence and income in the transition to adulthood. Second, I asked whether and to what extent the relations between self-control and income were mediated by perceptions of social support from family and friends. Third, I investigated whether and how this relation was moderated by maternal education levels using multi group methods. Finally, I examined individuals' experiences during the transition to adulthood (e.g., school, work, disconnection). These experiences during the transition to adulthood reflect young adults' human capital development as they may be engaged in activities (e.g., school) that that may differentially influence their later life outcomes but that are not reflected in measures of income.

Results indicated that self-control in adolescence did not predict income during the transition to adulthood, with a notable exception of the model among children of mothers with less than high school/some high school education only. Furthermore, findings suggested that perceptions of support from family and friends did not mediate this relation. Analyses further indicated that there were differences in young adults' income and participation in human capital generating activities (e.g., working, in school) by maternal education levels. Finally, results suggested that differences in these processes were raced and gendered. This

dissertation adds to the literature by examining under what circumstances and for whom self-control relates to positive developmental outcomes and furthers understandings of how inequality is reproduced.

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CHAPTER 1: Introduction

As inequality rises in the U.S., the greater dispersion of educational attainment among the labor force (Park, 1994; Sasson, 2016) strengthens the link between educational achievement and income (Machin & Vignoles, 2004). The education-income link may aid in the reproduction of inequities across generations as parents' education levels may relate to the accumulation of advantages or disadvantages among their children (McLanahan & Percheski, 2008; Vargas Lascano et al., 2015). For example, parent education levels are related to children's access to safe neighborhoods, schooling opportunities, and social resources (Bradley & Corwyn, 2002; Guo & Harris, 2000; Raver, Roy, & Pressler, 2015). Furthermore, youth in America are likely to replicate the financial circumstances of their parents. Children of parents in the lowest fifth of the income distribution have a 39% chance of remaining there and only a 7% chance of climbing to the top fifth (Corak, 2013; Joo & Reeves, 2015). In contrast, for those starting at the top, affluence provides a substantial buffer against downward mobility (Reeves & Howard, 2013) as access to opportunities and resources may further children's later opportunities for employment (Vargas Lascano et al., 2015). In other words, the link between income and educational attainment at the parent level is reiterated in the subsequent generation, hindering social mobility (Bloome, 2015).

Employment and/or the pursuit of further education and training during the transition to adulthood allow young people to develop the knowledge, skill sets, and sources of income that inform their future opportunities (Belfield, Levin, & Rosen, 2012; Mroz & Savage, 2006). Developing this human capital (e.g.,

skills, knowledge, and capabilities) and economic capital (e.g., money, property rights; Bourdieu, 1985) through employment opportunities and continued education are particularly important during this time as these experiences relate to individuals' future health and financial well-being (Benach, Vives, Amable, Vanroelen, Tarafa, & Muntaner, 2014; Leventhal, Graber, & Brooks-Gunn, 2001; Vuolo, Mortimer, & Staff, 2014). In contrast, disengagement from school and employment has costly consequences both to the individual and to society as those individuals have a greater reliance on government support, contribute less tax revenue, and are more likely to be involved in criminal activity than those who are employed or in school (Belfield et al., 2012; Benach et al., 2014; Phillips & Land, 2012). There are an estimated 6.7 million individuals between the ages of 16 and 24 who are not in school or employed (Belfield et al., 2012). These disconnected young people may be missing out on opportunities to develop the skills needed for success in the workforce; creating a mismatch in the skills people have and the skills required for existing employment opportunities (Blank, 2009). Furthermore, missing out on these experiences in the transition to adulthood may lead to long-term deficits in wages and being at greater risk for unemployment later in life (Mortimer, 2011).

In light of the importance of developing skills necessary for workforce participation, growing research focuses on workforce readiness, or preparing the workforce with the skills necessary for successful employment. Traditional economic models emphasize the cognitive (e.g., IQ) and technical skills needed for success in the workforce. Research in this area shows that cognitive skills are

related to individuals' wages (e.g., Tyler, 2002; Tyler, Murnane, & Willett, 2000). However, this research also indicates that individuals with similar backgrounds (e.g., cognitive ability, education, family background, and occupation) have different earnings over their lifetimes (Bowles, Gintis, & Osborne, 2001). To explain differences in these outcomes among individuals of similar backgrounds, researchers proposed that these variations were due to differences in motivation, attitude, and/or personality (Duncan & Dunifon, 1998b; Green, Maching, & Wilkenson, 1998; Tyler, 2002). These personal characteristics may help individuals in the workforce because they match employers' expectations for employees' abilities (e.g., communication, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethic; Robles, 2012). In response, a growing body of research examines the processes individuals use to regulate their environments (also called non-cognitive factors, personality, soft skills etc.; Guttman & Schoon, 2013) that are related to success in the workforce (e.g., Borghans, Duckworth, Heckman, & Ter Weel, 2008). Indeed, research shows that these behaviors, attitudes, and strategies may have the same relation to individuals' wages as cognitive ability (Heckman, Stixrud, & Urzua, 2006) and are related to individuals' abilities to obtain a job, garner higher wages, perform at their job, or find a new job after unemployment (Gallo et al., 2003; Heckman et al., 2006).

In particular, primary control striving strategies, such as self-control (the deliberate regulation of impulses, thoughts, feelings, and behaviors; Duckworth & Gross, 2014; Muraven & Baumeister, 2000), allow individuals to influence the

environment through their personal behavior (e.g., effort, time, or energy), so that the environment better fits their needs as they attempt to attain personal goals and overcome obstacles to those goals (Heckhausen et al., 2010; Wrosch et al., 2000). Working to actively control one's environment may relate to career success (Converse et al., 2012; Baay, de Ridder, Eccles, van der Lippe, & van Aken, 2014; Kokko, Pulkkinen, & Puustinen, 2000; Pulkkinen, Ohranen, & Tolvanen, 1999). Research shows that individuals who rate higher on self-control have higher levels of job search preparation behaviors and intentions (Baay, de Ridder et al., 2014), later extrinsic career success (salary and occupational prestige), intrinsic career success (career satisfaction; Converse et al., 2012), and a higher career orientation (defined by occupational status, education, present work situation, and career stability; Pulkkinen et al., 1999).

Coupled with the continued link between further education and career success (Ferreira & Gignoux, 2013; Hout, 2012), findings on the relation of self-control to employment outcomes seem to indicate that individuals get ahead through their contributions and capabilities (Converse et al., 2012; Pew Research Center, 2014). However, though individual factors such as self-control may relate to individuals' development of human and economic capital, they are not the sole determinant of whether and to what extent individuals connect with educational and employment opportunities. Rather, the interrelations of the individual *and* the context (Lerner, 2006), including family background, individual skills, and the resources available in the environment, may alter whether and how individuals'

self-control is related to positive outcomes (e.g., Anderson, Donlan, McDermott, & Zaff, 2015; Lundberg, 2013; McDermott, Donlan, Anderson, & Zaff, 2017).

Indeed, research shows that the relation between how individuals regulate their environments and their employment outcomes may change based on contextual factors (e.g., job complexity, differential valuation of skill; Barrick & Mount, 1991; Cattan, 2010; Heckman, Stixrud, & Urzua, 2006). In particular, perceptions of social support from family and friends may mediate the association between self-control and human and economic capital development because they may be related to actual support, provide youth with a safety net (Hardie & Seltzer, 2016), and may help youth to further regulate their behavior in service of their goals (Chen & Miller, 2012). Higher self-control is linked to higher levels of positive social relationships (Eisenberg, Hofer, Sulik, & Spinrad, 2014), which in turn may help youth to gain access to employment and educational opportunities (Granovetter, 1973, 1995; Leana & van Buren, 1999; Lin & Dumin, 1986; Lin, Ensel, & Vaughn, 1981; Ng, Eby, Sorensen, & Feldman, 2005). However, no research has examined this mediating pathway.[1] More research is needed to

[1] One study, Baay, Van Aken and colleagues (2014) found that social capital (measured through students' knowledge of and relation to individuals in various professions) mediated the relation between Big 5 personality constructs and employment outcomes (e.g., extraversion and emotional stability related to better job-search outcomes whereas social capital had a direct relation to the number of job offers adolescents received) but that social capital and personality measures were largely independent predictors of employment among Dutch vocational training graduates. Although aspects of personality are moderately correlated with self-control (.54; Tangney, Baumeister, & Boone, 2004), and social capital may be related to perceptions of social support, the constructs are not equivalent.

understand the specific direct and indirect relations of self-control and perceptions of social support to the development of human and economic capital.

This relation may be further moderated by differences in parental education levels which may translate into educational and economic advantages or disadvantages for the next generation (Alexander & Entwisle, 2014). Specifically, a mother's level of education is associated with the level and quality of schooling received by (Guo & Harris, 2000; Wolfe & Haveman, 2002) and the social resources available to her children (Blair & Raver, 2012; Bradley & Corwyn, 2002; Brooks-Gunn & Duncan, 1997; Raver, Roy, & Pressler, 2015; Viner et al., 2012). Maternal education levels may influence their children's self-control through stress processes related to poverty (e.g., Duckworth, Kim, & Tsukayama, 2013; Hostinar et al., 2015). The interrelation of social position, social network, and access to local jobs with parental education may also relate to individuals' employment outcomes as parents and friends help youth to attain employment (Granovetter, 1973, 1995; Leana & van Buren, 1999; Lin & Dumin, 1986; Lin, Ensel, & Vaughn, 1981; Ng et al., 2005). Similarly, adolescents with college educated parents are more likely to graduate from high school and enroll in college (Choi, Raley, Muller, & Riegle-Crumb, 2008a) with research showing that exposure to students whose parents are college educated at school may increase the likelihood that students enroll in college, above and beyond the effects of their parents' education levels (Choi, Raley, Muller, & Riegle-Crumb, 2008b). As such, maternal education levels may relate to adolescents' control beliefs, may modify the quantity and quality of social relationships available to

youth, and may impact the quality and type of educational and employment opportunities to which youth are connected, perpetuating the intergenerational transmission of advantage and disadvantage.

Research has demonstrated the independent relations between self-control and social relationships to various employment and educational outcomes. However, to the author's knowledge, no research examines whether and how these factors interrelate as developmental processes to differentially predict young adults' development of economic capital. In this dissertation, I seek to address this gap by asking whether and how individuals' self-control (the deliberate regulation of impulses, thoughts, feelings, and behaviors; Muraven & Baumeister, 2000) in late adolescence, relates to their development of economic capital in early adulthood. I operationalize the development of economic capital by examining their income, as these initial earnings may be foundational to later life outcomes. Then, I ask whether and how the relation between self-control and income is mediated by perceptions of social support from parents and friends. Finally, I examine whether and how these processes differ when individuals are grouped according to their mothers' level of achieved education. Maternal education levels may moderate the relation between self-control, social support, and income because maternal education relates to the availability of resources for children, which sets individuals on different trajectories (e.g., Caspi et al., 1998) reinforcing patterns of advantage and disadvantage.

CHAPTER 2: Literature Review

This chapter serves two purposes: to examine the three theoretical lenses that inform this work and to synthesize the existing literature on the constructs of interest. First, I examine three theoretical perspectives within a Relational Developmental Systems (RDS) metatheoretical perspective, which emphasizes the interrelation of individual and context in shaping human development (Overton, 2015). To do so, I describe RDS metatheory; examine prior theoretical perspectives that focus on either the context or the individual; and integrate these perspectives using the sociocultural self model (Stephens, Markus, & Fryburg, 2012). The sociocultural self model posits that individual factors (i.e., skills) and contextual factors (i.e., structural conditions) are mutually constitutive; and posits that in viewing these factors as inseparable, we may better understand why psychological characteristics may be more strongly related to outcomes in certain contexts and why individuals in the same context may respond differently to the same structural conditions (Stephens et al., 2012).

In line with this framework, I synthesize the research on self-control as an individual "skill" and perceptions of social support and maternal education as contextual factors that are representative of structural conditions and which may inform the development of economic capital in the transition to adulthood. Although self-control has been shown to predict later developmental outcomes (e.g., Converse et al., 2012; Moffit et al., 2011), maternal education levels may be associated with socioeconomic and stress conditions within the family, relating to differences in self-control and perceptions of support (e.g., Duckworth et al., 2013; Mittal & Griskevicius, 2014). However, one-dimensional approaches to

understanding self-control (i.e., some people have more and some people have less; Turiel et al., 2016), may conflate processes that are important to understanding the antecedents of social and economic inequality. Rather, the interrelation of self-control with contextual factors may alter whether and how it predicts later outcomes (e.g., Anderson et al., 2015). Therefore, although self-control and social support may relate to school and economic outcomes (e.g., Rosenfeld, Richman, & Bowen, 2000), they do so within and in relation to a system structured by socioeconomic class, gender, and race that changes their associations to economic capital (i.e., income).

Theoretical Perspectives

This study uses a Relational Developmental Systems (RDS) meta-theoretical frame, which emphasizes the interrelation of individual and context in shaping human development (Overton, 2015) to examine the relation between self-control, social relationships, maternal education, and income. Due to the complexity of person-context co-constructions, researchers using RDS theories may use theoretical frames which focus on these processes as either person-centered or context-centered (Liben, 2014; Witherington, 2014). RDS theories integrate "all levels of organization within the ecology of human development" (Lerner, 2006, p. 3) and are reliant upon three core concepts. First, that relational systems are adaptive in response to changing environments; second, that action is a characteristic function of any complex, adaptive system; and third, that embodied action, or the "interpenetrating relations between person, biology, and culture," is the general mechanism for all development (Overton, 2013, p. 55).

Within this metatheoretical frame, change across the life span occurs through mutually regulative relations between one system level and another (Lerner, 2012) and is predicated on the idea of plasticity through which there may be changes at both the individual and contextual levels (Lerner, 2006). As such, developmental scientists working within this theoretical frame reject Cartesian dualism (Lerner, 2006), instead focusing on how all of the levels of organization contribute to the functioning of the whole (Overton, 2013).

Within RDS metatheory, the fundamental unit of analysis in the study of human development is the mutually influential individual-context relationship (Lerner, 2012). The dynamic interrelated processes that govern changes in individual-context relations are known as "developmental regulations" (Fischer et al., 1993; Lerner, 2006; Lerner & Callina, 2014). In emphasizing that all action is co-acted, this perspective also puts forth that no single part of the system acts with more importance or weight than other parts. However, as previously mentioned, theoretical frameworks have focused on either the ways the context regulates the individual's development or the ways in which the individual tries to regulate her contexts. Therefore, in what follows, I review theoretical perspectives on the reproduction of inequality that include context-centered perspectives (i.e., centered on structural determination) and individual-centered perspectives emphasizing individual agency and behavior (Collins, 2009).

Context-centered theoretical perspectives

Theoretical perspectives that focus on the role of context in shaping human development to understand the reproduction of inequality emphasize the

ways in which the system is structured to reproduce itself (e.g., Bourdieu, 1985). Inherent in discussions around structural causes of inequality are ideas around the sources and influences of power (Portes, 1998) and how access to material and immaterial sources of capital aide in the accumulation of capital by dominant classes (Bourdieu, 1985). Here, I focus specifically on theories of *social reproduction* and of *social capital* (e.g., Bourdieu & Passeron, 1977; Coleman, 1988).

Bourdieu's social reproduction thesis proposes that cultural codes and practices, or ways of being, are transmitted from parents to children as cultural capital (Bourdieu & Passeron, 1977). This *cultural capital* may be embodied (i.e., in dispositions), objectified (i.e., through ownership of certain goods), and institutionalized (i.e., through educational qualifications) but is largely unnoticed as a form of capital in that it is transmitted and accumulated through socialized ways of being (Bourdieu, 1985). In using the term capital, Bourdieu (1985) highlights the idea that resources that are accumulated, persistent, durable, and function with the "potential to produce profits and to reproduce itself in identical or expanded form" (p. 241), may be converted into economic capital. In other words, parents teach children ways of being and ways of knowing the world that are made valuable as they are appropriated and implemented within their contexts, and are contingent on the individual's social position (Bourdieu, 1985; Emery & Flora, 2006).

Theorists have long posited that the reproduction of intergenerational inequality results from differences in parental characteristics that are passed on to

children (Bowles, 2014) through cultural capital. In this way, the elite may uphold structures of social dominance by privileging their own cultural capital and dismissing or penalizing the cultural capital of less dominant groups (Lamont & Lareau, 1988). Success in this system, and in its institutions (e.g., school), is therefore dependent on differences in dispositions which are attached to differences in social class (Bourdieu & Passeron, 1977). Thus, in a system of inequality, those with less power and privilege, such as those from lower socioeconomic backgrounds, may be viewed as having "less" cultural capital as their cultural capital is viewed as "lacking," rather than different. In contrast, individuals from higher socioeconomic backgrounds may have more resources to direct towards their children's education in terms of the types and amount of information parents may pass on (e.g., in the college application process) and in interactions with educational institutions (Lareau, 2011).

In line with this idea, Bowles and Gintis (1976) examined the reproduction of cultural capital through links in economic structures and schooling experiences. They promoted the idea that schools and other institutions reinforced inequalities in the social structure by punishing and rewarding specific ways of being, or cultural capital (Bourdieu & Passeron, 1977; Collins, 2009), leading to differences in cognitive and "non-cognitive" outcomes (e.g., factors not measured by cognitive test scores; Farkas, 2003; Gutman & Schoon, 2013). In particular, they argued that schools prepare individuals for adult work by socializing people to function within modern social structures of dominance and subordinacy (Bowles & Gintis, 2002). These differences in schooling are reproduced across

the educational system, leading to differences in the development of human and economic capital, creating social pathways which are perpetuated across generations (Bowles & Gintis, 2002; Lareau, 2011).

Theories of *social capital* have also been used to examine the reproduction of inequality. Social capital is "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu 1985, p. 248; 1980); and the concept emphasizes the idea that non-monetary resources can be sources of power (Portes, 2000). These resources may be drawn upon to improve the individual's opportunities (Coleman, 1988), for example gaining access to economic resources and increasing their cultural capital through contacts and institutional affiliations (Portes, 2000).

The social networks in which social capital is found are not given, but must be constructed through group relations (Portes, 2000). Because social capital is found in the relationships and built on the idea of shared values and norms in a community (Coleman, 1988), varying perspectives on social capital have emphasized it as a factor of the individual who is embedded within a community *or* as a structural component which influences individual access. In other words, social capital has been viewed as both the individual as in possession of social capital because of her relation to others as a source of advantage (Portes, 1998) and as representative of the opportunities for social capital within the individual's contexts that she may access.

Researchers have examined social capital as both bonding and bridging (see Patulny & Svendsen, 2007 for review). Whereas boding social capital works across homogeneous groups, bridging social capital reaches outwards across group divides (Patulny & Svendsen, 2007). Differences in bonding and bridging social capital may also relate to the reproduction of inequality. For example, when socioeconomically disadvantaged groups affiliate with other disadvantaged individuals due to historical and institutional constructions (i.e., there are unequal opportunities to individuals based on race, gender, SES, etc.) and due to homophily (i.e., individuals interact with others with similar characteristics), inequalities may be reproduced through social capital (Lin, 2000). Meaning that while members of resource-rich networks benefit from high quality and diverse kinds of resources, members of less resourced networks experience restrictions to information and influence which are further amplified by structural constraints, reducing the likelihood that they will establish ties with members of more advantaged networks (Lin, 2000). Importantly, forms of social capital that facilitate action in one context may not function similarly in others (Coleman, 1988). Indeed, research has shown that better social positions promote access to and use of social resources and that these network characteristics may in turn affect individuals' socioeconomic standings (e.g., Campbell, Marsden, & Hurlbert 1986; Lin, 2000; Lin & Dumin, 1986).

Individual-centered theoretical perspectives

In contrast to context-centered perspectives of social reproduction, research utilizing an individual-centered perspective focuses on individuals'

actions, behaviors, and attitudes. Stemming from Bowles and Gintis' (1976) work on reproduction, a growing body of literature emphasizes the identification, intervention, and remediation of students' non-cognitive factors, or the way students regulate their environments (Gutman & Schoon, 2013). This work was spurred, in part, because theories of reproduction were seen as too deterministic and needing further integration of individual agency (Collins, 2009).

In contrast to theoretical perspectives aimed at understanding how structural factors relate to individual outcomes (by legitimizing certain behaviors over others), individual-centered theories position the individual as an active agent of her own development. Granovetter (1988) noted that studies situated within this perspective follow a methodological individualism "that attempts to ground all explanations in the motives and behaviors of individuals" (p. 187). In the time since, many individual-centered theories have moved towards conceptualizations that focus on the individual but highlight the role of the individual's interrelation with the context. Here, I focus on individual-centered theories which forefront the importance of control over the self and the environment.

The Motivational Theory of Life-Span Development proposes that feeling a sense of control over one's environments is a key to adaptive development (Heckhausen, Wrosch, & Schulz, 2010). Through this theoretical lens, self-control and perceptions of social support may be understood as psychological processes. Individuals attempt to gain control over their environment through primary and secondary control processes, distinguished by whether the action is

primarily focused on the self (primary) or on the external world (secondary; Heckhausen & Schulz, 1995). Primary control striving strategies, such as self-control, allow individuals to influence the environment through their personal behavior (e.g., effort, time, or energy), so that the environment better fits their needs as they attempt to attain personal goals and overcome obstacles to those goals (Heckhausen et al., 2010; Wrosch et al., 2000). In other words, individuals regulate their contexts in service of their goals and these actions operate in relation to their contexts. Furthermore, whether and how these strategies work to help individuals achieve their goals may in turn influence their continued use of these strategies across contexts (Spencer, 2006).

Although this theory highlights the interrelation of individual with context, it confirms Granovetter's (1998) perspective on the methodological individualism of this framework. As such, examinations of the reproduction of inequality within the individual-centered perspective have focused on illuminating mean level differences among groups and have prompted the development of programs and policies aimed at remediating individual deficits in these factors (Lundberg, 2013). Despite the popularity of the individual-centered framework, these approaches are criticized because they may overlook distinct differences in understanding and functionality of these regulations in human development, and may inadvertently further inequality (Wigfield et al., 2015).

In addition, researchers have proposed individual-centered theories that take context into account to examine the role of maternal education in children's outcomes. For example, Harding, Morris, & Hughes (2015) outline a theoretical

model for the influence of maternal education on children's academic outcomes, integrating human (e.g., skills, knowledge, and capabilities), social (e.g., the individual's social relationships), and cultural (e.g., behavioral codes) capital with bioecological and developmental niche theories. The authors propose that mothers access and use human, cultural, and social capital "in a variety of ways to promote their children's academic outcomes" (Harding et al., 2015, p. 62). Through this model, mothers transmit these forms of capital to their children and use these forms of capital to advocate for their children. It is of note that the authors do not examine the role of economic capital in these processes as socioeconomic status (representing both human and economic capital) has been linked in various ways to parental socialization practices for their children's academic (e.g., Yamamoto & Sonnenschein, 2016) and employment outcomes. This omission ignores the substantive links between education and economic stability (Bloome, 2015; Corak, 2013; Joo & Reeves, 2015; Machin & Vignoles, 2004; Park, 1994; Reeves & Howard, 2013; Sasson, 2016) simultaneously reinforcing the idea of individual differences as driving the reproduction of inequality.

Merging perspectives

Following individual- and context-centered perspectives, inequality is often viewed through the lenses of individualistic versus structural constructs. In the U.S., the individualistic perspective is particularly popular for explaining inequality, with popular opinion endorsing the idea that inequality is reproduced due to differences - mainly, deficits - in individual behavior (Pew Research Center, 2014; Rose & Baumgarter, 2013). However, within a relational frame,

the individual acts upon the context and structural inequities act upon the individual. For example, within this frame, whether and to what degree individuals access employment opportunities is related to both contextual (e.g., deindustrialization; Alexander et al., 2014) and individual (e.g., technical skills; Blank, 2009) factors. In other words, neither frame satisfactorily explains the reproduction of inequality on its own; both perspectives are needed.

Indeed, Stephens, Markus, & Fryburg (2012) note that despite the usefulness of individual or contextual models, these conceptions may limit "research, theory, and intervention efforts" (p. 726). Rather, the authors propose the *sociocultural self model*. Aimed at understanding inequality, this model integrates individual (e.g., the "values, beliefs, attitudes, motives, traits, or skills" p. 726) and structural (material resources and the "general characteristics or conditions of the environments to which individuals are exposed" p.730) perspectives (Stephens et al., 2012). Furthermore, Stephens and colleagues (2012) note that

> "*an exclusive focus on either individuals or structures can create the mistaken impression that individual and structural factors are mutually exclusive or opposing explanations of inequality, rather than complementary factors that influence each other and operate in tandem*" (p. 733).

Thus, this model conceptualizes individual and structural factors as interdependent and mutually constitutive – in line with RDS conceptualizations.

Furthermore, this model does so while focusing on analyzing the self that emerges from this co-action.

The sociocultural self model builds on social cognitive theories that emphasize that human behavior is created through reciprocal interactions between personal factors (e.g., perception), behavior, and social and/or environmental factors (Bandura, 2001). These theories highlight the idea that the interrelation of the individual and her context, and in particular, her social contexts, is critical to her motivation (e.g., Skinner et al., 2008). These *self-system* processes (e.g., Bandura 1978; Skinner et al., 2008), wherein human functioning is a triadic, reciprocal "interplay of intrapersonal, behavioral, and environmental determinants" (Bandura, 2012, p. 359), create and modify individuals' motivations and emotions, prompt their behaviors, and shape their perceptions (Bandura, 2012). In other words, complex, adaptive self-system responses operate in response to situational and contextual cues (Barsalou et al., 2007) as the individual interprets contexts as she acts within them (Mistry & Dutta, 2015). As such, perceptual experience is not uniform across individuals; rather, individuals' lived experiences influence what they will understand, "attend to, perceive, and think" (Bandura, 1978, p. 345).

Focused on the emergent self-system – we can view self-control as a strategy individuals may employ to advance their goals. Through self-other appraisal processes, individuals make sense of their experiences and form meanings around the utility of their actions (e.g., Spencer et al., 1997). The response from others to the individual's displays of self-control may in turn

inform the individual's expectations, perceptions (including those of social support), and continued use of self-control as a strategy. However, although much research focuses on the development of individuals' attitudes, skills, and behaviors in the workforce and whether and how they relate to workers' economic capital, these examinations have not considered the myriad ways in which others may interpret the individual as they interrelate with their contexts, differentiating whether and how these behaviors relate to positive developmental outcomes. For example, viewed within the sociocultural self model, an understanding of the development of economic capital must include not only workers' ability to match employers' expectations for these skills (e.g., Robles, 2012) but also the economic and physical realities of the contexts in which people live and work. These realities include economic changes in the U.S. that have been associated with the differential valuation of Technical, Associate, and Bachelor degrees within the workforce (Vuolo, Mortimer, & Staff, 2016) and an increase in "bad jobs" – those with low pay, no access to health insurance, and no pension benefits which comprised more than 30% of jobs in the US in 1995 (Kalleberg, Reskin, & Hudson, 2000; Pedulla, 2016). Furthermore, differences in gendered and racialized expectations around the attitudes, skills, behaviors, and even work histories deemed acceptable may create different relations between these skills and the development of human and economic capital. For example, men (but not women) may face penalties in the workforce for past part-time positions (Pedulla, 2016), and implicit and explicit racial prejudices (e.g., Ziegert & Hanges, 2005) may preclude individuals from accessing educational and employment

opportunities. Thus, even among individuals who pursue work-related educational credentials (e.g., Technical degrees) and who display the attitudes, skills, and behaviors that match to employer expectations (e.g., self-control), employment opportunities may be low paying and subject to structured patterns that are classed, gendered, and racialized.

Within this framework, the dynamic interrelation of personal characteristics (e.g., self-control), the individual's inherited access to contemporary systems through "luck of the draw" factors (e.g., maternal education levels, race, sex), the individual's access to and perceptions of social networks, *and* the structure of the labor and educational market may inform the development of human and economic capital through work experiences and education. In this dissertation, I focus on the relations between self-control, perceptions of social support, and maternal education levels in the prediction of income in adolescence and the transition to adulthood. With this theoretical frame in mind, in the remainder of this literature review I examine the constructs of interest and their interrelations.

Self-control

Self-control, or the deliberate regulation of impulses, thoughts, feelings, and behaviors (Muraven & Baumeister, 2000), is related to a variety of outcomes including psychological adjustment, interpersonal relationships (Tangney et al., 2004), personal finances, (Moffit et al., 2011), and employment outcomes (e.g., unemployment, career orientations, or occupation; Converse et al., 2012; Kokko et al., 2000; Pulkkinen et al., 1999) in childhood, adolescence, and the transition

to adulthood. Self-control may be implicated in the development of human capital and earning capacity or income as it may help individuals curb their immediate desires in pursuit of longer term goals, which may help them to create more stable relationships and engage in long-term employment or educational opportunities (Gottfredson & Hirschi, 1990).

Self-control has garnered substantial attention in the research literature because of its relation to a variety of positive developmental outcomes and because it may be malleable, providing a point for intervention (e.g., Mischel, 1974). Longitudinal research shows that early expression of self-control relates to later positive developmental outcomes, including employment outcomes. For example, children who demonstrate higher self-control are more economically successful later in life and have higher academic and social functioning in adolescence (e.g., Shoda, Mischel, & Peake, 1990). Moffitt and colleagues (2011) demonstrated that childhood self-control (beginning at age 3) predicted fewer negative adolescent behaviors (from age 13 to 21; e.g., smoking and dropping out of school), which, in turn, predicted greater income later in life (at age 32). Similarly, Converse and colleagues (2012) found that childhood self-control positively related to later income and occupational prestige through educational attainment and later career satisfaction through occupational opportunity for achievement. In subsequent work Converse and colleagues (2014) examined the pathways through which early self-control relates to later occupational outcomes, showing that self-control predicted positive and negative behaviors in adolescence which in turn differentially predicted educational attainment. Higher educational

attainment predicted later job complexity that was further positively related to individuals' income and job satisfaction. Finally, Daly and colleagues (2015) found that low self-control in childhood was associated with the emergence and persistence of unemployment over the course of four decades. The authors found that higher self-control reduced the likelihood of unemployment above and beyond the associations of IQ, social class, and gender.

Early levels of self-control (and other factors) may set individuals on different trajectories (Caspi et al., 1998). Although research suggests these early ways of being matter, changes in these trajectories continue throughout life through experience and context (Jack, 2015). In particular, the capacity for self-control continues to develop throughout adolescence (Monahan et al., 2009; Steinberg et al., 2008). For example, Monahan and colleagues (2009) showed linear growth in impulse control in late adolescence and early adulthood. Steinberg and colleagues (2008) demonstrated a significant linear effect of age on impulsivity such that it declines or remains stable between the ages of 10 and 30. More recently, Vargas Lascano and colleagues (2015) found that perceptions of control increase from ages 18 to 25. The continued development of self-control throughout adolescence and early adulthood may be related to the normative maturation of the brain during this time period (Steinberg et al., 2008). Therefore, self-control may be stable in terms of individuals' relative standing in comparison to others (Gottfredson & Hirschi, 1990), but changes in their capacity for self-control in adolescence may alter the relation between self-control and positive outcomes.

Improvement in self-control may underlie desistance from antisocial behavior in the transition to adulthood which may help individuals to obtain and remain employed (Steinberg & Cauffman, 1996). For example, self-control during adolescence is related to better mental health outcomes (e.g., internalizing and externalizing problems; McDermott, Donlan, Anderson, & Zaff, 2017; Miller et al., 2015), less aggressive, delinquent, and violent behaviors (e.g., Anderson et al., 2015), and greater positive (e.g., homework completion, belonging to sports teams) and fewer negative behaviors (e.g., lying, skipping school; Converse, Piccone, & Tocci, 2014) which may help them to attain education and early employment opportunities in the transition to adulthood. Higher levels of self-control at age 22 are related to higher levels of preparation for a job search, with self-control being a significantly stronger predictor of job searching than individuals' motivations around work (Baay, de Ridder et al., 2014). The relations between self-control and job searching may be largely independent of motivation, suggesting that job-seekers benefit from self-control through adaptive habits and routines (Baay, de Ridder et al., 2014). It is likely that higher self-control helps individuals find, obtain, and maintain employment because it lowers the potential for distraction and disengagement from the job search process (Daly et al., 2015; Ent et al., 2015; Kanfer et al., 2001) and may allow individuals who are currently employed to regulate their behavior to meet the demands of the workplace (e.g., meeting deadlines; Schmidt et al., 2012). Furthermore, higher levels of self-control in the transition to adulthood are related to better interpersonal skills and

relationships (Tangney et al., 2004); these social skills and relationships may in turn, help individuals to obtain employment (e.g., Granovetter, 1974).

Importantly, self-control is not only malleable, but is contextually-dependent, and can be influenced by families, schools, and social environments (Heckman & Kautz, 2013). In particular, social relationships may influence the development of self-control (e.g., Casey, 2015; Gibson et al., 2010; Hope, Grasmick, & Pointon, 2003). For example, Gibson and colleagues (2010) found that primary caregivers who showed more warmth, more supervision and monitoring, and less hostility had children with higher levels of self-control. In turn, primary caregivers who showed less warmth, less supervision and monitoring, and more hostility had children with lower levels of self-control. Further research has demonstrated that parental supervision and attachment are strong predictors of self-control (Hope et al., 2003). There may be a relation between youths' self-control and their social relationships such that self-control enables youth to control their impulses (Krueger et al., 1996) and develop positive interpersonal relationships (Eisenberg, Hofer, Sulik, & Spinrad, 2014) which in turn, may help them to develop more self-control in a reciprocal loop. Furthermore, social contexts may attenuate the association between self-control and adolescent outcomes (e.g., Kuhn & Laird, 2013).

In this way, factors that reflect social processes may contribute to differences in self-control. For example, family socioeconomic status (SES) and parent education contribute to perceptions of control in the transition from adolescence to adulthood, altering individual trajectories of educational

experience and employment (Vargas Lascano et al., 2015). In support of this idea, Hostinar and colleagues (2015) found that low SES in early life related to adult levels of self-control through family climate and perceptions of stress. It is possible that the scarce resources and stress associated with poverty diminish the individual's cognitive capacity, leaving fewer mental resources for other tasks, and reducing self-control (Bertrand, Mullainathan, & Shafir, 2006; Duckworth et al., 2013; Mani, Mullainathan, Shafir, & Zhao, 2013). In other words, the cognitive efforts it takes to manage the day-to-day stresses of poverty may deplete the individual's capacity for self-control (Baumeister, Vohs, & Tice, 2007). For example, Mittal and Griskevicius (2014) showed that environmental uncertainty, through conditions associated with poverty, alters individuals' sense of control over the environment and that people who were poorer in childhood had a lower sense of control than those who grew up in more advantaged contexts. Indeed, children who experience more life stress report lower self-control in adolescence (Duckworth, Kim, & Tsukayama, 2013).

However, research examining the relations of neighborhood conditions, self-control, and social support provides mixed results, showing both that adverse neighborhood conditions and variations in social support are related to children's levels of self-control (Gibson et al., 2010; Pratt et al., 2004) and that self-control is not statistically different among adolescents in varying neighborhood conditions (McDermott et al., 2017). Furthermore, Mischel (1974) shows that children's self-control (demonstrated by not eating a marshmallow placed in front of them) could be manipulated by placing the marshmallow differently or

teaching the child strategies for waiting. Building on Mischel's (1974) marshmallow test, Kidd, Palmeri, and Aslin (2013) showed that children in a reliable context waited significantly longer for their reward than those in an unreliable context. These findings suggest that children in adverse contexts exhibit self-control in relation to their beliefs about the reliability of their contexts (Guttman & Schoon, 2013).

Although plentiful research examines how self-control relates to developmental outcomes across large populations, a growing body of literature looks at whether and how these relations hold true across diverse contexts and populations. For example, de Ridder, Lensvelt-Mulders, Finkenauer, Stok, and Baumeister (2012) conducted a meta-analysis of 102 studies investigating the behavioral effects of self-control. The authors found that although capability for self-control is similar across sociodemographic groups, self-control may function to alter desired and undesired behavior differently among groups; and may be a stronger predictor of behavior among samples including adolescents and males (de Ridder et al., 2012).

Furthermore, undergirded by the idea that an action that is adaptive in one context may not be adaptive in others (Blair & Raver, 2012); this research has begun to disaggregate large datasets to understand how these factors interrelate within specific contexts. From this perspective, research indicates that in highly disadvantaged contexts, high levels of self-control may not override contextual adversity (Anderson et al., 2015; McDermott et al., 2017). Moreover, this research highlights that although self-control may relate to positive developmental

outcomes it does so only in relation to the context of individuals' lives. For example, variations in contextual advantage or disadvantage may alter the relation between self-control and adolescent outcomes (Gibson, 2011). Anderson and colleagues (2015) found that self-control served as a protective factor against the development of delinquent and aggressive behaviors but only in some types of disadvantaged and dangerous neighborhood contexts. For youth in the most disadvantaged contexts and in the most advantaged contexts, the relation did not persist (see also McDermott et al., 2017). In addition, research shows that for low-SES youth although higher self-control was related to lower rates of depression, aggression, internalizing problems, and substance abuse, it was also related to faster epigenetic aging (Miller, Yu, Chen, & Brody, 2015). As such, in accordance with the context, self-control may not function in the same ways in relation to positive developmental outcomes and/or may be related to drawbacks in other areas of development.

Importantly, although this research examines the physical and social contexts of neighborhoods, there may be more proximal social relationships that inform these processes. In the following section, I examine literature on adolescents' perceptions of social support from parents and friends and how these perceptions of support relate to later employment outcomes.

Perceptions of support from parents and peers

Interpersonal relationships are particularly salient during adolescence (Makara & Madjar, 2015) with individuals shifting their primary forms of social interaction more toward relationships with peers than with their parents and

families (Brown & Larson, 2009). Although youth may spend more time with peers, family and in particular, parents remain a primary source of support for many adolescents (Donlan, Lynch, & Lerner, 2015). Adolescent social connection is related to individuals' wellness and developmental outcomes not only during adolescence, but later into adulthood (Baumeister & Leary, 1995; Deci & Ryan, 2012; Olsson, McGee, Nada-Raja, & Williams, 2013). Different social relationships such as with parents and peers, provide youth with different types of support (i.e., emotional, informational, etc.; Malecki & Demaray, 2003) and have unique associations with adolescent outcomes (e.g., Cavanaugh & Buehler, 2015), including individuals' self-evaluations, appraisals, motivation (Feeney & Collins, 2014; McDermott, Zaff, & Donlan, 2016; Urdan & Schoenfelder, 2006; Wentzel, 1998), and their employment outcomes (Aguilera & Massey, 2003). Furthermore, students who perceive more support from parents and friends have better attendance in school, spend more time studying, and obtain better grades, reducing the likelihood of school leaving (Rosenfeld, Richman, & Bowen, 2000; Zaff et al., 2016).

Strong social ties in adolescence can provide individuals with direct assistance including emotional, financial, and informational guidance which may help them to attain employment (Caspi et al., 1998). Perceptions of support (whether young people feel supported and would turn to social relationships for advice; Hardie & Seltzer, 2016) may include both material and emotional support, among other types (Harknett, 2006). Furthermore, although perceptions of support may be related to actual support (e.g., financial and social capital; Hardie

& Seltzer, 2016), by examining perceived support rather than actual, researchers may avoid the problem of conflating the need for support with availability of support (Harknett, 2006; Henly, Danziger, & Offer, 2005). Higher levels of perceived social support from family and friends are related to greater earnings and lower receipt of welfare in dollars (Harknett, 2006). Conversely, lower levels of perceived social support are related to lower employment rates (Harknett, 2006). Perceived support from family and friends is associated with economic well-being, particularly among low-income populations (Harknett 2006; Henly et al., 2005). Research shows that children report feeling more supported from married parents (compared to divorced parents Amato, Rezac, & Booth, 1995; Kaufman & Uhlenberg, 1998) and from smaller families (Hardie & Seltzer, 2016).

In adolescence, individuals may decrease the amount of time they spend with their parents, but research indicates that there is an increase in the proportion of time youth spend talking with their parents about interpersonal issues (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Parents may transmit financial, social, and human capital to their children (Schoeni & Ross, 2005; Swartz et al., 2011). These transfers have significant influence on children's access to employment and continued education (Hardie & Seltzer, 2016). For example, Granovetter (1974) noted that teenagers often obtain jobs through parents and other adults in their immediate community. Young people who can rely on their parents for support are better able to weather periods of low income, unemployment, and relationship instability (Settersten & Ray 2010). Indeed,

research shows that perceived support from parents may represent a latent "safety net" which may influence individuals' behavior, and in particular, enabling youth to take calculated risks (e.g., pursuing graduate education, starting a business; Hardie & Seltzer, 2016) which may relate to their later economic success.

Alternately, perceptions of support from friends and peers are related to engagement in school, as well as positive and negative behaviors, depending on peer group goals and attitudes (Donlan et al., 2015). Research shows that friends may provide the widest access to different employment positions (Lin & Dumin, 1986), and that friendship networks are positively associated with participation in the labor force (Aguilera, 2002). Aguilera and Massey (2003) suggest that friends and relatives sort through jobs to reserve the better jobs for people within their network – allowing workers to find jobs more closely matching their skills and preferences – which is related to higher wages. Furthermore, peer support may attenuate the link between contextual or self-imposed stress and elevated physiological stress responses (Brody et al., 2013).

However, perceptions of support may reflect individual variations in the self-system rather than social network characteristics (Sarason, Sarason, et al., 1990). If individuals can find people they perceive as dependable and trustworthy, they may be more likely to regulate their emotions and behaviors in response to stress (Chen & Miller, 2012). In other words, it is possible that perceptions of social support mediate the relation between self-control and employment outcomes by further enhancing or diminishing individuals' responses, which may help them to obtain and remain employed.

Social relationships and employment. The individual's social relationships and networks may assist them in achieving their goals, including their goals around employment, because these relationships may be leveraged to help them find jobs (Coleman, 1988; Granovetter, 1973; Lin & Dumin, 1986). Non-monetary resources can be sources of power (Portes, 2000) and may be drawn upon to improve the individual's opportunities (Coleman, 1988). Through a web of social relationships, individuals may gain direct access to economic resources, increase their technical and social skills, or affiliate with institutions that confer valued credentials (Portes, 1998). Research shows that the resources accumulated through relationships with other people help workers to find jobs (Granovetter, 1973, 1995; Lin & Dumin, 1996; Lin, Ensel, & Vaughn, 1981). For example, parental resources may be particularly important to finding initial employment (Kramarz & Skans, 2014), and young adults who live in proximity to their parents (e.g., same Census tract or commuting zone) may recover more earnings in the five years after a job loss, suggesting that parental networks of social support may be used to find new jobs and to weather periods of unemployment (Coate, Krolikowski, & Zabek, 2017). However, social resources may not always further one's occupational outcomes (de Graaf & Flap, 1988). Rather, social network disadvantages may compound individual disadvantages (Harknett 2006). For example, individuals' social relationships may reflect the advantages and disadvantages of their parents because the child inherits the material resources and educational opportunities related to parents' social capital (i.e., resources linked to social relationships; Bourdieu 1985) *and* parents'

connections to and information about opportunities (Loury, 1977), which may differentially prepare children for and connect them to the labor market.

Maternal education as a source of inequality: Heterogeneity in the transition to adulthood

In the 1960's, a federally commissioned study found that family socioeconomic status (SES) was the strongest relation to a child's educational achievement and life chances (Coleman, 1966). More than 50 years later that generalization still holds true (Collins, 2009). Resources in one's family, whether they are social, material, or economic, may aid or deter the individual's mobility (Lui et al., 2014). Individuals from economically disadvantaged families have fewer resources (i.e., financial, social capital) to navigate the transition to adulthood, including obtaining further education, work force participation, and family formation (Diemer, 2015; Furstenberg, 2008). Although parents' economic resources play a role in the creation of human capital and in the subsequent labor market outcomes among their children (Caspi et al., 1998), SES is comprised of a variety of factors including parents' education, occupation, income, and wealth, and each of these components may differentially contribute to processes that influence individuals' social and economic outcomes (Conger & Donnellan, 2007; Diemer, 2015). Here, I focus on maternal education levels.

The link between income and educational achievement has strengthened in recent decades (Machin & Vignoles, 2004), deepening inequality (Bloome, 2015). Importantly this link may be reflected in the relation between one's own education and income and across generations (i.e., from parent to child).

Resources related to parent education may set individuals on qualitatively different trajectories such that experiences in childhood may initiate processes of cumulative advantage of disadvantage leading to differences in human, social, and economic capital later in life (Caspi et al., 1998). For example, family poverty is associated with low parental education levels and is highly related to children's attendance at low-performing schools (Guo & Harris, 2000; Wolfe & Haveman, 2002), living in high-poverty neighborhoods (e.g., Raver, Roy, & Pressler, 2015), lower health, and lower academic achievement (Bradley & Corwyn, 2002). Mothers with less than a high school education also have the highest rates of unemployment (Pilkauskas, Waldfogel, & Brooks-Gunn, 2016). The combination of these factors reinforces patterns of social advantage and disadvantage; further hindering social mobility (Alexander et al., 2014). In this way, the material and social resources available to one's children (Bradley & Corwyn, 2002) may mediate the relation between maternal education and her children's later employment outcomes (Caspi et al., 1998). Furthermore, in the transition to adulthood, parental education levels may be particularly salient to understanding youth outcomes as individuals "generally have not firmly established themselves in the labor market, completed their education, and/or begun the process of accruing wealth" (Diemer, 2015, p. 160). As such, individuals' achievements and experiences (e.g., self-control and perceptions of support) must be considered in conjunction with the advantages and disadvantages of the previous generation (Lui et al., 2014).

Access to education is one mechanism for passing economic privilege to one's children (Lundberg, 2013). However, there may also be behavioral differences related to maternal education. For example, family members are socializing agents in the lives of children who are responsible for the development of "acceptable" behaviors (e.g., Hirschi & Gottfredson, 2001). Children whose mothers have lower income and educational attainment are often perceived as inadequately prepared for school (Alexander et al., 2014), both cognitively and behaviorally (Heckman et al., 2006). Research shows that higher maternal education has positive relations to both cognitive skills and behavioral problems (Carniero, Meghir, & Parey, 2013). In comparison, mothers with more education may further reify their privileges through behavioral aspects of socialization such as the ability to negotiate middle-class educational and professional organizations (Weininger & Lareau 2003) because they have access to more socially valued information (Diemer, 2015). Parents' knowledge of the educational system and of academic norms may help their children to achieve in school (e.g., Augustine, Cavanaugh, & Crosnoe, 2009; Coleman, 1988). Indeed, research examining maternal education and child outcomes shows that higher maternal education levels are related to their children's higher math and reading scores, lower incidence of behavioral problems, lower likelihood of grade repetition, delayed childbearing, and a greater likelihood of marrying better-educated individuals (Carneiro et al., 2012).

Importantly, as inequality increases, the return of education on income also rises (Bloome, 2015). The income, schooling, and quality of schooling of

one's parents are significant predictors of an individual's earnings (Bowles et al., 2001) with, for example, higher levels of parent education related to higher income for their children (Carneiro et al., 2012). Although research highlights the processes through which maternal education levels may be related to children's later income, limited research examines the relations between maternal education levels and other dimensions of their children's later employment. One study, focused on parent SES – which often includes parent education levels – found that higher parent SES was positively associated with a high career orientation (a factor comprised of individuals' occupational status, education, present work situation, and career stability) but not with a low career orientation later in life (Pulkkinen et al., 1999). In comparison, low parent SES was related to children's later career instability (Pulkkinen et al., 1999).

Homophily in networks

The accumulation of advantage and disadvantage in the transition to adulthood may affect individuals' opportunities and resources throughout their lives (Lui et al., 2014). When socioeconomically disadvantaged groups affiliate with other disadvantaged individuals due to historical and institutional constructions (i.e., there are unequal opportunities to individuals based on race, gender, SES, etc.) and due to homophily (i.e., individuals interact with others with similar characteristics), inequalities may be reproduced (Lin, 2000). Meaning that while members of resource-rich networks benefit from high quality and diverse kinds of resources, that benefit their skills, health, and education (Becker & Tomes, 1994), members of resource-poor networks experience restrictions to

information and influence. These restrictions are further amplified by structural constraints, reducing the likelihood that they will establish ties with members of more advantaged networks (Lin, 2000). For example, "people in higher-status occupations are more likely to associate with others who have higher-than-average occupational status, advanced skills, and economic resources" (Conger & Donnellan, 2007, p. 177). These processes maintain the social hierarchy and widen the gap between the more advantaged and disadvantaged into adulthood (Lui et al., 2014). Indeed, research shows that social positions promote access to and use of social resources and that these network characteristics may in turn affect individuals' socioeconomic standings (e.g., Campbell, Marsden, & Hurlbert 1986; Lin, 2000; Lin & Dumin, 1986).

Social position and employment. Social position and the nature of individuals' social ties affect their access to high-prestige occupations as well as the range of positions to which they have access (Lin & Dumin, 1986). Social capital, which may be viewed as bonding when it works across homogeneous groups and bridging when it reaches outwards across group divides (Patulny & Svendsen, 2007) may enhance the chances of attaining better social statuses; however, this social capital is contingent on the individual's initial positions within the social hierarchy (Lin, 1999). Specifically, social capital flows through gendered, racialized (McDonald, 2011), and socioeconomic networks (Brisson et al., 2009). For example, the effectiveness of social capital at facilitating increases in economic capital may be moderated by neighborhood disadvantage or by familial poverty (Brisson et al., 2009). In poor, urban communities, and

particularly among racial and ethnic minority youth, the interaction with kin and friends may not extend beyond the inner city, depriving their inhabitants of information about employment opportunities (see Portes, 1998 for review). Although social capital and perceptions of social support are not synonymous, these perceptions of support may reflect whether, how, and to what extent individuals have access to varying forms of social capital. Henly and colleagues (2005) reported that among current and former welfare recipients, the most economically needy families were those with the most limited access to social support. Thus, the interrelations between individuals' social relationships and social status may play a role in understanding employment outcomes.

Furthermore, based on the broader economic context of the family, social relationships may differentially relate to youth outcomes. For example, research utilizing a composite factor of SES (which included parental education) demonstrated that aspects of social support, such as nurturing parents, support from other adults, and from peers, has a stronger relation to youth outcomes for high SES youth compared to low SES youth (Scott et al., 2015). In addition, having a higher number of employed social contacts increases job finding rates and, among high-skilled workers, better network quality and a high number of employed non-familial contacts increases wages (Cappellari & Tatsiramos, 2015). In comparison, there is evidence that among low-skilled individuals a higher number of employed friends and relatives may lead to lower wages (Cappellari & Tatsiramos, 2015).

Parent education and perceived support. Social support may be a hidden source of inequality as parents from wealthier families may be able to provide more resources to their children (Swartz, 2008). Parents with higher levels of education may be more likely to provide advice to their children in the transition to adulthood regarding their educational pathways (Lareau & Weininger, 2008). Higher parent educational attainment is positively associated with youth perceptions of parental supportiveness but negatively associated with youth turning to parents for advice on education, employment, or relationships (Hardie & Seltzer, 2016). Family SES is also tied to parents' provision of perceived and actual support (Antonucci et al., 2011; Gerstel, 2011), with middle class families being more likely to provide financial and emotional support to young adults than socioeconomically disadvantaged families (Hardie & Seltzer, 2016). Furthermore, family income, wealth, and parents' financial stability may inform whether children believe that parents are able to provide advice about employment or monetary support (Hardie & Seltzer, 2016).

Prior research shows that perceived support was unrelated to employment quality in low-income networks but that it reduced the likelihood of living in poverty and was further associated with coping (Henly, Danziger, & Offer, 2005). Henly and colleagues (2005) also found that perceptions of social support were not related to earnings or job quality among single-mother welfare recipients but were significantly associated with reduced poverty and hardship. Although social support may act as a safety net for low income individuals; it is not equally available among low-income individuals (Harknett, 2006). Together, these

findings support the idea that social support may aid low-income families in their day-to-day lives, but not enough to promote social mobility (Henley et al., 2005).

In summary, maternal education levels may relate to their children's later employment outcomes through a variety of processes, including the transfer of behavioral norms and in the provision of access to social networks and resources.

The present study

As reviewed, self-control is related to individuals' later employment, wages, and occupations (e.g., Converse et al., 2012; Moffitt et al., 2011). However, research shows that the development of human and economic capital is predicted by a variety of personal, familial, and contextual factors (e.g., Caspi et al., 1998). In particular, the relation between self-control and income may be mediated by individuals' perceptions of support from family and friends as these perceptions may relate to actual support, provide youth with a safety net (Hardie & Seltzer, 2016), and may help youth to further regulate their behavior in service of their goals (Chen & Miller, 2012). Furthermore, it is possible that maternal education levels moderate this process as they may relate to youths' access to educational and economic opportunities. Specifically, the disadvantages associated with low maternal education levels may override the benefits of high self-control and social relationships in developing economic capital in the transition to adulthood. However, research has not yet examined these interrelations. Therefore, drawing on theories of social capital and social reproduction I ask,

Research Question 1: What is the relation between self-control in adolescence and income in the transition to adulthood?

Research Question 2: Whether and to what extent is the relation between self-control and income mediated by individuals' social relationships with family and friends?

Research Question 3: Are there group differences in the relation in Question 2 by maternal education level?

Prior research shows that self-control (i.e., the deliberate regulation of impulses, thoughts, feelings, and behaviors; Muraven & Baumeister, 2000) may be related to success in the workplace (Heckman & Kautz, 2013; Heckman, Stixrud, & Urzua, 2006). In response to Research Question 1, I hypothesized that ratings of self-control would predict income at Wave 3.

In addition, youth perceive and get actual support from multiple social relationships, including those with family and friends (Malecki & Demaray, 2003) which may help them to obtain employment (Aguilera & Massey, 2003). In response to Research Question 2, I hypothesized that perceptions of support from family and friends would partially mediate the relation between self-control and income as workplaces and schools require informal knowledge of the context (e.g., Nelsen, 1997), which may be learned through social connections (Granovetter 1973), and which may help individuals to regulate their behavior in service of their goals (Chen & Miller, 2012). I hypothesized that perceptions of social support would relate to higher levels of financial capital for two reasons. First, the reciprocal relations between self-control and social support (e.g.,

Eisenberg et al., 2014) and the relations between supportive social relationships and employment (Seibert, Kraimer, & Liden, 2001; Wu, Foo, & Turban, 2008), may lead to greater income. Second, perceived social support is related to actual support (Hardie & Seltzer, 2016). It is possible that self-control in adolescence sets individuals on different trajectories of experiences (Caspi et al., 1998) which begin to manifest in the transition to adulthood. Figure 1 shows the hypothesized model.

In response to Research Question 3, I hypothesized that self-control and social relationships would differentially predict income when individuals were grouped according to maternal education level, as different factors may function differently in relation to the context (Blair & Raver, 2012). Differences in income during the transition to adulthood may be related to differences in the socioeconomic status of the parents (Bowles, 2014). Low maternal education levels, which may also be used as a proxy for socioeconomic status, may limit the quality and type of social relationships available to children (Bradley & Corwyn, 2002) and homophily within social networks may lead to wage differences (Bentolila, Michelacci, & Suarez, 2010). See Figure 2 for an example of the hypothesized model.

CHAPTER 3: Method

Sample

Data were collected by the Project on Human Development in Chicago Neighborhoods (PHDCN); a multilevel, interdisciplinary study focused on children and adolescents and their families, schools, and neighborhoods. The PHDCN dataset has two components: the Community Survey (CS) and the Longitudinal Cohort Study (LCS). The CS examined neighborhood features through structured observations and a survey of 8,782 adults in 343 neighborhood clusters (NCs; Morenoff, Sampson, & Raudenbush, 2001). NCs were stratified across 21 categories by low, medium, or high socioeconomic status (SES) and by the race/ethnic composition of the residents (e.g., >75% Black, >75% White). The LCS consists of data collected from 80 of the 343 NCs, which were sampled from across the 21 categories to eliminate confounding ethnicity and SES. The LCS participants were selected from households in these NCs, and were grouped into Cohorts by age: within 6 months of birth, 3, 6, 9, 12, 15, and 18 years old. Data were collected from these Cohorts across three Waves (Wave 1 from 1994-1997; Wave 2 from 1997-1999; Wave 3 from 2000-2001).

Data for this study are drawn from the Cohort 15 participants (N=696). Cohort 15 was chosen for these analyses because the participants are in adolescence at Wave 1 and in the transition to adulthood at Wave 3 (approximately 21 years of age).

Measures

Self-control. Self-control was measured using the inhibitory control subscale of the Emotionality, Activity, Sociability, and Impulsivity (EASI)

Temperament Survey (Buss & Plomin, 1984). Inhibitory control is considered to underlie self-control, enabling children to inhibit their behavior (Daly et al., 2015). Primary caregivers answered five items to rate the participants' self-control on a five-point Likert scale (1= "*Uncharacteristic*" to 5= "*Characteristic*"). Higher scores indicated greater self-control. Items included "Finds self-control easy to learn."

Prior research provides evidence that the scale is reliable (α = .74; Gibson et al., 2010). Parental report is a valid measure of self-control (e.g., Gibson et al., 2010; Pratt et al., 2004) as self-reports from individuals with low self-control may be biased due to behaviors related to lower self-control (Piquero, MacIntosh, & Hickman, 2000). For instance, individuals with low self-control may not properly follow instructions on measures, biasing their results. Psychometric analysis of this scale has shown high agreement across raters (Neale & Stevenson, 1989) and supports the use of this scale among adolescents (Spense, Owens, & Goodyer, 2013).

Social Support. Friend support and family support were measured using the Provision of Social Relations (PSR; Turner, Frankel, & Levin, 1983) which asks participants to report on the social support received from their family and friends. Previous research shows the scale to be reliable (α = .89; Cadell, Regehr, & Hemsworth, 2003). A six-item subscale assessed friend support. Items included "I have at least one friend I could tell anything to." A five-item subscale assessed family support. Items included "My family lets me know they think I am a worthwhile person." PSR items were rated on a three-point Likert scale (1=

"*Very True*," to 3= "*Not True*"). Both scales were reverse coded such that higher values indicated higher support.

Human Capital Development. Participants were asked whether they were currently employed (for Cohort 15 *N*=468 "DG1A"), options included employed full- or part-time (*n*=266; 58.8%); with a job, not at work; keeping house; going to school; unable to work; unemployed; and other. Due to small cell size, individuals who indicated that they were unemployed, keeping house, and unable to work were collapsed into one category representing individuals who were disconnected. For example, there were three participants who indicated that they were unable to work, 24 who were keeping house, and 53 who were unemployed. In addition, only two participants indicated that they were both in school and working. Responses were recoded to indicate 1= Employed Full-time or Part-time; 2= In School; 3= Disconnected (Not Employed, Not in School). These categories are used to represent different aspects of continued human capital development during the transition to adulthood as they include activities that indicate participants are pursuing further skills and capabilities that may benefit them in the future.

Income. Income was used as a measure of economic capital at Wave 3. The young adults were asked to report what their total household income was in the last tax year (dg83). Responses ranged from "less than $5,000" to "more than $90,000".

Maternal Education. Mother's level of education was parent-reported at Wave 1. Categories included, 1=*less than high school*, 2=*some high school*,

3=*finish high school*, 4=*some more than high school*, and 5= *a bachelor's degree or more*.

Covariates. Participant age, race, gender, family structure, peer delinquency, maternal depression, mother age, family received public assistance, whether the participant was in school at wave 2, academic skill level (WRAT), and participant marital status will be used as covariates. The following covariates were obtained by the PHDCN researchers at Wave I. *Race* of the participants was coded into Black, Hispanic, White, or Other. Youth who selected multiple races were coded into the "Other" category. *Gender* was a binary measure (0= "*Female*," 1= "*Male*")[2]. *Family structure* was coded into three categories: two biological parent households, single parent households, and other households. Mother's age was measured in years. *Peer delinquency* was obtained from the Deviance of Peers measure (Huizinga, Esbensen, & Weiher, 1991). Participants rated the number of their friends who fit each description (e.g., "Number who have gotten into fist fights with others" or "Number who had attacked someone with a weapon") on a 3-point Likert scale, 1 (None), 2 (Some), or 3 (All); α =.89.

Maternal Depression was measured at Wave 2. Mothers were asked if they were "depressed 2 weeks in a row last year" (0= *No* or 1= *Yes*). *Subject currently in school* was also measured at Wave 2 (0= *No due to drop out, expulsion, or other* 1= *Yes*). *Maternal Age* was collected at Wave 1 (*M*=40.45,

[2] Sex and gender were collected by the PHDCN researchers. In this sample, there was 100% overlap in response between the two variables.

SD=5.91). At Wave 1, participants indicated whether their family received public assistance (0= *No*, 1=*Yes*).

At Wave 2, participants indicated whether they were still *in school* (0= *No*, 1=*Yes*). Participants were marked as not in school if they indicated that they had dropped out, were expelled, or other. Participant *marital status* was measured at Wave 3 (1= *single*, 2= *married*, 3= *other*). Finally, participants' *academic skill level* was accounted for using the scaled score of the Wide Range Achievement Test (WRAT) measured at Wave 3. Scores on the WRAT can be used to compare the achievement levels of people, and may be used to give a general indication of the instruction level (i.e., grade level) of the individual (ICPSR, 2017). In the current sample, scores ranged from 49 to 123.

Household income at Wave 1. Parents reported the total household income at Wave 1 for the last tax year. Responses ranged from less than $5,000 to more than $50,000.

Neighborhood (LINK_NC) was be used to account for the nested nature of the data (discussed further in the following section). As noted, data were collected from participants in 80 of the 343 neighborhood clusters. Neighborhood is an unordered categorical (nominal) variable.

Results

Descriptive Statistics

Descriptive statistics for racial categories within the full sample are reported in Table 1. Due to small cell size among Native, Pacific Islander, Asian, and Other participants, only participants who were Black, White, or Hispanic

were retained for further analysis (*N*=669). Table 2 reports the descriptive statistics for the final sample across all measures.

Among participants, the level of internal consistency for the measures of self-control (α=.704), family support (W3; α=.800), and friend support (W3; α=.732) were acceptable. Table 3 presents correlations between the variables of interest.

In addition, the variables for human capital development and maternal education level were collapsed due to small cell size. Human capital development categories included Employed Full- or Part-time; In School; and Disconnected (see Table 4). Maternal education level was collapsed to include categories representing Less than high school/Some high school; Finish high school/Some more than high school; and a Bachelor's degree or more. The number of participants for each category of maternal education level and human capital development outcome prior to estimation of missing data are represented in Table 5. These preliminary analyses revealed that there were too few participants whose mothers had a Bachelor's degree or more (*n*=65) to pursue Research Questions 2 and 3 on that group separately. Therefore, for all structural equation models, including invariance testing, maternal education level is represented by two categories in this model: less than high school/some high school (*n*= 282) and high school diploma/some more than high school/Bachelor's degree or more (*n*= 344). The three-category maternal education variable is retained in preliminary analyses and in post hoc analyses as there may be additional differences between

those who have attained a high school diploma and those who have a Bachelor's degree or more.

Preliminary Data Analysis

Data preparation and preliminary analyses were conducted using IBM SPSS Statistics 20. Preliminary checks for normality indicated that the data were moderately non-normal (Muthén & Kaplan, 1992). In addition, these preliminary analyses identified missing data. Table 6 reports the means, standard deviations, tests for normality, and missing data for all variables included in the analysis. Patterns of missingness were assessed across variables for categorical employment, family support, friend support, and self-control as well as across covariates. It is possible that these data are missing at random; however it is not possible to state this definitively (Enders, 2010). In addition, I examined whether there were differences in self-control and perceived social relationships using analysis of variance (ANOVA) and ran preliminary confirmatory factor analyses on each of my latent measures using the full sample and covariates. Finally, my preliminary analyses included invariance testing by maternal education level. Further information on each of these procedures is reported below.

Tests of Missingness. Tests of missingness indicated that there was a statistically significant difference in family support between participants who were missing data on the measure of self-control compared to those who were not [$t(24.33) = -4.15$, $p=.00$; 95% *CI*, -.23 to .08] such that those who were missing data on self-control had higher family support ratings.

Chi-square tests indicated that there were differences between the missing data and not missing data on the employment measure based on maternal level of education (χ^2= 9.90, *df* = 4, *p*= .04) and subject currently in school (χ^2= 5.21, *df* = 1, *p*=.02). Analyses revealed that there was a statistically significant difference in age (*t*(407.76) = -2.36, *p*=.02; 95% *CI*, -.12 to -.01) and family income (*t*(323.49) = 2.37, *p*=.02; % *CI*, .07 to .76) among those missing and not missing employment outcomes such that those missing data were older (*M*=15.20, *SD*=.33) than those who were not missing data (*M*=15.14, *SD*=.32) and those that had missing data came from families with lower incomes (*M*=3.87, *SD*=2.04) than those not missing (*M*=4.29, *SD*=1.80).

Tests indicated that there were differences between the missing data and not missing data on the family support measure based on maternal level of education (χ^2= 9.57, *df* = 4, *p*= .05), race (χ^2= 6.69, *df* = 2, *p*= .04), subject currently in school (χ^2= 7.55, *df* = 1, *p*<.01), and on family income (*t*(342.39) = 2.49, *p*<.00; 95% *CI*, .17 to .84) such that those who were missing data were from lower income families (*M*=3.81, *SD*=1.99) than those who were not missing data (*M*=4.32, *SD*=1.82).

T-tests indicated that those with missing data on the friend support aggregate came from lower income families (*M*=3.83, *SD*=1.99) than those who were not missing data (*M*=4.31, *SD*=1.82) on this measure (*t*(348.74) = 2.80, *p*<.00; 95% *CI*, .14 to .82). Chi-square tests further indicated that there were differences between the missing data and not missing data on the friend support

measure based on maternal level of education (χ^2= 9.56, *df* = 4, *p*= .005), race (χ^2= 6.23, *df* = 2, *p*= .04), and subject currently in school (χ^2= 6.97, *df* = 1, *p*<.01).

Finally, I examined differences among participants who were missing data on household income at Wave 3 with those who were not missing data. *T*-tests revealed that participants missing data on income at Wave 3 were from families reporting lower income at Wave 1 (*t*(611) = 2.35, *p*<.05). Chi-square tests indicated that there were differences in participants who were missing data and who were not missing data based on maternal education levels (χ^2= 6.18, *df* = 2, *p*=.05). No other differences emerged. The implications of estimating these missing data are discussed in the limitations section of Chapter 4.

Analysis of Variance. I examined whether there were significant differences in self-control and social relationships among youth with more and less educated mothers by conducting analysis of variance (ANOVA) tests. Results indicated that there were not statistically significant differences among youth in the average level of perceived social support from family and friends at Wave 3 based on their mothers' achieved education levels. The ANOVA examining differences in self-control across maternal education level groups indicated that there were significant differences between the groups (*F*(2, 609) =7.06, *p*=.001). Post hoc contrasts indicated that there were statistically significant differences between the less than high school/some high school group (*M*= 3.67, *SD*=.98) and the high school diploma/some more than high school group (*M*= 3.34, *SD*=1.02).

Confirmatory Factor Analysis. First, I employed confirmatory factor analysis (CFA) to examine the extent to which the underlying structure of the data

aligns with the measurement model. CFA is used to test theoretically and empirically grounded factor structures, and assess whether they fit the underlying structure of the data (Thompson, 2004). The underlying factor structure for the measures of self-control (Wave 1), friend support (Wave 3), and parent support (Wave 3) were examined. These analyses were conducted in MPlus 7.11.

Missing data were estimated using MLR which provides maximum likelihood parameter estimates with standard errors that are robust to non-normality and non-independence of observations. Covariates included participant gender, age, family receipt of public assistance at Wave 1, mother's age, peer delinquency, maternal depression, family structure, and race. Finally, to account for the non-independence of observations among respondents (i.e., participants in neighborhoods), all models were specified as multilevel with neighborhood as the second level, and used a sandwich estimator to adjust the standard error computations.

I used an item loading cutoff criterion of .45, which has been considered an indication of a "fair" estimate, compared with more stringent loadings, which would indicate "good" or "excellent" loadings, and with lower loadings, which are considered to be "poor" (Comrey & Lee, 1992). Good model fit was numerically indicated by a non-statistically significant chi-square. However, as the chi-square statistic is sensitive to sample size (Albright & Park, 2009; Thompson, 2004), I also examined the root mean square error of approximation (RMSEA), standardized root square mean residual (SRMR), comparative fit index (CFI), and Tucker–Lewis index) TLI (Hu & Bentler, 1999). An RMSEA below

.06 with an upper limit of .07, SRMR of less than .08, and CFI and TLI above .90 indicate good model fit (Hu & Bentler, 1999; Thompson, 2004).

Self-control. In the CFA of the self-control measure there were 48 missing data patterns. Two items (EY 15 and EY 24) did not meet the .45 cutoff criterion and were removed from the model (and all subsequent models; see Table 7). Fit indices of the final model indicated moderate fit ($\chi^2 = 53.60$, $df = 20$, $p < .01$; scaling correction factor for MLR = 1.03; RMSEA = .05, 90% CI, .03 to .07, p=.47; CFI = .89; TLI = .82; SRMR = .03).

Friend Support. In the CFA of the friend support measure there were 41 missing data patterns. Fit indices indicated good model fit ($\chi^2 = 92.50$, $df = 74$, $p = .07$; scaling correction factor for MLR = 1.09; RMSEA = .02, 90% CI, .00 to .03, p=1.00; CFI = .96; TLI = .95; SRMR = .03). Factor loadings are presented in Table 8.

Family Support. In the CFA of the family support measure there were 35 missing data patterns. Fit indices of the initial model indicated moderate fit ($\chi^2 = 128.42$, $df = 53$, $p < .01$; scaling correction factor for MLR = 1.04; RMSEA = .05, 90% CI, .04 to .06, p=.72; CFI = .88; TLI = .84; SRMR = .03). Modification indices indicated that correlating items would improve the model. Models were re-run including correlations between PRS9W3 "family has confidence in me" and PRS7W3 "family tells me they think I'm valuable"; and between PRS13W3 "know my family will always stand by me" and PRS4W3 "know family will always be there for me." Fit indices indicated good fit ($\chi^2 = 64.13$, $df = 51$, $p = .10$; scaling correction factor for MLR = 1.01; RMSEA = .02, 90% CI, .00 to .03,

p=1.00; CFI = .98; TLI = .97; SRMR = .02). Factor loadings (STDYX Standardization) for this model are presented in Table 9.

Invariance Testing. I examined whether the latent variables were invariant across maternal education groups. I tested for measurement invariance including the invariance of patterns of factor loadings, values of factor loadings, and observed item intercepts and error variances (Wang & Wang, 2012). Configural invariance (the same number of factors and the same patterns of free and fixed factor loadings across groups), Metric invariance (i.e., weak measurement invariance; invariance in factor loadings across groups), and Scalar invariance (i.e., strong measurement invariance; invariance of both factor loadings and item intercepts across groups; Wang & Wang, 2012) were tested. Covariates were not included in these analyses. Measurement invariance is a prerequisite to testing structural invariance as part of my later research questions (Wang & Wang, 2012).

Missing data were estimated using maximum likelihood with robust standard errors (MLR) which provides parameter estimates with standard errors that are robust to non-normality and non-independence of observations (Muthén & Muthén, 1998-2010). I used Monte Carlo integration to account for variance in the number of dimensions of integration for individuals due to missing data. Standard errors were adjusted to account for the non-independence of observations among respondents by neighborhood.

First, I examined model fit for each of the groups separately using the same fit criteria as in the preliminary CFA analyses. Then, using the full sample, I

examined configural, metric, and scalar invariance on the three latent factors together, using the MODEL = CONFIGURAL METRIC SCALAR; syntax for Mplus. The configural model has the same number of factors and the same set of zero factor loadings in all groups. The metric model holds all factor loadings equal across groups. The scalar model holds factor loadings and intercepts/thresholds equal across groups. The configural model serves as a reference model to which the more restrictive invariance models (i.e., metric, scalar) are compared (Marsh et al., 2017). Metric invariance is necessary for meaningful comparison of latent variables across groups whereas scalar invariance is a precursor for comparing latent factor means across groups (Marsh et al., 2017).

To account for the non-independence of the data (e.g., people in neighborhoods) and to investigate group differences (e.g., maternal education levels), I used mixture modeling. Fit criteria are not provided using MLR estimation and mixture analysis (Muthen & Muthen 1998-2010). Instead, model fit is evaluated using BIC, with a lower value indicating better fit (Widaman et al., 2013). A chi-square difference test using the loglikelihoods is also carried out under this command to compare nested models, and automatically uses the scaling correction factor for MLR estimation (Mplus, 2017).

First, I examined models for the less than high school/some high school group and for the high school diploma/some more than high school/Bachelor's degree or more group separately. The models indicated good model fit for the less than high school/some high school group and for the high school

diploma/some more than high school/Bachelor's degree or more group. Table 10 presents the fit criteria for each of these models. Factor loadings for these models are presented in Table 11.

Then, I examined the full sample. The configural, metric, and scalar models indicated that the three latent factors were invariant across groups. Unstandardized factor loadings for the configural, metric, and scalar models assessing invariance by maternal education levels are presented in Table 12, Table 13, and Table 14 respectively. BIC and loglikelihood chi-square comparing these three models are presented in Table 15. The BIC decreased and the loglikelihood chi-square was non-significant with each subsequent model, providing support for the idea that the measures were invariant across groups based on maternal education levels.

Research Questions.

I specified a series of models using structural equation modeling (SEM). SEM allows for the use of latent variables with multiple indicators, which may reduce measurement error and increase the accuracy of parameter estimates (Cole & Maxwell, 2003). Missing data were estimated using MLR which provides maximum likelihood parameter estimates with standard errors that are robust to non-normality and non-independence of observations (Muthén & Muthén, 1998-2010). For Research Questions 1 and 2, I used Monte Carlo integration to account for variance in the number of dimensions of integration for individuals due to missing data. For Research Question 3, I used mixture modeling to account for grouping by maternal education level (further details are provided below). In all

analyses, covariates included participant gender, age, family receipt of public assistance at Wave 1, mother's age, academic skill level, peer delinquency, maternal depression, in school at Wave 2, family structure, and race. In addition, in all analyses, standard errors were adjusted to account for the non-independence of observations among respondents by neighborhood.

Research Question 1: Self-control predicting financial capital

There were 61 missing data patterns that were estimated through MLR. Fit indices indicated moderate model fit (χ^2 = 65.90, *df* = 28, $p < .01$; scaling correction factor for MLR = 1.03; RMSEA = .05, 90% CI, .03 to .06, p=.70; CFI = .90; TLI = .79; SRMR = .02). Factor loadings are presented in Table 16. There was not a statistically significant relation between self-control in adolescence and household income at Wave 3 (β= .03, *SE*= .07, p=.65). The model is presented in Figure 3.

Research Question 2: Mediation by friend and family support

For Research Question 2, I specified a model which included the mediation of the relation examined in Research Question 1 by perceived social support from family and friends. I used a two-phase process to assess model fit (Mueller & Hancock, 2010). First, I examined the measurement model, which maps the measures onto the theoretical constructs, including all of the imposed paths from the latent factors to their measured variable indicators without the imposition of directional paths among the latent factors. In this model, all latent factors were allowed to covary. Second, I examined the specified structural models, which included the hypothesized connections and directionality.

Measurement model. There were 64 missing data patterns that were estimated through MLR. Fit indices indicated moderate model fit (χ^2 = 312.97, *df* = 226, $p < .01$; scaling correction factor for MLR = 1.07; RMSEA = .02, 90% CI, .02 to .03, p=1.0; CFI = .95; TLI = .93; SRMR = .03).

Structural model. There were 64 missing data patterns that were estimated through MLR. Fit indices indicated moderate model fit (χ^2 = 312.97, *df* = 226, $p < .01$; scaling correction factor for MLR = 1.07; RMSEA = .02, 90% CI, .02 to .03, p=.70; CFI = .95; TLI = .93; SRMR = .03). Factor loadings are presented in Table 17. The latent factors for perceived support from friends and family were correlated.

There was not a statistically significant relation between self-control in adolescence and income at Wave 3. Higher ratings of self-control were related to higher ratings of perceived friend support (β= .17, *SE*= .08, p<.05) and perceptions of friend and family support were positively correlated (β= .58, *SE*= .06, p<.01). There were no other statistically significant relations.

The structural model is presented in Figure 4.

Research Question 3: Moderation by maternal education level

I examined whether there were group differences in the model specified in Research Question 2 based on maternal education using multi-group analyses. In other words, in this research question, I examined the structural invariance of the model in Research Question 2 using maternal education level as a grouping

variable.[3] Multi-group analysis may be used to investigate the equality of factor structures across groups of individuals (Muthén & Muthén, 1998-2010). To do so, I used TYPE = MIXTURE COMPLEX and carried out the multi-group analysis using the KNOWNCLASS option in Mplus. Once again, MLR was used to estimate missing data. Fit criteria are not provided using MLR estimation and mixture analysis (Muthen & Muthen 1998-2010). Instead, model fit is evaluated using BIC, with a lower value indicating better fit (Widaman et al., 2013). In addition, I used the MODEL TEST: command to examine the Wald test statistic. The Wald test provides a chi-square statistic that if statistically significant, indicates that researchers may reject the null hypothesis, and that the unconstrained models fit the data better (i.e., that there were differences by maternal education). Wald tests occur after the model has been specified and do not influence parameter estimates (UCLA: Statistical Consulting Group, 2017).

Factor loadings for this model are presented in Table 18. The structural models, including imposed pathways and standardized parameters are presented in Figure 5. The models indicate structural invariance based on maternal education level grouping. The BIC for this model (BIC= 23554.76) decreased in comparison to the model from Research Question 2 (BIC = 23942.86) supporting good model fit. The Wald test for this model indicated that the model was a

[3] In addition, models examining the structural invariance for Research Question 2 by race and gender are presented in Appendix A. Tables 19 and 20 present the factor loadings. Figures 6 and 7 present the structural models. Results show that the model is non-invariant across race and gender. These findings are discussed in Chapter 4.

significantly better fit than a model where regression coefficients were constrained to be equal ($\chi^2 = 16.93$, df=4, p<.01).

Importantly, in the less than high school/some high school group the factor loadings for the measure of perceived family support were all negative, indicating that scoring high on this factor is related to indicating lower levels of support. In other words, the latent factor is representative of *"not" perceived family support*. Similarly, there were negative factor loadings for the measure of friend support in the high school diploma/some more than high school/Bachelor's degree or more group – indicating that this factor is representative of *"not" perceived friend support*.

Less than high school/some high school. In the less than high school/some high school maternal education group there was a positive relation between "not" family support and income (β= .20, *SE*= .07, p<.01). In other words, lower levels of family support related to higher income. There were not statistically significant relations between self-control and perceptions of support from either family or friends. There was a positive relation between perceptions of friend support and income (β= .32, *SE*= .08, p<.01). There was a statistically significant positive relation between self-control in adolescence and income during the transition to adulthood (β= .13, *SE*= .07, p<.05).

High school/some more than high school/Bachelor's degree or more. There was a statistically significant positive relation between self-control and perceptions of family support (β= .28, *SE*= .11, p<.05). In addition, there was a statistically significant negative relation between self-control and "not" perceived

friend support (β= -.31, *SE*= .11, *p*<.01). In other words, higher self-control was negatively related to lower perceptions of friend support. In this model, there was not a statistically significant relation between self-control and income nor were there relations from either measure of perceived support to income.

Post-hoc Analyses: Unpacking differences in Economic and Human Capital

Although the two-category maternal education level variable is valuable to understanding differences between young people whose parents have a high school diploma and those who do not, there may be additional differences when comparing these groups to those who have a Bachelor's degree or more as this further education may be related to parents' additional economic, cultural, and social capital (e.g., Bowles & Gintis, 2002; Jepsen, Troske, & Coomes, 2014). For the following analyses, I returned to using the three-category maternal education variable to elaborate on potential differences between these groups.

In addition, income alone is not fully representative of the varying ways in which young people may be gaining human and financial capital in the transition to adulthood. Rather, young people may have lower incomes when they are pursuing further education. Discerning between young people who have lower household incomes because they are disconnected (i.e., not in school and not working) compared to those who are enrolled in school is important because experiences of unemployment may have impacts on young people's later outcomes (Mortimer, 2011). Furthermore, as previously discussed, these outcomes may be structured within patterns that are classed, gendered, and racialized. Therefore, I examined whether there were differences in the relations

between maternal education, employment categories, and income at Wave 3 and how these differences varied according to race and gender.

First, I asked whether there were differences in income at Wave 1 and at Wave 3 based on maternal education levels. Total household income at Wave 1 (representing parent/caregiver income) and at Wave 3 (representing the household income of the young adult) were correlated at .36 ($p<.01$). An ANOVA of Wave 1 household income by maternal education level showed significant differences between groups [$F(2, 542) = 47.83$, $p<.01$]. There were statistically significant differences in every comparison of the three groups: less than high school/some high school ($M= 3.55$, $SD=1.67$), high school diploma/some more than high school ($M=4.39$, $SD=1.94$) and Bachelor's degree or more ($M=5.98$, $SD=1.35$). At Wave 3, an ANOVA examining maternal education levels and income also showed statistically significant differences [$F(2, 341) = 4.03$ $p=.02$]. Post hoc comparisons revealed that there were statistically significant differences in young adult's income between those who had less than a high school/some high school education ($M= 4.76$, $SD= 2.54$) and those who had a high school diploma/some more than high school ($M= 5.59$, $SD= 2.99$) only.

Focusing exclusively on the development of economic capital at this point may be misleading as young adults may be pursuing opportunities that further develop their human capital.[4] I asked whether there was a relation between maternal education level and the three-category human capital development

[4] However, as would be expected, these factors are related. A chi-square examining the relation between employment category and Wave 3 income was significant ($\chi^2=34.65$, $df= 20$, $p=.02$).

variable. There was a significant association between maternal education level and human capital development (χ^2= 10.04, *df* = 4, *p*=.04). Of the participants whose mothers had less than a high school education, 101 were working, 28 were in school, and 54 were disconnected. Of participants whose mothers had a high school diploma or some more than high school, 115 were working, 31 were in school, and 43 were disconnected. Of participants whose mothers had a bachelor's degree or more, 33 were working, 13 were in school, and 5 were disconnected.

Finally, I examined the data for further differences by gender and race. Although a chi-square examination of gender by employment category was non-significant, an ANOVA revealed that there were statistically significant differences between male (*M*= 5.61, *SD*= 2.99) and female (*M*= 4.82, *SD*= 2.61) participants in terms of income at Wave 3 [*F*(1, 360) = 7.25, *p*=.007]. An ANOVA examining differences in Wave 1 household income (i.e., caregivers' income) by race revealed statistically significant differences [*F*(2, 573) = 24.87, *p*<.01]. Post hoc comparisons revealed statistically significant differences in Wave 1 household income between White (*M*= 5.36, *SD*= 1.87) and Black (*M*= 3.93, *SD*= 1.94) and between White and Hispanic (*M*= 3.91, *SD*= 1.71) participants but no statistically significant differences between Black and Hispanic participants. The results of an ANOVA examining differences in Wave 3 income by race was non-significant. However, participants' human capital development category at Wave 3 was statistically significantly different by race (χ^2 =15.39, *df* = 4, *p* =.004). There were 56 White, 128 Hispanic, and 82 Black

participants working. There were 13 White, 35 Hispanic, and 29 Black participants in school. There were 9 White, 46 Hispanic, and 54 Black participants who were disconnected.

Summary

In summary, preliminary analyses indicated that mothers with lower levels of education rated their children as having higher self-control. No other differences emerged in the preliminary analyses. Findings from Research Questions 1 through 3 showed that self-control in adolescence did not predict income during the transition to adulthood, with a notable exception of the model in Research Question 3 among children of mothers with less than high school/some high school education. Post hoc analyses indicated that there were differences in income and differences in whether young adults were participating in activities that generate human capital (e.g., working, in school) by maternal education levels. Further analyses indicated that these differences were raced and gendered. Each of these findings are discussed in greater detail in Chapter 4.

CHAPTER 4: Discussion

Situated within a perspective informed by the *sociocultural self model* (Stephens et al., 2012), this dissertation sought to integrate an examination of self-control in adolescence with the structural and material resources available to the individual (i.e., social support, maternal education levels). Drawing on data from the Project for Human Development in Chicago Neighborhoods (PHDCN), I examined three research questions. First, I examined the relation between self-control in adolescence and income in the transition to adulthood. Second, I examined whether and to what extent the relations between self-control and income were mediated by perceptions of social support from family and friends. Finally, I examined whether and how this relation was moderated by maternal education levels using multi-group methods.

Based on prior theory and research, I hypothesized that self-control would relate to income at Wave 3 (Baay, de Ridder et al., 2014; Converse et al., 2012; Daly et al., 2015; Moffitt et al., 2011). Furthermore, as individuals' abilities to regulate their behavior has been associated with greater interpersonal skills and relationships (Eisenberg et al., 2014; Tangney et al., 2004) and these relationships have been related to findings jobs (Aguilera & Massey, 2003; Lin & Dumin, 1986), I hypothesized that the self-control-income relation would be mediated by individuals' relationships with family and friends. Finally, I hypothesized that these process models would be moderated by maternal education levels. Models largely did not support the idea that self-control in adolescence predicted income in the transition to adulthood. Although these models did not support the mediation of this relation by perceptions of social support from family and

friends, findings did support the idea that these processes were non-invariant across maternal education groups.

Taken together, the findings in this dissertation complicate the idea that ways of being can be converted into economic capital (Bourdieu, 1985) by examining *how* these processes may differ based on initial positions within the system. Although much attention has been given to the predictive power of self-control in relation to a variety of later positive developmental outcomes, in these analyses, self-control was largely not predictive of income as an economic outcome, and when it was, it varied in its predictive relation according to group characteristics. This study adds to the literature by examining various processes through which economic, social, and human capital may be transmitted to young adults (Swartz et al., 2011) and by showing how these relations are differentiated based on maternal education levels – creating different processes within each group. In what follows, I present a discussion of these findings by the hypothesized relations, followed implications, limitations, and conclusions.

Self-control-income relation

Early levels of self-control may set individuals on different trajectories (Caspi et al., 1998). Yet, in this dissertation, self-control in adolescence was largely unrelated to income later in life, except for among the young adults whose mothers had less than a high school education. Differences in the functionality of self-control may be related to its interrelation with individuals' material resources. Among young adults whose mothers have higher levels of education it may be that the importance of self-control to later outcomes is diminished because those

mothers may be able to draw on social resources and other protective factors to help their children (e.g., neighborhoods and schools with higher levels of safety; Anderson et al., 2015; Blair & Raver, 2012; Bradley & Corwyn, 2002; Brooks-Gunn & Duncan, 1997; Raver, Roy, & Pressler, 2015; Viner et al., 2012). In contrast, for young people whose mothers have lower levels of education, self-control may be a strategy that enables them to succeed in contexts with fewer supports. However, although self-control predicted greater income among the less than high school/some high school maternal education group, these young people were earning significantly less than their higher maternal education counterparts. Meaning that self-control may function as a personal strength distinguishing young adults' outcomes from others *within* their group, but this strategy may not further their chances of social mobility.

Although previous research shows that self-control relates to a variety of positive developmental outcomes, including several indicators of economic well-being (Baay, de Ridder et al., 2014; Converse et al., 2012; Daly et al., 2015; Moffitt et al., 2011), there was not a statistically significant relation between ratings of self-control and household income at Wave 3 across most of the models examined (with exception to the model for those whose mothers had less than high school/some high school education). Two factors in the current study may explain why these results differed from prior research. First, the present examination included young adults around 21 years of age. In comparison, prior research has included individuals later in life (Converse et al., 2012), which may allow time for greater differences in income to accumulate. Second, although

prior research has examined the relation between self-control and economic capital development among people from diverse occupations, these studies have not included individuals who were in school or who were disconnected. It is possible that the inclusion of a more heterogeneous sample (i.e., one that extends beyond those who are employed) is related to the failure to reject the null hypothesis in this study. For example, young people with higher ratings of self-control may have included individuals who were working and who were enrolled in school at Wave 3, with the latter reporting lower household incomes.

However, prior research has also shown that the longitudinal relation between self-control and salary is small, even among older samples who may be more established in their careers. For example, standardized regression coefficients in one set of studies ranged from .07 to .10 (p<.05; Converse et al., 2012). Furthermore, these two studies drew on age, race, gender, marital status, and conscientiousness as covariates (Converse et al., 2012). It is possible that by including a more comprehensive set of covariates in the current investigation, I accounted for the relation between self-control and income that was found in previous studies. In addition, de Ridder and colleagues' (2012) meta-analysis showed a moderate relation between self-control and work and school performance (e.g., GPA, homework hours, persistence at solving task; r=.36). It may be that the relation between self-control and income is mediated by some of these behavioral tasks. This idea may be further supported by research showing that higher self-control may be related to reduced likelihood of unemployment as it enables the job search process or allows employees to regulate their behavior

(Daly et al., 2015). Although self-control has been shown to be related to these behavioral proxies, they are not one in the same. For example, prior research on adolescents in the PHDCN sample shows that self-control is related to fewer externalizing problems (e.g., aggression, inattention, hyperactivity) and less delinquent (e.g., stealing), and violent behaviors (Anderson et al., 2015; McDermott et al., 2017). Yet, these factors – though often used as proxies for self-control – represent specific behaviors within certain domains and may be reported by smaller proportions of young people. For example, in previous research on adolescents within the PHDCN cohorts, 49 out of 1,072 adolescent participants reported ever attacking someone with a weapon in the past year (a measure of violent behavior; Anderson et al., 2015). In contrast, the latent construct of self-control may encompass a broader conceptualization of self-control, leading to broader understandings of how self-control functions outside of these behavioral problems. Further research is needed on the behavioral proxies, both positive and negative, through which self-control may relate to these later outcomes.

Preliminary findings showed that mothers in the less than high school/some high school group rated their children as having higher levels of self-control than mothers with a high school diploma/some more than high school. Self-reports from individuals with low self-control may be biased because of behaviors related to lower self-control (Piquero, MacIntosh, & Hickman, 2000), and as such, parental reports have been shown to be a viable alternative that may be used to provide valid measures of self-control (e.g., Pratt, Turner, & Piquero,

2004). However, it is possible that ratings of self-control are influenced by reference bias as individuals make evaluations in relation to the social context (West et al., 2015). In other words, mothers may base their judgements and responses about their child's self-control on multiple points of information within their contexts, including social comparison. These mothers may be rating their children with higher levels of self-control based their ability and/or need to respond to contextual adversity. Furthermore, although there were statistically significant differences in the measure of self-control by maternal education level, these differences were small (a change in mean score of .33). Future research is needed to better understand the potential role of social comparisons and other forms of meaning making in ratings of these regulatory processes.

Social support and maternal education

None of the models presented in this dissertation supported the mediation of the self-control-income relation by perceptions of social support from family or friends. These findings mirror results from Baay, Van Aken and colleagues (2014) which showed the independent relations of social support and personality measures to employment. Of particular note, among the two maternal education groups, the predictive relations between self-control, social support, and income were vastly different. Furthermore, even though preliminary analyses showed that there were not statistically significant differences in young adults' ratings of perceived social support from family or friends based on maternal education levels, there were notable differences in the processes through which these factors interrelated in the current sample.

In particular, research Question 3 examined whether and to what extent maternal education levels moderated the relation between adolescent self-control and later household income. Results showed that there was structural non-invariance between the maternal education level groups. Although research has shown that various aspects of personality may not uniformly relate to work outcomes (e.g., Baay, Van Aken et al., 2014; Gelissen & de Graaf, 2006), examinations of the structural invariance of self-control as a developmental predictor are less common (e.g., Anderson et al., 2015; McDermott et al., 2017). Future research that considers whether and how the predictive relation between self-control, social support, and positive outcomes may be context-dependent (e.g., Lundberg, 2013) and how personal meanings may influence the differential functioning of these factors within these contexts, is needed.

These findings also lend further support to the idea that the relation between aspects of social capital and income may be contingent on the individual's initial positions within the social hierarchy (Lin, 1999). The findings from Research Question 3 suggest that the relation between social support and positive developmental outcomes may be different among higher and lower SES families, in agreement with prior research (Scott et al., 2015). In this sample, it was not that the young adults whose mothers have lower levels of education perceived less support from their family and friends than their higher maternal education level counterparts, but that even with similar levels of support the structural model was non-invariant. In other words, these models suggest that there may be different processes informing economic development in the

transition to adulthood among these groups and support the idea that the broader economic context of the family may alter the relation between social support and youth outcomes (Cappellari & Tatsiramos, 2015; Scott et al., 2015). For example, social networks may connect individuals to lower paying jobs (Cappellari & Tatsiramos, 2015) during the transition to adulthood, and as such, social support among low-income families may not foster social mobility (Henley et al., 2005). Prior research further suggests that socioeconomically disadvantaged families may have fewer resources and capacities to navigate the transition to adulthood (Furstenberg, 2008). It is notable that in this sample there were no differences in perceived levels of support by maternal education levels (though there may be further differences in support that were not captured in the current measure, such as levels of monetary support; Hardie & Seltzer, 2016).[5] Future research should consider the ways in which access to different material resources and types of social support (e.g., emotional, financial) inform people's meanings around and access to varying opportunities for human and economic capital development within these varying maternal education groupings.

[5] In prior research, Henly and colleagues (2005) indicated that families who report primarily welfare income also reported the most limited access to social support. However, the authors drew on a sample that included only families who had received Temporary Assistance for Needy Families (TANF; Henly et al., 2005). It is possible that there was no relation between maternal education level and perceptions of social support in the current sample because the sample included a more diverse sample population, diminishing effects that may be detected within smaller subsamples. It may also be possible that these perceptions are more closely tied to variations in income than maternal education; providing a possible explanation for relations between SES (which includes parental education levels) and perceptions of support found in prior research (e.g., Antonucci et al., 2011; Gerstel, 2011; Hardie & Seltzer, 2016).

Prior research emphasizes that parents with less education may be less able to connect children to economic, social, and human capital (e.g., Harding et al., 2015) which may accumulate, amounting in substantial differences in their life trajectories. Results indicated that among individuals whose mothers have lower levels of education, lower perceptions of support from family were positively related to income. These findings contrast with prior research that showed that perceptions of support were unrelated to earnings in low-income networks (Henly et al., 2005). Prior research has shown that families' financial situations may inform whether children believe that parents are able to provide advice about employment or monetary support (Hardie & Seltzer, 2016). In extremely disadvantaged contexts, family resources may be stretched thin, requiring parents to work multiple jobs (Mistry, Vandewater, Huston, & McLoyd, 2002). This compromised family support may encourage youth to turn to their friends for support instead (Anderson et al., 2015). It is possible that lower perceptions of family support are related to higher income levels within this group because young people may not view their family members as knowledgeable or able to help them and turn to other social supports.

In line with this idea, the model for the lower maternal education group in Research Question 3 showed that there was a positive relation between perceptions of friend support and income. These findings support previous findings that friendship networks may be related to labor force participation (Aguilera, 2002; Lin & Dumin, 1986). Although prior research has shown that friends and relatives may search for jobs for people within their networks

(Aguilera & Massey, 2003), future research may focus on the processes through which these supportive relationships relate to work outcomes via the educational characteristics of the individuals' social network. For example, it is possible that friendship networks with members with higher levels of education extend a wider reach to employment and educational opportunities than family networks, connecting individuals to educational and employment opportunities.

There was a statistically significant positive relation between self-control in adolescence and income during the transition to adulthood for the individuals whose mothers had less than high school/some high school education. This finding supports prior research showing positive relations between self-control and work outcomes and research from longitudinal investigations showing that self-control earlier in life may be predictive of positive developmental outcomes at later points (e.g., Converse et al., 2012; Converse et al., 2014; Daly et al., 2015; Moffitt et al., 2011). This previous research demonstrated that self-control may influence various behaviors (e.g., smoking, dropout), leading to differences in income (Moffitt et al., 2011). The current investigation sought to further this body of literature by examining whether and how this relation was mediated by perceptions of social support. Among this group, self-control in adolescence was not related to perceptions of social support from family or friends in the transition to adulthood. This finding contrasts with prior research showing that higher levels of self-control were related to better interpersonal skills and relationships (Tangney et al., 2004). For example, much of the prior research showing the relation of self-control to interpersonal skills has been conducted among college

students. As such, the differences illuminated here may be related to the social processes characteristic of these samples (discussed in detail below).

Among the high school/some high school/Bachelor's degree or more group, the negative relation from self-control to "not" friend support may mirror the finding in Research Question 2 because the latent factor is representative of lower perceptions of friend support. Combined with the additional statistically significant positive relation between self-control and perceptions of support from family, these findings suggest that among this group, self-control and perceptions of social support may be informed by self-other appraisals (Eisenberg et al., 2014; Krueger et al., 1996). Combined with results from Research Question 2, these findings lend support to the idea there may be a reciprocal relation between self-control and social relationships (Eisenberg, Hofer, Sulik, & Spinrad, 2014; Krueger et al., 1996) with self-control in adolescence relating to perceptions of support from friends in the transition to adulthood, among this group. It may be that self-control helps young people to establish and maintain these social relationships by allowing them to regulate their behavior. For example, Duckworth and colleagues (2016) found that high school students draw on self-control to navigate interpersonal relationships. Potentially, success in these strategies may reinforce their use throughout late adolescence and into the transition to adulthood and/or may strengthen friendship relations and perceptions of support.

Despite previous research that friendship networks may provide access to different employment positions and are positively associated with participation in

the labor force (Aguilera, 2002; Lin & Dumin, 1986), the results from this study did not support a relation between perceptions of support and income among the high school/some high school/Bachelor's degree or more group. However, prior research on the relation of perceived social support to earnings is mixed. For example, Henly and colleagues (2005) showed that there was not a statistically significant relation between perceived social support and earnings using a more generalized measure of support (i.e., whether there was someone to turn to). In contrast, research examining perceptions of support specifically from friends and family has shown that individuals with strong material and emotional support networks earn more and may be less reliant on welfare than those with weaker support networks (Harknett, 2006). That these processes look so different across maternal education groups may be implicated in the mixed findings of prior research. Alternately, it is possible that these perceptions of support are representative of, or relate to other, behavioral processes (e.g., trust, communication) within these social relationships that may in turn predict income later in life. Although Moffitt and colleagues (2011) showed that childhood self-control may predict behaviors that relate to income at age 32, in this group, there was not a statistically significant relation between self-control and income.

Variations in these processes across maternal education groups may be due to cultural processes that are specific to these groups. Among those with mothers with higher education levels, it may be that the advantages in their contexts (e.g., greater neighborhood safety and social cohesion; Anderson et al., 2015) reduce the necessity of relying on self-control as a predictor of income. In

comparison, among their peers whose mothers have lower levels of education, disadvantages in context may place a greater emphasis on self-control and social networks outside of the family in the prediction of later income. It is unclear why self-control was related to perceptions of support among the higher but not the lower maternal education group. It is possible that these models are non-invariant due to cultural expectations and pressures placed on the young people. For example, among affluent suburban populations, research shows that these cultural expectations from parents may include high pressure for achievement, criticism, and of valuing personal success over prosocial goals (Ciciolla, Curlee, Karageorge, & Luthar, 2017). It is possible that the reciprocal processes between self-control and social support in the higher maternal education group play into these cultural processes among this sample as well. Future research is needed to unpack the context-specific processes that may be informing these relations.

Differences in income and human capital by race, maternal education, and gender

This dissertation provides further information about the forms of capital development occurring during the transition to adulthood beyond income. Information about these processes lends support to understanding how systems of inequality are reproduced. The relation between parents' income at Wave 1 and children's income at Wave 3 found in the current investigation, is supported by previous research on the reproduction of economic inequality and intergenerational mobility (e.g., Bowles & Gintis, 2002; Reeves & Howard, 2013). The ANOVA examining the relation between maternal education levels

and their children's income at Wave 3 revealed differences between those who had less than a high school/some high school education and those who had a high school diploma/some more than high school.

Analyses also suggest that approximately 16% (n = 109) of the young people in this sample were disconnected from both school and work. Previous research has shown that national estimates range from 7% to 20% of the U.S. youth population, depending on criteria for inclusion (Fernandes & Gabe, 2009). Previous research has noted that there may be diverse backgrounds and experiences of individuals who are disconnected during the transition to adulthood including being unable to find work, caring for children, or having a severe disability (Fernandes & Gabe, 2009). Similarly, youth who were considered disconnected in the current investigation included those who were unemployed, keeping house, and unable to work. This disconnection may have long-term impacts on young people's later outcomes (Mortimer, 2011). Previous research has shown that disconnection from school or work during the transition to adulthood may relate to long-term deficits in income, even if individuals later gain employment (Mroz & Savage, 2006). Post hoc analyses further revealed that there were statistically significant differences in the percent of youth who were disconnected between the between the higher and lower maternal education groups. A higher percent of young adults whose mothers had less than high school/some high school education were disconnected and a lower percent were working compared to their higher maternal education counterparts (a similar percent of youth reported being in school across the groups).

These analyses also revealed differences in income and human capital development by gender and race. The White families reported earning significantly more than their Black and Hispanic counterparts at Wave 1, however, this relation disappeared when examined at Wave 3. Although one may suggest that this finding indicates that these racial disparities were ameliorated in the second generation, when I examined whether and how these young people were building human capital through work or school, there were racial differences in these outcomes, including a greater percent of Black and Hispanic young adults who were disconnected. It is possible that differences in the experiences at the transition to adulthood accumulate and may be represented in later economic differences.

Supplemental analyses presented in Appendix A suggest that there may be further non-invariance in the model presented in Research Question 2 by gender and race. Prior research has shown that young women may be more likely to report perceived parental supportiveness, to be married, have children, and have higher levels of education than young men (Hardie & Seltzer, 2016). These experiences may relate to differences in whether children turn to parents for support (Hardie & Seltzer, 2016; Settersten & Ray 2010) and may account for some of the differences in income by gender in the post hoc analyses. Furthermore, prior research has shown that there may be differences in perceptions of support and financial support based on race/ethnicity, though poverty and parental education levels may account for much of these differences (Hardie & Seltzer, 2016). Given the sample size and hypothesized structural

models in the current investigation, it was not possible to examine Research Question 3 within race/gender categories. However, these findings suggest that future research should examine whether and how these processes vary within these groups.

Implications

There are several implications of this work for programs and policies. These findings highlight the idea that different groups place different values on behaviors (Chen, 2011) and that there are different skills and competencies necessary for success among these groups (Guerra & Smith, 2005). More importantly, these findings complement previous research showing that self-control does not universally relate to later positive developmental outcomes (e.g., Anderson et al., 2015). Although policymakers and practitioners are becoming more aware of the risks of misusing group-level differences to guide supports for individuals (Wigfield, Eccles, Fredricks, Simpkins, Roeser, & Schiefele, 2015), one-dimensional approaches (e.g., some people have more and some people have less; Turiel et al., 2016) are frequently used to inform youth-serving programming and policy making. In particular, these ideas can be seen in efforts aimed at "increasing" self-control among populations that are "lacking" (Lundberg, 2013).

Yet, the findings this study and others (e.g., McDermott et al., 2017) suggest that there are contexts in which self-control and social supports are not significant predictors of positive developmental outcomes. Previous research also shows that among lower-income racial minorities in adverse contexts, high self-control may facilitate academic and psychosocial outcomes while undermining

their physical health (Miller et al., 2015). Furthermore, when self-control and social relationships were predictive of better economic outcomes in the current investigation, these factors were not enough to foster social mobility. Taken together, these findings suggest that policy efforts should be aimed at creating contexts in which self-control is less important to economic and other developmental outcomes (rather than aimed at increasing self-control).

There may be several avenues through which to pursue these changes. First, policies and programs aimed at increasing safety and social cohesion at the neighborhood level may be combined with programs aimed at neighborhood economic revitalization. Previous research shows that in the most advantaged, safe, and supportive neighborhoods adolescents did not appear to experience added benefits from high self-control or social support (Anderson et al., 2015). Second, policies and programs that aim to connect young people to a wide variety of job opportunities and social networks may supersede the importance of self-control in achieving these outcomes by addressing structural issues of network homophily and disadvantage.

In the current investigation, the social relationships of young adults whose mothers had lower levels of education were related to their income. However, they earned less than their higher maternal education counterparts. Programs and policies may aim to provide bridging social capital to young people in these contexts. For example, the Family Independence (FII) approaches poverty alleviation by starting with the identification of assets in the community, and focusing on how community members may come together to leverage these

assets. FII's approach encourages families to turn to their friends and social networks for help and direction in making financial decisions, including saving money, starting a business, and pursuing further education, among others (Lim Miller, 2011). At the same time, FII encourages the development of bridging social capital by obtaining corporate partnerships that allow individuals entryway into economic systems (e.g., bank partnerships which promote access to and use of checking and savings accounts). In other words, FII programming is structured to encourage the development of bridging and bonding social capital (Patulny & Svendsen, 2007) among its participants in ways that may foster economic mobility by drawing on existing social relationships among individuals and providing pathways to connect those groups with existing structural resources.

Limitations

This study is not without limitations. First, perceptions of support may be inaccurate in that individuals may overestimate or underestimate the amount of support actually available to them (Harknett, 2006). Researchers have argued that perceptions of support may reflect personal characteristics related to perceptual inaccuracies rather than support that is available (Henly et al., 2005; Sarason et al., 1990). However, measures of perceived support may be less dependent on individuals' level of need. As such, perceptions of support may represent closer approximations of the availability of support and are a reliable method for examining social support (see Henly et al., 2005 for a review). Future research may extend these examinations by including measures of perceptions of support with measures of need, types of support, and how individuals access that support.

Second, the generalizability of these findings may be limited by the time and place in which they were collected. These data were collected in the first decade of the 21st century. Furthermore, these data were only collected from residents in Chicago. In that time, changes in the U.S. economy including the Great Recession, changes within the labor market (e.g., Kalleberg, Reskin, & Hudson, 2000; Pedulla, 2016; Vuolo, Staff, & Mortimer, 2012), the increasing importance of education to employment, and the increased availability of online educational opportunities may impact whether and how young adults are connected to school and employment. These two factors may hinder the generalizability of the findings to other populations, particularly those in non-urban environments.

Third, future investigations would benefit from a larger sample size. Although the sample size in the current investigation was adequate for employing structural equation models, it limited the possibility of examining further nuance within maternal education and human capital development groupings. Young adults may be engaged in a variety of educational opportunities (e.g., vocational training, 2-year college, 4-year college; Vuolo et al., 2016) or may be employed in a variety of part- and full-time jobs, creating meaningful differences in their human and economic capital development, that were not captured by the current measures. Furthermore, given that the association between self-control and income was only statistically significant among the lowest maternal education group, there may be additional nuanced relations within and across subpopulations that were not reflected in these analyses due to sample size

restrictions. In particular, future research should focus on examining these processes for structural invariance within race, gender, and maternal education groupings.

Fourth, analyses of missing data indicated that data were missing from individuals whose mothers had lower levels of education and who were from lower income households at Wave 1. There may be additional differences among these groups that were not captured in these analyses due to missing data estimation.

Fifth, as previously discussed, income is a narrow representative of the various economic and human developmental activities that may be occurring in the transition to adulthood. Future research that includes measures of income with other nuanced indicators of employment may illuminate new understandings of how self-control relates to these developmental outcomes. For example, research could include measures of the number of jobs, type of work, and hours worked at young adults' jobs to gain a better understanding of how processes in adolescence relate to the quality of these employment and human capital development experiences in early adulthood.

Finally, self-control was only measured at one time point during adolescence. Prior research highlights that adolescence may be a time in which neurochemical, structural, and functional brain changes may be viewed as imbalanced, relating to differences in self-control (Casey & Caudle, 2013). Furthermore, individuals continue to develop control capacities during this developmental period (Monahan et al., 2009; Steinberg et al., 2008; Vargas

Lascano et al 2015). By not capturing differences in self-control across time, this examination was not able to capture potential differences in these models based reflecting these developmental changes. Future research should examine how these capacities are developed, how self-control is made meaningful during this developmental period, when and how it is enacted, and whether changes in these capacities influence the development of human and economic capital during the transition to adulthood.

Conclusions

Maternal education may relate to the resources available to her children as they work to establish themselves in the labor market, complete education, and accumulate financial capital (Diemer, 2015), initiating a process of cumulative advantage and disadvantage that leads to differences in human, social, and economic capital for their children later in life (Caspi et al., 1998). Although early ways of being matter, continued changes through experience and context may influence the reproduction of inequality (Jack, 2015). The findings in this dissertation add to a body of literature that begins to unpack how processes and the transition to adulthood may be implicated in later social and economic disparities. These findings suggest that future research investigate how the co-action of self-control and varying contexts may alter whether and how it relates to developmental outcomes among diverse groups of individuals. In doing so, these future examinations will expand the current literature to understand not just whether self-control predicts positive developmental outcomes, but under what circumstances and for whom this predictive relation holds true.

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Table 1. *Cohort 15 Race Descriptive Statistics (full sample)*

Variable	Percent
Race (Wave 1)	
Hispanic	44.7%
Asian	.6%
Pacific Islander	.3%
Black	36.4%
White	15.1%
Native American	1.3%
Other	1.6%

N=696

Table 2. *Cohort 15 Descriptive Statistics (for reduced sample)*

Variable	Percent (*n*)
Race (Wave 1)	
Hispanic	46.5% (*n*= 311)
Black	37.8% (*n*=253)
White	15.7% (*n*=105)
Family Structure (Wave 1)	
Two-parent	63.3% (*n*= 419)
Single-parent	31.7% (*n*=210)
Other	5.0% (*n*=33)
Total Household Income (eia2b0) W1	
<5,000	11.3% (*n*=65)
5,000-9,999	7.5% (*n*=43)
10,000-19,999	20.5% (*n*=118)
20,000-29,999	20.7% (*n*=119)
30,000-39,999	12.7% (*n*=73)
40,000-49,999	10.4% (*n*=60)
>50,000	17.0% (*n*=98)
YA Marital Status (Wave 3)	
Single	87.7% (*n*=414)
Separated, widowed	.2% (*n*=2)
Married	5.9% (*n*=28)
Living with partner	5.9% (*n*=28)
Maternal Education Level (Wave 1)	
Less than high school	24.6% (*n*=154)
Some high school	20.4% (*n*=128)
Finish high school	13.4% (*n*=84)
Some more than high school	31.2% (*n*=195)
Bachelor's degree or more	10.4% (*n*=65)
Subject Age (Wave 1)	*M*=15.16, *SD*=.32
Mother Age (Wave 1)	*M*=40.45, *SD*=5.91
Subject Gender (Wave 1)	51.4% female (*n*=344)
Participant in School (Wave 2)	
No (dropped out, expelled, other)	17.6% (*n*=101)
Yes	82.4% (*n*=472)
Family Received Public Assistance (Wave 1)	
No	72.3% (*n*= 414)
Yes	25.7% (*n*= 147)
N=669	

Table 3. *Correlations for variables included in the model.*

	Self-control	Fr W3	Fam W3	Gender	Age	Mat Age	Pub Assist W1	In School W2	WRAT W3	Mar Stat W3	Mat Dep	Peer Del	Income W3
Self-control	1												
Friend Support	.14**	1											
Family Support	.11*	.37**	1										
Gender	.04	.11*	-.10*	1									
Subject Age	.04	.04	.05	-.03	1								
Maternal Age	.03	.02	.03	-.05	.11**	1							
Public Assistance W1	-.09*	-.07	-.07	.03	.03	-.22**	1						
In School W2	.17**	.13**	.02	.07	-.15**	.01	-.13**	1					
WRAT W3	.13*	.13*	.03	.00	.14**	.14**	-.29**	.13*	1				
Marital Status W3	.00	.00	.04	.11*	.08	-.06	-.02	-.20**	-.07	1			
Mat Dep	-.11*	-.08	.01	.04	-.02	-.03	.05	-.17**	-.05	.04	1		
Peer Del	-.27	-.23**	-.09	-.03	.03	-.03	.10*	-.14**	-.06	.03	.00	1	
Income W3	.02	.04	.07	.14**	-.02	.04	-.26**	.11*	.18**	-.06	.04	-.02	1

Note: * p<.05; ** p<.01; W1 = Wave 1; W2 = Wave 2; W3 = Wave 3; Fr = Friend Support; Fam = Family Support; Mat Age = Maternal Age; Peer Del= Peer Delinquency; Mat Dep = Maternal Depression; Mar Stat = Marital Status; Pub Assist = Public Assistance;

Table 4. *Crosstabs of Maternal Education Level and three-category Human Capital Development.*

	Less than high school *n*	Some high school *n*	Finish high school *n*	Some more than high school *n*	Bachelor's degree or more *n*
Human Capital					
Employed Full/Part Time	65	36	39	76	33
In School	18	10	7	24	13
Disconnected	26	28	12	31	5

Table 5. *Crosstabs of three-category Category Maternal Education Level and three-category Human Capital Development*

	Less than high school, Some high school *n* (%)	Finish high school, Some more than high school *n* (%)	Bachelor's degree or more *n* (%)
Employed Full/Part Time	101 (40.6%)	115 (46.2%)	33 (13.3%)
In School	28 (38.9%)	31 (43.1%)	13 (18.1%)
Disconnected	54 (52.9%)	43 (42.2%)	5 (4.9%)

Note: Percent reported is by row

Table 6. *Cohort 15 Variance list and descriptive data.*

	Variable/Latent Variable	*M*	*SD*	Skew	Kurtosis	Missing %
Outcomes	Categorical Employment (3 Categories)	1.65	.84	.73	-1.20	32.5%
	Household income W3	5.20	2.82	.45	-.65	45.9%
Predictors	Family Support	2.76	.34	-1.88	3.98	33.6%
	Friend Support	2.61	.38	-1.14	1.29	33.9%
	Self-Control	3.51	1.01	-.45	-.48	3.4%
	Maternal Ed	2.82	1.37	-.01	-1.38	6.6%
Covariates	Race	1.76	1.68	-.02	-1.83	0%
	Gender	.49	.50	.06	-2.00	0%
	Age	15.16	.32	.36	1.91	0%
	Family Structure	1.42	.59	1.07	.15	1.2%
	Maternal Age W1	40.45	5.91	.57	.03	7.8%
	Public Assistance W1	.08	.27	3.19	8.21	30.0%
	Participant in School W2	.82	.38	-1.70	.91	14.5%
	Marital Status W3	1.54	1.47	2.40	3.93	29.6%
	WRAT Scaled Score W3	95.50	14.84	-.59	-.04	38.4%
	Maternal Depression	.39	.49	.46	-1.80	30.1%
	Peer Delinquency	1.61	.32	.52	-.27	15.7%

Note: Maternal Ed = Maternal Education Level; W1 = Wave 1; W2 = Wave 2; W3 = Wave 3;

Table 7. *Standardized factor loadings for CFA of self-control.*

		Estimate	*S.E.*
Self-control All Variables	EY6 “has trouble resisting temptation”	.69**	.15
	EY24 “usually cannot stand waiting”	.38**	.05
	EY25 “has trouble controlling impulses”	.59**	.11
	EY14 “finds self-control easy to learn”	.53**	.19
	EY15 “can tolerate frustration better than most”	.40*	.19
3 Item Self-control	EY6 “has trouble resisting temptation”	.70**	.06
	EY25 “has trouble controlling impulses”	.59**	.05
	EY14 “can tolerate frustration better than most”	.53**	.04

Note: *p<.05, **p<.01;

Table 8. *Standardized factor loadings for CFA of friend support at Wave 3.*

	Estimate(SE)
PRS1W3 “with friends able to completely relax”	.52(.06)**
PRS2W3 “share same approach to life as friends”	.49(.04)**
PRS5W3 “know friends enjoy doing things with me”	.51(.06)**
PRS6W3 “have at least one friend I could tell anything to”	.58(.05)**
PRS8W3 “feel very close to some friends”	.70(.05)**
PRS12W3 “friends would take time to talk about problems”	.67(.04)**

Note: *p<.05, **p<.01;

Table 9. *Standardized factor loadings for CFA of family support at Wave 3.*

	Estimate(SE)
PRS10W3 “family helps me find solutions to problems”	.61(.05)**
PRS4W3 “know family will always be there for me”	.56(.05)**
PRS7W3 “family tells me they think I’m valuable”	.70(.07)**
PRS9W3 “family has confidence in me”	.69(.08)**
PRS13W3 “know my family will always stand by me”	.68(.06)**
Item correlations	
PRS9W3 with PRS13W3	.16(.12)
PRS13W3 with PRS4W3	.41(.09)**

Note: *p<.05, **p<.01;

Table 10. *Fit criteria for the three factor measures, run separately by maternal education level*

	χ^2 (df)	χ^2 scaling correction factor MLR	RMSEA	CI	CFI	TLI	SRMR
<HS	86.13(72)	1.08	.03	.00-.05	.97	.96	.06
HS+	79.47(72)	1.23	.02	.00-.04	.99	.98	.05

Note: *p<.05, **p<.01

Table 11. *Standardized factor loadings for the three-factor model run separately by maternal education level.*

	<HS Estimate (SE)	HS+ Estimate (SE)
EY6 "has trouble resisting temptation"	.61(.10)**	.66(.08)**
EY25 "has trouble controlling impulses"	.61(.09)**	.72(.07)**
EY14 "finds self-control easy to learn"	.55(.07)**	.50(.06)**
PRS10W3 family helps me find solutions to problems	.59(.08)**	.56(.07)**
PRS4W3 "know family will always be there for me"	.53(.09)**	.51(.08)**
PRS7W3 "family tells me they think I'm valuable"	.76(.09)**	.75(.09)**
PRS9W3 "family has confidence in me"	.73(.08)**	.66(.08)**
PRS13W3 "know my family will always stand by me"	.61(.09)**	.65(.06)**
PRS1W3 "with friends able to completely relax"	.53(.07)**	.45(.10)**
PRS2W3 "share same approach to life as friends"	.38(.07)**	.50(.06)**
PRS5W3 "know friends enjoy doing things with me"	.55(.10)**	.48(.08)**
PRS6W3 "have at least one friend I could tell anything to"	.55(.10)((	.63(.08)**
PRS8W3 "feel very close to some friends"	.65(.09)**	.70(.06)**
PRS12W3 "friends would take time to talk about problems"	.65(.07)**	.69(.06)**
Family with Friends	.50(.12)**	.54(.09)**
Friends with Self-control	.12(.14)	.30(.11)**
Family with self-control	.06(.12)	.23(.10)*

Note: *p<.05, **p<.01;

Table 12. *Unstandardized factor loadings for the three-factor model examining configural invariance by maternal education level*

	<HS Estimate (SE)	HS+ Estimate (SE)
EY6 "has trouble resisting temptation"	1.00(.00)	1.00(.00)
EY25 "has trouble controlling impulses"	1.21(.32)**	1.17(.25)**
EY14 "finds self-control easy to learn"	.94(.21)**	.76(.12)**
PRS10W3 family helps me find solutions to problems	1.00(.00)	1.00(.00)
PRS4W3 "know family will always be there for me"	.51(.13)**	.74(.25)**
PRS7W3 "family tells me they think I'm valuable"	1.05(.20)**	1.12(.22)**
PRS9W3 "family has confidence in me"	.93(.13)**	.86(.16)**
PRS13W3 "know my family will always stand by me"	.66(.14)**	.89(.26)**
PRS1W3 "with friends able to completely relax"	1.00(.00)	1.00(.00)
PRS2W3 "share same approach to life as friends"	1.05(.24)**	1.83(.49)**
PRS5W3 "know friends enjoy doing things with me"	1.12(.27)**	1.29(.29)**
PRS6W3 "have at least one friend I could tell anything to"	1.33(.36)**	1.73(.51)**
PRS8W3 "feel very close to some friends"	1.44(.37)**	1.86(.55)**
PRS12W3 "friends would take time to talk about problems"	1.60(.29)**	2.14(.62)**
Family with Friends	.04(.01)**	.03(.01)*
Friends with Self-control	.03(.03)	.06(.03)
Family with self-control	.02(.04)	.07(.03)*

Note: *p<.05, **p<.01;

Table 13. *Unstandardized factor loadings for the three-factor model examining metric invariance by maternal education level*

	<HS Estimate (SE)	HS+ Estimate (SE)
EY6 "has trouble resisting temptation"	1.00(.00)	1.00(.00)
EY25 "has trouble controlling impulses"	1.17(.19)**	1.17(.19)**
EY14 "finds self-control easy to learn"	.82(.11)**	.82(.11)**
PRS10W3 family helps me find solutions to problems	1.00(.00)	1.00(.00)
PRS4W3 "know family will always be there for me"	.62(.11)**	.62(.11)**
PRS7W3 "family tells me they think I'm valuable"	1.11(.14)**	1.11(.14)**
PRS9W3 "family has confidence in me"	.89(.11)**	.89(.11)**
PRS13W3 "know my family will always stand by me"	.77(.13)**	.77(.13)**
PRS1W3 "with friends able to completely relax"	1.00(.00)	1.00(.00)
PRS2W3 "share same approach to life as friends"	1.47(.27)**	1.47(.27)**
PRS5W3 "know friends enjoy doing things with me"	1.23(.20)**	1.23(.20)**
PRS6W3 "have at least one friend I could tell anything to"	1.56(.32)**	1.56(.32)**
PRS8W3 "feel very close to some friends"	1.69(.32)**	1.69(.32)**
PRS12W3 "friends would take time to talk about problems"	1.90(.34)**	1.90(.34)**
Family with Friends	.03(.01)**	.04(.01)**
Friends with Self-control	.02(.02)	.07(.03)*
Family with self-control	.02(.04)	.07(.03)*

Note: *p<.05, **p<.01;

Table 14. *Unstandardized factor loadings for the three-factor model examining scalar invariance by maternal education level*

	<HS Estimate (SE)	HS+ Estimate (SE)
EY6 "has trouble resisting temptation"	1.00(.00)	1.00(.00)
EY25 "has trouble controlling impulses"	1.06(.16)**	1.06(.16)**
EY14 "finds self-control easy to learn"	.79(.11)**	.79(.11)**
PRS10W3 family helps me find solutions to problems	1.00(.00)	1.00(.00)
PRS4W3 "know family will always be there for me"	.61(.11)**	.61(.11)**
PRS7W3 "family tells me they think I'm valuable"	1.11(.14)**	1.11(.14)**
PRS9W3 "family has confidence in me"	.89(.11)**	.89(.11)**
PRS13W3 "know my family will always stand by me"	.76(.13)**	.76(.13)**
PRS1W3 "with friends able to completely relax"	1.00(.00)	1.00(.00)
PRS2W3 "share same approach to life as friends"	1.47(.26)**	1.47(.26)**
PRS5W3 "know friends enjoy doing things with me"	1.22(.20)*	1.22(.20)*
PRS6W3 "have at least one friend I could tell anything to"	1.56(.32)**	1.56(.32)**
PRS8W3 "feel very close to some friends"	1.68(.32)**	1.68(.32)**
PRS12W3 "friends would take time to talk about problems"	1.90(.34)**	1.90(.34)**
Family with Friends	.03(.01)**	.04(.01)**
Friends with Self-control	.03(.03)	.07(.03)*
Family with self-control	.02(.04)	.07(.04)*
Means		
Self-control	.33(.12)**	.00(.00)
Family	-.03(.04)	.00(.00)
Friends	-.02(.03)	.00(.00)

Note: *p<.05, **p<.01;

Table 15. *BIC for the configural, metric, and scalar models for using maternal education level as the grouping variable*

	BIC
CONFIGURAL	13415.388
METRIC	13354.848
SCALAR	13299.815
Loglikelihood Chi-Square	
Metric against Configural	χ^2= 4.86, *df*= 11, *p*= .94
Scalar against Metric	χ^2= 15.39, *df*= 11, *p*= .17

Table 16. *Standardized factor loadings for self-control predicting household income at Wave 3.*

	Full Sample
	Estimate(S.E.)
EY6 “has trouble resisting temptation”	.70(.06)**
EY25 “has trouble controlling impulses”	.59(.05)**
EY14 “finds self-control easy to learn”	.53(.04)**

Note: *p<.05, **p<.01;

Table 17. *Standardized factor loadings for self-control predicting household income at Wave 3 mediated by friend and family support.*

	Full Model
	Estimate(S.E.)
EY6 “has trouble resisting temptation”	.70(.06)**
EY25 “has trouble controlling impulses”	.59(.05)**
EY14 “finds self-control easy to learn”	.53(.04)**
PRS10W3 family helps me find solutions to problems	.60(.05)**
PRS4W3 “know family will always be there for me”	.55(.05)**
PRS7W3 “family tells me they think I’m valuable”	.73(.06)**
PRS9W3 “family has confidence in me”	.70(.06)**
PRS13W3 “know my family will always stand by me”	.67(.05)**
PRS1W3 “with friends able to completely relax”	.51(.06)**
PRS2W3 “share same approach to life as friends”	.46(.04)**
PRS5W3 “know friends enjoy doing things with me”	.51(.06)**
PRS6W3 “have at least one friend I could tell anything to”	.59(.05)**
PRS8W3 “feel very close to some friends”	.69(.05)**
PRS12W3 “friends would take time to talk about problems”	.69(.04)**

Note: *p<.05, **p<.01;

Table 18. *Standardized factor loadings for the multi-group model of self-control predicting household income at Wave 3 mediated by friend support and family support with maternal education level as the grouping variable.*

	<HS Estimate(SE)	HS + Estimate(SE)
EY6 "has trouble resisting temptation"	.64(.08)**	.71(.06)**
EY25 "has trouble controlling impulses"	.60(.07)**	.63(.05)**
EY14 "finds self-control easy to learn"	.53(.05)**	.54(.05)**
PRS10W3 family helps me find solutions to problems	-.63(.06)**	.57(.07)**
PRS4W3 "know family will always be there for me"	-.53(.10)**	.55(.08)**
PRS7W3 "family tells me they think I'm valuable"	-.74(.08)**	.72(.06)**
PRS9W3 "family has confidence in me"	-.73(.06)**	.62(.08)**
PRS13W3 "know my family will always stand by me"	-.65(.09)**	.66(.07)**
PRS1W3 "with friends able to completely relax"	.51(.07)**	-.52(.11)**
PRS2W3 "share same approach to life as friends"	.46(.06)**	-.47(.06)**
PRS5W3 "know friends enjoy doing things with me"	.49(.09)**	-.52(.07)**
PRS6W3 "have at least one friend I could tell anything to"	.58(.07)**	-.60(.07)**
PRS8W3 "feel very close to some friends"	.65(.06)**	-.67(.06)**
PRS12W3 "friends would take time to talk about problems"	.68(.05)**	-.68(.05)**

Note: *p<.05, **p<.01;

Figure 1. *Hypothesized model of self-control predicting employment outcomes mediated by social relationships.*

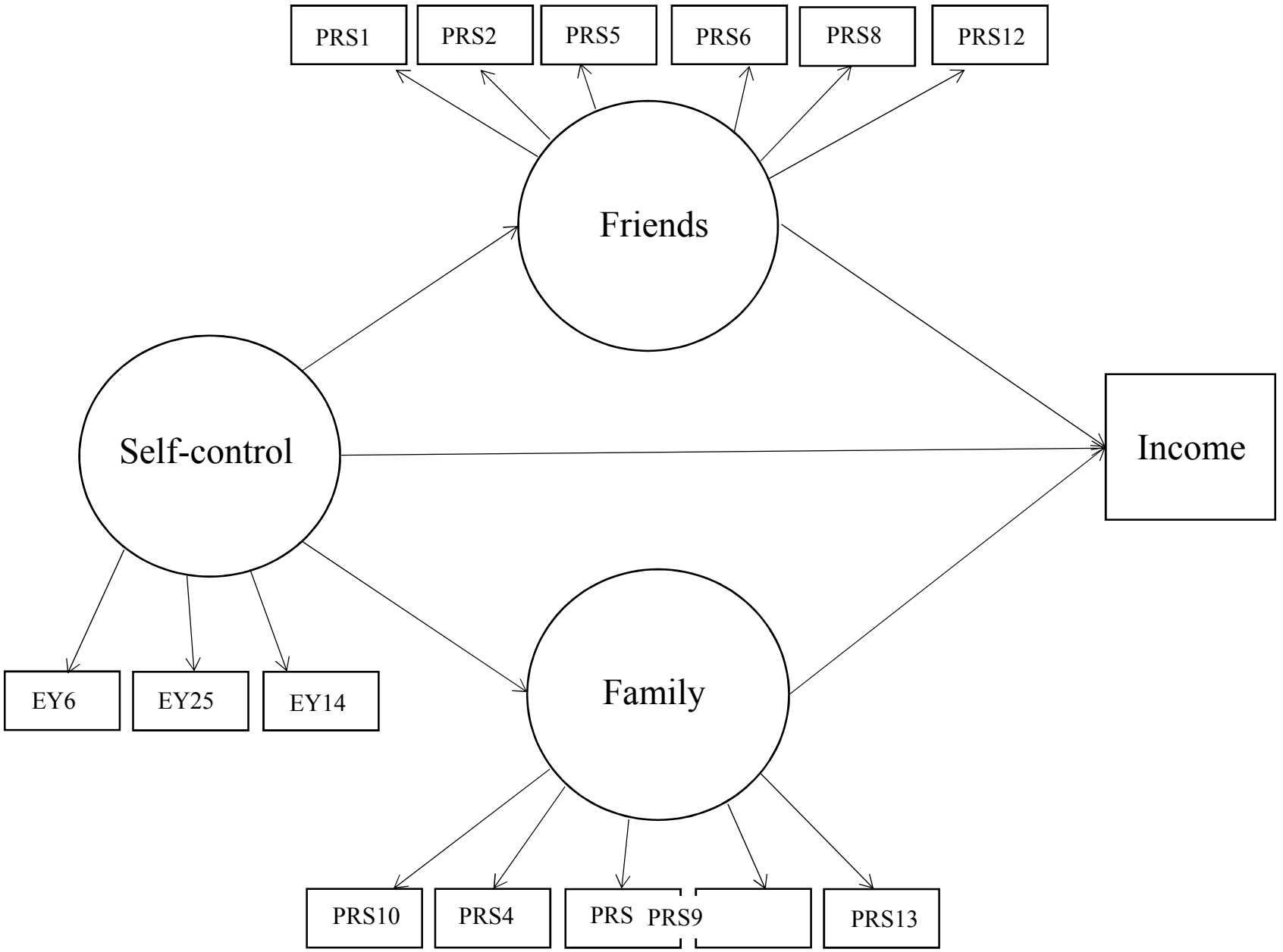


Figure 2. *Hypothesized model of multi group analysis of self-control predicting employment outcomes mediated by social relationships.*

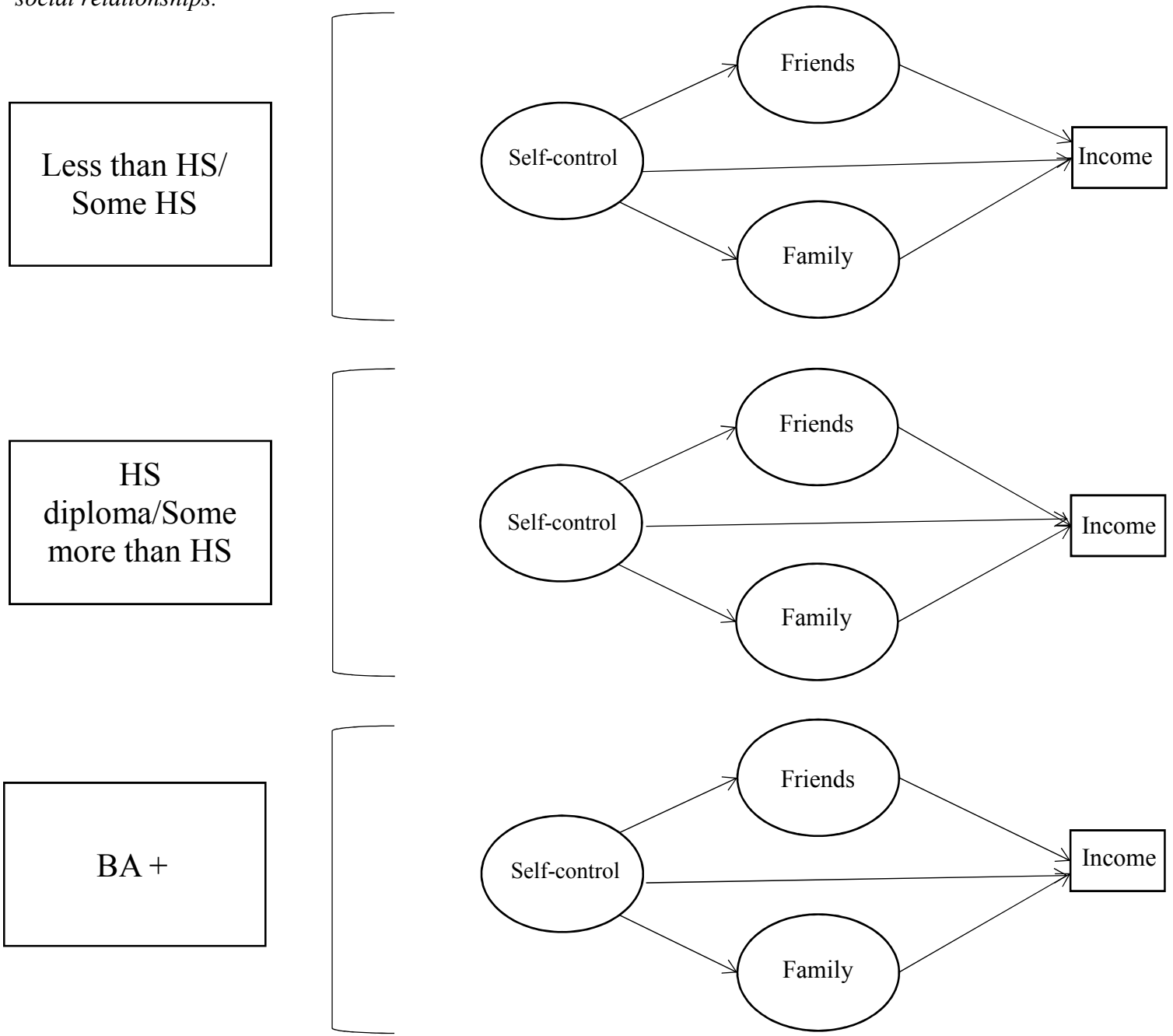


Figure 3. *Standardized results for model of self-control predicting employment outcomes using all covariates.*

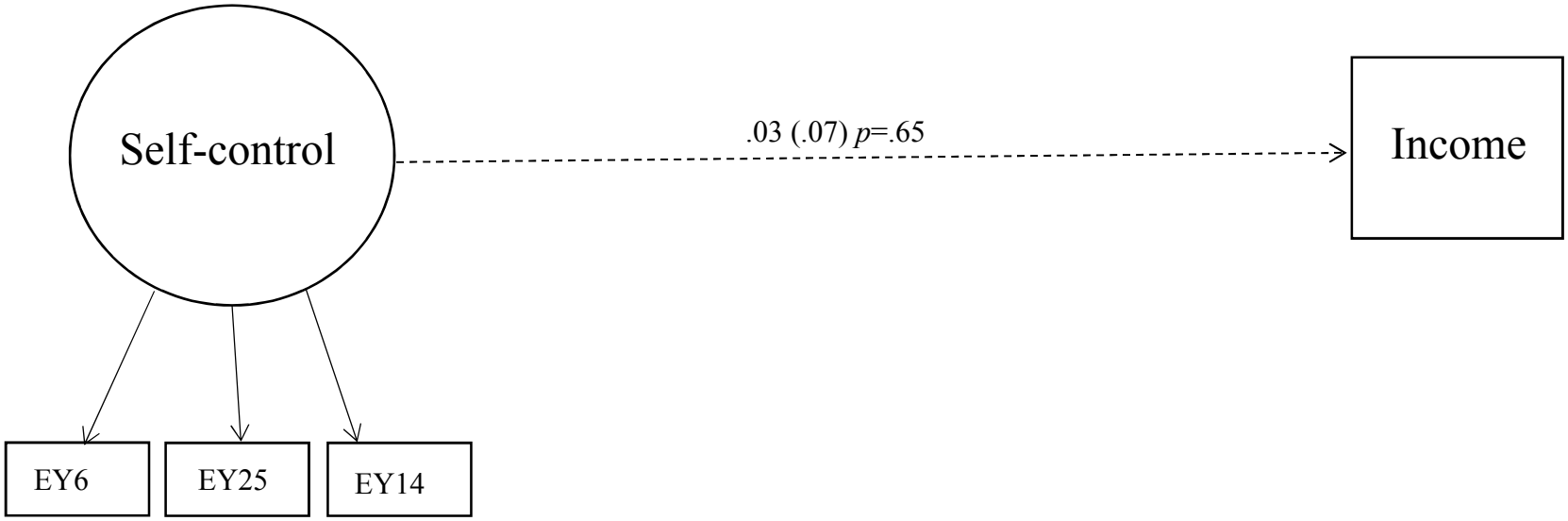
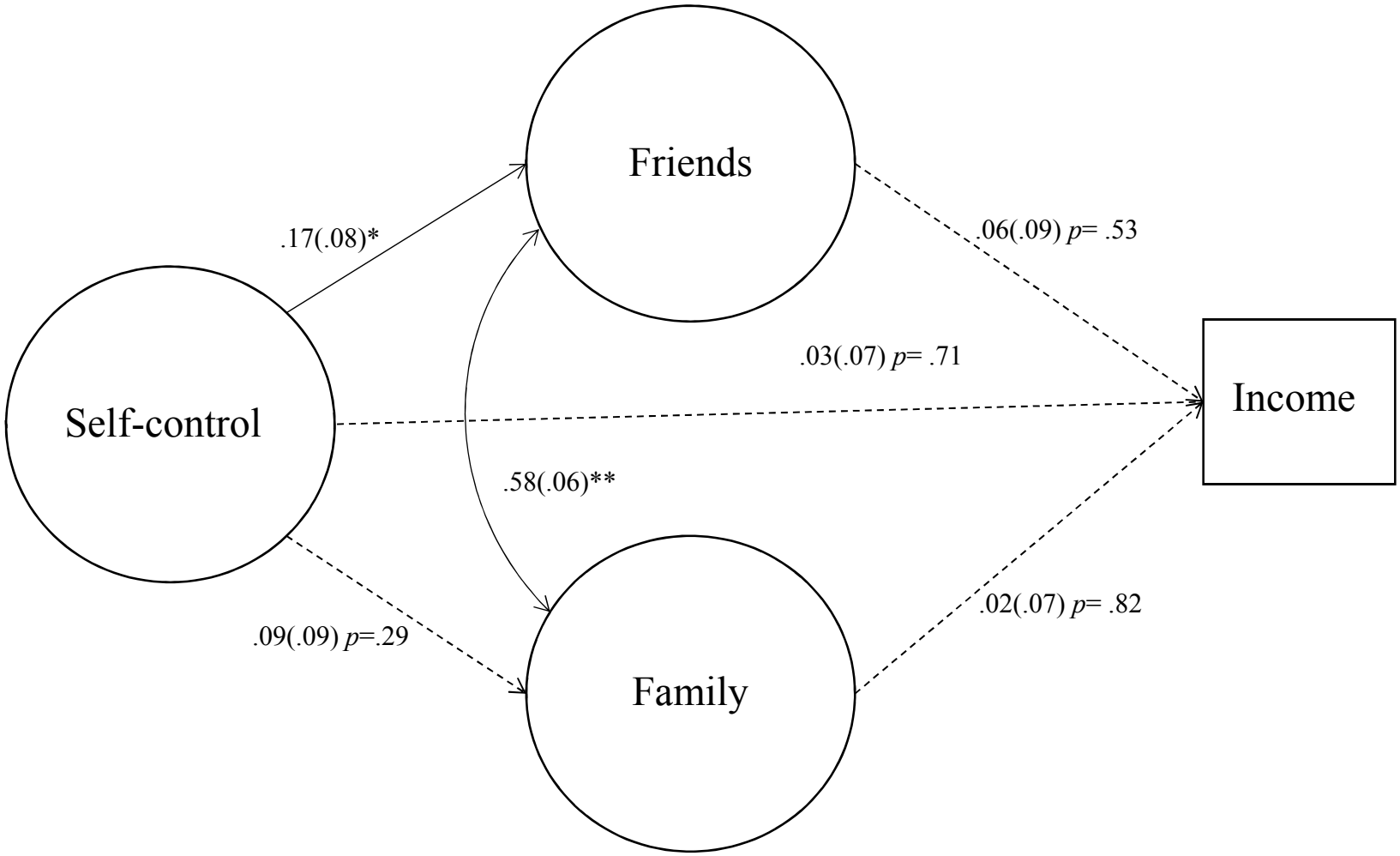
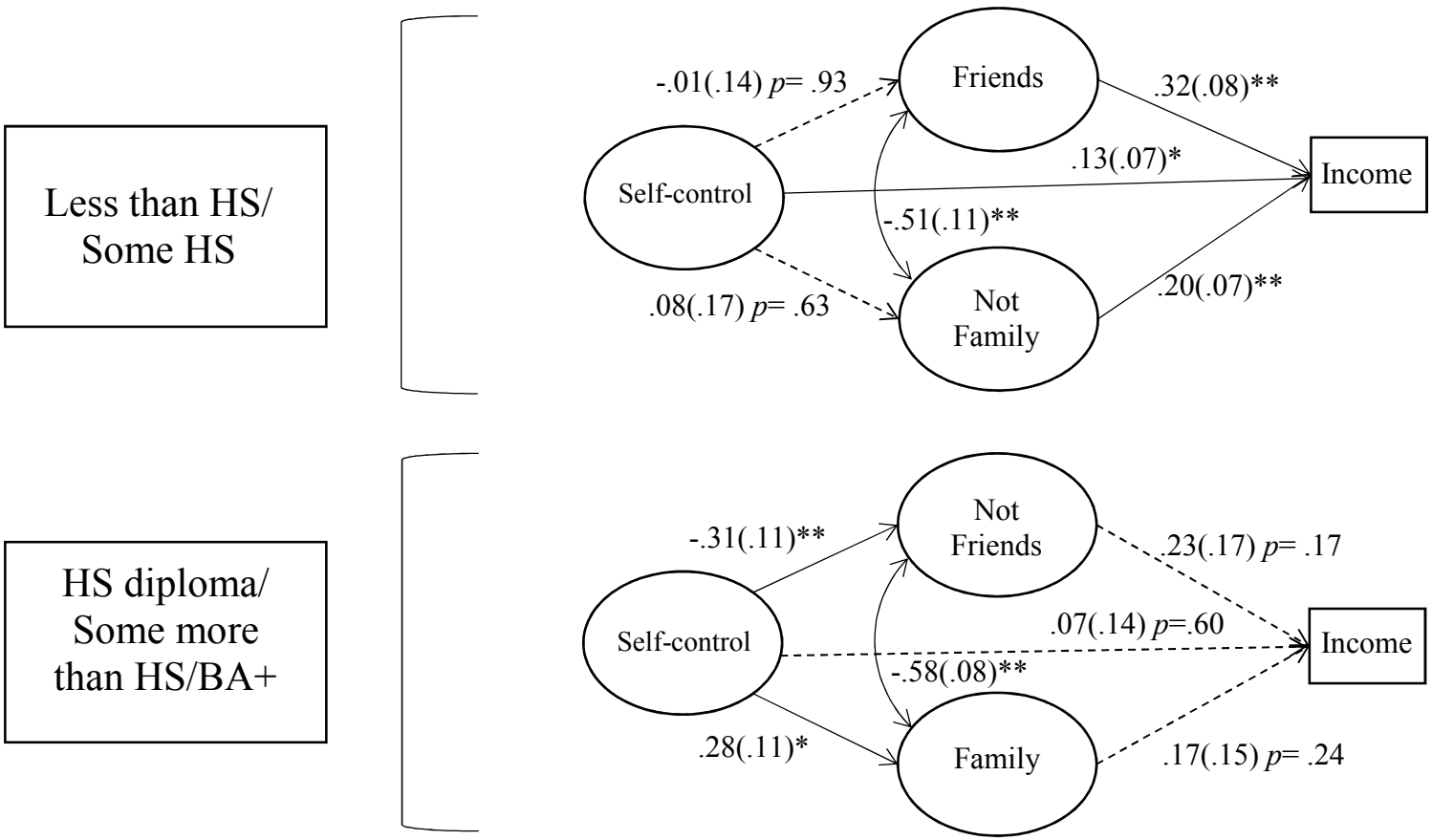


Figure 4. *Standardized results for model of self-control predicting employment outcomes mediated by social relationships*



Note: *p<.05, **p<.01

Figure 5. *Standardized results for model of multi-group analysis of self-control predicting employment outcomes mediated by social relationships using maternal education as the grouping variable.*



Note: *p<.05, **p<.01

Appendix A: Research Question 2 examined for structural invariance by gender and race.

Table 19. *Standardized factor loadings for the multi-group model of self-control predicting household income at Wave 3 mediated by friend and family support with gender as the grouping variable.*

	Male Estimate (*SE*)	Female Estimate (*SE*)
EY6 "has trouble resisting temptation"	.71(.06)**	.68(.07)**
EY25 "has trouble controlling impulses"	.62(.05)**	.58(.06)**
EY14 "finds self-control easy to learn"	.52(.05)**	.53(.06)**
PRS10W3 family helps me find solutions to problems	.53(.07)**	.64(.05)**
PRS4W3 "know family will always be there for me"	.47(.09)**	.62(.10)**
PRS7W3 "family tells me they think I'm valuable"	.73(.06)**	.72(.07)**
PRS9W3 "family has confidence in me"	.69(.07)**	.67(.07)**
PRS13W3 "know my family will always stand by me"	.54(.10)**	.78(.06)**
PRS1W3 "with friends able to completely relax"	.59(.08)**	.44(.06)**
PRS2W3 "share same approach to life as friends"	.53(.04)**	.39(.06)**
PRS5W3 "know friends enjoy doing things with me"	.51(.07)**	.52(.08)**
PRS6W3 "have at least one friend I could tell anything to"	.59(.08)**	.58(.07)**
PRS8W3 "feel very close to some friends"	.65(.07)**	.71(.05)**
PRS12W3 "friends would take time to talk about problems"	.75(.03)**	.64(.06)**

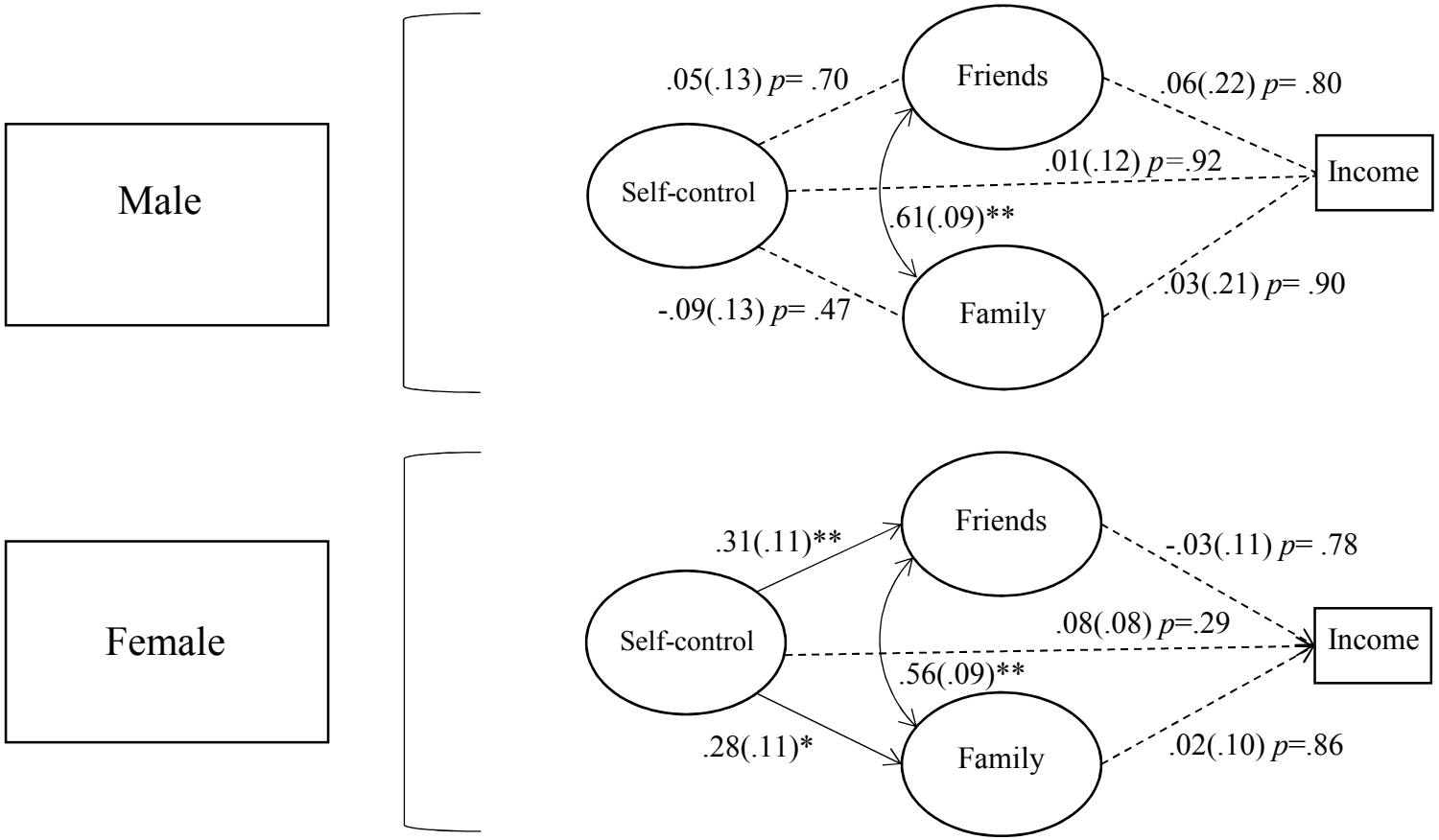
Note: *p<.05, **p<.01;

Table 20. *Standardized factor loadings for the multi-group model of self-control predicting household income at Wave 3 mediated by friend and family support with race as the grouping variable.*

	White Estimate (*SE*)	Hispanic Estimate (*SE*)	Black Estimate (*SE*)
EY6 "has trouble resisting temptation"	.71(.07)**	.62(.08)**	.74*.06)**
EY25 "has trouble controlling impulses"	.61(.06)**	.57(.11)**	.60(.06)**
EY14 "finds self-control easy to learn"	.58(.05)**	.48(.05)**	.54(.07)**
PRS10W3 family helps me find solutions to problems	.69(.07)**	.63(.06)**	.54(.07)**
PRS4W3 "know family will always be there for me"	.67(.08)**	.48(.10)**	.57(.10)**
PRS7W3 "family tells me they think I'm valuable"	.78(.07)**	.71(.07)**	.77(.06)**
PRS9W3 "family has confidence in me"	.75(.07)**	.73(.07)**	.66(.09)**
PRS13W3 "know my family will always stand by me"	.65(.09)**	.65(.10)**	.72(.07)**
PRS1W3 "with friends able to completely relax"	.32(.11)**	.47(.09)**	.59(.10)**
PRS2W3 "share same approach to life as friends"	.48(.13)**	.55(.05)**	.29(.10)**
PRS5W3 "know friends enjoy doing things with me"	.34(.15)*	.44(.09)**	.62(.07)**
PRS6W3 "have at least one friend I could tell anything to"	.39(.12)**	.62(.09)**	.61(.09)**
PRS8W3 "feel very close to some friends"	.50(.11)**	.71(.06)**	.72(.07)**
PRS12W3 "friends would take time to talk about problems"	.57(.13)**	.69(.05)**	.72(.05)**

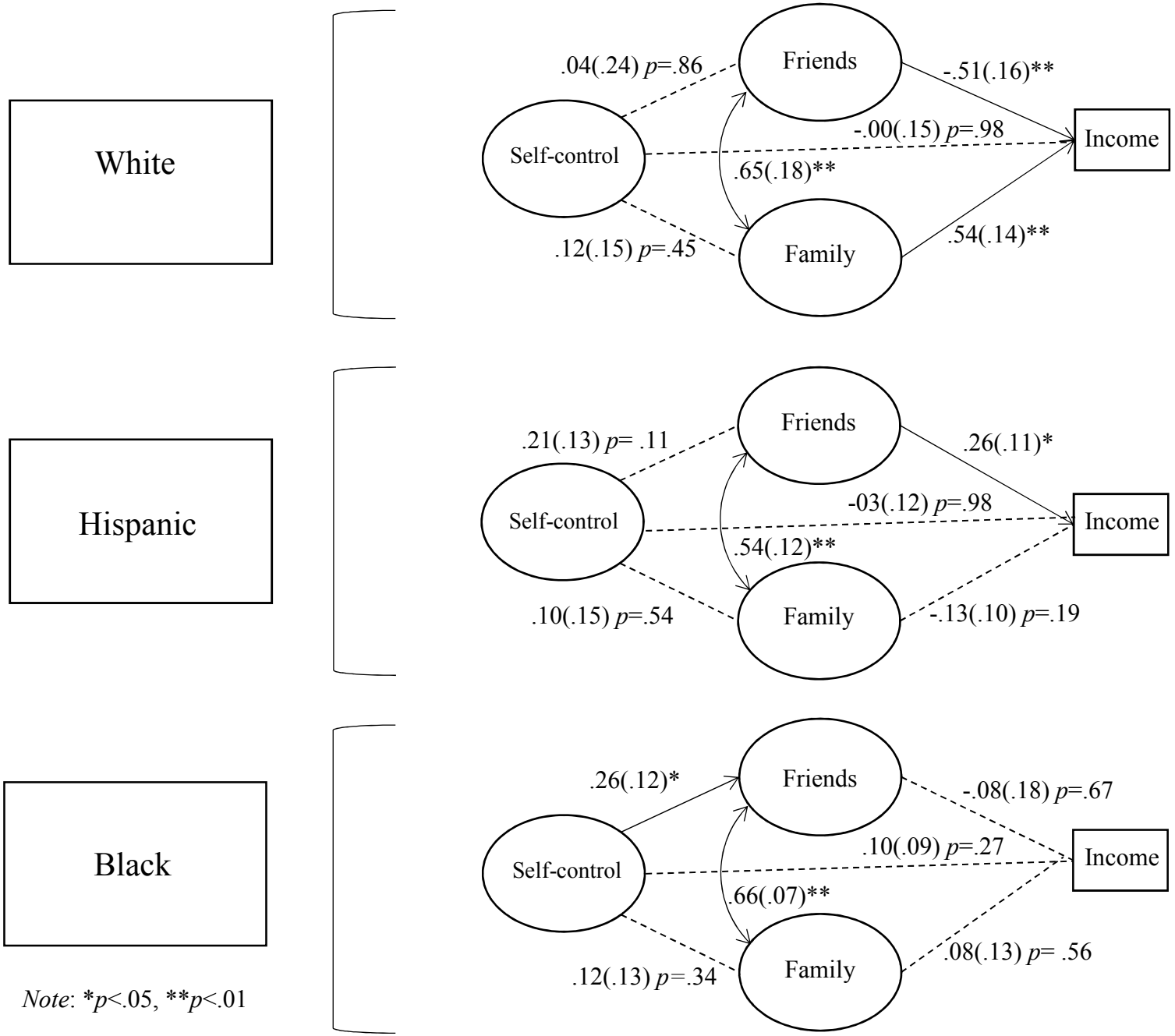
Note: *p<.05, **p<.01;

Figure 6. *Standardized results for model of multi-group analysis of self-control predicting employment outcomes mediated by social relationships using gender as the grouping variable.*



Note: *$p<.05$, **$p<.01$

Figure 7. Standardized results for model of multi-group analysis of self-control predicting employment outcomes mediated by social relationships using race as the grouping variable.



Note: *$p<.05$, **$p<.01$